

*Post-pandemic urbanism for small cities: density versus  
green (private) areas*

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UN Habitat prescribes an urban density rate of more than 150 inhabitants per hectare. Inspired by the model of the compact (european) city, whose paradigmatic example is Barcelona (171 inhab./he), the New Urban Agenda (UN HABITAT, 2020) condemns the urban sprawl of North American cities as Atlanta (6 inhab./he). However, the document does not mention the low proportion of green areas per inhabitant in Barcelona, one of the smallest among European capitals, and local efforts to improve it.

Recent work by Swedish researchers (BERGHAUSER PONT et al, 2020), comparing three hundred articles worldwide, points to the fact that density and compactness are desirable from the point of view of economics and transport, but problematic under ecological/health aspects. If American urban expansion based mainly on single-family typologies is not desirable, neither is the high density model of Barcelona without enough green space – the Goldilocks Principle or Sustainable Densities Proposition (SHLOMO, 2012).

Cities are specific ecosystems. Result of the sum of the original ecosystem of a place and the overlap of human occupation. The urban ecosystem can be unbalanced, as in the case of cities such as São Paulo, with traffic jams, air, noise and visual pollution, microclimate problems such as the “heat island” effect, etc; or relatively balanced, as in the case of small urban centers with up to 100 thousand inhabitants.

In the case of relatively balanced ecosystems in small towns, it is important to identify which elements are present in the landscape that, added to the absence of the negative aspects just mentioned, contribute to their environmental quality. Taking Cachoeira do Sul as an example, a municipality located in the central region of the Brazilian state of Rio Grande do Sul, about 200 kilometers from the capital Porto Alegre, between the Pampa biome and the Atlantic Forest, we will present below some of these components or elements.

A first aspect is a certain contiguity of the urban fabric, related to the scale of the city (but not only), and which provides a less problematic displacement logic - the “15-minute city”. Another aspect linked to the morphology of the city concerns the pattern of distribution of small buildings “in height”. As they were not concentrated, they did not generate localized densification. Where the phenomenon happened in part, along the avenues that make up the main commercial axis, there are specific problems such as the slow flow of vehicles.

The ongoing typological substitution processes, however, with small “tall” buildings replacing houses, often waterproofing all the land available on the ground floor, even in their “dispersed” character, can lead, at some point, to excessive soil waterproofing. In addition to the eternal preference of drivers for asphalt, these aspects can determine a new level, which is problematic in terms of macrodrainage. If, on the one hand, we are talking about “scalar” phenomena, in the sense that it is necessary to exceed a certain threshold of scale for them to become observable - the verticalization of an entire neighborhood, for example; on the other hand, it is an issue already dealt with in the broader experience of Brazilian urban legislation, where some municipalities already have a “permeability rate” forecast, that is, a *non aedificandi* area, not even underground, aiming at the infiltration of part of rainwater on site, without overloading the storm sewer system.

What interests us, however, is another aspect of the urban ecosystem of Cachoeira do Sul, certainly present in most municipalities with up to 100 thousand inhabitants (HARDOY, SATTERTHWAITTE, 1986) and in many larger cities. This aspect contributes in a fundamental way to its ecological balance and, therefore, to the environmental quality of the city and its biodiversity.

The ecological importance of private gardens is a recent topic in scientific research and in the related international bibliography. The pioneering results are part of the study Biodiversity in Urban Gardens (BUGs) at the University of Sheffield, England. A first part of the project was completed in 2002, in the city of Sheffield itself, and a second part, involving five cities, was carried out between 2004 and 2007 throughout the United Kingdom. An article in the magazine Galileu (2021), about research in three cities in England, reveals that private gardens represent 29% of the urban land cover, six times the area of public parks. French scientific literature in the field of ecology also began to debate the topic (CLERGEAU; RIBOULOT-CHETRIT, 2015). The work of Riboulot-Chetrit (2015), for example, shows how private gardens in Paris, despite their fragmented character, are spread across the entire urban fabric. The author also notes that the predominant typology in France, with regard to urban growth in recent decades, is single-family housing, normally associated with the presence of gardens - something that is also valid, to a large extent, for the general panorama.

In Landscape Ecology, more focused on the study on a regional scale, where, in general,

the “natural” or rural scope predominates in proportion to the urban fabric, as it is widely known, much work is done from the notions of matrix / patch / corridor. On the scale of a municipality the size of Cachoeira do Sul in its entirety, where the urban fabric is diluted in the rural scope, it can be said that the matrix would be the use of soil for agriculture, the patches would be areas of vegetation in the middle of the matrix and the corridors, the connections between these patches of vegetation. The recent environmental legislation in Brazil, prior to the current government, protecting the riparian forests of watercourses, provided, for example, that they resumed their role as ecological corridors. But when proposing an approach from an Ecology of the Urban Landscape it is necessary to readapt the general notions of Landscape Ecology.

In this direction, urban afforestation can function as a corridor linking patches of vegetation composed of parks and squares. In the case of Cachoeira do Sul, in the absence of public or community parks and gardens (and even in Paris, in their presence) the private gardens, despite their fragmentation, establish a certain continuity between larger and smaller patches of vegetation – the same can be said about vegetable gardens in the urban area. Having no urban parks, Cachoeira do Sul is relatively wooded, from the point of view of public urban afforestation, having a system of squares. Nevertheless, some areas of adjoining private gardens are comparable to the largest public green areas found in the middle of the urban area, such as the Zoo and the squares Honorato and José Bonifácio.

Typological substitution / vertical densification processes, where buildings replace houses, in addition to eventually waterproofing the available ground, something circumventable by the permeability rates’ regulatory legislation, also gradually eliminate the area of private gardens. Again, this is a phenomenon whose consequences will only be observable when certain scalar thresholds are crossed. The question being precisely the quantification of this threshold of scale: the subtraction of how many private gardens in an area leads to the loss of urban biodiversity?

More than a legislation of limitation of rights, although it is possible, from scenarios on the thresholds of scale (professor Moccia Francesco Domenico, from University of Naples “Federico II”, reminds that “in Italian regulation, because public areas should be provided in proportion to habitant number, the increase of density means greener”) the international experience points to an incentive legislation, in parallel with campaigns to valorize private gardens, urban, peri-urban and community vegetable gardens. etc. Valuation in line with the need for the development of healthier habits by the urban population, for public health reasons evidenced during the current pandemic, even in the case of metropolises (BERG, 2016).

Research on scenarios / thresholds of scale, with respect to the subtraction of private gardens area versus loss of biodiversity, can also lead to incentive legislation reversing ideas from

metropolitan urban thinking, such as progressive taxes: in parallel with the idea of occupying voids, emphasizing the qualities of urban density, we could ask ourselves if some of these voids could not have other social functions, such as recreation and leisure areas, gardens and vegetable gardens. Progressive taxes would be applied if there was no ecological function or social use, if any of these two existed, incentive legislation could be applied.

In addition to the loss of biodiversity, the subtraction (on a scale) of private gardens probably also leads to the other negative aspects mentioned above: waterproofing of the soil, overload of the rainwater drainage system, flooding, greater atmospheric pollution due to loss of vegetation associated with the absorption of CO<sub>2</sub>, changes in the microclimate as a heat island effect, etc.

With the lessons of the current pandemic moment, perhaps the time has come for a new urbanism. The highly dense and compact city model, inspired by Barcelona, is in check. The Catalan capital has one of the lowest green indices per inhabitant in Europe, problems such as the heat island effect etc. and currently invests heavily in proposals and projects for green infrastructure. The UN Habitat The New Urban Agenda, for example, in encouraging such a model does not point out the problems previously mentioned. If the density of a city like Atlanta, based on the American model of suburban expansion through single-family typology, is not viable, neither is the excessive and “gray” density of Barcelona.

It is a new front of issues and problems related to studies on Ecology of the Urban Landscape. It is time for a new urbanistic thinking focused on the processes of “naturalization”, of maintaining the urban and environmental quality of small and medium sized cities and their future growth.

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