Chapter 12
New Designing Codes for Urban Infrastructures: A Hypothesis of a Transdisciplinary Approach

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ABSTRACT

This chapter develops the issue of establishing new transdisciplinary codes for the design of urban infrastructure of a grid city. In the networked and systemic vision of a grid city, it is necessary to find a direct connection between three levels of the infrastructural design process that today are separated: the urban design level, the grid design level, and the technical design level. The chapter explores innovative horizons to implement a new multilevel and integrated design code to shift the contemporary urban infrastructural project toward a much more complex system to generate multiple dimensions of urban quality: a system with which to promote the coexistence of different aspects: the infrastructural network design to achieve metabolic interactions between nature, resources, and communities; the technological-environmental interface design to enable multiple connections between spaces, buildings, and users; the grid design to activate physical and immaterial relationships between collective and private dimensions.

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INTRODUCTION

The role of infrastructure in the planning, building and management processes of an urban organism has always been the main variable of the conservation and regenerative dynamics of a city’s physical and immaterial resources. The urban habitat, as it was transformed through the construction of infrastructure works (e.g. transportation of people/resources, production/distribution of energy, services placement), has generated functional and morphological modifications of various scales.

At times urban infrastructure has followed logics that have taken up the challenge of integrating different scales of intervention tending to harmonize them with the cultural and technical-scientific innovations.

In many experiences, infrastructure emphasized the separation among the levels of the project; nature, the city and society were pitted against each other and specialized networks were de-contextualized from the evolutive dynamics that affected economies, people and communities.

The evolution of urban systems toward horizons of change (whose outlines seem to be becoming less certain and foreseeable today) poses a new question for infrastructural design. There are several factors that might be at the origin of this change such as the intensification of severe phenomena caused by climate and geo-soil changes, aging populations, an increasing scarcity of energy and food, the intensification of population migrations and growing bitterness in the conflicts between individuals and communities as regards political, social, and religious questions. So, cities are becoming (or, after a long season of modernity, they are going back to being) the main realities in which we find both the “unsustainable” effects of the disequilibria caused by this new phase of transition. Today, cities are the places in which we experiment new forms of sustainable reorganization of people and resources to confront this change.

Grid Cities can become on-going laboratories to achieve in this transition a confrontation between the geometrizing/ordinating logic (renaissance-modern in origin) of the organization of urban space and the more recent ‘network’ organizational tendency (ecologic, digital, and communicative).

Grid Cities are at one and the same time quantitatively ordinate and reticular urban entities, but they also contain an overlapping of physical and immaterial infrastructural networks that produce unexpected qualitative modifications in the urban socio-economic structure. In some cases, the infrastructure itself supplies places in which new quality examples of urbanity set up by the community take form.

So infrastructure design for Grid Cities is called on to handle problems of the spatial and temporal fragmentation of the expertise and competences that are at the base of the evolution of the infrastructure itself.
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