

Resilience vs soft crisis: dynamic risk assessment in complex hybrid systems. Case history of Ginosa (Taranto, Southern Italy)

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Considering a natural system without human-induced modifications, its resilience can be altered by many natural drivers (e.g. geological characteristics, climate) and their spatial modifications over time. Therefore, natural hazardous phenomena could shift natural system over tipping points in an easier or more difficult way. So long as natural system does not involve human settlements or transport infrastructures, natural system risk assessment could not be a basic topic.

Nowadays, human activities have modified many natural systems forming, as a result, hybrid systems (both human and natural), in which natural and human-induced drivers modify hybrid systems vulnerability in order to decrease or increase their resilience: scientists define this new age Anthropocene. In this context, dynamic risk assessment of hybrid systems is required in order to avoid disaster when hazardous phenomena occur, but it is a quite complex issue. In fact, soft crisis emerging signals are difficult to identify because of wrong risk perception and lack of communication. Furthermore, natural and human-induced modifications are rarely registered and supervised by governments, so it is fairly difficult defining how systems resilience changes over time.

Inhabitants of Ginosa (Taranto, South of Italy) had modified many old rock dwellings over thousand years since the Middle Ages. Indeed, they had built up three-storey houses on three hypogeum levels of rock dwellings along the ravine. The Matrice street collapse in Ginosa is an example of how natural and human-induced spatial modifications over time had led a soft crisis to evolve in a disaster, fortunately without fatalities. This research aim is to revisit events before the Matrice street collapse on the 21st January 2014. The will is to define the relationship between the hybrid system resilience and soft crisis variation over time and how human and natural drivers were involved in the shift.