

POLYTECHNIC OF TORINO  
FACULTY OF ARCHITECTURE 2  
Degree in Architecture  
**Honors theses**

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**Project and climate control of exterior spaces: a river park along the Guadalquivir river in Seville**

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Thermic comfort is usually referred to a closed space whose climatic parameters are regulated by particular architectural elements.

Does this apply to an open space as well? Can we improve the microclimate of non delimited spaces?

The aim of this study was to investigate this subject and to develop a methodology for the design of open space climate control.

The work was performed in Seville at the SAMA (Seminario de Arquitectura y Medioambiente), the research group previously in charge of design the open spaces of the Expo 1992.

The study consists of two parts. During The first and theoretical part we focused on the analysis of systems of open space climate control already in use. In the second part we applied these principles to the actual project of a river park along the Guadalquivir river in Seville.

In the first part of the study we present the classification and functions of open spaces, with a particular interest in the social and environmental ones.

With regards to the thermic-hygrometrical comfort we compared the concept of thermic comfort for open spaces with the one of closed spaces, outlining the main points to be considered in relation to the acclimatization of exterior spaces.

We then present the techniques of climate control and the technical instruments to be adopted, with their mode of operation and effects.

In particular we examine the role of water and vegetation.

The first part is devoted too to the study of Seville and the Expo 1992, where for the first time a global system of climate control of open spaces was developed.

In fact, we analyzed the climate situation of the city and we identified the major problems related to the thermic comfort and we then studied the project of the expo examining the master plan, the work methodology and the completion of the pilot program.

The second part is represented by the actual project of a river park along the Guadalquivir located at the old gates of the Expo.



View of project site. Existent conditions

The aims of the project were:

1. to protect and to emphasize all the historical elements of the area and their interaction with the context.
2. to improve the public use of the riverbanks providing accessibility, freedom and maintenance of the edges.
3. to restore the urban landscape of this area so much related to the history of the city.
4. to introduce natural and architectural elements favoring a better thermic comfort for the activities foreseen. We also propose a number of new functions having in mind the functional and formal relations between the buildings and their context, providing the historical elements with a novel vitality thus regaining their lost centrality.



Plan, elevation, sections and views of the proposed project

Moreover, we propose a bioclimatic intervention in one part of the site. Through the use of shadows, vegetation and different levels of the ground, we developed a system of water canals that takes advantage of the slope of the ground and uses the water of the river through a system of pumps, allowing the soil irrigation and the natural cooling. The project also includes a green pergola, pools and a walkway, this one covered by 540 square meters of photovoltaic panels. The covered walkway is not only a new view point of the entire site but also a space for working and studying activities. In fact, this structure is also provided with desk spaces and power outlets. We also suggest the recover of the old railway tower with the introduction of a restaurant space.



Rendering of the walkway and system of water canals for the natural cooling

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