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BOX 3

THE ANALYSIS OF HISTORICAL BUILDINGS
A brief survey on technical regulations and their effects on urban planning

Margherita Giuffré
Architect, PhD in Urban Planning
Dipartimento Design, Tecnologia dell'Architettura, Territorio e Ambiente - *Sapienza* Università di

Italian historic centers - mostly composed of grouping of buildings of different dimensions and shapes - showed a marked weakness in most recent earthquakes, firstly in the L'Aquila area in 2009 and also in the Emilia area in 2012.
From analyzing the effects of earthquakes occurred at the end of the last century, and in particular in Umbria and in Marche regions in 1997, the difficulties of a vision focused on a single buiding emerges - when operating on historical building fabrics – regarding the damages description, the safety controls and the intervention they needed.
This Box examines some versions of the national anti-seismic technical regulations, starting from 1996, with the explicit purpose of highlighting how attention moves from the single building to its surrounding, until focus is given to groupings of buildings - the "aggregate edilizi" - making this central to the rules that regulate post-seismic reconstruction.
Until 2003, the technical regulations requiring the analysis of buildings affected by seismic occurrences in order to define improvement interventions and mitigation of seismic vulnerability referred only to single buildings.

Following the San Giuliano earthquake in 2002 this regulation was reviewed and, especially in relation to the problem of historic buildings, an profound change was introduced with important implications for urban planning. In fact, the Ordinance of the Cabinet's President (OPCM 3274/03) introduces issues concerning the wider building fabric and the characteristics of the urban and historic contexts. These were subsequently modified in the 2008 revision. Since 1998, following the earthquake in Umbria and Marche regions, the Law 61 on reconstruction had already introduced the concept of "unitary intervention" within the "Piani di recupero" (Recovery programs), a planning tool addressed to mitigate vulnerability, while restoring the built environment.

The use of this instrument enabled targeted interventions for improving seismic safety and for reducing the seismic vulnerability of historic buildings. At the same time, this significantly contributed to the preservation and recovery of buildings of historical-monumental interest, through complex recovery interventions carried out through unitary projects involving both public and private agencies, which pay attention also to public spaces, paths, escape routes.

Considering the anti-seismic normative as an evolving matter both from a technical and an administrative point of view, it is rather clear that it is the "aggregato edilizio" which represents the reference unit, thereby addressing it during the post-seismic recovery studies. This operation should cause analysis and interventions as well as the planning and management of historic settlements that could be read as a form of prevention within the ordinary town planning activity.

DM 9/1/1996 *Technical regulations for building in seismic areas*	This law is centered on the single building within seismic areas.
Law 61/98 *Further urgent interventions in earthquake areas of Marche and Umbria regions and other areas affected by calamities.*	This Law introduced the concept of "unitary intervention" within "Piani di Recupero" (Recovery plans). These Programs provide for reconstruction or recovery of public and private buildings, and primary and secondary urban structure, destroyed or damaged by an earthquake (Art.3). The approach is integrated and foresees unitary planning and subsequent unitary execution. It is addressed to places "of particular interest" for their historical or landscape value, and to centers whose damage resulted higher than the 40%. The association among the owners of the buildings involved into the recovery program, being them private citizens or public institutions, is mandatory by law.
OPCM 3274/03, *First elements in the matter of general criteria for the country's seismic classification and technical regulations for building in seismic areas*, amended and supplemented by the **OPCM 3431/05**	It introduces the problem of the "continuous building fabric", characteristic of historic centers (see 11.5.4.3.2 "Aggregati edilizi"). The "aggregati edilizi" is here identified as the complex result of a inhomogeneous construction process. From a structural point of view, interactions due to structural contiguity have to be taken into account. To proceed with safety evaluation and therefore to the intervention definition, the regulation requires a preliminary analysis extended to the full aggregate to which the building to be analyzed belongs. This survey process to be executed on building aggregates is very burdensome.
DM 01/14/2008 *New technical regulation on constructions* **Explicative memorandum 617/08**	In the 2008 revision of the OPCM mentioned before, the part regarding aggregates is removed and partly inserted in the Memorandum 617/08 about existing buildings (Appendix C8: building aggregates), introducing on one hand greater flexibility in relation to the preliminary analysis, but in fact weakening the regulation related to interactions.
Law 77/09 *Conversion into Law, with amendments, of the Law-Decree 39/09, showing urgent interventions in favor of populations affected by seismic events in the Abruzzo region in the month of April 2009 and subsequent urgent interventions by the civil protection* **Decree 3/10** by the Deputy Commissioner for Reconstruction and the President of the Abruzzo Region.	Building aggregates, that constitute the object of Reconstruction plans, are configured as the basic element of reconstruction both from a technical point of view - because they are identified as reference units for intervention -, and from the administrative point of view - as they represent requests and interests of the owners, acting in associations.