**MITOCW | 20. Form Models II: Open-endedness and Prophecy**



**JULIAN BEINART:** I'm going to go through a number of cases with you today. So we'll have to rely on, sometimes, on this hand out, sometimes on the slides. Let me first tell you what handout contains. The first is an example from Philippe Boudon's book, *Lived-in Architecture.* This is his housing for steel workers at Pessac, near Bordeaux, which Boudon studied after a period of time and made these drawings of the changes that people have made to the original plan, which is the top left.

The elevations indicate a couple of things, because I'm not going to go into any detail about this example. People enclosed the open porch of Corbusier's to make garages. They replaced long, linear windows by rectangular windows of a much more oblong nature, arguing that Corbusier's windows were not modern enough and so on and so on.

When Corbusier was asked by Boudon about these changes, he said, to be grammatically as possible, life is more important than art. There was no indication that he expected or made provisions for changes to take place. He was central to modernism, that time was captured within the space of the project. He neither looked forward to changes that could be made nor did he look back to the possibility of history or memory affecting your work.

So one ism, as I tried to indicate on Tuesday, was the notion of fixed culture, which operated with the production of objects which had no reference backwards of any value. Corbusier is a classic example of a man who denies the 19th century street forever and then proceeded to make projects like this one, in which the steel workers themselves find the capacity to change without the change being premeditated.

We're going to be looking today at the issue of looking forward and what unpredictability means. I will use the case of MIT on the second and third page. You will see the plan of MIT from 1920, 1916, to 1994, 2004. I will discuss [? Maria Zepharado's ?] thesis and what she found. Next

Two pages from Rodrigo Perez de Arce's work, arguing that-- it says, demanding adding on to existing buildings is an opportunity for good change.

**AUDIENCE:** Who is this? It's not at the top.

**JULIAN BEINART:** Isn't it?

**AUDIENCE:** Rodrigo Perez de Arce.

**JULIAN BEINART:** Rodrigo Perez de Arce, A-R-C-E. He's from Colombia. Do you know him?

**AUDIENCE:** No, professor.

**JULIAN BEINART:** He's a quiet man, who draws very beautiful drawings. His urban-- in the larger reading list for this class, you'll find the reference. It's published in *Architectural Design* and also in a little handbook by the Architectural Association in London. I will show some examples of his work.

The next two pages are drawings by Louis Kahn and Alison and Peter Smithson of the Team 10 group dealing with flows. The next few pages are plans of European universities from 1961 onward all the way through to the Free University of Berlin in 1963, all slowly dealing with the architecture of change. OK.

Reaction after the end of CIM was in the hands of a small group of architects called Team 10, who put forward the possibility that time could be escaped from. That's my words. They didn't write it. Alison and Peter Smithson, Team 10 primaries, the doctrine of their work and theories, they were interested in notions of unpredictability, circumstance, probability. They were interested in the notion of the temporary and the ephemeral versus the permanent. Secondly, they were interested in the flow, in the idea that movement systems, particularly those that create interaction and connection were fundamental to their work. And thirdly, they tried to argue for social reality, which involved the complexity of occasion, as it occurred in most situations at the time.

They invented words, like most architects do. Socioplastics is their invention. Socioplastics use that word which embraces what the painters like Richard Hamilton and Eduardo Paolozzi were trying to do in their painting. It's interesting how few architects of the modern movement or the post-modern movement have had much association with painting. Frank Gehry is, perhaps, the only one. Steven Holl, to some extent, connect the interpretation of architecture in light to certain ideas about painting, whereas the Modernists were very much in the mood of all the painting revolutions, which occurred largely in Paris and in Europe.

So we have the notion of change, the notion of flow, and the notion of socioplastics as central to Team 10's work. We will look a little bit at Team 10's work. But I haven't got the time in this class to deliberate fully on Team 10 and their architecture and their urbanistic work.

We have to accept that you cannot predict the future. There's a book by Paul Ormerod, an Englishman, called *Why Most Things Fail,* which sets out that we maintain to achieve a particular outcome but the complexity of the world, even in apparently simple situations, appears to be so great that it's not within our power to ordain the future. He gives the example of the world's 100 largest companies in the period from 1912 to 1995. Out of the 100 largest industrial companies in 1912, how many have survived in 1995? Guess.

**AUDIENCE:** There's a good book called *The Living Company,* written by Arie de Geus in which they studied companies over 200 years old to understand what would make them last over time.

**JULIAN BEINART:** Well, 48% of the companies which were in the world's largest 100 disappeared. 52% survived. So that means over 80 years, you have a 50% chance of survival. It's more than human beings.

**AUDIENCE:** Yeah.

**JULIAN BEINART:** It's pretty good. He refers to the difference between risk and uncertainty, risk being where the options are within a span of certainty, such as flipping a coin. And uncertainty is where the options are very unclear, such as a man or a couple of men from the moon landing on the Earth, which some people believe in.

The difference between risk and uncertainty isn't easily discussed in the work of the people that I'm going to be arguing for, this notion somehow that-- how much do you know of this work? Who knows about the Free University in Berlin? One person. You all are very ignorant, if I might say so. We don't teach history properly. We don't teach urban history at all. I have complained about this for most of my career. And seeing this is the last time I have to complain--

[LAUGHTER]

--I'll complain finally, for the record. All right. We'll talk about the Free University in Berlin project by shared records. Let's just list, if we can, some of the conventional methods of achieving flexibility in cities. Number one, land banking, you can endow land with cheap uses, farming, parking lots, and so on, on the grounds that, in future when land becomes more scarce, they will be able to be reused without much demolition.

Farming is not an option which has been used in urbanism very much if at all. Farming in New York is on terraces and high 100-feet above the ground, or 1,000 feet above the ground.

Secondly, easements-- easements are rights of way which can be endowed with limited use, such as on the sides of highways. When we spoke about Robert Moses, I spoke about the lack of his provision of easements on his freeways.

The cost of providing the easement would have allowed the addition of public transportation next to these roads at a cost, which is now estimated to be a fraction of what it now would cost to do them. So you allow the possibility of an event taking place on land which is easily available and costs very little initially, but increases in value as time passes.

The problem with prediction is that there's a difference between the right prediction and the excessive prediction. Now, it's between too little response and too much response. Prediction costs money under most circumstances.

You can also do excessive prediction. I think I showed you a diagram of a South African mining town, a classic case where the town was designed so that the central businesses could expand. The expansion area around the center of the city was so poorly treated, so badly landscaped, not landscaped at all.

It was just dirt. It, in fact, caused the center business area not only to grow, but to decline in size instead of to expand. Leaving land for expansion is one of the ideas that we'll look at a bit more carefully.

You can leave open space for consumption, assuming a coarse grain in your town. I will show you the example of the Seoul the Olympics in 1988, which built its Olympic Games on the basis of a fairly large open space system. Who knows the 1988 Olympic Games? Were you there?

**AUDIENCE:** Not at the Games, I know the site.

**JULIAN BEINART:** You know the site. Yeah. Yeah. It's a classic example of the cannibalization of easy access space. Open space is easy access. It's cheap-- not cheap in the public's mind, but cheap in the promoter's mind.

And most of the facilities, including the Olympic Village by Kyu Sung Woo, who lives here in Cambridge, was built on this available land. We'll come to Seoul '88 later on. I'm just running through some of these.

There's infrastructure for flexibility. When we designed the MIT Brain and Cognitive Sciences building, we had to allow for the C86 railroad to run through underneath the building that made an extraordinary difference in the kind of building which you could design

but we calculated that if the air Rights Committee owned the air right over the C86 railroad, about 22 feet or 15 meters. I'm not sure which. I think it's 22 feet.

MIT can build 22 feet above the plane of the railroad. We calculated when working on this that, if MIT exercised this option and built on the maximum air rights that the-- well, they have the air rights. The degree to which they can build vertically will have to be sanctioned by the city.

But we calculated that, if MIT wished to expand its campus vertically over the air rights, the development would be worth billions of dollars in Cambridge in terms of square footage. So imagine the possibility of a future in which MIT could build above a railway line.

The fact is that we only built to the height that Cambridge allows in our building, which was large enough for our program. But this friction caused by a movement system. Corbusier's proposition of building under the freeways in Algiers is not feasible anymore. The noise and pollution caused by the automobiles would make it virtually impossible to build under the freeways.

One of the dramatic futures in the next 50 years is going to be to how to capture the space under elevated freeways all over the world. They're elevated to a considerable height because you have to be able to pass through with a truck, which means that you have to have ramps at 1 in 10 or 1 in 5. Depending on how steep you are, you can take a large amount of space.

So I haven't seen a proposition in recent times anywhere in the world for capturing the space under a freeway in a positive sense. We have one SMR student project thesis, which you'll see in three weeks time, which tries to do this in Boston with great difficulty.

But the air rights mean that the development above a plane, which for the moment is used by a railroad or freeway, and the development below that plane even penetrating into the ground are options which utopianists have examined and wondered about. So we have to include them on our list.

Lastly, is the question of geometry. And most of the rest of my talk is going to deal with people who have used the idea of geometry to allow for future change. OK. One of the people who argued for the impact of geometry is [? Maria Zepharado's ?] thesis.

Maria was in this class and became interested in the idea of change. She wanted to study a city and make some speculation about how urban transformation took place. She decided after being forced to limit her thesis to take a MIT.

MIT, Shadrach Woods, the architect of the firm, Josic-- oh, I forget the name of the French firm, was an American architect who developed the word ground scraper as a model of MIT and used as the basis for the design of the Free University campus in Berlin.

Maria worked with the drawings in the MIT archives, which had never been looked at before, and made an assessment of the number of geometric configurations that allowed the campus to grow in the way that it did. I haven't got time to go into this detail, as always. Why are we so short of time?

Is it because we try to do too much? But if you don't do too much, who says what is enough? Should one take one project like this and spend a semester studying it in detail? Would you gain more from doing that versus attending a class which tries to cover everything in the world?

[LAUGHTER]

Well, you made your choice. Among our findings, six stand out, the existence of an underlying circulation system. MIT has a block size of 65 feet in width in the central corridor most of the time.

There are three kinds of stems used. Number three, the quality of the knuckles-- whenever a building changed directions. Almost always when there's an opportunity to change direction, the vertical circulation system of elevators and staircases are contained in the knuckle.

So she shows that every time a building changes direction it is free of having to replace the vertical circulation system. It means that the circulation system becomes more intense as it is joined to other systems. The fully equipped unit section-- from the [INAUDIBLE] system.

The courtyard is future space. I never realized that MIT intended the courtyard system as an opportunity for building expansion. Thank god they haven't.

The facades-- where facades were considered to be permanent, they were built of granite or limestone. Where the facades were considered to be temporary, they were built of brick, yellow brick facade.

So she argues very systematically with a lot of data that there was a kind of DNA in the system not a very profound DNA, but a very simple DNA, which allowed MIT to grow until 2004 on its own land.

Our building, the Brain and Cognitive Center, is on the other side of Vassar Street. It was the first time a building-- not the first time, but one of the first times the major building was built outside of the limited campus. We proposed an aerial connection from building whatever-it-is across Vassar Street to a place on the second floor of the Brain and Cognitive Center.

MIT wouldn't build it. We tried very hard to get it built. In fact, the German engineer [? George Sly ?] who worked on the Freedom Tower in New York is probably the best structural engineer in the world, designed the connector.

But MIT didn't. MIT now faces an expansion possibility which is not as simple as expanding on your own land. It has to deal with urban infrastructure of much more complex nature.

Another use of geometry, which we mentioned before is in the Llewelyn-Davies plan for Milton Keynes in London one of the Mark 3 New Towns. You'll remember that the grid is used. And the grid is spaced at 1 kilometer by 1 kilometer, not 1 mile by 1 mile, so that the consequence of the generation of volume within this enclosed grid space would not be too large and require great separated interaction.

Some other ideas-- the whole premise of Milton Keynes' his plan he summarized as follows. "The central aim of the plan is to arrange the necessary fixed elements, transport drainage water supply in a new city, so as to allow the greatest possible scope for freedom and change. It has been planned as far as possible to allow wide varieties in patterns of life and the greatest possible choice for the future."

There are two things in the geometry of the-- well, in the application of the geometry. Number one is the idea, as I drew on the blackboard, of recognizing the possibility of a space frame system. A space frame system in architecture is a system which spans distance and allows you to put points on the load system at any point as opposed to point and beam system, where you can only load the system where there is a column beneath your point.

So it's kind of pointless system or freedom of pointing, which allows almost any kind of change to exist. The notion of deciding what the maximum amount that you can allow before the system cripples itself is interesting. You have to use mathematical prediction systems like the Poisson distribution.

Who knows what the Poisson distribution is? You should know. If you're going to design a university campus or a schoolroom, how do you decide on the distribution of the sizes of classrooms?

You're architects. You're in advanced standing at MIT. You're doing doctorates. You're doing all kinds of advanced degrees. And if I ask you the simple proposition that, if you had to walk out of here and you were in Burma somewhere and they decided to build a new university, how would you decide on its program without knowing the Poisson distribution?

The Department of Mathematics at Cambridge University, a new building, is designed on the basis of Poisson distribution. It allocates probability of sizes given certain average rates. I'm not trying to be clever.

I'm just trying to say that there are statistical measures which give one a better prediction about the future. One of the best subjects I ever studied in graduate school was statistics. I hated it, but it made me aware of the fact that you can generate knowledge through sampling systems of great capacity.

I was staggered when my professor said, the only reason we have live matches is because we know statistically how many matches fail. And we can predict the production of boxes of matches without any of them failing or 99% succeeding-- staggering, but a simple observation.

The Poisson distribution is one of the features of a-- so the second feature Milton Keynes, in trying to predict the possibility of, first of all, diversity and, secondly, of change is to introduce zoning systems based on performance dimensions.

The reason why German zoning started out was because of the industrial city causing noise and dirt and fumes and traffic as opposed to the quiet notions that are required in a residential area. If today a high tech company produces no noise, no smoke, no sound, can it not be adjacent to a residential building?

Of course, I don't know how this has worked in Milton Keynes. If I buy a piece of land and I make a wonderful garden next to it, it has value. If the city decides to build a factory next to it, I lose value.

How do you account for that change? Do you repay me? I take you to court and say I have rights. They say, you don't have rights to predict, to confiscate, the rights of development and so around you.

It's a fundamental problem. If you wish to design for diversity, you can, of course, write a rule saying that a factory will not be within 100 feet. But performance dimensions measure sound, noise, frequency of traffic.

If trucks start working, as they do in New York, at 5 o'clock in the morning and I want to sleep, what right do I have to stop the trucks from off-loading at 5 o'clock in the morning? These are tough questions. And flexibility simply runs up against some of these questions in a very real sense.

It will be interesting to check-- I need to talk to John de Monchaux who is one of the designers of Milton Keynes, about how this has been handled. Rodrigo Pérez de Arce, who argues in favor of keeping existing stock and building an architecture of addition, he says, urbanistically, it has three advantages.

"By being a gradual organized incorporation of parity into an existing core, it implies the use of a pre-existing structure. And by doing so, it extends the likelihood that it's being useful for a long time. Secondly, it allows for a form of development characterized by its low cost in both social and material terms."

I'm not sure that he's right. Maybe it's true in Colombia, but the cost of renewing buildings, such as the buildings around here, which have been renewed for high technology purposes, is extensive. It's not automatic that, if you extend a building, all you do is put a bedroom, an addition to a house.

And thirdly, he says that this process, "this additive transformation ensures a sense of continuity in the construction of the town and a sense of place in both historical and spatial terms." He goes on and on. This is the piece from Architectural Design if you can't find the AA, the little book.

Let's look. And I need you to look at your transcript. Let's look at the development of a systematic campus plan starting in-- the British were very intelligent after they won the war, the '39, '45 war.

They decided under the Labor government, which replaced Churchill-- Churchill was interestingly successful as a war leader, but helpless as a peace leader. Maggie Thatcher was equally hopeless. She was a big war success with the Falkland Islands, big victory indeed. Yeah.

Anyway, we start with the 1961 plan for the University of Sussex. This is post-war, post '45, rebuilding of educational institutions in Europe. And I use this data just to make an argument about the change.

61 Sussex is a campus plan. They are separate schools. They are individual categories, individual enterprises, School of Mathematics, School of Humanities, and so on. By the University of Lancaster in 1964, the tension starts being paid to the connecting of places.

And the system is one in which modular space is connected in a complex network. Number four, the University of East Anglia in 1961, the plan is now a solid linear configuration with three small outgrowths. But the whole system is very much based on the linearity of-- number five, the University of Essex in 1961, tries to take that linearity and bend it up and down.

By now, people are asking questions of whether interdisciplinary knowledge systems are not taking hold, biology and science or physics and chemistry. So the breakdown of conventional disciplines suggests the kind of grouping of and even a future in which this might continue, allowing for a switch to the next page, University of Surrey, where you start getting some inclination of the idea of building modular space of various dimensions.

University of Dublin, [? John Carver's ?] project starts trying to articulate the linearity by having a central public spine, much like the main corridor at MIT, and outgrowths from it depending on the need to be close to the public versus space which requires research privacy.

We go down to the University of Loughborough in 1965, which is a major, major departure. Now, a 50 by 50 cube by 15 feet high is the only element to be designed in the university space it will account for 70% of the campus. What does this imply?

It implies that we maximize the possibility of change every space is endowed with a service structure. So that my office can become a space for a research scientist who needs specialized heating, specialized air, specialized steam, specialized power. If I produce all of this for everybody, we can change with maximum flexibility.

Do you understand the idea? This is the ultimate measure of flexibility, an item which has infinite flexibility. In a competition for the university, new university of Bremen, one of the competitors had a railway line right through the middle of the campus with the train with a crane on it. And it kept on moving the parts, modules, all over the place.

So if my department grew, some modules could be added to the top of our existing department. If we fired half of the Department of Architecture, the modules could be replaced. If you speed that up, you can imagine coming to your office on Monday and needing an algorithm to explain where you should be or where you're going to be.

MIT's central corridor, despite the changes, has remained. And it has a low rate of change. It should have changed much more than it has, but it's become embedded into the system, so that whilst almost every other space at MIT has undergone change, it hasn't.

It has the same old dull administrative-- instead of building a cafeteria across the street, MIT should have jettisoned its administrative facilities and used this major corridor as a place for real public exhibitions, for eating, for people coming together. It didn't.

It lacked the intelligence or the-- but so excessive flexibility is very costly. One of the reasons you can't do advanced science in the old part of MIT is because is the infrastructure is too weak. The sixth floor of our building-- our building has six floors.

Well, the sixth floor is for animals. All of animals are generally in basement. One of the future for building university research facilities given climate change-- New York University, the animal laboratories in the basement all flooded. All the research was lost.

We put ours up in the sky for no clear reasons. We thought the animals would be better off in there than down in the basement. And nobody disagreed.

On top of that floor is a floor of machines, machines which look like airplane systems. Because the building is a laboratory which has to account for research which requires highly specialized vectors of steam, light, all kinds of elements which the ceiling depths of about 18 inches, or 2 feet, in places is so dense that you cannot get another pipe through there.

If MIT would have allowed us to account for future flexibility, we would have made the depth greater than the 18 inches tube. It costs money. We weren't allowed to plan the building with any space on the building called TBA, To Be Added.

It's like packing an aircraft carrier. An aircraft carrier probably can change internally. But anyway, let's move on with these diagrams. We're got a few minutes left.

The Potteries Thinkbelt in 1966, was Cedric Price, the British architect's, attempt to do a couple of things-- to eliminate the idea of a campus from having separateness from the rest of urbanism. He decided to place this British university in an area of suffering economic decline in Staffordshire.

He argued that this embedding of the University into the society's needs would spontaneously produce another kind of university, such as it would stimulate the economy, for instance, through promoting a landlady industry and so on.

Instead of building university dormitories, I showed you a project in New York by the Ford Foundation, which attempted to do the same thing that, instead of building university dormitories, create a market for the supply of housing by the poor people around the university.

The last of these plans is the most famous of them. It's the Free University in Berlin. Shadrach Woods writes about this plan. "We have not begun by trying to give fixed points within the system. I know they will have this.

People make the identifiable features, not the architect. I do not want to make any symbols to begin with. I think that the use of the building create centers of activity. The plan is really an attempt not to make sense--" and so on to begin with.

It's interesting that the implication is that, if you give an opportunity for people to arrange themselves, they will have the capacity to do so in a correct manner or in a manner that is correct for them. This is a time when Noam Chomsky was lecturing about the innate ability of a child to construct a specific system of interconnection amongst concepts and conditions of use and reference on the basis of scanty and scattered evidence.

Is there DNA in human beings which automatically will be able to create better space than a specialist guiding them? Or what combination of the two? Classical anarchism is--

**AUDIENCE:** That would be the wisdom of the crowd in that sense.

**JULIAN BEINART:** Well, as I can only judge from Shadrach Woods, who was a very good architect, this is absolutely anti-classical. The crowd will organize itself as it goes along and works and studies. There will be a generation of space which will be more the result of the participation of the people than imposed on them.

I'm putting it rather crudely, the notion that there is a DNA in all human beings, according to Chomsky, which allows a child to construct complex sentences without having been told how to do it, admittedly with the parents and society around them to guide them. But Chomsky is fairly well-established as an authority now. There's still controversy around whether the DNA of people have this capacity without much learning.

My own position about-- the Free University has had a bad history. It's been vandalized. It's been destroyed. It's had to be rebuilt. It never fulfilled the promise that Woods had for it.

So what we see through all of these cases, from Sussex in '61 where the armature of separated items in a campus are dismantled into a system, which is almost cybernetic in a sense, free associations of networks created freely over time suggesting new relationships. The trouble with architecture is that it's not easy.

You just can't take a piece of paper and stick it on a wall. The wall has to have bearing. Acoustics unfortunately means that the only way to separate sound is with mass.

The university is the last place in the world to flitter around with stud walls or prefabricated metal panels. If we had a prefabricated metal panel uninsulated, we wouldn't be able to teach in this class. So again, the Poisson distribution might guide one into knowing the frequency of places which need acoustic separation versus those that don't in the same way that the Loughborough possibility of making everything possible-- a Poisson distribution would say that the likelihood of wet laboratories occurring in your campus are this.

And, therefore, you should only spend the money on a feasible solution, which requires 70% of your buildings to have this flexibility. The Stata building has no wet laboratories in it. Therefore, it has nothing-- I mean, if you knew architecture well enough, you could look at the Stata building and our building and compare them fundamentally and say, the one has wet laboratories, the one doesn't have any, by looking at the amount of chimneys on the roof.

We have every kind of chimney emanating smoke or gas, whatever comes from MIT. The Stata building has nothing. There's a flat ceiling roof. It's the only flat plane in the building.

OK. I want to look briefly at two other cases. The one is the-- by the way, there's a piece by William Fawcett in the MIT Planning Journal, one or two volumes ago, on flexible life, flexibility.

It's called "Investment in Flexibility, the Life Cycle Options Synthesis." He gives examples of prediction which is based on estimates of outcome and the costing of the estimates of outcome and the decision which is based on the system.

I'd also recommend that you read something in Kevin Lynch's book*What Time Is This Place?* for an attempt, in the space-time continuum, to play around with the idea of time. There's a page in which he goes through a whole number of possibilities of changing time. And he doesn't speculate about his implications on space.

I'm going to skip a bunch of stuff and end with the last two because we won't have time. I'll deal with this mainly through the slides. I can't find the right place.

The two cases are the use of temporary environment of a fairly large scale in cities. The one is the story of Paris between 1855 and 1900. After the success of the Crystal Palace Exhibition in 1851 in London, the French built an exhibition in 1855. And almost every 11 years afterwards, 1855, 1867, 1878, 1889, and 1900, it had an exhibition, a temporary exhibition, a major temporary exhibition in the center of Paris just north of the Seine and largely south of the Seine.

I'll go through some of the material with the slides, but let me read you a quote from the French novelist Jean Giraudoux about the existence of a temporary city in conjunction with a permanent city. He's talking about the citizens of Paris.

"They are delighted by the thought of reaching this cardboard or plaster city, which is a permanent stone site of Paris." What an extraordinary idea, that part of your city is rotating at a faster speed than the other parts.

The Free University of Berlin has no stone site. It only has transparency. Maybe you need a balance between stone site and cardboard. He goes on.

"They do not come to see it disguised and transvestized Paris." The exhibitions are not transvestized Paris, not changed Paris. But they are unique. They are on their own.

"They come attracted by the temporary union of an ephemeral city with a millennial one, the association of the most eccentric city with the most real and tangible one." It's an extraordinary idea that you keep the center of your city to change at a more rapid rate.

I'll show you slides of 1867 being the first structure and the demolition. That takes place within a period of 11 years. So every child in the city is seeing construction and destruction until 1900. Of course, the most significant event takes place in 1889 and considered a temporary phenomenon.

The Eiffel Tower is the most permanent of all phenomena in Paris. So again, out of this temporary sea of change, there are a couple of items which remain and log into a system of permanence. Although the Eiffel Tower was regarded as an American structure, easily taken apart and assembled, a fabricated structure unlike the solid neoclassical form of a Parisian facade.

The Trocadéro, which was on the other side of the Seine in the 1878-- the 1889 exhibition, was demolished. Although it had a plaster facade and looked as if it had been there forever. So these juxtapositions are interesting in themselves.

The last and the most permanent of temporary phenomena are the Olympic Games. In 1896, the Olympic Games was an attempt to recapitulate one of Greece's ongoing traditions.

That is the ancient site of Olympia 776 BC, which consisted of two components, a permanent religious component with priests dealing with flames and an outdoor camp series of components, gymnasia, stadia, palestra, health spa, and so on dealing with a cultural attribute of the body being performed in competition every four years.

In 1896, [INAUDIBLE] decided to make some mileage out of reclaiming this idea. 1900, the Olympic Games were held in Paris at the time of the 1900 Exposition. The Olympic Games was nothing. It was a joke.

The Exposition was everything. The swimmers swam the races in the Seine. The discus throwers had to throw the discus in the [INAUDIBLE] in amongst the trees.

But it was a single event because you do two vectors, the growth of the exhibition movement from 1855 to 1900 and then the decline of the exhibition movement and then the advent of the Olympic Games transplacing the exhibitions. The Games didn't succeed. 1904, it came to the United States in St. Louis.

Maybe you don't realize that the United States has had the Games four times. Where?

**AUDIENCE:** New York, LA, and Atlanta.

**JULIAN BEINART:** New York has never had the Games.

**AUDIENCE:** It's the--

**JULIAN BEINART:** Los Angeles has had it twice, in '32 and '84.

**AUDIENCE:** Wasn't there a Winter Games in New York?

**JULIAN BEINART:** That's the Winter Olympics. I'm talking about the Summer Games.

**AUDIENCE:** OK.

**JULIAN BEINART:** Lake Placid was the Winter Games where American Hockey team beat the Russians and caused enormous xenophobia in this country. The Olympic Games really only took off in '32 in Los Angeles, the modern games that is. It's one of the remarkable events.

It was during the Depression years. Only the French were allowed to drink alcohol. Oh, it was remarkable. It made $1 million profit despite the fact that not many people could afford to come. '36 was the acme of Hitler's performance in Berlin.

**AUDIENCE:** How do you think the films of Leni Riefenstahl sort of played a role in the Olympics?

**JULIAN BEINART:** Well, Leni Riefenstahl's film-- at the 1988 Games in Seoul, I was asked to do a presentation. And I showed the introduction to Leni Riefenstahl's film as opposed to the '84 Olympic Games in Los Angeles.

Riefenstahl, in case you don't know Leni Riefenstahl, she was the German. She was the very cryptic and all over the place German filmmaker who made *Olympia.* She convinced Goebbels and Hitler to record. They were very proud of the fact that Hollywood couldn't make a film of the '32 Games.

I will show you some of the still photographs from the '32 Games. But Hitler said, we are going to make a film. And I could go into some detail about the film, but you can still find *Olympia* in the 7-Eleven-- not 7-Eleven. What are the sophisticated local video outlets here in Cambridge? I don't know.

**AUDIENCE:** It's all on your computer now.

**JULIAN BEINART:** Well, Michael, if you can find it on your computer, find it.

**AUDIENCE:** Oh, yeah.

**JULIAN BEINART:** Let's look at these images. I'm sorry. I have to show-- I've written about the Olympic Games. It's in the reading for today.

I've been to two Olympic Games. This is the last meeting of CIAM. And the arguments had all to do between the closed aesthetic of BBPR's building in Milan and Giancarlos' building in Matera in the south of Italy. I haven't got time to go into. Next.

Some of the projects of Team 10, this is Alison and Peter Smithson's project for the Golden Lane competition. You'll see the drawing indicates an enormous attempt to create maximized communication. Almost every level has people on it doing something or other.

Here is a building which takes linear form. And people are supposed to socially condense, to use the Russian term. It's absolute nonsense.

When I came to America, I lived in 100 Memorial Drive. It's a skip-stop elevator building, which means that you have three times the volume going into the elevator. I picked up the newspaper every morning quite early in the morning outside the front of my door. I never, in 10 years, ever saw another person in the corridor. Next.

Park Hill Sheffield, one of the outgrowths of this system. It's now being rehabilitated and changed. You can see, again, the whole idea of the pedestrian sidewalk, which is a sidewalk elevated in space, is that people will use it to-- there are just too few people in a building of this kind, in most residential buildings, to generate enough-- as if communicating with everybody who lives next to you is a good idea.

I mean, it's a strange notion in our thinking about urbanism that we all Greeks meeting in the area to discuss our local politics. We'll come back to this when talking about the contemporary American city.

But there's a mistaken notion, I think sometimes argued by Richard Sennett mistakenly, that density of population provides intercourse between people in a very spontaneous way. Yes, you can only get married to somebody you meet in Philly. Next.

Another notion by Candilis, Josic, and Shadrach Woods' firm, the town of the extension of Toulouse, Toulouse-le-Mirail, the notion of the web. A web, again, is an architect geometric form which is meant to produce important intersections. Next.

Pérez de Arce, this is in your hand. This is the story of reurbanizing Chandigarh. You start off by building a few things. Over time, these get added to and added to and added to and added to. And the plan of the central part of Corbusier changes over time as the growth is consistent all along.

So you start with very-- as, I think, Louis Khan said, I'd like to build a town-- when he was working in Dhaka, first out of mud and bricks. And in the end, it will become a city of gold, something like that. Next.

Pérez de Arce's project. The ultimate goal would be to exhaust the center of Chandigarh by new construction, additions. That's the Secretariat building in the distance and in the case of Louis Khan's central complex in Dhaka. De Arce says that, through a selective additive transformation, you can change the city and build on existing systems rather than create something from scratch every time in a finished way. Next.

The MIT campus, which you all know well, that's a diagram from Maria's thesis. The project for the New University of Bochum in Germany by Candilis, Josic, and Woods, it has no elevations on the outskirts. There are just points of growth and expansion.

They stopped expanding where the topography curtails the expansion. There's a central line through the system, but the whole idea is that this is a space-time configuration that can change at a speed which is not yet determined. Next.

The University of Zurich competition-- the university is a set of spaces covered in red and blue with different rates of change. Forget about the one on the right. That's the University of Pavia by Giancarlo de Carlo. Next.

Loughborough-- the 50 foot by 50 foot module fully serviced. Next-- the French Paris story and the Olympic games. The white space is the transformed white space of the center of Paris from 1855 to 1900.

On the right are the various exposition artifacts. On the middle at the top is the first 1855 pavilions on the Champs-Élysées. 1900, they rebuilt, as they are today, and linked to a system across the Seine on the south.

1867, on the left, is the perfect around the world form. 1868, it crosses the Seine. And they build the [INAUDIBLE] on the left bank-- no, it's on the right bank in French and so on.

You get the advent of the Eiffel Tower here, 1889. You have the contrast between the apparent temporariness of this building and the apparent permanence of this. 1937, this one goes, but the Eiffel Tower stays. Next.

1855-- the two buildings just west of the blue, the Champs-Élysées. Continuing here-- the Champs-Élysées and the two replacement buildings for the 1900 Exposition. I can't reach with my hand. Next.

In 1867-- 1878, next. 1867, every 11 years you see this cycle every time in the construction of something which is ephemeral. Then it is-- this is 1867-- being removed. Next.

Delaunay's painting, this painting is a number of features about the existential condition of the Eiffel Tower as a symbol in the city. And here is an example of a neoclassical system, which has much apparent meaning embedded in it. But is easily removable as opposed to that.

You can contrast the meaning of these two items in the urban system. Why is the Eiffel Tower still there? It produces more income than any other public feature in Paris.

Paris is the largest tourist city in the world. It spends more money per capita on cleaning the city than any other city in the world, city comment. Next.

And the final resolution in 1937-- where the two winners are the Russian pavilion and the German pavilion. Our friend Melnikov's design for the '37 Exposition was never built. Next.

The plan of the original Olympic Games-- the inner core of the temple of Zeus and Hera. And outside-- the palestra, the wrestling, the gymnasium, the bathhouses, the guesthouse, the Hippodrome, and the stadium. So there's the plan for the Olympic Games in Munich-- when was Munich, '72?

I think '72. '68 was Mexico City. I used to know the dates all, but I'm sorry. Next.

1896 in Athens, 1900 in Paris-- next. 1904 in the United States, which is part of an international-- much like Paris in 1900, 1904 is part of an international festival. Here-- bushmen from South Africa produced to dance. Bushmen started running in the marathon, were chased off the course by dogs and didn't finish.

The whole system is-- the wonderful museum of St. Louis, the art museum the St. Louis, is still based on the site of the original exposition in 1904. Next.

1932, this is one of the wonderful set of still photographs taken of the games in '32. Next. Interesting, here we have, for the first time, the reuse of a stadium.

On the left is the vice president of the United States in person. Mr. Garner-- I think his name was Garner-- opening an exhibition. In 1984, security is so tight that the President Ronald Reagan appears only electronically, but the building remains the same.

One of the extraordinary things-- well, we'll see it in the next slide. Next. Berlin in '36-- the flame from the connection to original area in Greece and arriving in Berlin with Hitler on the stadium podium. Next.

Sorry, I think that's the wrong slide I believe. The slide that's supposed to be on the left shows the network of the Los Angeles '32 and '84 stadium. Transportation wise, it has worked remarkably well because it allows distribution of traffic in every 360 degree directions.

This is Speer's project for Hitler for 400,000 people, which would eliminate the Olympic Games configuration and hardly be able to anybody to see. Next.

Some of the plans-- this is Seoul. Most of the stadia are built on park land. The wonderful Olympic Village by Kyu Sung Woo-- at the top. Next.

I just have cut out most of the other slides. This is two aspects to the American-- a couple aspects of the Olympic Games. The Olympic Games are temporary events in cities. They've been used, for cities like Tokyo, to argue for building a freeway system or building new housing.

They've been used by countries like contemporary China, Tokyo in 1960, Melbourne in '56, to introduce the city as an internationally important place for trade, for psychological satisfaction, and so on.

Los Angeles and the American Olympic Games at Atlanta and Los Angeles have argued that you can reuse existing infrastructure, that you can capitalize on the existing resources already in the city. The '84 games builds no new housing. The Olympic Village is based on campus housing in the University of Southern California.

The only new facility built in '84 is the swimming pool paid for by McDonald's. So there is not only a notion of the private sector playing a role, which-- the IOC, which is a semi-fascist organization, corrupt as hell, controlling the franchise.

The Los Angeles Games is widespread, distributed according to the plan of the town. The Games in Barcelona are also very tightly associated with the major form of the city, the [INAUDIBLE]. Next.

Just the Olympic 1928 on the right, the American team is housed in a boat, the ultimate ephemeral item. This is Cape Town. I was going to talk about Cape Town's attempt to use racial integration as a social basis for the plan of the Olympic Games. They never entered. Next.

And the project for the Olympic Games in Boston, reusing the river and the university facilities along the river as the core. And here is an indication of how much the Games cost and the division between the private and public sector.