

POLITECNICO DI TORINO
FIRST SCHOOL OF ARCHITECTURE
Master of Science in Architecture (Construction)
Honors theses

Ecolibrary Project.TO

**A Library in Turin design on the basis of Sustainability Criteria
and the analysis of the natural lighting**

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This thesis was born as an attempt to explore, and as far as possible, to deepen, a theme that is very actual, the design of a sustainable building, that in this case refers to the planning of a sustainable library, beginning from the restoration of a building in disuse, and taking into account the analysis of the natural lighting in its internal spaces.

The first theoretical part of this thesis pretends to provide many elements of great interest regarding the topics mentioned above. In this work, a great set of historical and bibliographical, as well as architectural, sociological and technical information and data was gathered and analyzed to use it to develop the project of a library for Turin. In the initial chapters, elements as the inner characteristics of the library, the current vision of this institution and its historical evolution up to the present, have been analyzed to then go deeper into the specific aspects of the architecture of the libraries in relation to their function, the services they give and the technical and environmental requirements that they must have to satisfy the needs of their users. Besides this information, some examples of representative libraries have been presented and analyzed to be able to understand the elements that have led them to become models of reference for the construction of new buildings or for the restoration of existing buildings to use them as libraries.

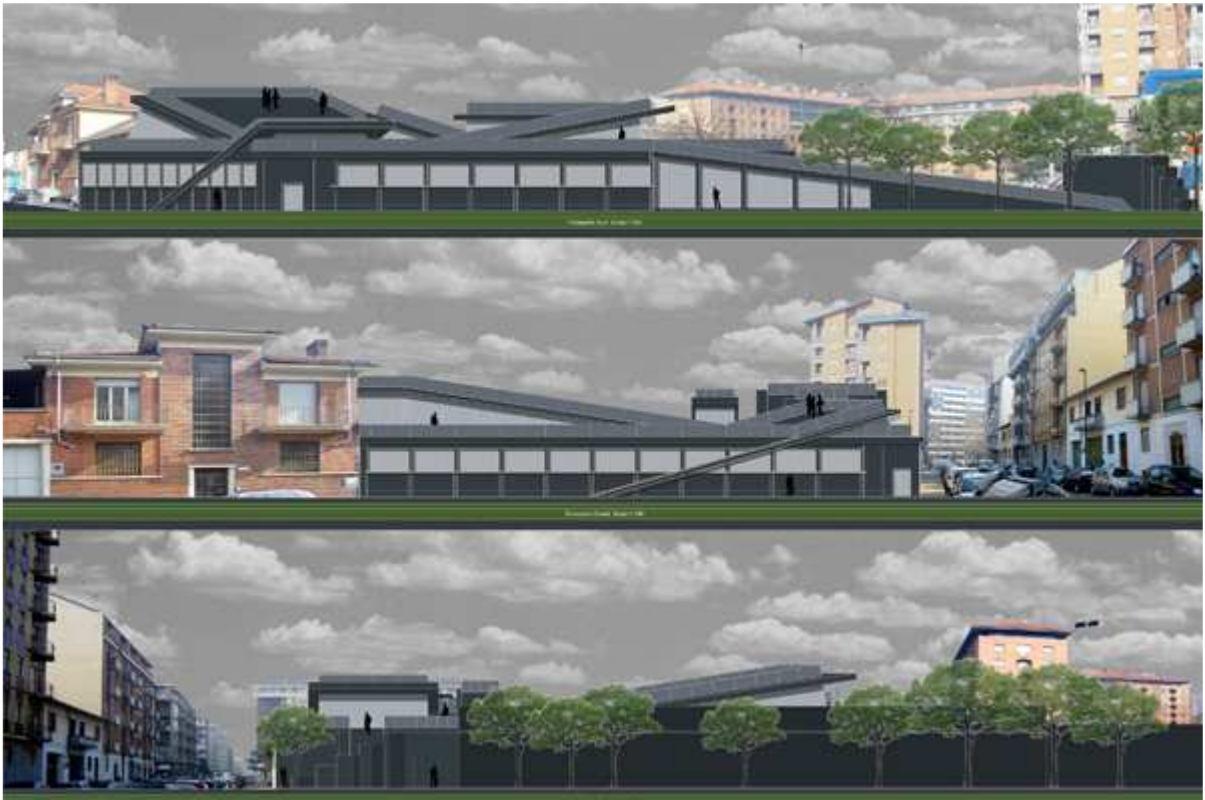
One of the aims of this thesis was to show that the design of a new library needs a critical analysis of the whole series of specialized information about this field. Only with the compilation of a lot of information related to the doctrines of the modern biblioteconomy, and thinking in the readers, it is possible to answer to the increasing demand of culture and information that is covered by the libraries in all their different typologies: the public libraries, the historical libraries, the university and research libraries, as well as the big national and international libraries. This one represents a demand that also includes the world of the interdisciplinary research, at least regarding some of the most ambitious projects that have been built in Europe and in the whole world.

But this research has not only been focused on the big libraries, but also on the small libraries and their specific architectural and functional characteristics, to allow that this typology, which is also very important for the society because it promotes the approach of the common citizens to the books and the culture, is more spread and promoted by the local governments, seeing its construction not only as an unnecessary expense of economic and material resources, but as an important investment for the society in which it is built.



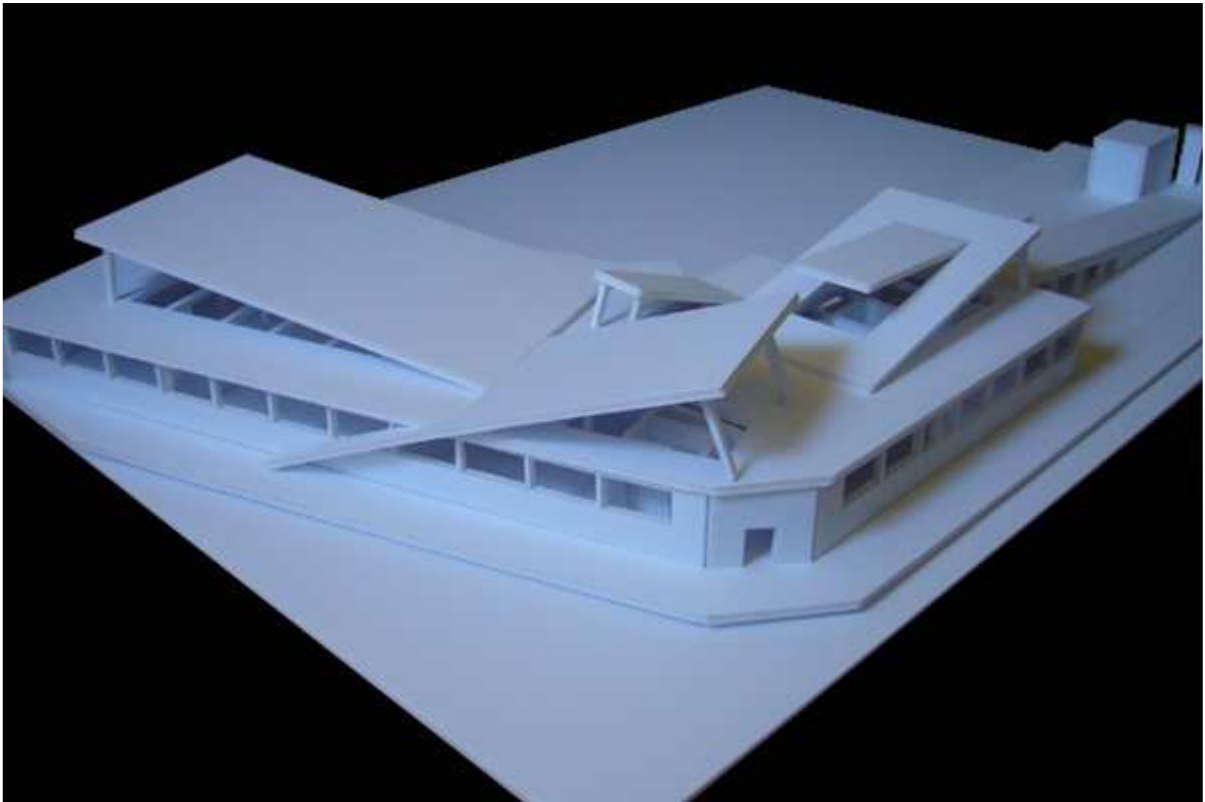
Photomontage of the Project in the Urban Context

Another aspect that has been emphasized in this thesis is the possibility of restoration of ancient buildings to be used as public libraries, taking into account certain considerations that could lead to the accomplishment of a project that answers to all the characteristics needed in order to provide the users with a high quality service. And regarding the quality in general, the thesis approaches also the sustainability of the project, doing a particular emphasis in the topic of the natural lighting and its importance in the library, not only to favor an agreeable and effective reading, but also as an element that generates the space and that can change the perception that the users have of the space in which they develop their activities.



Façades of the Library

All these theoretical notions were applied then to design a library in Turin, this design process has been completely explained in the thesis and all the climatic, social and constructive information that was used for the accomplishment of the project is presented. Besides, the topic about natural lighting has been analyzed and there has been carried out an analysis of the projected building for this thesis with a new software called LightSolve that, instead of using the usual method of the daylight factor, develops an annual basis analysis that allows to identify critical points in the project regarding the natural lighting to be able to correct them in such way of finding the formal, spatial and functional solution that answers in a better way to the needs of every area of the library.



Model of the Project

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