

DOCTORAL SCHOOL IN ENVIRONMENTAL ENGINEERING

Department of Civil and Environmental Engineering

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**Roads and Verticality.
Strategies and design in mountain landscape**

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Abstract

This PhD thesis provides design strategies to control changes produced in mountain places and landscapes following constructions of roads. Strategies are based on the activation of *potentialities unexpressed* in places, although compromised, characterized by presence of roads. With the term *unexpressed potentialities* we refer to functions, attitudes, uses which, during the process of road realization, have not found an appropriate design solution. Topic of the thesis is to demonstrate that these *design gaps* can be properly addressed by an architecture project, obtaining two results: create a link between places, landscapes and roads and consolidate the participation of architecture discipline in a field (roads production) in which, today in Italy, it is less integrated than others.

Changes in mountain landscapes are characterized by morphology and orography of the territory crossed: the factor that most influences in this direction is the verticality of the space.

This specificity is discussed in the thesis through the analysis of road segments, infrastructure nodes or other specific situations, divided according to the topography in which there are: *high gradients*, *slope* or *bottom of valleys*. Specific characteristics which correspond to the three different orographic situations are explained by an interpretative study of the cross section, highlighting the potentiality of the space related with its vertical dimension.

Most study cases belong to the geographical area of Trentino Alto Adige, an Italian region characterized by mountain landscapes. Some study cases are taken from other Italian regions or known experiences of the international context.

The proposed strategies are developed through study of architectural projects, joined by devices that interpret the vertical (*overlapping, slope and difference in altitude*) of the spaces, reproposable in cases of mountain road. All strategies can be applied at any step of road production, from concept to design to construction. In addition, and we assume that this is the most frequent case, can be applied *ex post*, when the road is built, intervening to change situations already in place.