POLYTECHNIC OF TORINO
FACULTY OF ARCHITECTURE 1
Degree in Architecture
Honors theses

The re-employment of débris from demolition materials and the waste from building production is not only an ecological choice

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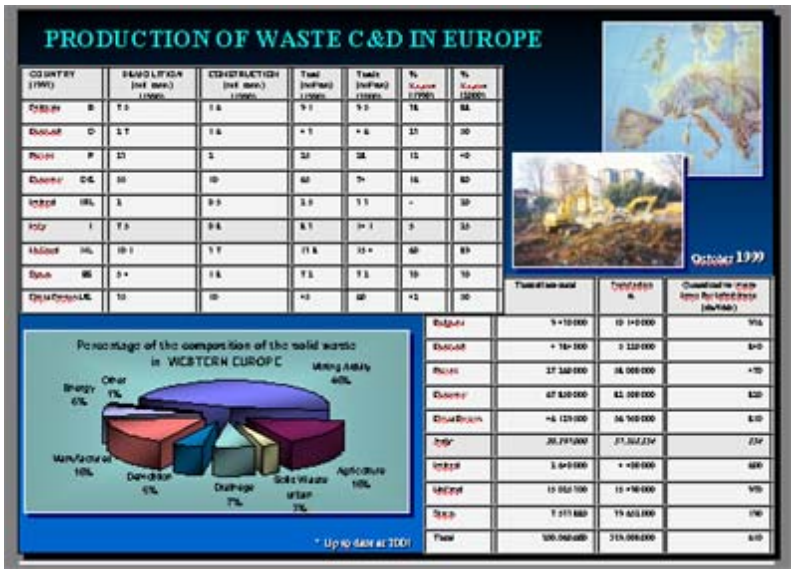
The thesis starts by analizing the ways in which building materials have been recycled over various historical periods and the problems these produce. It then outlines the current situation and the future prospects in this field as well as considering the real possibilities of recycling both demolition materials and waste from building production, in the construction process.

There is an increasing awareness of problems connected to the environment during the whole life-cycle of a building. The potential environmental damnage caused during construction and the extraction of primary materials has awakened the interest of those involved in technologies for recycling.The experience acquired by certain European countries allows us to think positively about the potential for recycling materials and by-products which in the past have just been destined for waste disposal grounds. Research aimed at discovering new uses for this type of material, foresee a widening application even in areas which were fomerly barred as can be seen with the use of inert asbestos in the production of bricks. Furthermore, in contrast with nearly all other industries, the construction industry is characterized by the vast range of materials employed. In the European Context, the construction industry accounts for more than 1/3 of waste produced and Italy produces 20,4 mil. tons of construction debris each year (354 daN/per capita)



Starting whith the quantitative data which highlights the extent of the problem, the thesis aims to promote demolition techniques which are in line with the indications below:

- D.L. n. 22/1997 Ronchi

  Its waste management strategy, now consolidated at the community level, is centred along intervention lines that calls for a reduction in the amount of waste produced, the recycling of products at the end of their life cycle, the recycling of materials, the saving of energy;
- DG-ENV.E.3 del 4/4/2000

  Which stresses the necessity to organise a system for the collection of data about the flow of waste from C&D; to agree a specific plan for waste management; to implement economic measures.

The instruments promoted by the DG-ENV.E.3 regard:

Objectives of recycling (reach 50-70% by 2005 and 70-85% by 2010);
Standard of use and quality mark;
Development of the recycled materials market;
Permission of demolition whith an operative plan and an environmental audit;
Waste bookkeeping from C&D and management plans;
Dumping-ground tax;
Restrictions and control systems on waste disposal in dumping-grounds;
Development of pilot projects aimed at selective demolition, selection at origin and recovery of waste;
Transport Documents;
Certificate of quality for organisations in the field (ISO 14000, EMAS)
Increased use of voluntary agreements aimed at:

Prevention of the production of waste (preservation of the existing building patrimony, longer-lasting materials);
Recycling (separation at origin);
Limiting waste disposal in dumping-grounds (prohibition for recyclabe materials).

These instruments make demolition an important priority as it places conditions on the quality of the final product, according to the ways in which it is applied. This means selective demolition becomes part of the measures aimed at reducing building waste. Pieces of monomaterial can be supplied which are suitable for special systems of recycling and the use of the UNI manual of demolition which supplies a number of indications aimed at understanding the most appropriate techniques to use in individual cases.

The various themes tackled in the thesis, lead to a reflection of building techniques. More accordance should be employed during the planning stages. In this way, the construction in layers, the use of dry junctions and the recourse to manufactured constructions using monomaterials or homogeneous materials which are simple to assemble seem more suitable regarding the guidelines outlined.

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