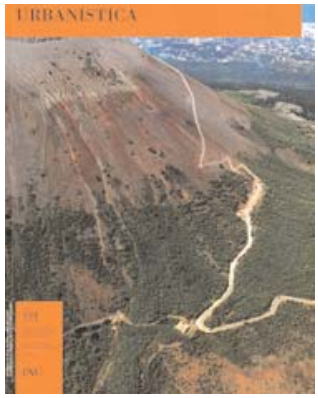

Urbanistica n. 134
September-December 2007

Distribution by www.planum.net

The experimentation in the historical centres of San Piero and Santa Sofia

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The experimentations carried out for the Sisma project involved the historical centres of San Piero and Santa Sofia, two settlements in the province of Forlì-Cesena, on the Romagnolo Appennino (mountain area), on the border with Tuscany.
Both have undergone the urban vulnerability and the exposure assessment (using regional methods) and the seismic behavioural study of the building aggregates.
The first assessments aid in defining the strategical choices (along with the set up of the Rehabilitation plans), for the preservation policy and enhancement policy of the public spaces.
The second (the seismic behavioural study), in the rehabilitation plans, aims at 'guiding' the building transformation with rules and regulations which integrate the preservation of historical heritage along with seismic strengthening. The study has three elements: 'critical' survey, guide-design, rules and regulations.
The experimentation has used the survey methodology (for the aggregates) introduced into the Rehabilitation plans financed by the Emilia-Romagna Region during the Nineties. The experimentation has improved the methodology, adapting it to the specific context. The surveys are carried out through visual examination of every part of the building, distinguishing the certain elements from the hypothetical ones.
The survey includes: geometrical survey; structures and structural details survey; 'critical-stratigraphical survey' (which regard the traces left by the historical development of the building and the urban fabric); survey of discontinuity between buildings and within the buildings themselves; survey of state of preservation, cracks and failures: each of these surveys produce specific information for the knowledge of buildings' and aggregates' vulnerability.
The 'historical' techniques of structural strengthening have also been studied, like for example: chains, corner reinforcement, insertion of internal walls, etc. These techniques have been applied on a wide scale after the earthquakes in 1918: they are easily applicable, have a non-invasive effect on historical buildings and have proved efficient in successive seismic events.
Maps and documents of the Tuscan Cadaster (1826) in the two aggregates in via Verdi and in via Gentili have been used to compare the layout and size of buildings before the earthquakes in 1918 with the current ones.
The most important modification carried out consisted in the demolition of the top floor in some buildings, by order of the Surveyors department (Genio civile).
The intervention on the urban fabric and building heritage inside the historical centre are determined by the rules and regulation specific to each and every building. There are general rules and regulations included in the urban plans (Piani strutturali comunali) and detailed rules in the guide-design for the improvement of seismic behaviour in building aggregates.
The guide-design deduces the way in which seismic damage occurs from the 'critical survey' (starting from the lack of the connections produced by the historical development of buildings and urban fabric). Furthermore it identifies (through rules and graphical representations) the consequent technical measures in order to reduce both direct and induced vulnerability.
The guide-design represents, both in the plans and in the façades, the requirements which are necessary to satisfy in the rehabilitation design of the single buildings. The requirements are: the improvement and safeguarding of morphological and structural regularity; the improvement of the organisation of the system which can resist to seismic actions; the increase of structural resistance.
The designer must take into account these requirements and carry out the necessary verifications. Design solutions which are different to those proposed in the guide-design may be adopted, but it is necessary to demonstrate that these solutions do not damage the adjacent buildings and that the requirements defined in the guide-design are inexistent.