



POLITECNICO
DI TORINO

Honors thesis

Architecture II

Abstract

**Bamboo and earth:
Self-building's materials for the Buenos Aires' Delta**

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by

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The development that had the city of Buenos Aires, split the city in two halves, on one side the regulated urban centre with the medium-high class, on the other side an informal city of "*villas miserias*" (slums), where live the poorest and the most bondary people. Who lives in the *villas* rarely has the opportunity to fit in the formal city.

This reality made part of the population looking for a different standard of life, going out from the urban area and where there might be the possibility to determinate himself in a community.

The great natural resource of the Paranà's Delta offer a real aternative to these demands. The natural resources give the opportunity to start an economical activity indipendently, to self-build your own house and to live in a healthier environment, for the surrounding ecosystem and for the natural material, less toxic than the traditional.

The research starts from an analysis of the Delta area, taking into account:

- Geo-morphological aspects;
- Social dynamics;
- Local natural resources.

The last point is explained through the investigation of the properties that bamboo and earth offer in the building's branch; underlining: building techniques, physical properties and trying to focus on the limits and the possibilities that these materials offer.

Hereafter it is explained how the experiences about the constructions with natural materials gave the chance to know better these themes, with the aim of reching the target of projecting a *modular living prototype* for the Delta area, with the possibility to be repeated and expand the house.

This thesis focused on self-building processes in a developing country, so it doesn't talk about: big structures, industrial manufacture, high-tech etc. But want to be a guide on how is possible to use materials and usetools, that are easy to find in th surrounding area, in an **alternative** way.

Rammed earth and bamboo joined together have great properties of: mechanical resistance, termical trasmittance and aesthetic value. But these characteristics are completely denied if not used in the right way: protection from the weather conditions, from solar rays, humidity etc.

If we compare the growth of a bamboo field with a wood forest, we can see the great productivity if the bamboo one. In fact, the life cycle of a cane is about 3-5 yers, instead the tree spend at least 15 years to be mature.

The sperimentation must do not stop just on the laboratory proofs for the material characterisation, but must value the properties in function of the shape that the projectist wants to follow. In fact it is important to research new technological proposals to verify and standardize, that can be used as a reference for whom wants to follow this way.

Although self-building requires simple technological systems (because everyone must be able to do it), these systems must be studied deeply in the projecting step, in order to combine a simple techology, with a formal-aesthetic achievement articulated.

The experience made in the Delta showed a natural trend to approach to bioclimatical aspects. The causes are fundated in two aspects:

- **Economical**, the use of local natural resources lead to a big dejection of the production cost;
- **Environmental**, nowadays a lot of people is involved with the sustainability and look for new living models, less impacting on the planet.

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