

Chapter 2.

Characterizing social unrest as systemic risk

Interconnectedness and frameworking

The focus in this chapter will be on the connection between systemic risks and social unrest. The question is in what way social unrests can be seen as systemic risks or at least as a part of a systemic risk and what analytical consequences will follow from this analysis. For this purpose we will use a typology of risks that has been developed by the IRGC for their framework of risk governance. The model has been explicitly designed to apply to systemic risks and seems to be one of the most articulated models within risk research (IRGC, 2006; IRGC, 2008; Renn *et al.*, 2007; Renn, 2008). Within this concept risks are ordered according to their dominant characteristics. Systemic risks show the following characteristics: complexity, uncertainty, ambiguity and spill-over effects.

Box 2.1. Possible "snowball effects" of social unrest

Once social unrest manifests itself it can trigger further consequences and lead to secondary risks outside of the area in which the unrest originally occurred. In a globalized society unrest can act as trigger of transboundary ramifications, small local events (e.g. the unrest in Tibet 2009/2010) can cause "snowball effects" world-wide particularly if they are amplified through international media or through the internet.

Complexity

Complexity refers to the difficulty of identifying and quantifying causal links between a multitude of potential candidates and specific adverse effects (cf. Lewin, 1992; Underdal, 2009; Waldrop, 1992). A crucial aspect in this respect concerns the applicability of probabilistic risk assessment techniques. If the chain of events between a cause and an effect follows a linear relationship (as for example in car accidents, or in an overdose of pharmaceutical products), simple statistical models are sufficient to calculate the probabilities of harm. Such simple relationships may still be associated with high uncertainty, for example, if only few data are available or the effect is stochastic by its own nature. Sophisticated models of probabilistic inferences are required if the relationship between cause and effects becomes more complex (Renn and Walker, 2008). The nature of this difficulty may be traced back to interactive effects among these candidates (synergisms and antagonisms, positive and negative feedback loops), long delay periods between cause and effect, inter-individual variation, intervening variables, and others. It is precisely these complexities that make sophisticated scientific investigations necessary since the dose–effect relationship is neither obvious nor directly observable. Nonlinear response functions may also result from feedback loops that constitute a complex web of intervening variables. Complexity requires therefore sensitivity to non-linear transitions as well as to scale (on different levels). It also needs to take into account a multitude of exposure pathways and the composite effects of other

agents that are present in the exposure situation. Examples of highly complex risk include sophisticated chemical facilities, synergistic effects of potentially toxic substances, failure risk of large interconnected infrastructures and risks of critical loads to sensitive ecosystems.

In reference to social unrests the following points of complexity can be problematic:

- it is unclear how different causes and combination of causes interact with each other (moderating or increasing the effect) and with the outcome of social unrest;
- it is not clear how modifying and moderating factors influence the causal relationship;
- at this point in time, neither the causes nor the intervening factors or social unrest are known to science leading to social unrest;
- within such a model of unrest a distinction between factors (variables that describe the more the context that leads to social unrest) and triggers (variables that drive a situation in which the context is very likely for social unrest to occur) seems to be suitable.

All in all social unrests can be grouped in the category of complex events. As there are no empirical models that are capable of explaining the causal chains that would lead to social unrest a multitude of potential factors need to be considered. These factors also interact with each other and are influenced by external conditions and constraints. Furthermore, it is also not clear how one can specify the dependent variable, i.e. the unit in which social unrest can be expressed.

Uncertainty

Scientific uncertainty relates to the limitedness or even absence of scientific knowledge (data, information) that makes it difficult to exactly assess the probability and possible outcomes of undesired effects (cf.: Aven and Renn, 2009; Filar and Haurie, 2010; Halpern, 2003; Rosa, 1997). It most often results from an incomplete or inadequate reduction of complexity in modeling cause-effect chains (cf. Marti et al., 2010). Whether the world is inherently uncertain is a philosophical question that is not pursued here. It is essential to acknowledge in the context of risk assessment that human knowledge is always incomplete and selective, and, thus, contingent upon uncertain assumptions, assertions and predictions (Funtowicz and Ravetz, 1992; Laudan, 1996; Renn, 2008). It is obvious that the modeled probability distributions within a numerical relational system can only represent an approximation of the empirical relational system that helps elucidate and predict uncertain events. Examples of high uncertainty include many natural disasters, such as earthquakes, possible health effects of mass pollutants below the threshold of statistical significance, acts of violence - such as terrorism and sabotage - and long-term effects of introducing genetically modified species into the natural environment.

Referring to social unrest uncertainty plays a major role in various expressions:

- It is still unclear to what degree most of the identified causal factors influence social unrest, and how various moderators impact on the causal relationships.
- Most factors interact with social unrest in a non-linear relationship.
- Many causal factors are simply unknown.

- Most factors that have been identified are highly dependent on cultural context, social situation and historical conditions.

Ambiguity

Ambiguity indicates a situation of ambivalence in which different and sometimes divergent streams of thinking and interpretation about the same risk phenomena and their circumstances are apparent (cf. Feldman, 1989; Zahariadis, 2003). We distinguish between interpretative and normative ambiguity which both relate to divergent or contested perspectives on the justification, severity or wider ‘meanings’ associated with a given threat (Stirling, 2003; Renn, 2008).

- *Interpretative ambiguity* denotes the variability of (legitimate) interpretations based on identical observations or data assessments results, e.g. an adverse or non-adverse effect. Variability of interpretation, however, is not restricted to expert dissent. Laypeople’s perception of risk often differs from expert judgments because it is related to qualitative risk characteristics such as familiarity, personal or institutional control, assignment of blame, and others. Moreover, in contemporary pluralist societies diversity of risk perspectives within and between social groups is generally fostered by divergent value preferences, variations in interests and very few, if any universally applicable moral principles; all the more, if risk problems are complex and uncertain.
- That leads us to the aspect of *normative ambiguity*. It alludes to different concepts of what can be regarded as tolerable referring e.g. to ethics, quality of life parameters, distribution of risks and benefits, etc. A condition of ambiguity emerges where the problem lies in agreeing on the appropriate values, priorities, assumptions, or boundaries to be applied to the definition of possible outcomes. Examples for high interpretative ambiguity include low dose radiation (ionizing and non-ionizing), low concentrations of genotoxic substances, food supplements and hormone treatment of cattle. Normative ambiguities can be associated, for example, with passive smoking, nuclear power, pre-natal genetic screening and genetically modified food.

Both interpretative and normative ambiguity are associated with social unrest. Many expressions of social unrest may also be categorized as social outrage, protest, demonstration or civil disobedience. It depends on the legal traditions and cultural norms which expressions of discontent are subsumed under the concept of social unrest. Furthermore, with respect to normative ambiguity, social unrest may be viewed as a risk or an opportunity depending on which side one stands. For example, riots against financial politics in Greece can be seen as harm (for example a possible position of the government) or as an opportunity (the chance to get perceived injustice reversed).

Spill-off (“ripple”) effects

Social unrest is an example of systemic risk also because the potential damage is not limited to the original risk arena but spreads out to other arenas (OECD, 2003). The key characteristic that sets systemic risks apart from conventional perils is that their negative physical impacts (sometimes immediate and obvious, but often subtle and latent) have the potential to trigger severe ripple effects. When a systemic risk manifests into calamity, the ripple effects that result can cause a dramatic sequence of secondary and tertiary spin-off impacts. They may be felt in a wide range of seemingly divergent social systems,

from the economy to the health system, inflicting harm and damage in realms far beyond their own. A commercial sector, for example, may suffer significant losses as a result of a systemic risk. Such losses occurred in the travel industry in the aftermath of the terrorist attack of 11 September 2001, when business people and holidaymakers alike were too frightened to board a plane. Similarly, the UK agricultural sector suffered for years during the crisis over Bovine Spongiform Encephalopathy (BSE), widely known as Mad Cow Disease. People did not want to eat British beef, no matter what tangible evidence they had, one way or another, about its relative danger to their health or inherent safety. Both were typical examples of the manifestation of a systemic risk. In its ultimate extent a systemic risk can cause the collapse of a system. The ripple-effects towards other areas of concern and the possibility of a system collapse are additional components of systemic risks (Renn and Keil, 2008).

Social unrest meets all the criteria for systemic risks: they are characterized by a high degree of uncertainty, complexity and ambiguity. They demonstrate a high degree of ripple-effects into other sectors of society and, in the worst case, can contribute to the collapse of a political system. For example, riots may lead to the breakdown of food supply or other basic goods. Or protest may legitimate other violent actions such as looting. On the other hand social unrest can be a systemic effect in itself. Unrests are not necessarily caused by a societal reason (e.g. dissatisfaction with any societal relations) but the reason also can be another harmful event. So it was the case during and after Hurricane Katrina as much looting occurred. The problem here was that the storm and the failure of institutions to provide help lead to self-help situations that drove people to loot. In this sense we can state that social unrest can be the cause or effect in line with harmful events.

Summary

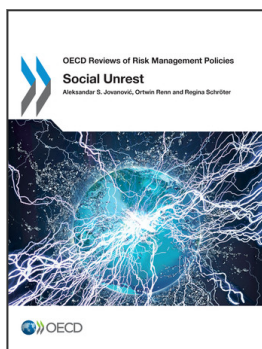
In conclusion we can state, that social unrests are complex events that can be influenced and triggered by social causes as well as accidents and natural disasters. They are characterized by high complexity, uncertainty and ambiguity; they can easily trigger effects onto other sectors of society and are capable of inducing a breakdown or collapse of the social or political system. Furthermore, our knowledge about the causes and triggers of social unrest is very limited due to the multitude of potential factors, non-linear relationships within the complex causal web, and the predominance of idiosyncratic context-driven elements that make generalizations extremely problematic and dubious.

As there are many gaps in scientific research on social unrest events this document can only collect some of the insights gained so far and suggest a conceptual approach that could help to better understand and ultimately model the genesis of social unrest. In this paper we therefore attempt to develop a heuristic tool that enables us to identify the main drivers of social unrest and to conceptualize some of the pathways that could lead to social unrest. Before introducing this heuristic model, it is necessary to have a closer look at several cases of systemic risks that either lead or could have lead to events of unrest. The next chapter we will discuss several case studies and identify aspects that all these cases have in common. The major objective here is to distinguish between developments that constitute typical and universal patterns and unique, idiosyncratic elements that can be applied only to the respective case and its historic context. These case studies provide the basis for delineating the outline of a model that could help improving our understanding of social unrest.

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From:
Social Unrest

Access the complete publication at:
<https://doi.org/10.1787/9789264173460-en>

Please cite this chapter as:

Jovanović, Aleksandar S., Ortwin Renn and Regina Schröter (2012), “Characterizing social unrest as systemic risk”, in *Social Unrest*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264173460-4-en>

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