

How we shape our cities, and then they shape us.

The quality of the built environment is one of those topics that is absolutely central to the fields of architecture and planning, yet difficult to articulate with rigor. There is no widely accepted theory of good built environments and different attempts to craft one are perpetually challenged by the elusive nature of the relationship between urban form and the activities it accommodates on the one hand, and the differences in cultural context in every city on the other. Yet, despite the inadequacies of professional knowledge on the ingredients of good city form, a layperson's attraction towards delightful urban environments, such as Copenhagen, Paris, Tallinn or Hong Kong, offers testimony to the important role that urban geometry plays in shaping our attitudes towards cities.

The state of knowledge on the form-process dialectic suggests that general questions, such as 'how does urban configuration affect social life?' are defeated at the outset because more interactions are found than a single answer could possibly suggest. Perhaps more important, the complexity of cities also suggests that any particular interaction between form and use is neither unique nor deterministic. Instead, the relationship can take many forms and depends on many additional factors beyond form that affect people's use of space.

In order to gain a little insight into this relationship between the physical pattern of cities and the life that takes place therein, consider a simple intersection of roads. Settlements have often emerged at crossroads, and not just roads but also other paths of access - waterways, railways and nowadays even airports. There is not much interesting about this intersection, other than the fact that it produces a moment of centrality - a place, which is reached by everyone that passes through these roads, a place of encounters and exposure. We can imagine this place giving rise to human decisions to locate certain economic activities there - a post-office, a restaurant, a place of employment and so on. As a result of such decisions, people start to shape the built environment - they create buildings at the crossroads to house their activities. But where these activities are placed is affected by the initial geometry of roads. By placing their activities in the environment, people not only shape the settlement, but the pre-existing geometry of the settlement also helps shape people's decisions and behavior.

We can imagine this process unfolding over time, producing more activities and more buildings. Because of the additional demand that new activities generate, even new streets may be added, altering the initial geometry of the path network. As a result, we end up with a circular causality where we shape our buildings and they in turn impact our behavior, as Winston Churchill famously remarked. Cause and effect in this circular process are difficult to untangle, but this process, which unfolds in every city, is absolutely fundamental to a society and to its people's identity. Sometimes it is so consistent over time that it produces an environment that we associate with a particular type of city - a Hansiatic city, an American city, or an Indonesian Kampong. The reciprocal relationship between people and their environments are part of a system of agreements and interactions that constitute the culture of a society.

It is important to consider these dynamics today because they allow us to open a discussion about what kind of a city we might want to live in, and what tools or strategies we could possibly use to achieve it. If we deal with the expansion of an established urban core - Tallinn, Stockholm, or Helsinki for instance - what spatial

qualities should we seek to achieve in a Grand Tallinn plan? In order for people to associate with the expansion, it may be important that the expansion contain certain recognizable traits of the existing city - a certain visual pattern or a convention of social agreements. A plan drawn by the Finish architect Eliel Saarinen for Grand Tallinn in 1913 was not the most careful plan in terms of picking up this pattern-language of Tallinn, but it nevertheless proposed a spatially coherent vision for the extension of the city, which influenced Tallinn's development even under Soviet times. The city's expansion to Lasnamäe via sunken arterial roads under the Soviet rule, was proposed by Saarinen 99 years ago, though with a different form and demographic pattern than what we have today.

But architectural visions, such as Eliel Saarinen's, are certainly not the only, nor the dominant forces shaping cities. That is not to say that such visions do not matter - I tend to think that they can produce a surprisingly powerful influence on a city's development trajectory - but that there are also other very important societal forces at play, which directly influence the forms of cities. Among those, there are real-estate markets, energy prices, the reliability of utilities and services, geographic constraints, climate conditions, history, and of course people's will. When we talk about all these forces, it indeed appears that as architects and planners we have rather limited influence on cities. Let me illustrate the case with two extreme examples of urban form.

In the Figure below, we see Beverly Hills CA, which lies at the very low end of the density spectrum that is still considered urban, with about 600 people per sq km. On the right lies the densest known human settlement in history - the Kowloon walled city, with about 1.25 million people per sq km. To build the Kowloon Walled City, a lot of preconditions, which were highly specific and probably impossible to repeat, needed to be in place - the electricity and utility networks had to be stable enough to guarantee that the place will not go pitch black and steaming hot over daily ruptures to service; construction technology had to be advanced enough to build twelve stories with virtually no maneuvering space for cranes; and the healthcare system had to be reliable to support the ill and the weak in case of need. But once in place, both of these extreme urban structures have also shaped their inhabitants daily lives in important ways. In Beverly Hills, one has to drive to get around for instance. One can find almost no commerce, except on and around the Rodeo Drive, whereas the Kowloon Walled city was full of commerce - probably every service and store one can imagine. So again, we see a circular causality, where social forces lead to a certain form, and once in place, the form affects the land use pattern and our experience of the place.



We can also detect some of these forces at work, when we look at the recent formal changes in Tallinn. It is easiest to consider these changes, when we compare

them to Tallinn during the Soviet times. I will briefly outline six of such changes that stand out today:

1. Whereas the city-country boundary used to be more distinct and sharp under State control of all land in Soviet times, we now see visibly disorderly edges and leapfrog development in Tallinn. This type of jagged expansion is largely a result of land privatization around the city; the lack of ground water tapping controls; and the lack of legal growth controls.



2. Market forces were not the main drivers of urban form in the Soviet times. In fact, the highest densities were built on the edges of the city, in the so called hills of Tallinn – Lasnamae, Mustamäe, Öismäe – and grand structures such as City Hall (Linnahall) were located according to civic, not market considerations. What we now witness is a reorganization of densities in Tallinn. Since 1991, new densities have formed at well-connected central locations, and as moving around got easier with cars, commerce and jobs have clustered into increasingly large sub-centers, such as Kristiine, Ülemiste and Rocca al Mare, that lie at points of access and centrality in the transportation network.



3. There has also been a notable increase in suburban housing around Tallinn. There has always been a share of detached housing in Tallinn, but what we witness today is one of the most important demographic groups – young families with young children, moving into more spacious and safer suburban housing. In 1995 7% of Tallinn’s population lived in detached homes, in 1999 it went up to 10%, and it has kept increasing since. As urbanists, we might ask what changes in central city living might incentivize young families to prefer a denser way of life? But the issue is complex – even though we could outline a number of benefits to denser settlements, decreasing communication costs favor dispersion. The demand for detached housing also results from complex social issues and lack of private opportunities for property development during Soviet times. Estonia, similar to

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other Scandinavian countries, has a very low population density, where land values have not yet generated market conditions for very dense housing developments.



4. We have witnessed a huge amount of experimentation in building types since 1991, some of which like office buildings, and the already mentioned shopping centers, were little known prior to 1991. As a recent exhibit at the Venice Biennale showed, only about 10% of all single-family houses in Estonia are built on standardized templates, or so-called catalogue types. 90% are based on individual designs - this constitutes a huge wealth of ideas! But a number of these experiments have been constrained by financial means and are consequently not likely to age very well. The downtown office district, which used to have an aesthetic of stone, is now predominantly glass, which might not be best suited to the city's climate. Unlike some of the more stable European countries, distinct building "typologies" in the meaning of Aldo Rossi have not yet evolved in Tallinn.



5. Car ownership in Estonia in 1980 was 126 per 1000 people. In 1995 it was 250 per 1000 and today it is 471 per 1000, which is almost one car per two people, very close to the EU average. Car ownership has grown three and a half times in only 30 years! This has produced a remarkable increase in the amount of land that is devoted to parking and roads, a rather unfortunate change for the pedestrians of Tallinn. The former symbolic role of some of the central traffic nodes has given way to efficiency and throughput.



6. An last, largely driven by limited economic means, a lot of building stock lasts a long time in Tallinn – fortunately so. An average building’s life expectancy is well over 25 years, which is more typical of some western countries, most notably the US, but now also many parts of Asia, where it is even shorter. Longer building life expectancies have incentivized better upkeep, more adaptive-reuse and preservation. The renewals that have taken place in the Fahle district, Telliskivi Street and Rotermanni quarter, offer delightful examples of contemporary urban environments that build upon the legacy of the past.



But for a city to evolve in a healthy manner, it need not only grow on the edges and on top of existing structures, but also continuously change its existing structure. Like many parts of Europe, Tallinn now has a significant historic preservation body that guides the choice and protection of significant structures. This is indeed necessary, but we also need an approach to demolition in order to sustain a healthy urban metabolism. Cities have to change, just like the people living in them change and we need to pay more attention to how we can allow these changes, which generate affordability, to take place without losing important qualities in the existing built fabric.

How cities shape us.

The above forces shaping cities are relatively well understood, at least compared to the other side of the coin that I am going to address next. How the forms of cities impact people is much less understood, though a body of theory is slowly growing. This is partly due to the fact that it is very difficult to rigorously analyze the influence of the built environment on social and economic processes, and partly because we do not seem to be paying much attention to it. But the question of how the built environment affects, and desirably benefits, the choices that constrain our daily behavior, is in fact more important, since it allows us to also question whether the kind of city we build is really the one we desire?

There have been times - most notably in early Modernism - where architects believed they could change society. The demolition of Pruitt-Igoe in St. Louis in 1972 symbolized the surrender of architectural design as a cure to important social issues of cities. This has produced important consequences - disbelief and confusion to what the role of architecture actually is? Some have even made an argument for generic architecture and gone to search for its meaning beyond social concerns. I think designers need to abandon the arrogant belief that architecture should do all or nothing for its users. Big issues like urban poverty or inequality cannot be solved via better design alone. Design does matter; it is simply not the only thing that matters. Other influences like institutional support, policy, financial regulation and economic support also matter, all together. We must accept the limited role of design and work with other disciplines to produce quality urban environments. In a paradoxical way, the demolition of Pruitt-Igoe also affirmed the importance of design, even if in a negative light.



There is a real need in urbanism to describe the effects of the built environment on social processes empirically. Today, cities measure all kinds of things - economic output, tourism, imports and exports, job growth etc. - but not how the form of a city affects any of these things. At the City Form Lab in Singapore, we have decided to focus on these the question of how the built environment affects, and desirably benefits life in cities. I will briefly attempt to outline a few types of these effects.

The built environment can help generate certain types of behavior, in particular when it comes to the use of public space. Places that are inviting, well configured and programmatically activated can attract a lot of people, as experiments in the revitalization of central Copenhagen have shown. Our very own transformation of the Freedom Square in Tallinn affirms this too.

Second, built environment can also produce important social effects. "The only indispensable material factor in the generation of power", claimed Hannah Arendt, "is the living together of people. Only where men live so close together that the potentialities of action are always present can power remain with them, and the foundation of cities, which as city-states have remained paradigmatic for all Western political organizations, is therefore indeed the most important material prerequisite for power." (Arendt 1958)

The social forces that emerge when men and women come together behind a common cause in cities are among the greatest social forces we know. They have produced a series of important social changes in the 20th century – the Civil rights Movement, the fall of communist regimes in the former USSR, and most recently the social movements we have seen in the Arab Spring. It would be inconceivable for these movements to have occurred without the congregations of people that cities form.

Sometimes the causes of these movements themselves originate from the spatial characteristics of cities. In Tallinn, for instance, we are not doing such a great job at integrating residents of diverse classes and backgrounds. While the Russian speaking population forms 38% of the city's total, there are districts like Lasnamäe, where the share of Russian speakers is around 70%, and new suburban districts that attract the economic high-achievers, where Russian speakers only form 6%. These spatial inequalities cannot be disconnected from the street riots we witnessed three years ago in Tallinn.

Urban form can also influence the economies of cities. When we look at the relationship between GDP and Urbanization in the world, we see that there have been very few countries that have achieved a GDP above \$10,000 that are less than 50% urbanized. Cities benefit economic activities with at least three important attributes. They offer the benefit of size, which increases the volume of opportunities for their inhabitants and economies of scale for their enterprises. Size increases the number and variety of destinations available to a citizen, and provides market area for specialized companies who couldn't survive in a small town. Second, cities generate density, which reduces transportation costs and increases the likelihood for interaction. A concentration of people and firms within close proximity allows us to get more done with less time. And third, the external connectivity of cities, via their train stations, airports, pipes and fiber optic cables, helps us expand our reach well beyond the physical boundaries of cities, to other cities and countries world-wide, further increasing the choice of opportunities and reducing the communication costs of reaching them.

At the intra-urban scale, we might ask, how can we increase the density, or more precisely the accessibility, of an area so as to reap the economic benefits that a city generates? Accessibility to an area can increase if more people are crammed into smaller spaces. This is hardly a solution that is available today. But accessibility also depends on urban design. Density goes up if buildings are spaced closer together, or built bigger, as the skyline of Tornimäe clearly illustrates. Furthermore, even if we keep building heights and spacing constant, we can increase an area's density by improving the connectivity of the location. More connected street networks and improved public transit links allow people to reach more destinations with lower transportation costs, improving access and stimulating economic activity. We see the latter effect at work at the nodes like Kristiine and Rocca al Mare, where major shopping centers have now formed in Tallinn.

Designing social and spatial change.

How could we use a better awareness of how people shape cities, and vice versa, to actually design better places? On the one hand, we can try to stimulate certain social forces so as to achieve a desirable type of urban form. For instance, we can put heavy taxes on gasoline, which increases transportation costs and leads to higher urban density. Or on the flip side, we might rather incentivize certain spatial

patterns in a hope that they will affect people's behavior in some commonly desired way. For instance, we could set clever guidelines for the design and programming of public space in the hopes that this will lead to greater usage of these spaces. But we must remember that there is no clear causality between form and behavior. Rather, we may observe a probabilistic relationship, which, if coordinated skillfully with institutional and regulatory support, and with people's participation, may lead to behavioral change.

More empirical research is needed in the urban design education to study these relationships. If we analyzed more often how urban spaces are actually used, we could probably develop valuable insight for designing good places and cities. The question then becomes, how could we measure or judge the qualities of urban design? As one example of metrics, Kevin Lynch has proposed a set of five so called performance dimensions – vitality, fit, access, sense and control – that he argued could be rather universally analyzed in every city (Lynch 1984). These performance dimensions are admittedly abstract and more work is needed before they can be operationalized, but they offer a starting point.

What Lynch called control, might also be extended to include adaptability and open-endedness in urban design, which I believe are really key criteria for rapidly developing cities like Tallinn. Change, as we know, is the only constant force in cities, and by preparing for it, we enlarge the freedoms and choices that can be made available to people in the future. Adaptability can be coded into physical design, as in well-dimensioned street-grids that are capable of absorbing vastly different building patterns over time. And adaptability can also be achieved via a clever temporal management of activities, as recently demonstrated in the conversion of Broadway at Times Square to a pedestrian zone. This very significant change in the traffic pattern of New York City was first tried out for a few months as a temporary experiment. It allowed the city to assess whether the proposed change works, and thereby considerably lower the risk of an unsuccessful implementation. I think there is much promise to such solutions in Tallinn and elsewhere as well.

Embedding options for growth and change in the present may add costs and reduce the fit between today's activities and the forms that accommodate them, but these costs can be considerably higher when future demands are encountered by surprise. One of our largest problems in Tallinn today – the conversion of large high-rise dormitory neighborhoods to more diverse and self-renewing urban environments – offers an important lesson about the costs that a lack of adaptability can produce in the long run. If the built environment conflicts with the present use but offers exceptional charm, on the other hand – such the Tallinn Old Town or wooden housing districts for instance, then we may also be quite willing to adapt our behavior instead of the buildings. The relationship between people and places only starts after a place is built. Adaptability, on behalf of both the built environment and its users, is the bridge that allows this relationship to mature.

References:

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