SAFETY? SECURITY/ TWO CULTURES?

Rearticulating safety and security cultures in critical infrastructures through the lens of co-production

Contemporary technological societies are faced with an increasing number of crises, such as environmental catastrophes, technological and industrial crises, and terrorist attacks (Bijker, Hommels, & Mesman, 2014). These crises may have unintentional human or natural causes, may be rooted in intentional and malevolent acts, or comprise a mix of motivations and behaviors (Khripunov & Kim, 2008). Particularly vulnerable to these growing threats are critical infrastructures such as energy sector and nuclear power plants. In order to prevent and mitigate the risks confronting them, these infrastructures have over time developed measures to increase first and foremost their safety, and subsequently, their security. Research analyzing the implementation of those measures in critical infrastructures is typically split into two separate domains: *safety culture* and *security culture.* As a consequence, no stabilized and comparable definitions of safety and security have been developed. Nor is it clear how the two concepts relate to one another, and whether they can coexist, as is often assumed by institutional regulatory and policy bodies (e.g. International Atomic Energy Agency, 2016b) and some authors (Gandhi & Kang, 2013; Reniers, Cremer, & Buytaert, 2011). We may hence ask: how do safety and security cultures interact? which synergies and discrepancies do they entail? What may be the impact of their articulation on risks mitigation ? To address these questions, this paper provides a first-of-its-kind systematic literature review of the concepts of safety culture and security culture in critical infrastructures. It highlights several lacunae, such as the existence of a certain fuzziness among definitions due to ontological contradictions regarding safety and security cultures conceptions. Besides, it stresses the non-integration of technological and procedural elements as active safety and security cultures’ elements. In order to overcome the identified pitfalls, it suggests mutually informed and comparable safety and security cultures definitions that incorporate technological, procedural and human aspects and mobilize vulnerability and resilience approaches. Building on this theoretical endeavor, it proposes an integrated model of safety and security cultures that paves the way for empirical research within critical infrastructures.