



This research regards the urban form and its relationship with water.

Worldwide, the limits of accessibility and availability of this resource are being pressed - rupture events in contemporary cities lead to questioning the infrastructure model in current city design.

Pursuing a theoretical systematisation, evidence of the progressive participation of water in the city and in housing is revisited, through a historical and (cartho) graphical framework. Departing from a community distribution system in public places, to the rationalisation of the street and the emergence of infrastructural logic in the sec. XIX, the sec. XX appears as a period of important formal and conceptual syntheses for the production of housing. The mastery of residential infrastructure - the housing machine - produces a domestic lexicon that translates into served and server spaces.

From architectures of water celebration to its condition of utilitarian invisibility in the contemporary urban landscape, the challenge of the sec. XXI will oppose the rationalisation of design and water consumption to a more integrated vision between urban environment and natural dynamics. It is intended to defend that the design of architecture oriented to this purpose can contribute to this achievement. The city of Lisbon will be approached as a central case study; research may be supported by complementary case studies.

In the first architectural treatise on record, dated two millennia ago (1st century BC), Vitruvius dedicated one of his ten books to the theme 'water', consecrating it as a fundamental theme of thought related to architecture and as humanization tool for the territory. The book points out some constructive solutions with a relative degree of sophistication for a design of its artificial conduction over and under the natural territory, through exclusive circuits and the construction of specific support objects for this purpose.

In the present and young 21st century, the 17 Goals for Sustainable Development have defined since 2015 a common goal for the global population, regardless of their geographical condition, politics or level of prosperity, centering the issue of development on a common agenda of well-being, sharing and responsible use of resources in the common house we inhabit. Objective 6 "drinking water and

sanitation" unambiguously isolates the urgency to guarantee accessibility to water, at least half of the global agenda is complementarily related to this idea.

The challenge of the sec. XXI for the use of water in cities will be to maintain the quality of life that current technology allows, minimizing its consumption globally. Guarantee accessibility, through an efficient artificial infrastructure, and availability, through the good maintenance of the natural infrastructure - that promote small local water cycles in an urban environment.

The city is the physical support of the access systems to this property, and its architecture, individual and collective, a consequence of the technologies in force. It appears that the growing domain of water infrastructure promotes an urban design that is increasingly independent of the territorial base - their own natural and social history. The water point forms a collective public space in the historic city. The linear water infrastructure is defined together with the street, and from it determines the constructions. The fully infrastructured building with private supply points, along with the domain of structural construction solutions, becomes quite free from a formal point of view, integrating spaces that are progressively more specialized in their interior composition. Solutions are explored that articulate a sense of 'motor', which endows the domestic interior with functionality.

The water element in its natural state was banned from the urban space, in which it does not participate as a visible element, its presence being highly domesticated and seen as a consumer good with easy access, or as a surplus to be forwarded in the case of rainwater.

There is a need for a typological moment capable of framing the presence and use of water in contemporary construction. It will make sense to revisit some vernacular-based solutions and interpret how they can be integrated and combined in 21st century projects, making the most of technology and global knowledge in constant evolution, without losing the accumulated timeless knowledge.

In the city, housing is the program that has the greatest expression, highest gross consumption and therefore the most urgency to be optimized. It is also the most effective. For a more humanized view of water, it is important to be aware that it is not an abstract resource, and architecture can contribute to this positive integration.