

Chapter 3

Building in ‘Aggregate’ in Barletta

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This chapter presents the forensic investigations relevant to the collapse of a building in ‘aggregate’ that occurred in Barletta (Puglia, South Italy) on the morning of the 3rd October 2011, causing five fatalities. According to the Italian technical standards, a building aggregate consists of a set of adjacent buildings that is the result of an articulated and not unitary genesis due to multiple factors. Some recent Italian collapses, such as that occurred in Barletta, have highlighted that the approach to be used in the relevant forensic investigations is not so obvious and simple. The aim of the article is to describe the different approaches used in the investigations by different consultants and their different conclusions on the trigger of the collapse.

3.1 Introduction

The Italian historical city centres are full of building aggregates that can be defined as a set of adjacent buildings, delimited by an open space, that is the result of an articulated and not unitary genesis due to multiple factors (e.g., different construction and modification ages, materials, uses, owners). When structural interventions are made on a building in an aggregate, specific investigations and analyses should be performed to evaluate possible interactions arising from the structural contiguity with adjacent buildings. The problem is that, when dealing with historical building aggregates, it is quite impossible to have a deep structural knowledge of the whole aggregate mainly because of the following reasons:

- difficulties in finding documents of the original project;
- difficulties in finding historical documents describing the construction sequence;
- difficulties in making surveys and tests in buildings of other owners;
- difficulties in the assessment of the mechanical characteristics of old construction materials (e.g., natural masonry blocks, ‘poor’ quality mortar);
- absence of national/international codes relevant to the vulnerability assessment of old existing constructions in building aggregates.