

THE SPATIAL STRUCTURE OF CITIES: PRACTICAL DECISIONS FACING URBAN PLANNERS

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In the previous talk, we have been discussing mostly the structure of cities, the influence of market and regulations, but those topics are in a certain way theoretical. In reality, planners are facing day to day a lot of problems that they have to solve. I would like to cover during this session the very concrete problems that planners are facing and to try to give some answers using the things we have learned before, in particular, the interaction of market with regulations and taxation and infrastructure.

So the first question we will ask is: Should densities be controlled? As you know, controlling density is one of the major outputs of urban plans.

Second, should planners favor monocentric or polycentric cities? This is, again, something which appears very often in master plans, and many master plans nowadays tend, I think, to favor polycentric cities, without really completely analyzing the consequence of this choice. So we are going to discuss that topic a little more.

Then we will discuss the side effects of green belts. Green belts are very popular--in plans mostly, not so much by implementation. So we would like to know the effect of green belts on city structures and on land markets.

And the fourth subject will be: Do satellite towns decrease the need for transport? A lot of master plans are planning satellite towns with the idea that satellite towns may reduce transport and will be self-sufficient. We'll see if this is true.

And, finally, is it desirable to match employment and housing in each neighborhood? This is a problem which arises from time to time. For instance, in Sweden, there are some regulations which oblige planners or developers to match for each neighborhood the number of jobs and housing. So we will see if this is a good idea or not.

To answer all those questions, we will use the same methodology that we used in the previous sessions. We will ask if this is what the government does, how will the private sector

respond to that? And what is important is the effect of this interaction between the two. It is not the intention of the legislation.

So let us start with the density. Should densities be controlled? Densities are generated by the interaction of markets, regulation and infrastructure. So densities are pretty complex things by themselves. In reality, population densities cannot be directly controlled by regulations. What planners really control is the amount of floor space which is built on a plot of land. They do not control the number of people who are going to live within this floor space. Controlling density, in the real world, means really reducing the amount of floor space built in a particular place.

We will then ask a question, should we use regulations to impose a minimum floor size, restructuring the floor area ratio, and reducing density? The regulations have the effect to reduce density normally, but it does that very indirectly.

The control of density then raises two questions. First, what is the rationale for imposing lower densities? Is it a good idea to reduce densities compared to what they will be without regulation? And, second, does reducing density of floor space always reduce population densities? Don't forget that the main objective of most land use regulations is to reduce population density by controlling the floor area ratio.

First, let us be clear that regulations may limit densities, but they cannot increase densities. If there is no demand, no regulation can increase density. However, even if there is demand for high density, regulation could decrease density.

The rationale for restricting density below an allowed threshold is based on the capacity of existing or planned infrastructure. In general, the rationale which is given is that the existing infrastructure or the planned infrastructure is not designed for high density. And, therefore, very often when there is already an infrastructure in an area, planners will tend to say, we have to restrict densities because, for instance, the existing water pipes would allow only this maximum density.

However, when making the assumption that keeping density low saves on infrastructure costs, planners have to recognize that when a city keeps growing, the people who are not accommodated in the area of reduced density will have to be accommodated somewhere else. And, therefore, the city will still have to spend on infrastructure on newly developed land to accommodate this population. Therefore, when planners try to reduce densities, they should not forget that every time they reduce density in an area, they have also to increasing the land area which is required for a given population and therefore spend more on infrastructure and transport.

Normally, if planners did a cost/benefit analysis, they will decide to impose low densities only when the cost of developing additional land to put additional population will be less than increasing the infrastructure capacity in the area where they want to limit densities. Planners could make exceptions, of course, when there is a clear environmental reason or for protecting historical heritage. Then the planners' objective should just be to protect, for

instance, historical heritage. There is nothing wrong with that if it is an explicit decision, and it is known that it is going to increase the amount of land required to expand the city, but that has to be a clear objective.

In most of the other occasions, I think that it's always a better idea to increase infrastructure capacity than to decrease density. If there is a demand for high density, I think it is--not always, but in general--to the benefit of the city to allow this high density.

Now, the other question was whether is it effective to control densities through land-use regulations?. Do not forget that the only way to control density is, in fact, to limit the amount of floor space per unit of land. If you do that systematically on a very large area of a city, what you are doing, in fact, is decreasing the supply of floor space which is being created in the city. And if the city has some difficulty in expanding a new area because of topography or because of lack of infrastructure, then what you are doing, in fact, is restricting the supply of floor space. And if you restrict the supply of floor space, you are, in fact, making housing more expensive and you will have more people living in a smaller space. Therefore, you will increase density in the long run. I have seen many examples, in India, for instance, where the policy of the local government to systematically decrease density, in fact, resulted in higher density than the one which was first there because it created such a shortage of housing. Where you had an apartment with one family, you ended up with two families in the same apartment. So in this case the policy aiming at reducing density had been really to increase density rather than to reduce it.

The second question we will address is: Should planners favor monocentric or polycentric cities? I think the current fashion in master plans to push for polycentric cities, to create centers which are specialized. I think it should be checked against the original objective . Is it a good thing if a city which is dominantly monocentric to become polycentric through the influence of a master plan?

Let us look at the advantage of monocentric cities, and let us look at the advantage of polycentric cities.

Monocentric cities are a more effective spatial structures when the objective is to maintain a high level of public transport. If the objective is for public transport to be the dominant mode of transport, monocentric cities are by far the most efficient. However, it is impossible to maintain 100 percent monocentricity. That means all the jobs, all the trips going to the center. But you could maintain a dominant monocentricity by allowing high densities if there is demand for it.

Monocentric cities also tend to have shorter average trips than polycentric cities. As a consequence if trips are shorter, less pollution will be emitted. It will be more concentrated in a smaller area, but there will be less pollution.

And, finally, the other rationale for high-density monocentric cities is that they consume much less space, and they put less pressure on the environment outside the city. So that's why, I think, monocentric models should not be abandoned without at least some thought being given to it.

Now, what are the advantages of polycentric cities? Polycentric cities have advantages, too. There are some very successful polycentric cities in the world, mostly in North America. Polycentric cities tend to have cheaper land because there is a much larger supply of land. And cheaper land increases the consumption of floor space making housing more affordable; therefore, people in polycentric cities tend to have larger houses than they will have in monocentric cities.

I think that in a polycentric city it is easier for small business to find adequate land because there is more land which can be developed for small business, and they don't need to be necessarily in the center in the most expensive land.

However, in a polycentric city, trips are longer in distance (not necessarily in time), therefore, there are more pollutants which are emitted for a given number of trips. However, those pollutants are spread much more widely within the city rather than being concentrated, so, in fact, this lack of concentration might be a benefit, at least to the people who are exposed to pollution. It's better to have a diluted pollution than a concentrated one. So there it's less dangerous, although the total amount of pollutants will be higher in polycentric cities. So I think those have to be kept in mind when a decision is taken.

I think that in low- and moderate-income cities it is better to reinforce the degree of monocentricity of a city. When a city becomes very large, I would say above five million people, the degree of monocentricity is bound to decrease because the center itself becomes so large that it loses its efficiency. Planners then need to create different centers, and that's unavoidable.

However, the question is whether it is possible to maintain a very strong center with other sub-centers, or if the center itself will disappear. For instance, in some American cities the center itself has disappeared. There is no dominant center. There are only housing and jobs spread evenly.

Is the absence of a dominant city center a good thing? In Asia from a cultural point of view, I don't think it's a good thing. I think that it's a good practice to maintain a very strong center even in cities which are so large that they have to become polycentric. And, again, I think one of the best examples of this is Shanghai. I have been very impressed by the way Shanghai in the last ten years has increased the quality of life in the city center itself by creating, for instance, extremely well designed pedestrian streets, adding museums and other types of amenities, theaters and so on. I think that it's very important for a large city to maintain a prestigious center. Although I have to recognize that a center-less city like Atlanta, for instance, is very viable.

Our third question is the side effect of green belts. I think that most master plans sometimes have a green belt somewhere. It's an extremely popular measure with urban planners. For some reason it attracts people, this idea of a city which is limited in its growth and has a fixed limit.

In reality, what does a green belt do? A green belt obliges cities to grow through densification, and then at a certain time, the city does not fit anymore within the green belt. And then the city then jumps over the green belt to an area outside the green belt. The end result are suburbs which are growing outside the green belt and a city which densifies inside the green belt. The effect of that, of course, is to increase transport costs. Those suburbs are not autonomous. They depend on the city on the other side of the green belt.

For instance, Seoul, in Korea, has the only green belt which was very seriously implemented in the world. And this green belt has resulted in extremely expensive housing. The city has developed within this constraint. With very little land, housing is extremely expensive, and as a result, South Koreans consume less floor space than they would if the green belt has not been there.

In terms of transport, Seoul has developed five satellite towns outside the green belt to accommodate growth, and, of course, the people who work in those satellite towns commute to the center.

There is a justification for green belts. The main objective is to maintain open space. But I think it's much better to provide open space along natural features which are really interesting, like along rivers, for instance, or on a little hill with a wood on it or something like that, rather than the arbitrary geometry of green belts. The green belt, by its name, obliges to do a circular type of park. I don't think it's an efficient way of providing open space. It's better to preserve linear parks along rivers, little patches around, for instance, a historical monument, and keep it green rather than to have a green belt around the city.

This is true of Seoul, for instance. Seoul has the only successful green belt, successful in the sense that it was implemented. And it really has very few parks. The green belt is not very accessible for the citizens. It's not really a park. I think Seoul would have been better off in terms of green space if more green space had been preserved inside the city and less in the green belt itself.

Do satellite towns decrease the need for transport? Satellite towns usually are based on the premises that they will be self-sufficient, therefore, that people who live in satellite towns will work in them. And there will be some trips to the central city, but not that many.

In reality, every time a satellite town has been implemented, whether it's in Europe or in Asia, when you do a survey after the satellite town is built, after, say, ten years and it's fully inhabited, you find that most people who live in satellite towns work outside it. And most people who work in a satellite town live outside it.

The result, really, of the satellite town has been usually to increase commuting time, and to a certain extent to decrease labor mobility, because from a satellite town usually it's not very easy to get to another satellite town. It's much easier to get to the center city.

There may be cases where a satellite town is justified, for instance, towns which are specialized in certain things. But, in general, we have to bear in mind that satellite towns increase trip lengths and transport costs.

We are now reaching our fifth subject. Is it desirable to match employment and housing in each neighborhood? This is a worry that some planners have. They feel that somehow, if it could be managed to have a match between employments and housing in every neighborhood, it will decrease the need for commuting. People could find a job in their own neighborhood and therefore they would not need to commute long distances.

I think that this concept in reality is not correct, because the economy of a large, modern city is based on labor mobility. It is based on the integration of labor markets. That means that anybody within the metropolitan area should have a physical access to other parts of the city. And employers in a given area of the city should be able to recruit employees within the entire metropolitan area. This is the justification of large cities, to increase the size of the labor market, and that creates an increased return to scale for the economy of the city.

In a large city, employers have a very large pool of employees from which they can choose from, and at the same time, employees have a very large pool of jobs from which they can select. This is the way the economy of cities works. To try to match jobs and housing neighborhood by neighborhood is a little naïve, contradicts the economic principles of large cities and finally doesn't really work.

Why it doesn't work? Because if you try to match employment and housing in each neighborhood, you deny the basic economical principle on which cities are based: labor mobility and integrated work market. It implies also that households who are living somewhere will limit the search for a job just in their neighborhood. They are not going to look in another part of the city for a job. It might be true for some people, but, in general, that's not at all what people do. When they look for a job, they like to look at a larger area for jobs.

Then the other consequence of matching housing and employment is that when households want to change jobs, if their new job is in another neighborhood, then they should change housing at the same time. And that might not be what they want. And, in general, that's not what people do.

The opposite is also true, that households who want to move to a new house should change jobs, because, again, their new house might not be in the neighborhood where they live right now. I think that, in general, trying to match employment and housing per neighborhood is a fallacy. It is not a useful concept.

However, I want to be clear that it doesn't mean that all the jobs have to be in one area and all housing in another area. I think that in every neighborhood there should be enough supply of housing in general so people can make a choice, and also employers can make a choice where to locate. So, in this sense, I think that mixed use is very good.

My critique of matching employment and jobs in a neighborhood is not directed against mixed land use. I think that it is a very good thing to have mixed land use. But I don't think that there should be a concern or that it is even desirable that people live necessarily very close to their place of employment. When people select housing, they have other criteria than job distance. They have, for instance, the quality of schools, where their friends or relatives are living, and then, finally, the housing price. So I think that we should not even try to match employment and housing locations.

In the discussion of those topics, I have been using always the same methodology. When we want to do something like a green belt or satellite town or controlling density, we should always ask ourselves: How will the markets, how will the private sector react to this? So what is the outcome, really? What is important is the outcome and the impact of what we plan. Planners should anticipate the negative side effect that either regulations or investments would have on the market. Things do not succeed as planned in general. So you have to anticipate, and sometimes, not only anticipate but you will have to monitor also what is happening because things in reality become very different.

Do not forget that planners do not design cities. They only provide a framework which affects the supply and demand for land and floor space. This framework is only a framework. The private sector and other forces will use this framework to really build a city. So it's this interaction of the two which is important, and that's why every time urban planners promote something, whether it's regulations, infrastructure investments, or a new land-use tax, for instance, they should immediately try to forecast what will be the effect on prices, what will be the effect on the supply of housing, what will be the effect on the supply of jobs. And that's the only way they can solve the problem.

At times, when planners try to anticipate the reaction of the market, they might be wrong. But if they monitor what's happening, they will see very quickly that their assumptions were wrong. And, of course, they could then modify their policy in time. Too often policies are not modified. Policies which do not work very well are maintained for a very long time because of lack of monitoring.

There are no ready-made good solutions, no silver bullet that you can copy or invent. Every time, what you have to do is to anticipate the effect of what you do on markets and on supply and demand. Sometime you will be right, sometime you will be wrong!