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DESIGNING THE EUROPEAN MEDIUM-SIZED CITY

Urban Regeneration Technique through the Structured Densification of the Centrality System

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Introduction

This chapter deals with illustrating the *Urban regeneration technique through the structured densification of the centrality system* (TDSC): a method of designing the architecture of the city experimented at the School of Architecture of the University of Parma by the research group UAL – Urban and Architectural Laboratory with which – in addition to Carlo Quintelli, the scientific manager – the undersigned (as the coordinator) and Professors Marco Maretto and Carlo Gandolfi are associated.

The research began in 2010 with funding obtained through a competitive tender from the Emilia-Romagna Region within the European Social Fund called *Spinner 2013 – Designing buildings, new integrated quality models for the compact city. Policies of regeneration and structure of urban centralities in the context of the cities of Emilia-Romagna* and involved three PhD students¹ in the three-year period 2011–2014.

The research topic conceived and proposed by Carlo Quintelli as the scientific director of a research group that included scholars from the four regional universities² attained first place in the ranking out of over 70 projects presented.

The TDSC technique was subsequently presented, discussed, tested, applied, and verified on various occasions (conferences, seminars, architecture festivals), including didactic projects (workshops and laboratories) and progressively revised and refined until the application in the ArchéA project.³

Field Definition: The Medium-Sized European City

From the Italian tradition of urban studies of which Carlo Quintelli writes in this book,⁴ the research of the school of Parma that defined the characteristics of the TDSC has a significant field definition concerning the nature of the cities of possible application⁵: in other words, the methodological reflection does not deal with the city in general, which, as has been known, has many differences both from a geographical point of view and from a dimensional point of view and is also of physical structure. It deals with a particular type of city

defined as a “medium-sized European city” (such is the city between 100,000 and 500,000 inhabitants) that has certain common historical-architectural characteristics and that the research of the European Community, known as ESPON – European Spatial Planning Observatory Network (ESPON 2006) – defined as the most widespread type of city and in which there is a high quality of life and urban space.

Compact City versus Diffuse City: Evaluation of the Expansive Model of the Contemporary City

There is no doubt that the contemporary city presents an expansive development perpetrated by urban policies that up to now have favored, in a sometimes irreversible way, the so-called phenomenon of land consumption. In addition, the extreme peripheralization of the city has had negative repercussions on the quality of the space so as to create urban and social margins.

In an attempt to remedy these problems through a sustainable approach, the TDSC assumes the compact city⁶ (and in particular the density and articulation of its spaces) as the design principle of new urban spaces.

The Technique: Introduction

In line with the sustainability principle that imposes a “zero land consumption,” the project technique proposes *urban regeneration* as *densification* (according to the logic of “building within the building”), through the use of the available void according to an identification of the functions and role of the project derived from the concept of *centrality*. Different types of centralities have been identified (metropolitan, neighborhood, etc.), each of which applies to the project site through the analysis and subsequent identification of the specific role.

We could argue that it is an inter-scalar technique that links together the different scales of the project (from the territorial one to the neighborhood one via the urban scale) to obtain an architecture that fits fully into the structure of the city.

From the architectural point of view, a system of formal and functional archetypes derived from the history of the city participate in the construction of the new architecture.

It is a technique that, far from being modeling, starts from the characters of the city and from their analyses intended as the first stage of the design.

Definition of Urban Centrality

Centrality describes the action of a central element in its periphery and has been defined as a hierarchical concept between service and attraction (Christaller 1933). The attractiveness and diffusion of this element is based on the effectiveness of the central area and its accessibility. The element can be an urban center or a more specialized polarizing element (commercial, cultural, financial, administrative center; Choay and Merlin 1986).

The TDSC technique assumes as its main objective the urban regeneration of the indistinct urban fabric through the inclusion of architectures-centralities with a strong level of representativeness (figurative and formal) able to catalyze the sociality of the community that inhabits the urban parts. The new urban centralities operate on a structure and super-structure that the city possesses and that the research tends to bring out in the search for spatialities suitable for hosting these new capacitors (Canella 1995).

All the spatial components of the settlement context contribute to the project of the new urban centrality in a delivery between new and preexisting. In fact, the built-up and non-built-up spatialities involved in the urban transformation represent elements that strengthen the design of the new centrality which, focusing mainly on densification through composite settlement systems, is also implemented through the recovery of existing urban fragments to be included in the regenerative action.

The central space deriving from the aggregative system of the new urban centrality is a regulatory element with respect to its own boundary, the neighboring context, and the urban reality it creates.

Centrality, as a typological device and place of identity, has been shaped in the city through two types: the first is summarized in the *Forum* in which the directional function of society and the territory is concentrated as well as representing the place of exchange: a model in which the shape of the void defined through the composition of plastic objects that make up its boundary prevails. The second is represented by the great unitary architectural organisms condensing functions, activities, uses, and meanings similar to the same idea of cities such as basilicas or Roman baths or, more recently, service centers such as theatres, schools, museums, and so on.

This new architectural typology becomes the protagonist of the urban scene, acting at the territorial or simply neighborhood scale, able to regenerate the urban and social fabric, consolidate or requalify the shape of the city, and restore the physical continuity between the contextual morphological and typological components by activating a given system of variable relationships case by case.

First Phase: The Shaped City (Redefine the Shape of the City)

The technique takes the contemporary city as its starting point, within which it is possible to identify a form of the *shaped city* in which there is still a density such as to ensure formal and functional continuity between urban realities. The re-perimeterization of this city excludes the so-called diffuse city composed of scattered, more or less nuclearized urban areas contaminating the surrounding area.

The diffuse city is the effect of excessive land consumption that is now unsustainable for the entire ecosystem. The urban development pursued by research interrupts this trend by inverting the paradigm, replacing the model of expansive development with a model of compact urban development (internal expansion).

Full Space and Empty Space

The TDSC technique analyzes the urban space by mapping it according to two macro categories: full space and empty space, respectively represented with black and white. Derived from the studies of Rowe-Koetter, the “figure-ground” analysis is taken as a pretext for the sole purpose of an economy of urban space made, in this way, perceptually explicit. For the purposes of the method for both types of space (full and empty), the unit of measurement is the building understood as an existing visible and physically usable asset as a product of the regulations that design the city and which requires human intervention to modify the nature of the space. This is divided into different components: built-up space, that is, a full space; unbuilt-up space, that is, the empty artificial but unnatural space (squares, parking

FIGURE 18.1 Parma. Left: mapping of the building. The shaped city and suburban or peri-urban settlements. Right: transformation of the shaped city into centurial pixels for the purpose of measuring the full and empty spaces (drawing by P. Strina).

lots, equipped green areas, level sports facilities, paved areas, etc.); this last type of space generally understood as that empty space uncontaminated by the human action of urbanization.

The method, in this first phase, can be summarized in a few key steps:

- a The identification of the shaped city and its rationalization in order to measure the spatial components within it. The identification of the shaped city derives from a first empirical profiling of the densest, most continuous and compact body of the city.
- b The subsequent measurement of full and empty spaces leads to the final data⁷: the pre-eminent amount of empty space compared to full space, within the shaped city part, in which there is a certain overall economy that can be used with a regeneration that aims at further compacting the shape in contrast to the expansive method adopted up to now⁸ (Figure 18.1).

Second Phase: The Analysis of the City and the Search for Spaces That Interpret Centrality

Identification of Areas

Starting from the analysis of the urban evolution that caused the explosion of the historic center and the spread of the construction, as a first step, *urban units* must be identified in the *shaped city* in which persist the formal and functional phenomena (signs) that have generated the aforementioned *urban realities* called, in the sense of the research, *areas of prevalent characterization*.

FIGURE 18.2 Parma. Left: urban development according to historical thresholds identified according to density types (in the middle). Right: identification of areas through territorial signs (drawing by P. Strina).

The medium-sized European city presents similar dynamics of expansion so as to be able to take the compact Renaissance city or walled city as an initial historical threshold for the purposes of our research. Hence, the 19th-century urbanization resulting from the industrial revolution led to the explosion of the *forma urbis extra moenia*. The research analyzes urban development through five historical thresholds⁹ generating as many urban realities or *areas of prevalent characterization*, each of them characterized by type-morphological particularities and by a correlated settlement density that can be measured through a relationship between full and empty spaces.

These characteristics derive from aspects related to the geographical location, the nature of the public and private space within the *area*, the infrastructural consistency that satisfies the accessibility requirement and, first and foremost, its endowment in terms of equipment and collective services for public use (Figure 18.2).

From the Area to the Definition of the Centrality Field

The identified *areas* that make up the *urban unit* are characterized by their own structure consisting of full and empty spaces, public and private, polarity and connectivity fabric. In order to identify the *space that interprets centrality*, the so-called *centrality factors* are identified within the areas, that is, components that are relevant due to a formal and functional nature in the urban fabric. These can be single buildings, urban portions, full and empty spaces, but these are mainly for public use with their own degree of attractiveness and usefulness for collective life.

They represent the first parametric index for evaluating the potential of the *area* itself to host, within its structure, *centrality fields* susceptible to transformation through the establishment of a new urban centrality.

The *centrality factors* establish a relational behavior between them according to a principle of physical proximity expressed through the entity of *relational clusters* characterized by their own structures.

Depending on the geometry-dependent structure of the relationship between the *centrality factors*, we will therefore have the following types of *clusters*:

- a *Linear*, characterized by a sequence of in-line centrality factors;
- b *Articulated*, in which the centrality factors relate, giving rise to polygonal figures;
- c *Articulated composite*, derived from an arrangement of centrality factors that shape a tetrahedral relational geometry.

Within an urban dimension that can be used in a cycle-pedestrian manner, contained within a radius of no more than 1,000 meters, multiple *relational clusters* can coexist that, in turn, interface in a system that can be defined as a *poly-cluster*.

This latter entity is activated when optimal spatial conditions persist, detectable within the neighboring urban fabric, such as to facilitate a connective cycle-pedestrian network between the individual component *clusters*.

The concentration, albeit widespread, of *centrality factors* in a narrow sector of area in which particular favorable conditions of infrastructural, spatial, and road conditions coexist, guides the definition of the *centrality field* formally definable through the urban signs called *perimeter edge components*.

The *centrality fields* are interspersed with each other by an intermediate fabric within which it is possible to operate regenerative strategies oriented to its full ability to mediate between one field and another.

The *centrality factors* differ in role and importance in relation to the *area* and the entire *urban unit*.

The *centrality factors*: depending on the catchment area they attract and the inter-scalar relationships triggered between the *centrality field*, *area*, *urban unit*, and vast metropolitan area, we will have centrality factors of metropolitan/urban areas and field relevance.

The prevalence of certain *centrality factors* within the *field* establishes the nature of the *field* itself and guides the choice of the most compatible type of *urban centrality* to be installed there.

The game of selection and identification of the *space that interprets centrality* will be played within the *centrality field* (Figure 18.3).

From the Field to the Identification of the Space That Interprets Centrality

The morphological structure of the *centrality field* represents the body within which to identify the *space that interprets centrality*.

The methodological procedure continues with the morphological analysis of the fabric making up the *centrality field* and allows us to describe the functional nature of the settlement density. This analysis is completed by surveying the aggregative typologies of the building space. Compared to the generic empty space of variable consistency, the spatialities emerge from which to select the *space that interprets the centrality* through factors of accessibility, usability, and visibility.

FIGURE 18.3 Parma. From the area to the definition of the centrality field. The centrality factors (in red) are mapped with the subsequent identification of the clusters (yellow line; drawing by P. Strina).

The void sought will have to be denoted by a useful dimension to accommodate the complex device of the new centrality as well as by infrastructural boundary conditions such as to guarantee maximum ease of access and use of the new project.

The *accessibility* requirement is satisfied when the chosen space is served by road arteries on which public and private public transport routes, of a fast or slow nature, coexist, corroborated by the presence of cycle and pedestrian paths.

The requirement of *usability*, on the other hand, is guaranteed by the presence of public and relationship spaces.

The *visibility* requirement is formalized through the presence of recognizable and fully perceptible *landmarks* during the experience of travel and usability of the *centrality field* that will dictate lines of force for the new project (Figure 18.4).

Third Phase: Toward the Project

The Historical Experience of Centralities

From the project point of view, the TDSC technique aims to identify not only the places of potential urban regeneration and densification through the use of the centrality strategy but also the type of centrality to be established so that the overall system of centralities can

FIGURE 18.4 Parma. From the area to the definition of the centrality field. Above, the relationships between clusters are mapped that are activated according to a cycle-pedestrian type of usability and accessibility (highlighted by the radius of 500–1,000 meters) and the identification of the periphery component (blue dotted line). Below, the identification of the area of inactivity (white trapezoid; drawing by P. Strina).

function as a whole. The technique, therefore, links the components together at different levels (territorial, urban, neighborhood), transforming them into a centrality project (public spaces and related architecture). In the entirely interpretative passage from space and type of centrality to the actual project, some historical constants (archetypes) linked to the urban planning of the European medium-sized city come to our aid.

The analysis of the models in reference to their key role in significant chronological passages for urban evolution has revealed typological invariants that return. In the collective imagination, these typological elements lead back to the idea of *centrality* or *centrality factor*: among these we find the market, the basilica, the portico, the temple, the palace, the Gothic lot, the tower, the linear body, the central plan, the amphitheater, the courtyard, and the pavilion. These, comprised together, generate settlement typologies characterized by spatiality often of a centripetal or centrifugal nature in which the center plays a dominant role, with compositional focus and often in public space. All the settlement typologies exhibited experience density, the last essential factor in the urban project on which forms, distances, spatial perceptions, and consistency of the urban structure depend (Figure 18.5).

The Typological Declination of Centralities

The role types of the new centrality within the city and the territory are the first determinant of the project.

The previously illustrated parts have contributed to the definition of a generic profile of the new urban centrality as a pivotal tool for a precise densification technique.

Urban centrality is conceived as:

- an urban project capable of regenerating and densifying large parts of ordered/disordered construction;
- an urban regeneration tool focused on the redevelopment of public space in the collective life setting;
- a transmitter of identity and community places that acts as a social catalyst within the shaped city and in the logic of a polycentric geography;
- a composite architectural device in which the type of its plastic components takes on the role of vehicle of the identity and traditional image of the context with which the project relates in continuity;
- an architecture with a strong degree of representativeness that stands as an exceptionality within the urban blur, meeting the requirements of maximum visibility while respecting the project context;
- an architectural composition that mainly insists on consistent public spaces, identified through the prefigured method; their reduction is compensated by the quality of the project and the polyfunctionality of the space itself that derives from it;
- a multifunctional composite capable of serving various roles in order to maximize the liveliness of the planned urban place;
- an urban complex in which the distinction between public and private space, internal and adjacent to the project, is strongly mitigated thanks to design choices aimed at maximum usability of the entire configured space.

FIGURE 18.5 Parma. From the area to the definition of the centrality field. The centrality space is identified (below, yellow) among the available space resources (above, yellow; drawing by P. Strina).

FIGURE 18.6 The historical experience of centralities: the Foro di Pompei and Piazza Maggiore in Bologna as settlement typologies that contain recurring typological elements such as the palace, the temple, the portico, the market, the tower, the basilica, and so on. Compared to the nature of the project, the typological elements help to direct the new design (drawing by P. Strina).

The generic centrality thus characterized reacts with the *urban unit* and with the aptitude of the parts that compose it. Depending on the transcalar relational capability between the project and parts of the city, urban unit, and the vast metropolitan area and territory, three different types of urban centrality are outlined, the difference between which is expressed in terms of form and function as well as in terms of relationships.

These are:

- a *Urban centrality centered on a polycentric relationship system* investigates the inter-scalar relationship between the infrastructural network and its intermodal exchange nodes that act as a hinge both at the territory scale – exchanging with the dynamic flow of the infrastructure that crosses them – and at the urban scale, as a suture between parts separated by the rail tracks. Similar to the archetype of the Porta Urbis, it fulfils the representative functions as a threshold and showcase before restoring the image of the city;
- b *Metropolitan type urban centrality* capable of triggering transcalar relationships and definable link between city and hinterland, entities making up the metropolitan landscape. It acts as an architectural garrison over the vast area that is responsible for its governance. The new metropolitan-type urban centrality becomes the place of directionality whose compositional forms must be able to represent their dominant role and communicate it within the vast area. In the city, it assumes the role of a founding fragment, a strategy of widespread regeneration that systematizes the preexisting contextual directional functions;
- c *Urban centrality of parts of the city* that is a catalyst for a particular collective neighborhood life. It is capable of triggering relationships between areas that participate in the configuration of a polycentric geography of community places ideally defined as urban squares.

Each type of centrality will be characterized, in addition to its size, by a complex functional program within which a special expressive function of the aptitude of the individual types will emerge.

During the ArchéA project, the Parma unit adopted the TDSC technique in the two cases of the Architectural Design Workshop of Bologna (November 23–30, 2019)¹⁰ and of Aachen (November 21–30, 2020).¹¹ Both project sites – the area of the former fruit and vegetable market adjacent to the “Bolognina” district in Bologna and the Drieter Hof district in Aachen – led to the experimentation of type B Metropolitan-type urban centrality (Figure 18.6).

Notes

- 1 The doctoral research envisaged a common methodological introduction and practical application on different types of centrality by the doctoral students: Annapaola Nolli, *Densification technique through the strategy of urban centralities in a polycentric relationship system* (applied to the city of Modena); Paolo Strina, *Densification technique through the strategy of metropolitan urban centralities* (applied to the city of Bologna); Nicola Montini, *Densification technique through the strategy of urban centralities of parts of the city* (applied to the city of Forlì). The theses had Prof. Carlo Quintelli as supervisor while the undersigned participated in the ongoing reviews/discussions.
- 2 The research group that presented the project included, in addition to Prof. Carlo Quintelli (scientific manager), Prof. Enrico Prandi (Department of Civil, Territorial, Environmental Engineering and Architecture – University of Parma), Prof. Giovanni Pieretti (Department of

- Sociology – University of Bologna), Prof. Vanni Codeluppi (Department of Communication and Economics – University of Modena and Reggio Emilia) and Profs. Nicola Marzot, Laura Gabrielli, and Pietromaria Davoli (Department of Architecture – University of Ferrara).
- 3 A monograph dedicated entirely to the TDSC methodology is currently being published by Paolo Strina and with an introduction by Carlo Quintelli, and a critical postface by Enrico Prandi (Il Poligrafo editore).
 - 4 See the essay by Carlo Quintelli, *The long-term method of the urban project in Italy and the Parma School*, and the essay by Lamberto Amistadi, *Drawing the city: form and meaning*, contained in this book.
 - 5 Already in that period, the group originating from research on cities in the Western Emilia territory (CittaEmilia), the idea that a European city existed took shape, meaning a particular type of city with some prevailing historical, morphological, and cultural characteristics. See Amistadi and Prandi (2011).
 - 6 The principle of the compact city was the model that, starting from 2011, was tested in the projects for Parma within the two European Workshops IP Erasmus CCA – *Compact City Architecture. Historical City Centre Design in Europe* (Parma 2012) and *Compact City Architecture. Designing Centrality, regenerating the suburbs* (Parma 2013). See Prandi (2012, 2013).
 - 7 The measurement of space is omitted in the application on Aachen.
 - 8 A few years after the start of the research, the trend of an expansive model regardless of land consumption issues is about to be abandoned in favor of more sustainable models. To date (2020), there are many urban planning tools that have reversed the trend and can be defined as “zero land consumption.”
 - 9 The urban facts deriving from the relative historical thresholds are historical center, historical suburbs, suburbs of the 1930s–1960s, suburbs of the 70s–80s, suburbs of the 90s to today’s suburbs.
 - 10 For a description of the project with respect to the technique, see the essay by Paolo Strina in this book and Balducci (2020).
 - 11 For a description of the project with respect to the technique, see the essay by Giuseppe Verterame in this book.

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