After the *bubble*.

Urban landscapes and public space before, during and after the real estate boom or rationality in austerity. A complex vision.

ABSTRACT: During the years before the actual real estate crisis, in Spain the number of housing units built has almost duplicated in ratio the number built in countries the same economic level. This rhythm of production of houses and their urban fabric is closely related to specific residential types and urban forms and landscape. These types and forms have become the spatial scene representing a high scale specific private housing company system. This system has developed new urban quarters and large sectors according to a specific production and development logic, so that the resultant urban forms and landscape have very specific characteristics.

This paper tries to present the results of an analysis of the related public space based on a model of analysis of the communicative behavior of the specific urban system, and the use of a new concept, the "density of events". Some conclusions allow us to speak of planning lessons from austerity and establish some hypothesis on possible urban futures from present time uncertainty.

KEYWORDS: Urban landscape; urban complexity; systems theory; density of events; evolvability.

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1. Introduction.

Since approximately 2007, especially Europe is suffering an economic crisis in which a major part of its financial components has an important spatial root. From this perspective, Spanish case is an extreme one, because the relative weight of the building sector in the whole national economy is exceptionally high. In Spain, during the years before the crisis the number of housing units built has almost duplicated in ratio the number built in countries the same or higher economic level, countries such as France or Germany. This rhythm of production of houses and their urban fabric is closely related to specific residential types and urban forms and landscape. These types and forms have become the spatial scene representing a high scale specific private housing company system. This system has developed new urban quarters and large sectors according to a specific production and development logic, so that the resultant urban forms and landscape have very specific characteristics, different from both public high scale development and, of course, traditional low-level based development, based on a more atomized system, with profusion of small agents and developers, the system closely related to periods of austerity or even scarcely.

This paper tries to present the results of a comparative analysis of these different ways of production of urban space, and more specifically the related public space, this one understood from a more global perspective. The method and tools we have used (the "complex" vision) are based on a model of analysis of the communicative behavior of the specific urban system. Some years ago we successfully did the translation of the complex model of the social system by German sociologist Niklas Luhmmann to urban systems [Ruiz Sánchez, 1992], so that from this idea of the urban system as a communicative system we have developed our own analysis and project decision making methodology based on a wide concept of public space as communicative space (more than a mere channel) and support of the evolving ability of the urban system (*evolvability*). Most of the conclusions of the research, as a whole, show a deep and significant rationality in traditional urban processes, especially in those developed in deep austerity times, and their related urban forms, even some of those ones considered as "informal", opposite to "formal" urban processes and forms related to the real estate boom. These conclusions allow us to speak of planning lessons from austerity and establish some hypothesis on possible urban futures from present time uncertainty.

2. Lessons from nature. Entropy and urban complexity.

For our approach, the central idea lies in the meaning of *entropy* in complex systems. This entropy is Shannon's entropy, as defined in [Shannon 1948], and provides a good idea about the diversity of the system, as, for instance, Spanish biologist and ecologist Ramón Margalef determined for ecological and living systems [Margalef   ]. Ecological systems are very important for us, because they are the best examples of how species and individuals spread out around a specific territory, and the logic of this way of spread out. This logic has a lot to do with food chains, and this means the logic in the use of energy in the system. But this use is not optimized from the perspective of a static system; it also (and this is very often forgotten) has a main importance in the survival of the whole system (not any individual at all) in the future. The evolving capacity of the system is the main goal of the system. Diversity is an important aspect of this subject. But even more important is the linkage system between the different parts (individuals) of the

system. In fact, these individuals are not the basic elements of the system, but the linkages, the relations between them. Diversity has to do with individuals, complexity has to do with relations.

From and out of these premises, complex systems theorists [Hutchinson, Margalef, Wagensberg …] have established some hypothesis, even rules, about the understanding and meaning of complexity. A first intuition has to do with the distributions of individuals and species, according to their sizes. There are more bacteria than insects, more insects than doves, more doves than elephants or whales … But the total amount of fraction of biomass correspondent to bacteria is larger than to insects, and this fraction larger than … And of course, big fierce animals' life lasts much longer than doves', and so and so. Another intuition leads us to propose a new rule: relationships are more probable if they are simpler. The same in language, shorter words are more probable than longer ones, but there are syntax rules that determine how to build a sentence. There are limitations to diversity, and rules to establish which of the possible relations (links) are valid (communications).

We assume that cities are complex systems, like ecosystems or societies. And, what is not so trivial, these systems are not constituted by individuals but by relations between them, but the pattern of distribution of these individuals (and groups of individuals, such as species in ecosystems, or functional and spatial types in cities) and their ability to link each other determine the system behavior and its evolvability. This idea of evolvability is, for us, of an extreme importance in urban systems [Ruiz Sánchez 2012], because cities are supposed to be the main instrument for societies to defend themselves from the uncertainty of the future.

Present economical and financial system is providing us with the largest uncertainty our civilization has had to deal with, as present crisis is showing us. Post 9-11 future is, for the first time in our history, not only unable to be predicted but not even imagined, and so the difficulties for planning and decision making. Classical sci-fi literature very often has shown us a wide range of possible futures to help us orientate our decisions. We must remember that classical proto-sci-fi novels of the XIX century were many times more anticipatory social and spatial projects than just mere amusement. When William Morris writes *News from Nowhere* at the very end of his life, after having designed some of the best pieces of furniture and houses of the century, he is not telling us a fairy tale but projecting a whole world. And, of course, Howard's *Tomorrow …* or Le Corbusier's *Athens Charter* can be read as utopian (dystopian, in the case of the *Charte d'Athènes*) fictions.

Complexity has lot to do with possible futures. In fact, complexity is the only tool a system has to defend itself from uncertainty. The physical building of a city, including its maintenance upkeep, has an extreme impact on the whole economical system. In fact, traditional cities were designed and built to last. Although Utopian references hive always been present in urban discourse through history, every time a Utopia has been effectively build it has failed. And it has been because of two causes: its simplicity (every Utopia is, by definition, simple) and its inability to evolve.

These two causes are, in fact, the same. As physician Jorge Wagensberg reminds us, complexity also represents the ability to reach different states. Urban complexity is no more than the ability of any urban system to anticipate uncertainty, to be open to a wide range of possible futures. Only if we would be able to exactly predict what it is going to happen it would be valid to design a simple spatial system that would suit the only future. But we know that things do not happen this way. So the

traditional answer has more to do with an explicit renunciation to reach an optimum state in order to keep an ability to adapt and face any contingence or future.

3. Urban landscape and public space: a communicative and complex approach.

The second half of the XX century has provided us the tools to build a large utopia. The first planned social utopia, based on the tale of social emancipation through industrial jobs and social housing provision, produced most of the urban peripheries we know, with better or worse results. The second and recent utopia is based on the collaboration between financial and real estate systems to develop a spatial urban system to give support to an artificially inflated bubble of capital, being the utopian tale that one of the economic liberalism and unlimited growth.

This second urban utopia has, of course, its own particular urban landscape. To analyze this landscape we have used a method based on the complex system approach. The main idea was not to conceive the urban landscape as a result of composition of forms and volumes, but as a scene for communicative action. So the main object of analysis was the linkage system, based on some first hypothesis:

-   Urban communications only take place in the public space. Public space is the only communicative space at an urban level.
-   Communications happen between lots. So urban fabric as a subdivision pattern is a key factor in the behavior of the communicative network.
-   Links appear on the frontage of the blocks (alignment), as nodes between the public and private spheres. Complexity within the buildings does not mean necessarily a complex behavior at the urban scale (more often the opposite).
-   Public space complexity can be understood as a wide range of possibilities to establish communications between parts (lots), and has to do with the topological conception of the network, nothing to do with the amount of public space.

Communications happen. And what can sound paradoxical: they can even survive specific buildings. Many (most, in fact) of these communications take place because there are relationships based on complementarity between units. In cities as systems we must speak of "mutualistic" or "dialogical" frameworks [Luhmann 1984], based on differentiation processes.

From an evolutionary point of view, for us it is obvious the lessons we can learn from natural systems. First of all, we can follow a similar rule to that one about distribution of sizes, individuals and species. The survival of the system has a lot to do with its complexity. Less adaptable individuals are scarce, larger in size and "designed" to live longer. Complex individuals are scarce: complexity of the system is more related to different levels of complexity among individuals, being the simpler the more abundant. Large buildings, with hundreds of housing units in some cases, even containing mixed-uses, can contribute to generate an extremely simple network if its link to the public space is just limited to an only gate.

To analyze complexity we decided to use subdivision (lots) maps and aerial pictures on one side and conventional pictures on the other. In order not to skew the results we have used images from "*google maps / street view*", to identify communicative

capacities along the picture. These communicative capacities can be summarize out of variety, number of buildings related to housing units, gates (accesses to private sphere from public spaces)… We use maps and aerial views to analyze the urban fabric, both public space network and links to private lots, the whole represented as a graph, in topological terms.

Topological homeomorphisms have revealed to be an important tool for the analysis of complexity of the urban form, always complemented with a scale contextualization through the use of concepts such as space, distance and transformation. For instance, from a strictly topological point of view there is no difference between a gated- single houses -community, a large single-building perimeter block with only a gate, and a tall building. Like a donut and a cup, they are exactly the same. Their ability to establish communications within the system are very limited, as well as their ability to evolve. For quite similar reasons, it is not the same a row of independent houses than a row of houses sharing walls or structural elements in the lot lines, even if they show some kind of false independence by keeping separated entrances to each house.

This was very well understood in the masterplan for Borneo-Sporenburg, in Amsterdam, particularly the first sketches. By comparing the very near development in KNSM eiland, with hundreds of apartments and housing units in no more than a dozen buildings, the first sketch for the design of Borneo-Sporenburg consisted on mainly rows of independent houses, in the well-known Amsterdam tradition, with just a couple of larger buildings (one of them properly called "the whale"). Of course this urban landscape is not easy to be tolerated by the hegemonic real estate system, although the urban quality has not to be demonstrated; so these rows, except one of them, were replaced by conventional "lying down" larger blocks pretending the fiction of single-family houses, without the level of freedom this means [Ruiz Sánchez 2009].

4. Urban landscape and public space while blowing and inflating the bubble.

After analyzing some of the most representative examples, in Madrid and their Metropolitan Area, of recent urban developments, some conclusions have to be pointed out.

Most of these developments, even the largest ones (Ensanche de Vallecas, in Madrid, for instance, with more than 24,000 housing units, itself is larger than an average medium size town in Spain) consist of an extremely simple urban pattern. But what is more interesting is that it has been designed and sized according to some main premises: the size of the promotion unit, best if larger, and the identification of the block with the lot, this is, without any inner subdivision.

So we are facing a landscape of "whales", more than two hundred housing units perimeter blocks (or topological homeomorphisms in singular but communicative similar buildings, like the "Mirador" building in Sanchinarro, Madrid). So this way thousands of families are now living in quarters with hardly some dozens urban links (which means less levels of freedom, of course).

If we look at complementary functions, the same has happened. Most of the times street commerce has disappeared except in very limited central streets, at the best. The "mall" type has replaced every other form of urban commerce. And the same

can be said if we look at traditional urban facilities: looking for the best, for optimum places, there is a preference for large, specialized buildings instead of more adaptable spaces.

There is also a widespread preference for tall buildings, even skyscrapers. And, what is more interesting, there is an increasing amount of specialized literature trying to demonstrate that tall buildings are the only possible and "sustainable" future. This is not only untrue, but an extremely dangerous assert. What lies behind this idea is a future model proposed by hegemonic economic forces, not the only answer. Large buildings mean decreasing urban complexity, which means less access to possible futures, less adaptability and evolvability and, of course, less freedom.

Public space, meanwhile, get more oversized, but this does not mean at all the existence of a more complex network. In fact it is the opposite: if a lot of communications are theoretically possible, the design of the public network is that only a few of them are privileged over the others. Shopping is only possible at the mall, only few movements are really comfortable, even if the scene is designed pretending to be a paradise. Public space is empty, it lacks activity at all, it is only designed just for simple transportation and as a stage for the new supposed idyllic forms of life.

We have incorporated a new item to measure and analyze urban form, what we call "*density of events*". For us, the discourse about density lacks some important aspects very often forgotten, such as variety, number of links, and, of course, evolving ability. The same as the discourse on tall buildings, discussion on density may arrive at some fallacies. Density without complexity is, for us, undesirable. By using these images from street view we compare the *density of events* (number of lots and different buildings, mixture and combination of uses, variety of sizes, number of links (gates, corners, alternative path …) with actual density. The conclusion is that recent urban developments can produce dense urban fabric, but no complex at all, while traditional urban design has produced, under less favorable economic conditions, a richer and mor complex urban fabric.

Of course this utopia behind recent planning is also unable to adapt, but it does not matter at all. The hidden idea is that the system can replace utopia every time it fails. And that if the failures happen sooner, the best for the economic system behind, for destroying and replacing (urban renewal) is better than adapting.

Meanwhile, the economic crisis is showing us some alerts. Many of these developments are almost empty, many lots are wastelands, many buildings keep unfinished, many developers are asking for smaller promotion units or the companies have just disappeared. But the main alarm is, for us, that a lot of messages are said about the end of the crisis as a solution, and that the solution consists in more the same, instead of the necessity of a real change.

As we have said, some of the best sci-fi writers very often show us how the future could be. A recent (2009) awarded novel, *The wind-up girl*, by Paolo Bacigalupi, shows us a possible future urban landscape after the inevitable shrinkage. In XXIII century Bangkok skyscrapers are completely empty, most people live and work in small precarious cottages, linked through a complex spatial network. The future is for cities, of course, but only for complex cities. If we look at our own tradition, we can find more rationality than in recent "well-planned" urban developments. Sure it is time to learn from the rationality of austerity.

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Biography

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He combines academic and research with professional activity as planner and urban designer in several scales.
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