



## Urbanism in the X, Y, Z, and – Z dimensions

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The modern city has progressively been defined within a primarily horizontal dimension according to a strategy of 'adding alongside'. Zoning, the instrument for controlling the use of the soil, identifies areas and functional uses atop a two-dimensional plane relative to the zero degree. The third dimension is considered only when it regards vertical development (+z), in reference to regulations governing the maximum allowable building heights, while the dimension of the subsoil (-z) is almost wholly ignored.

**The subsoil has been used**, without any overall strategy and in the absence of tools capable of coordinating their rational positioning, to incoherently locate a series of technical spaces and infrastructural networks indispensable to the proper functioning of what is above grade.

**The complementary relationship between what is above and below the soil**, a crucial element in the formation of many urban settlements, has been reduced to an exclusively technical-functional relationship, and the subsoil has been configured as an appendix in which to conceal services and infrastructures that would otherwise occupy the surfaces of the urban soil. In their complexity they configure a new contemporary geological layer, partially mapped and little known, that complicates and often impedes access to deeper layers.

**Studies of urban analysis have in fact investigated urban fabrics and morphologies only on the surface**, without analysing the point of a building's attachment to the ground in any profundity. Cadastral charts and maps reduce the soil to a surface devoid of any depth, even if this surface represents the visible form of a three-dimensional volume atop which different human activities occur.

**It is a three-dimensional volume that interacts with the what is above the soil** through a variability of depths, in relation to what is settled atop this support; and if a field of wheat or a garden send their roots only a few centimetres into its depths, a forest or a thick wood a few meters, technical infrastructures dig dozens and even of hundred meters downward.

**Today the lack of available soil in densely constructed areas**, together with the fragility of many urban soils and the urgency of limiting the consumption of the soil as much as

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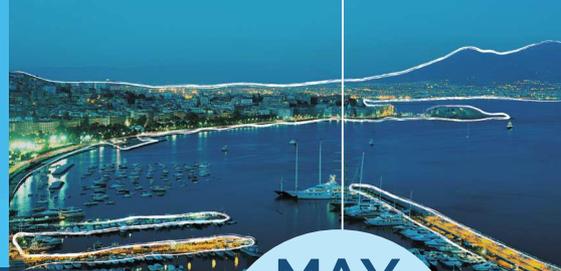
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possible, lead toward the search for strategies designed to rationalise existing uses and identify new methods of utilising the subsoil. These methods are more complex, moving beyond the conception of the subsoil as a technical space for services and storage.

**The urban development of the twenty-first century city** thus demands a reflection on the opportunities offered by urbanism in the x, y, +z and -z dimensions.

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