

What is a flood? Semantic networks in English hazard-prone communities

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Managing flood hazards is a complex issue for which intellectual resources of any single group are insufficient. Until recently, flood management has been the responsibility of natural and applied sciences, and the subject of institutionalized expert knowledge. However, managing flood hazards solely with the knowledge and the expertise of institutionalized actors has proven inefficient, increasing vulnerability of communities to flood hazards. Consequently, since the beginning of the 1990s, there has been a gradual shift in flood hazard management policy and practice. Central to the new approach to flood management is community engagement and interaction between local and expert knowledge throughout flood-related decision-making. Yet, the research reports limited participation of local communities and failure to establish the dialog between the two types of knowledge. Recently, 'Local Ecological Knowledge' perspective has fostered participatory research on the engagement of different stakeholders in flood-related decision-making. Explaining the low levels of community engagement, the researchers refer mainly to exogenous factors, such as the culture of political participation, risk perception, and the socio-political context. There is, however, little research inquiry into the content of knowledge being integrated. This limits both research and practice.

Our research question is: What are the relations between local and expert knowledge structures in flood-prone communities? Research combining interactionist approach to knowledge production in local communities (Blumer, 2012; Fine, 2012; Mead, 1934) and the formal neoinstitutionalist approach to culture (DiMaggio, Nag & Blei, 2013; Mohr, 2000; Mohr & Neely, 2009; Thornton et al., 2012) shows that locally emerging and institutionally imposed knowledge structures interplay (Basov, de Nooy & Nenko, 2018). To inquire how local and expert knowledge structures interplay in flood-prone communities, we use the socio-semantic version (Ibid.) of the word collocation-based semantic network approach (Sinclair, 1991; Carley, 1994; Diesner, 2013). This means, nodes are word stems and links correspond to their location next to each other within a textual corpus produced by a certain social group. Hence, the semantic links correspond to associations between concepts specific to the group (Krippendorff 2004: 206). Comparing semantic networks of local and expert stakeholders, one can get an insight into how the corresponding knowledge structures interplay.

Our pilot study of one flood-prone village located in South East England uses semi-structured interviews with three stakeholders: two groups of community flood activists and representatives of a governmental agency (the Environment Agency) responsible for managing flood risk in the area. Interview narratives by representatives of the stakeholders are processed in order to map each of the three stakeholders' semantic networks. We examine semantic similarities and differences between the stakeholders. The preliminary analysis shows a surprising diversity between their knowledge structures. A relatively small number of semantic associations is shared by all of the three stakeholders and the strengths of associations are different across the stakeholders. Although operating within the same geographical area and experiencing the same flood events, two groups of community flood activists produce different knowledge structures. Moreover, the analysis has revealed a higher semantic similarity between one of the activist groups and the Environment Agency than between the two activist groups. Thus, local and expert knowledge structures interpenetrate; and this overlap may be even greater than between local knowledge structures of different flood activist groups within the same community. Based on our ethnographic observations, we assume this is because the relations between knowledge structures are moderated by interpersonal ties connecting different stakeholders. Hence, in order to explain the interplay between local and expert knowledge, semantic network analysis is to be supplemented with social network analysis. Semantic networks of the stakeholders are to be analyzed jointly with their social network, connected to each other by a two-mode network, as individuals use words. This enables an account of joint dynamics of different stakeholders' knowledge structures in their local social context. Applied to such multilayer structures, new statistical modeling techniques, such as the exponential random graph modeling, are capable of revealing the mechanisms of interaction between local and expert knowledge in flood risk management. This may shed additional light on how to orchestrate production of knowledge on floods relevant to specific geographical regions.