

Identity and vulnerability in a port-city

Architectural strategies for disaster risk reduction of the port-built heritage: Beirut 2020

Steluta TOPALOV, "Ion Mincu" University of Architecture and Urbanism, Bucharest, Romania

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On August 4th. 2020, one of the biggest non-nuclear explosions the world has seen in recent times, took place in the Port of Beirut. It only took a couple of seconds for the city to lose a part of its identity, which was made up of layers of accumulated cultural assets and architectural heritage; almost 730 historical buildings were severely damaged, and 3000 buildings with cultural value were at risk of falling. Beirut was an important port city, serving the oil trade and transporting passengers and goods from the Levant and the Gulf. The port played a crucial role in Beirut's history and was located in the city's central area, surrounded by luxurious residential neighbourhoods and historically protected areas.



Fig. 1. Gemayze post-blast, the architectural heritage, Beirut, (source: Steluța Topalov)

The recent events in Beirut have highlighted the vulnerability of the heritage to disasters and the importance to integrate heritage protection, sustainable development of the historic areas with the

design of architecture and urbanism, to reduce the disaster risk for historical areas in a port city. The historical buildings are protected by law, but not in front of the disasters.

In this context, the research highlights the importance of a methodology for disaster risk reduction of the built heritage by assessing the existing post-disaster situation to identify the specific vulnerability of this built system and specific post-disaster management of the port city. The methodology for the quantifiable assessment of the built system, based on a pilot study for the affected heritage area of Beirut, supports the intervention strategies in the historical areas of the port-cities.

Due to the contemporary challenges, the research study aims to demonstrate the value of further research on resilience and vulnerability in port cities by presenting one of the most recent case studies of a man-made hazard: the Beirut port disaster and its post-disaster urban recovery strategy. Through direct access to information, field research, interviews, and participation in projects for the reconstruction of affected areas, the case study will provide an essential context for analysing current risks in port cities. Disasters can occur in any region, but port cities face complex and particular risks because of their location between land and water and their international maritime role.

In this context, the built historical heritage requires an integrated evaluation to develop strategies for its preservation. Cultural heritage is one of the most important aspects that identify a city's history and evolution, and preserving it could give communities a sense of rooting, continuity and social aspirations.

The primary interest in a standard post-disaster reconstruction phase is the need to collect data about the direct physical impacts of disasters, focusing on both the buildings and human losses. However, it further fails from understanding urban recovery as a holistic and inclusive process.

In this sense, it is vital to review the post-disaster data management. This means a new approach in the post-impact investigations of disaster recovery is needed. Whereas maps have been the traditional way geographers represent data in physical space, a new approach of data collection, analysis and dissemination strategies for the post-disaster recovery is employed.

One of the most recent examples of data management used as a tool for an inclusive urban recovery is the "*The Observatory of the Reconstruction*" digital platform which provides a shared base of spatial information for/about the August 2020 post-disaster reconstruction of Beirut from various perspectives including historical development, geography and urban social trends. The platform examines the blast through multidisciplinary and interdisciplinary perspectives, taking an integrated approach to research on urban recovery and locates the disaster within its historical urban process. In addition, the platform aims to provide ongoing geographic documentation of the city by first disclosing and then staging and sharing the information to generate collaborations and future people-centred decision-making.

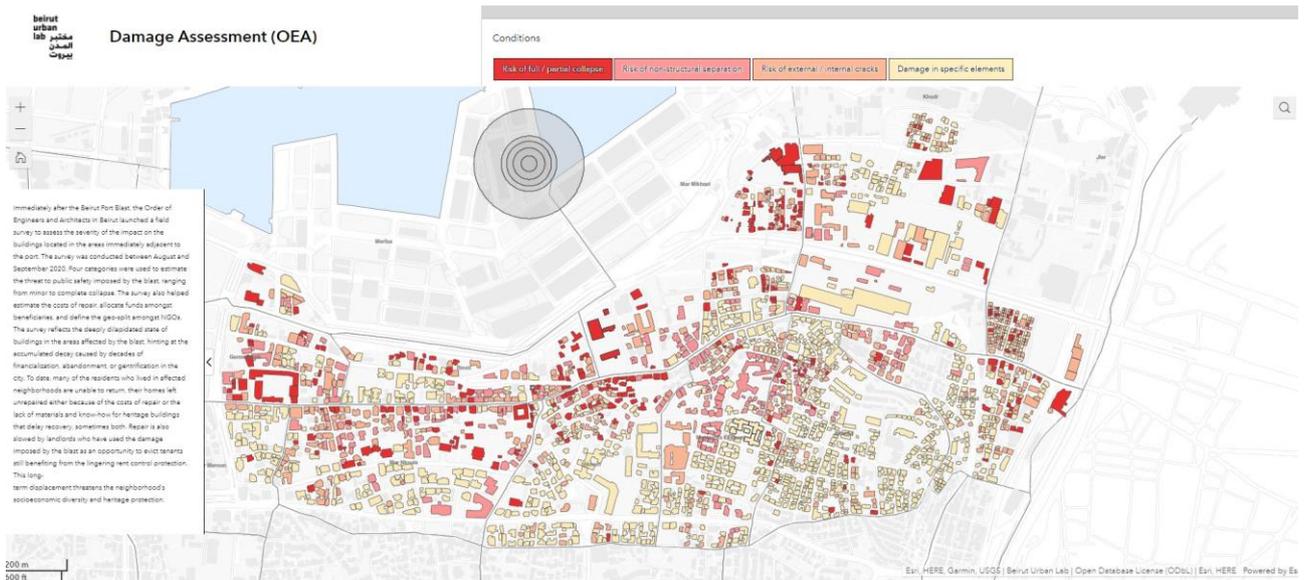


Fig. 2. “The Beirut Urban Observatory” platform of geolocalised urban data for post-blast recovery (source: *experience.arcgis.com*)

Risk-based approaches, a procedure that assesses vulnerabilities, are a strategic key for successful sustainable development in the context of historic buildings, as they are strongly connected to cultural identity.

The basic approach to disasters mitigation in a historical area is to diagnose the state of the building in order to protect it. The fundamentals of such procedure imply a built technical inspection (Spain) that analyses the main vulnerability parameters, such as morphological and typological characteristics, structural safety, operational and fire safety. However, the state of the conservation system is often developed at an operational scale of a historic building without analysing its real integration into the urban dynamics.

In observance of the Sendai Framework (2015), which discuss the importance of understanding the disaster risk, a new methodology of protecting the cultural heritage is proposed. The methodology embeds the assessment of specific building elements at levels beyond the conservation with a dynamic vision of the heritage. Furthermore, the methodology requires an urban approach that considers all the cultural elements and buildings as part of the urban environment to identify areas of intervention.

A multilevel survey that will identify, in the first stage, the critical apparatus underlying the buildings exposed to hazards will include specific evaluations of the heritage in terms of the relationship between the cultural, affiliation, functional criteria as an identity dimension of the built heritage and the vulnerability value. The analytical datasheet will be implemented as a methodology for the buildings affected by the hazards, considering the community vulnerabilities in the affected areas. The interventions in the area can take place only with the support of the affected community, the acceptance of the reconstruction being based on landmarks (Lynch, 1960), architectural objects embedded with urban memories. Similar methodologies for the evaluation of the heritage in order to provide decision-making have been made in the case of the architectural heritage of the city of Venice (Giove et al., 2011.)

The proposed methodology aims to investigate the role of architecture and urbanism in reducing risk, in an original approach that has a historical vision about the relation between urbanism/architecture and disasters and to identify the buildings exposed to threats, in a relationship of identity dimension and vulnerability value, in order to protect them.

The research aims to contribute to a new vision of multi-hazard risk mitigation to address the contemporary port cities threats to their urban heritage areas.

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