

SOCIOMATERIAL PRACTICES IN THE MORPHING ORGANIZATION: A MULTILAYER NETWORK APPROACH

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ABSTRACT

We propose a novel approach for the study of sociomaterial practices within complex organizational settings. Our approach has its theoretical foundations on Network Science and more specifically on the concept of Multilayer Network Analysis. By attending to the ontological dichotomy between the physicality of material objects and the conceptual nature of discourses, routines, and institutions, we conceptualize the social and material as separate layers of a multilayer network with intra-layer connections representing the processual dynamics emerging in organizational settings. Such an analytical stance can help us understand how the social and material layer can potentially give rise to each other, and how they coevolve over time. Our work contributes to the broader organizational studies literature, and more specifically to the literature on sociomateriality by providing the analytical apparatus to study the concept. Moreover it contributes to the Network Science literature by providing a novel application setting for Multilayer Network Analysis.

Author Keywords

Sociomateriality, Network Science, Multilayer Networks

INTRODUCTION

The ways we explore and eventually understand the notion of materiality within complex organizational settings are conceptually problematic [6]. As a way to overcome this, an alternative approach has been proposed in the organization studies literature that posits materiality as constitutive of practices, and draws on the concept of sociomateriality as influenced by the work of Mol [6], Suchman [10], and Barad [1]. The notion of sociomateriality recognizes that all practices are sociomaterial, and that this sociomateriality is constitutive of the contours and possibilities of organizing [9].

Recent research endeavours call for more theorizing on the processual and procedural use of material objects, suggesting that their materiality is consequential for our understanding of organizing processes [4]. Whilst the literature to date presents the notion of sociomateriality through an arguably flexible ontological lens, where boundaries between the physical and the conceptual are constantly negotiated in practice [3, 8], there is also the

view that the physical and the conceptual are phenomena of different orders, entailing an ontological dichotomy between the physicality of material objects and the conceptual nature of discourses, routines, and institutions [4]. Sociomateriality as a concept has been studied so far only in conceptual and interpretivistic level, and consequently there are no research methods for the study and understanding of the concept from an analytical stance. To fill this methodological gap, we deploy concepts drawn from Network Science.

PROPOSED METHODOLOGICAL APPROACH

Network Science can become a valuable asset for the exploration and understanding of complex systems; and the morphing organization is not an exception. The definition and description of network structures is a straightforward process, and it has come a long way through the large number of studies on the structures of networks. The organisational literature on networks to date, however, has mainly focused on their structural properties. This body of work has deployed the construction of network maps and the analysis of the relative positioning and connectivity of individuals to define network phenomenology, and theorize about network forms of organization. Such studies share a *flat* view of networks, and do not develop a *systemic* perspective that attends to their dynamics, and the social, processual and procedural aspects of network processes.

A network is not something that *is*; it is something that is *becoming*, and the behaviour and structure of networks can change over time, as not only the membership of different and multiple actors engaged in the networks changes, but also the nature of their roles and relationships. Networks can morph over time, transforming the membership, connectivity, and content, as well as the meaning of the communications of connected individuals. Connections with repeated transactions may become stronger, new connections may appear, some may atrophy due to a lack of communication, whilst dying connections may revive due to a renewed interest in collaboration. A dynamic network topology may emerge, where network constellations are activated selectively as and when needed for particular collaborative and transactional contingencies. The network structure provides the possibility for both the maintenance of a steady state, and transformation in the face of environmental perturbations [5]. In socially embedded

networks, however, the entanglement of social and material matters since it plays a central role in the way people understand and experience the world around them.

For the analysis and understanding of sociomaterial practices from an analytical point of view within complex organizational settings, we propose the use of Multilayer Networks [2]; also widely known as ‘networks of networks’. A Multilayer network is defined as the triple: $M = (X, E, S)$, where $S = \{S_1, \dots, S_p\}$ represents a

family of subgraphs $S_q = (X_q, E_q)$ of G that $X = \bigcup_{j=1}^p X_j$,

and $E = \bigcup_{j=1}^p E_j$. Based on the nature of sociomaterial

practices within complex organizational settings, for the needs of our proposed methodological approach we incorporate a set of two layers: $S = \{S_1, S_2\}$, with each layer representing the social and material ontological levels, the inter-layer connections representing the social and processual interactions on each layer respectively, while the intra-layer connections represent the processes constituting the entanglement of the two layers (Figure 1).

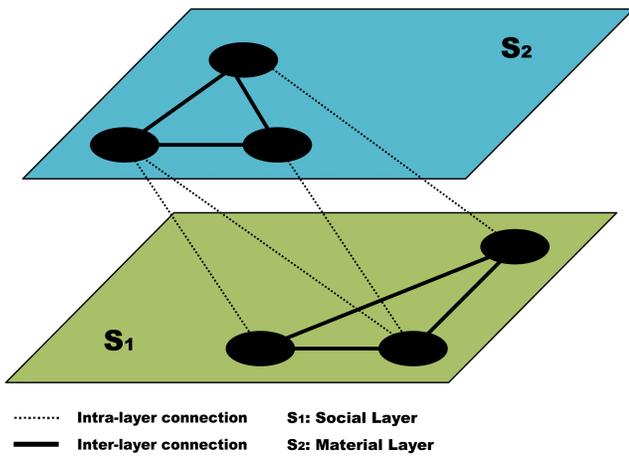


Figure 1: Graphical representation of the proposed methodological approach

More specifically, let S_1 be the social layer and S_2 the material layer: The subgraph (X_1, E_1) represents the social interactivity in the organizational network, where the nodes are the actors of the network and the ties are the social relations among the actors, whilst the subgraph (X_2, E_2) is the material layer, where the nodes are the practices within the organizational setting, and the ties are the processual relations among the practices. The intra-layer connections between S_1 and S_2 represent the procedural interactivity in the organizational setting, where actors relate to processes.

CONCLUSIONS

Our approach conceptualizes the social and material as separate layers of a multilayer network with intra-layer connections representing the processual dynamics emerging in organizational settings, by attending to the ontological dichotomy between the physicality of material objects and the conceptual nature of routines. Such an analytical stance helps in understanding how the social and material layers can give rise to each other, and how they coevolve over time. The proposed approach contributes to the broader organizational studies literature, and more specifically to the literature on sociomateriality by providing an analytical methodological lens for the study of the concept. Moreover it contributes to the Network Science literature by providing a novel application for Multilayer Network Analysis. Our plans for future work include the application of this approach on datasets from organizational settings representing social and processual interactivity for the study of the entanglement of social and material within organizational settings.

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