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Construction of functional areas as part of spatial planning. The case of Gijón urban planning

Decision making in spatial planning is based on numerous variables of different kinds, be they physical, legal or spatial partitioning from constructs whose boundaries do not have a clear definition (homogeneous areas, landscape units, environmental units, etc.) and therefore they require a specific study

In Gijón Urban Planning, a theorist construct was applied as three functional areas: *TOWN*, *PERIURBAN* and *RURAL*. Although originally intended to be applied to categorize the different conditions of the urbanistic figure of “núcleo rural” (a kind of rural settlement), it came to take a greater role, focusing on the compaction of urban uses.

It could not be applied in a direct way, because neither the legislation nor the political precepts allowed it.

Gijón is the most populated municipality of Asturias and the fifteenth of Spain, with about 280,000 inhabitants in 180 km². The town is one of the vertex and gravitational centers of a polycentric metropolitan system. If the municipality were divided into ‘Urban Gijón’ and ‘Rural Gijón’, the first would remain the most populous municipality in the region and the second the eleventh, with more than 14,000 inhabitants.

The complexity of the task entailed the overlapping of two opposing methodologies. Qualitative and quantitative methods had been employed. These were complemented to approach the complexity of spaces without simple definition.

There are two spaces that could be delimited from a morphological analysis on the ground, orthophoto and topographic maps. They are the following:

— *Town* (functional area). It can be defined as a set

of buildings and streets whose dense and large population is usually dedicated to non-agrarian activities. The grouping of collective dwelling buildings is a great approximation to this concept. In this particular case, it is defined by large communication infrastructures.

— *Urbanized Periurban* (part of the *Periurban* functional area). This term has been used to identify those spaces that Grupo Aduar’s dictionary indicates for the term ‘periurbanización’: areas of single-family dwelling, smaller settlements of collective housing and logistic, industrial, commercial and large equipment zones.

Identify these spaces is relatively easy because they are urbanized spaces (in addition the urban planning classifies them as urban areas).

However, there are spaces that are more difficult to identify but with periurban functions. This makes it necessary to resort to methods such as Multi-Criteria Evaluation. We used weighted sum technique. This is based on the use of a series of criteria that can be added in a layer, to which certain values can be applied and a weight according to its relevance to the final result.

Eight criteria were applied:

A. Distance to town. With the model of the concentric crowns, this would be the most relevant criterion, assuming the distance to the town as main factor. The term ‘periurban’ already denotes in its name the condition of being around an urban place.

B. Distance to motorway link. Theories and studies in urban sprawl conclude that the proximity to a motorway link implies an important opportunity of urbanization. When the links are within short distance of the town, they tend to settle industrial or logistic areas, something that the literature usually includes among the descriptions of the periurban environment.

C. Slope. Asturias is a mountainous area, so it has generally hard slopes. This has meant that the flatter areas have been the ones that had the greatest pressure from all areas, since the plains are the ones that have the greatest capacity to accommodate uses. This means that flat lands have a greater tendency to become peri-urban areas, which, because agrarian and forestry uses have lower added value per unit area, cannot compete and are relegated to areas with greater slopes.

D. Soil Fertility and Capability Classification. It is a variable that marks the competition for the most suitable land for various activities. The land with the greatest capability to generate high incomes per unit area acquires the most intensive and profitable uses. The natural soils most suitable to support agricultural activity are the best to support urbanization, since the conditions for the formation of these soils and for urbanization usually coincide. Best soils are meant to be periurban.

E. Potential agricultural uses. It is a continuation between the two previous criteria. All of them are part of a larger set that shows the competition for the land according to the use that can be implemented.

F. Land uses. It is based on the principle that the periurban spaces present a more intensive land uses than the rural ones. However, regional specialization in livestock farming implies that it has manifested as a very homogenous criterion.

G. Population density. Demographic variables are among the most used in the techniques that determine rurality; many of employed by Cloke were demographic, National Institute of Statistics' (INE) criterion is that rural municipalities are smaller of the 2,000 inhabitants; OECD indicates that local rural entities are those with a density of less than 150 inhabitants per km²; Law for the Sustainable Development of the Rural Environment defines the rural environ-

ment as geographical space formed by aggregation of municipalities or smaller local entities that have a population of less than 30,000 inhabitants and a density of less than 100 inhabitants per km². For specific case of the unit of measure were 'parroquias' (collective entity of population less than the municipality) and population of 2013.

H. Average age of houses. The history indicates that in the 1960s decade of the twentieth century periurbanization began, and within it started a process whereby the non-rural population build houses in rural spaces, sometimes as a main residence derived from the mobility that cars provided, sometimes with ludic and vacation objectives. It supposes that in spaces where are more abundant houses constructed after 1960 are more periurban.

From results of Multi-Criteria Evaluation, can be discerned each area, but it also reveals several details that lead to the need to adjust the results through line generalization.

- Absence of a clear line, as there tends to be 'intrusions' between values.
- Low results of urbanized spaces, since many of them lacked data within the criteria to be analyzed. This has a direct correspondence with defined *Urbanized Periurbans*.

So, while the division between *Town* and *Periurban* is clear, between *Periurban* and *Rural* is more complex. However, there is a relatively narrow band that we call as undefined area that is simple to follow, especially once the *Urbanized Periurban* has been drawn.

With this zoning the following criteria for the planning are defined:

- "Núcleos rurales" were divided into two subcategories with different parceling conditions.
- Collective housing only could be into the limits of *Town* functional area.
- In *Periurban* functional area, the expansion of diffuse urban uses is restricted by compaction.
- Agrarian uses are promoted in *Periurban* area, not only in *Rural* area.

