

# Cognition and Crowds: The (social) influence of cognition on riots

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Individual and collective behavior is the outcome of internal cognitive processes and social and spatial conditions. In crowds, especially in riot situations, behavior of individual and groups is often surprising in the eyes of outsiders. The surprise may indicate a misattribution of crowd behavior, which may cause the police to take (counter) actions, that can even have unwanted escalating effects.

In our simulation research we want to understand crowd and riot behavior by studying the interaction of individuals. We thereby focus on intra-individual, individual and inter-individual aspects. The intra-individual aspects are studied from a cognitive perspective, taking into account cognitive structures, mental representations and goals. Individual aspects, such as assembly, avoidance and dispersion behavior of actors are studied on the basis of their cognitive processes and content. Inter-individual aspects are studied by characteristics of crowd behavior (closeness, clustering, interaction dynamics). We developed a multi-level model of (intra- and inter) individual behavior that is influenced by its physical and social environment as well as by physiological and mental states of actors.

In modeling individuals in crowds we look for example at the saliency of specific human behavior and at the social context. Saliency implies that whatever is dominant in the cognitive system, i.e., high activation of a memory element, is more likely to affect behavior than non-dominant representations. These saliency/activation levels give rise to a dynamical hierarchy in behaviors, i.e., their order changes over time due to external (priming) or internal influences (decay). The social context involves the influence of internal representations on social behavior and also on how the behavior of others influence the internal representations. For instance, in modeling the role of leaders present in a crowd we see that the subjective perception other individuals ascribe to such a person effects the “leadership” representation of the person.

For obvious practical and ethical reasons we work with (social) simulation experiments. The (intra-) individual and social aspects (density of humans, environmental set up, arousal, chunking order, goal order, “leadership” and in/out group representations) are designed in various constellations to study the effects on the probability of riots.