



Exploring resilience to natural hazards: The role of planning in the long-term community rebuilding of Kalamata after the 1986 earthquake.



Fig. 1: Aerial view of the city of Kalamata

Done by	Myrto Kalliopi Gari
Student email	Myrto.gari@umontreal.ca
Supervisor	Isabelle Thomas
Institution	Université de Montréal
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Abstract: Urban resilience, the key concept of this research, is very important in the Mediterranean region, that carries a long history of cities and citizenship, and at the same time has to confront the challenge of surviving in a highly vulnerable environment. The city of Kalamata is chosen as a case study in order to examine the way it responded to the disastrous earthquake of 1986. Considered as a successful example of reconstruction, this research aims to identify the patterns that lead to this success and into what these patterns have transformed today and finally what we can learn from them. Creating a method of assessing resilience in the different phases of disaster recovery, with a particular focus in the less explored but of great importance phase of long-term recovery, this research project aims at contributing in the operationalization of the concept of resilience.

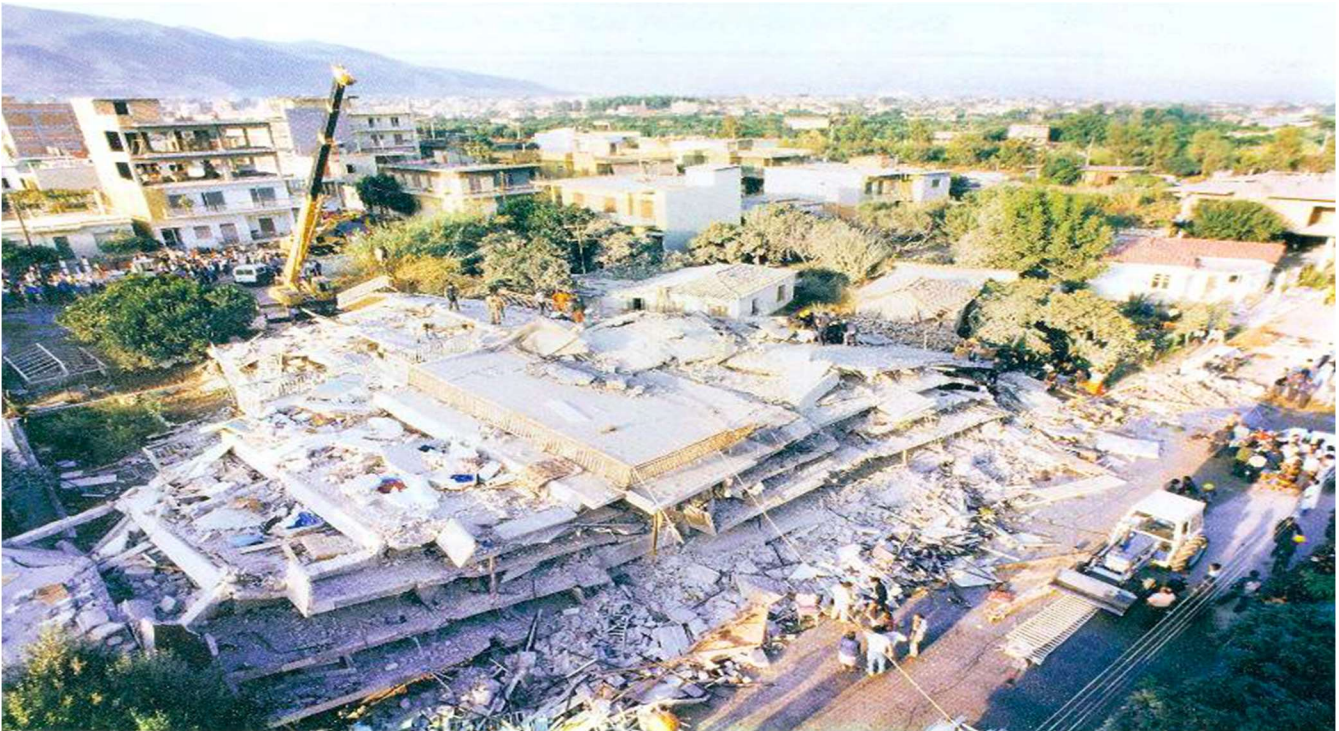


Fig. 2: Collapsed apartment building in Kalamata.

Research Problem	In the aftermath of a disaster, immediate relief is a priority while recovery and long-term impacts are often overlooked or not prioritized. Each catastrophic event affects different the community it disrupts, and the trajectory of its recovery is unpredictable. However, disasters create also rare windows of opportunity for structural changes. As Olshansky and Chang (2009) argue, disasters open a rare but brief window of opportunity for effecting lasting change. The introduction of resilience in planning can facilitate this lasting change to happen. However, even if resilience as a theoretical concept has become very popular, predicting resilience in the aftermath of a disaster is challenging and there is a lack of such empirical knowledge. Thus, for resilience to be utilized by policy makers and practitioners, information from past case studies is needed. This empirical knowledge will facilitates the operationalization of resilience within a post-disaster context.
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Objectives	This research explores how planning practices influence resilience in different time periods in the aftermath of a catastrophic event. The objective is to understand and assess resilience in order to make it utilizable as a concept for both researchers and practitioners.
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Theoretical Framework: In an era of continuous environmental and socio-economic uncertainty, the concept of resilience becomes an important element in most aspects of life. The need for resilience translates to a need for flexibility, learning and adaptation to ever-changing environments. Particularly in urban environments, resilience brings new ways of addressing both recurring and unpredictable challenges and risks. Likewise planning, resilience acts in a direct way but has long-term impacts, unfolding its products differently over a short and a long period of time. Since planning and resilience are both concepts that evolve and develop in macro-timing, following the long-term evolution of a city after a catastrophic event is critical for exploring the



links between them. In the aftermath of a disastrous event, immediate reactions and impacts draw the attention and the focus of researchers and practitioners but the long-term impacts and evolution are often overlooked. From the widely explored short-term reconstruction phase to the less documented long-term recovery phase, a city is following post-disaster an unpredictable route. The question that arises is how can one understand, foresee and moreover influence this route towards an improved trajectory. In other words, how can a city's resilience be not only assessed but moreover ameliorated towards more sustainable forms.

Methodology : This research develops around two phases. The first one demands the development of a model for the assessment of urban community resilience based on existing literature while the second one implies the application of the model on the case study. These two steps enable the identification and the critical understanding of the links between different recovery planning practices and the resilience of an urban system with a post-disaster perspective. The sequential explanatory analysis includes the examination of different indicators on a longitudinal basis and the further explanation of the findings with the help of interviews and other sources in order to evaluate the policy choices both on the short and on the long term. Using as a case study the city of Kalamata, Greece that suffered severe damage from the 1986 earthquakes and recovered shortly after, the focus is on the impacts of the reconstruction decisions on the city's actual resilience and moreover sustainability levels.

Results	The city of Kalamata offers a valuable example of using the window of opportunity created by a disastrous earthquake to implement lasting structural change. The elements that facilitated this change included a series of planning interventions and regulations that changed the shape of the city in the following decades. The existence of an updated masterplan that served as an axis for the reconstruction of the city as well as the development beyond it was central to the evolution of recovery.
Implications	Recovery is a very specific process that differentiates greatly between each case and depends on a variety of parameters, such as the place, the timing, the resources, etc. Thus, it is difficult to produce generalizable results from one case study. However some prerequisites for a resilient rebuilding can be identified that influence the trajectory of recovery.

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