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STRUCTURE, CONTENT, AND MEANING OF ORGANIZATIONAL NETWORKS: EXTENDING NETWORK THINKING, INTRODUCTION

Julie E. Ferguson, Peter Groenewegen, Christine Moser, Stephen P. Borgatti and John W. Mohr

INTRODUCTION

In recent years, the field of social network research has engaged in recurring debates on the theoretical foundations of the role of culture and meaning in social network processes. These concepts are distinct but interrelated. That is, social network processes afford opportunities for content creation and exchange, differentially interpreted by cultural understandings and at the same time shaping these (and, some might argue, vice versa). In addition, the increasing use of digital sources in organizational processes has triggered scholarly interest in better understanding these interrelations. This is all the more salient given the large data flows and analytical tools that researchers can draw (Bail, 2014; DiMaggio, Nag, & Blei, 2013; Evans & Aceves, 2016; Lazer et al., 2009; Lee & Martin, 2015). Taken together, these developments present a challenge to generate deeper theoretical understanding of how structure, content and meaning are dynamically intertwined, in both online and offline domains.

The field of relational sociology has been a prominent catalyst of such understanding, bridging culture and meaning through its attention to the character of

social structure and agency in relation to meaning (Bourdieu & Wacquant, 1992; Breiger, 2000; Emirbayer, 1997; Emirbayer & Goodwin, 1994; White, 1992). Organizational scholars have tapped into this line of thought, in recognition of the relevance of (online) communications, events, and information from archival and/or secondary electronic sources in explaining organizational phenomena. A network perspective is particularly useful to understand such phenomena by analyzing relations as both cause and consequence of organizational behavior (Borgatti & Foster, 2003), and with ongoing scholarly efforts aimed at explaining how different types of networks and information sources are intertwined (Perry-Smith & Mannucci, 2017; Rogan, 2014; Shipilov & Li, 2012; Shipilov et al., 2014; Vernet, Kilduff, & Salter, 2014). Our focus on the relation between structure, content, and meaning is in line with this aim, integrating network reasoning with questions of meaning.

This volume elaborates on extant theoretical reasoning and showcases methodological approaches applied to the nexus of social networks and culture or meaning networks. Thus far, analyses have tended to focus either on social structure or on content analytical dimensions of organizational interactions, while the benefits of a more integrated approach are becoming increasingly evident. On the one hand, for instance, a focus on narrative analyses incrementally addresses how textual sources also represent the integration of culture and social relations (Bearman & Stovel, 2000; Franzosi, 2014). On the other hand, the field of social network research maintains a predominant focus on connections between actors to explain organizational phenomena, but increasingly recognizes the significance of the content of social relations, which calls for new schemes to more clearly distinguish different types of relations in networks and new understandings about the role of culture in forming social ties (Borgatti, Brass, & Halgin, 2014; Fuhse, 2009; Lizardo, 2006). Realizing this potential requires conceptualization of the manner in which network structures can be imbued with culture and meaning, how analysis of culture and meaning can be improved though an understanding of their embeddedness within the social, and what this implies for organizing. In this volume, we bring together a broad palette of contributions, to show the variety of approaches and recent methodological advances made in organizational scholarship, with the aim to catalyze a theoretically robust integration of hitherto separate strands of research.

We seek to build on and extend prior scholarly work aimed, for instance, at analyzing meaning through mixed-method approaches to social networks (Domínguez & Hollstein, 2014). Another example is the work done in sociological social movement studies, which has increasingly integrated social network analysis with analysis of the dynamics of ideas in networks, combining network analytic techniques and analysis of news and internet as communication channels (Krinsky & Crossley, 2013). In line with this tradition is earlier work by Mische (2003) on the manner in which networks of activist organizations influenced the change of meanings of the political organizations involved. Such work is directly inspired by the work of Harrison White, focusing on the

integration of social network theory and methods of cultural analysis (Godart & White, 2010; White, 1992).

Similar developments can be found in communication science, where content analysis has increasingly employed network analytical techniques, for instance, in semantic network analysis (e.g., Kleinnijenhuis & van Atteveldt, 2014; Welbers, van Atteveldt, Kleinnijenhuis, Ruigrok, & Schaper, 2016). The widespread application of network analytical tools and perspectives has evoked similar approaches to the study of meaning and relations in the organizational field (as in Ferguson & Soekijad, 2016). These diverse theoretical and methodological frames have helped organizational scholars to gain crucial insights into relational aspects of social structures and meaning networks.

In this volume, we build upon these developments, providing examples of the way research into relational and meaning networks can be combined. In bringing these contributions together we show how the content of what happens between actors in terms of connections and flows between them can be conceptualized more accurately, thus responding to Borgatti and colleagues (2014). Each of the empirical chapters applies different analytical tools for the research into meanings, social relations, and structural positions in organizations in a broad sense, but emphasizes different dimensions of structure, content, and meaning in their approach, as we now explain.

Structure: Extending Social Network Studies

In social network studies, the attention to social relations has been extended to include specific and sometimes distal approaches to meaning. Considerable effort has been spent on characterizing organizational social network research (for instance, Borgatti, Mehra, Brass, & Labianca, 2009; Brass, Galaskiewicz, Greve, & Tsai, 2004; Kilduff & Brass, 2010). A particularly useful scheme is proposed by Borgatti and Halgin (2011), discerning state-type and event-type relations (conceptualized as "ties"). While this scheme reports and categorizes structural outcomes, it is less suited toward conceptualizing the structural dimensions of content or meaning, other than referring to events and flows that involve the exchange of content. In particular, some caution is called for when flows are inferred from sharing of meeting places or events between actors. Thus, the conceptualization of mixed actor-event structures offers space for conceptual expansion (Diani & Kousis, 2014).

To this end, and starting from well-developed theories of social fields, some scholars sought to use measures of meanings as a way to understand the social order of organizations within a field. This implies the notion that social space (including social networks and ecological spaces) is ordered in part by the meaning of the spaces and the ties that make up the network or the field (Mohr, 2013). For instance, one stream of work has looked at how studies of

categories, classifications, typologies, and logics can be used to analyze the ordering of organizations within a market, environment, or field (see, for example, Hsu & Hannan, 2005; Padgett & Powell, 2012; Podolny, 1993; Pólos, Hannan, & Carroll, 2002; Zuckerman, 1999). Much of this work focused on a more interpretively oriented study of texts. For example, Ruef (1999) used text data to map out niche structures within the discursive logic of the health care industry and Mohr and Guerra-Pearson (2010) used this approach to analyze the niche structure of social relief organizations in New York City during the Progressive Era. In this case the goal was to map organizations in a topological meaning space based on the expression of differentiated adherence to technical, status, and social problem "logics." This broadly cultural program can be regarded as a field- or domain-directed attempt at determining the structural positions of organizations.

In this volume, Oberg, Korff, and Powell (2017) further elaborate on this program, introducing a discursive approach formulated as the manner in which organizations use language to structure an organizational field co-constituting their formation of interorganizational collaborations. The field is defined as "[…] a social setting in which the position of entities is the product of interactions between specific rules and properties of its members" (Bourdieu & Wacquant, 1992). The central process forming the focus of their study, embedded in the context of nonprofit organizations, is the field of social impact analysis (for a review of the field literature see Zietsma, Groenewegen, Logue, & Hinings, 2017). In a methodologically novel manner, Oberg et al. present different ways in which organizations present their strategy and activities on their websites. They layer meaning structures with linkages among the organizations, as indicated by hyperlinks. These methods make it possible to analyze how coherence and structure of meaning differ as a means to tease out mechanisms of field dynamics. The main message of this contribution is that discourse and relationships are intertwined. The authors argue for the possibilities that this integration opens up, such as ways to depict and analyze dynamics of field evolution such as differentiation, recombination, and integration.

Structural analyses of meaning structures, drawing on social network analytical theories, techniques, and measures, are important for better understanding how ties afford meaning, embedded within social structures. Semantic network extends such analyses, through its focus on the actual content and meaning of the communications taking place between social actors.

Content: A Structural Approach to Content Analysis

Many different methodological approaches have been developed to map meaning structures (Mohr, 1998, 2013). Content analytical methods may be the most prevalent, and thanks to advances in computational approaches, it is also

becoming increasingly sophisticated (Evans & Aceves, 2016). Relying upon human coding as a means of analyzing content, early computational approaches were based on word frequency and correlations between word clusters or sematic frames. One project that emerged from these beginnings is semantic network analysis, as developed by Carley (1994), Danowski (1993), and others. The increase in online content has boosted this tradition, providing a vast body of data suitable for social and semantic network analysis. For instance, within the information systems, semantic web techniques emerged in an effort to address the increased complexities of finding relevant information on the internet (Finin, Ding, Zhou, & Joshi, 2005). These techniques often draw on social network measures as a means to identify communities of people with specific interests, thereby deriving how meaning is constructed and communicated. Thus, methods were developed to specify the critical elements that constitute the vocabulary leading to a networked community on the internet (Mika, 2005). In this approach, the connection indicated between the actors on the internet and the content of what they are interested in is jointly used to derive a network community structure.

The contribution by van Atteveldt, Moser, and Welbers (2017) in this volume can be understood in this tradition. In their chapter, the authors show how different organizations become intertwined based on meaning embedded in text. Drawing on institutional theory, they discuss how differences and similarities between organizations may be expressed through shared (or unshared) meaning. Shared meaning may emerge from analyses of text-based interconnections between organizations. The authors investigated political parties in the Netherlands and used text from manifestos and press releases to show how these organizations shared — or didn't share — meaning. The results show that most parties seem to converge on shared meaning, whereas one party to the extreme right further diverged from any shared meaning, thus occupying a rather isolated position. The chapter shows how automatic semantic network analysis techniques can be used to study how organizations share meaning. We believe that such a novel approach can be usefully applied to different organizational settings, while the technique itself reveals previously hidden shared meaning networks.

Following the approach based on word frequencies (detailed above) came efforts to analyze text by reconstructing its content and the interrelationships between elements of the content. For instance, building on Charles Tilly's (1986) analytic framework for systematically reading historical collections of newspaper stories as data for mapping out historical change, Roberto Franzosi developed a toolkit oriented toward semantic grammars based on quantitative narrative analysis. This toolkit allowed for more sophisticated meaning measurement of textual content that could be used to study relational interactions between actors (Franzosi, 2004; Franzosi, Fazio, & Vicari, 2012). Franzosi argues that the structure of a text should be understood by an analysis of its grammar, contextualized within its genre and then used to understand its

meaning (Franzosi, 2004). Within this approach, text contains the *actions* of actors, which are then used to reconstruct the relation between the *meanings* of events or issues and these actors.

In line with this tradition, content analysis has been used to derive the manner in which the relations between actors are depicted in texts (frequently newspapers), as in van Atteveldt (2008). Similarly, research on communications produced in a variety of settings, such as visibility of choices of corporate partners (alliances) and friends (social network sites), has stimulated a flurry of research on the social structure and meaning in available texts (Rawlings, McFarland, Dahlander, & Wang, 2015). Increasingly, sophisticated methods have been developed to reconstruct the meaning in such texts by semantic analysis of different sources and under different conditions (Schultz, Kleinnijenhuis, Oegema, Utz, & van Atteveldt, 2012) or by paying attention to structural connections within events. This area has dramatically expanded in the last few years through the rise of new communication sources such as Twitter, blogs, and other social media. These new sources of texts are useful for analysis in that they not only disclose the origins of a text but also enable tracing responses and reacting agents. Thus, in line with the expanding research opportunities, text and actor analysis are increasingly intertwined. Another tradition within this strand of analysis is two-mode network analysis, where content and actors are combined in one graph, so as to jointly analyze both content and social actors (Vernet et al., 2014).

Such analyses require a theoretical notion of how concepts and people interact in a dynamic way, as discussed by Conaldi and colleagues who studied two-mode networks of software bugs and software engineers. Here, it is important that the conceptual language for each of the two types of nodes is different, to distinguish the networks under analysis (Conaldi, Lomi, & Tonellato, 2012). For instance, Conaldi et al. couple the developers with bugs through their ability to find solutions, in essence introducing a meaning element to the analysis. This approach, which might also be used in further exploring the dynamics of socio-semantic networks, raises questions deriving from frequency-based analytical approaches about the role of popular concepts versus popular actors as a driving force of network evolution. Similarly, others working on two-mode networks developed a dynamic view on how each type of node is involved in a different way in the dynamics of the community. As Roth and Cointet put it, "[…]interactions occurring in socio-semantic networks are determined at least partially by the structure of past interactions and conceptual affinities" (Roth & Cointet, 2010: 16).

The contribution by Lomi, Tasselli, and Zappa (2017) has as a starting point the emergence of vocabularies as an approach toward shared meaning in organizations. Their contribution advances understanding of the expression of meaning in organizations by analyzing the manner in which vocabularies can be connected to the development of shared meanings in organizations (Loewenstein, Ocasio, & Jones, 2012). Their aim is to uncover the interrelation

of meaning structures and organizational structures, a challenge that has been neglected in two traditions: one, the discursive tradition of organization studies that neglects the structural aspects; two, the structural tradition that neglects the meanings embedded in and forming interaction patterns. Choosing an approach built on micro-level principles and analytical methods (ERGM) similar to those used by Basov and Brennecke (2017), they use a survey-based set of labels (words) that members of one organization select from a larger list in order to describe their unit and the overall organization. Their analysis shows a different approach to linking social and meaning aspects by testing the two-mode network of organizational members and elements of the vocabulary. This shows how the social-meaning structure in itself can be associated with social structures present in the organization forms that reveal the various meaning structures in organizations. This chapter addresses the combination of identity formation and social structures in organizations.

Basov and Brennecke aim to integrate the micro mechanisms of what they call sociocultural structuring in a study of five creative organizations in five European cities. Their contribution builds on the notion of homophily governing tie formation in terms of semantic similarities. The approach to semantic networks is broad, and a large database is built from text that is analyzed at the level of dyadic and triadic similarities. The chapter considers the interplay between social relations and shared meanings in what they label "sociocultural" balance, which is stated in two mirrored propositions. First, pairs of individuals sharing meanings with the same third person are likely to be connected by interpersonal ties. Second, individuals who are themselves connected through interpersonal ties to the same third person are likely to share meanings. They combine semantic mapping of texts associated with cultural activities such as art exhibitions. In the results, the authors demonstrate the influence of cultural homophily on tie formation. At the triadic level, culture forms; this insight offers an additional explanation of triadic closure that complements the classical social network argument that closure reduces cognitive dissonance.

Conventional approaches to semantic networks analyze the structural properties of words as nodes. However, such analyses do not say anything about the meaning of measures attributed to such semantic networks. Godart and Claes (2017) suggest that this leaves unexplained how social interfaces, such as markets (i.e., the way producers and consumers are connected), rely on multiple sociocultural processes. The authors therefore fill this void by explaining the distinction between two types of semantic networks that reflect cultural dimensions of markets. First, they identify *attributed* semantic networks that are not influenced by organizations, but are rather based on the perceptions of external audiences, reflecting, for instance, the embeddedness of an organization in the media. Second, they discern *intended* semantic networks that are influenced by organizations and designed to project their definition to the market, for instance, through marketing, corporate communications, or profile. The authors compare these two types of networks, showing how organizational

embeddedness in semantic networks impacts the organizations' ability to extract higher prices from customers. Subsequently, they develop a network view of the cultural elements of markets − i.e., concepts, representations, ideas − and theorize how this relates to *price* as a critical market outcome. The case study that is central to the chapter concerns the seldom-explored luxury watch industry, which heavily depends on cultural features as a justification of price attribution and is therefore a relevant and interesting empirical context for the study.

The contributions in this section comprise a broad and varied range of conceptual approaches, tools, and methods that can be adopted in content analysis, enriching such inquiry by strengthening the relation between content and structure. The final section in this volume engages more directly with meaning, interpreting text as cultural expressions.

Meaning: The Duality of Structure and Content

Building on work in the communication sciences and humanities, text is increasingly used as a means to disclose how meaning is constructed by actors in social networks. Extending analysis of texts in and of themselves, the variation in meaning of texts for their users is a field of inquiry that is gaining traction in terms of establishing the social function of the texts and meaning (location, time, and audience). As with other papers in this volume, this emphasis on text and meaning calls for conceptual and methodological integration of meaning and networks simultaneously, and how these jointly contribute to organizational processes.

If studies of content refer to what is said by agents and institutions, then studies of meaning refer to efforts that are focused on interpreting what is meant. This requires an understanding of meaning in context and in use. One of the ways that researchers have sought to accomplish this is through the use of formal studies of duality that capture the relations that link (and co-constitute) different domains. The duality of self and society has been a focus of concern for the social sciences at least since Nadel (1951) and, more foundationally, back to Simmel. Harrison White developed the concept more formally in his studies of kinship algebra, and an elegant method of formal analysis was proposed in a famous paper by Ronald Breiger (1974) on the duality of individuals and groups. Bourdieu (1984) was also focused on formalizing duality as demonstrated in his use of correspondence analysis studies of the co-constitution of class and culture. Starting in the 1990s, a number of scholars began using Galois lattices to map dual logics of cultural processes. The anthropologist Thomas Schweizer (1993) used Galois lattices to map out articulations linking the status order of a community with the cultural value of their material possessions. White (1996) studied cultural possessions among

hunter-gatherers, and Mohr and Duquenne (1997) mapped the duality of institutional practices and cultural identities in Progressive Era poverty organizations. Mische and Pattison (2000) used lattices to model the dualities linking political ideologies with the event attendance and membership histories of Brazilian youth activists. Breiger (2000) used lattices to analyze decisions by the U.S. Supreme Court.

The distinction between the study of content and the study of meaning is in some ways similar to what Kenneth Burke (1941) describes as the difference between a semantic and a poetic meaning. A semantic meaning tries to provide an exact specification of a concept that uniquely defines it within a field of other concepts. In contrast, a poetic meaning is not simple or unambiguous. Poetic meanings are filled with passion, attitude, and ambiguity. Or, as Burke puts it

> (t)he semantic ideal would attempt to get a description by the elimination of attitude. The poetic ideal would attempt to attain a full moral act by attaining a perspective atop all the conflicts of attitude. The first would try to cut away, to abstract, all emotional factors that complicate the objective clarity of meaning. The second would try to derive its vision from the maximum heaping up of all these emotional factors, playing them off, one against the other, inviting them to reinforce and contradict one another, and seeking to make this active participation itself a major ingredient of the vision. (pp. 147−148)

The common frame of the final set of papers is a mapping of the social and cultural together in a way that highlights their duality.

Going back to relational sociology, we find that meaning in networks has long been recognized as important (Fuhse, 2009; Mohr, 1998; Pachucki & Breiger, 2010; White, 1992). Indeed, Fuhse (2009: 51) argues that "networks are configurations of social relationships interwoven with meaning." As we argue in the concluding chapter, we believe that meaning is embedded in social ties and networks between people, and that organizational network research has as yet devoted limited attention to this phenomenon. Meaning might, for example, refer to tacit flows that may include intent (cf. Amabile & Pratt, 2016), feeling, symbols, signs/signification (Bechky, 2011), perceptions, and/or value (Gray, Bougon, & Donnellon, 1985). Meaning and the role that it has in social ties, social networks, and their maintenance and evolution should play a more salient role in network theorizing, as the papers in this volume suggest.

The paper by Rodriguez, Mohr, and Halcomb (2017) relates to this theme in its focus on how practices and beliefs of individuals form common lifestyle configurations. Focusing on one community organization (a Buddhist monastery in modern Europe) and its efforts to recruit members from the local community, Rodriguez and his colleagues argue that one can usefully map out configurations of practices and beliefs that capture the institutional logic of a focal organization. They argue that one can then use this method as a way to track levels of community engagement for the organization and its members.

Monica Lee (2017) expands on the emerging consensus that social structure and culture are "dual" − inseparable and co-constitutive. She suggests that "every cultural understanding is shaped by the set of social relationships in

which it arises; every structural decision is shaped by a set of cultural under-standings." For instance, our relationships to one another shape how we inter-pret one another's ideas, and vice versa. Thus, it is useful to examine closely the culture/structure duality in terms of social relations versus cultural/ideational relationships to make sense of how ideas and beliefs are shaped by social struc-ture, and vice versa.

An apt setting in which to do this is one in which the creation of ideas is the core purpose. Thus, Lee positions her study in the novel setting of a school of philosophy, namely the Frankfurt School which comprised an influential stream of Critical Theory in the early to mid-20th century. Lee conceptualizes a school as "a recognizable social entity with a distinct social structure and dis-tinct set of ideas that distinguishes it in the intellectual field." She analyzes cor-respondence between members of the Frankfurt School as well as their formal texts across two time periods, using systematic and computer-assisted analysis. She finds a relation between social and cultural cohesiveness as the school fragments over these two time periods. Lee analyzes changes in the school's social and intellectual structure by focusing on Marcuse and Löwenthal's mem-bership and structural positioning, comparing this to the school's theoretical identity, and explaining how this related to changes in the school's overall cohe-sion over time. Lee provides an important contribution to the investigation of the culture/structure duality, proposing that the duality comprises more than "mutual influence" and instead calls for a theoretical framework of cultural and social understandings that converge on the level of interaction, which her paper provides.

IMPLICATIONS

The theme underlying this volume emphasizes the social structure of meaning systems, and the meaning of social structure. The increasing availability of tools and methods to conduct such analyses is evident in the broad range of work included in this volume, where each chapter showcases different analytical and methodological approaches to the theme. In so doing, we hope to interest a wide audience of organizational scholars in further understanding the interrela-tions of structure, content, and meaning with affinity to different traditions of organizational theory.

For instance, institutional theory is driven by the assumption that there are bounded areas of organizational life − institutional fields − characterized both by intense interactions in exchanges of various kinds, and by collective meaning systems. For example, most of the expression of embedded rules will be useless without an understanding of how to apply it in local circumstances. But also the other side holds, namely the degree to which one can make sense of

individual and organizational actions, expressed as a discourse that will be part of a socially reproduced collective meaning system (Greckhamer, 2012).

Another domain of organizational theorizing that grapples with the themes we address in this volume is the discussion on the communicative constitution of organizations (CCO; see for instance McPhee & Zaug, 2009; Putnam & Nicotera, 2009). Scholars engaging in this discussion suggest that communication is not merely one of many factors involved in organizing, but that organizations are in fact realized in communication processes; i.e., organizations are "established, composed, designed, and sustained" through communications (Cooren, Kuhn, Cornelissen, & Clark, 2011: p. 1150). Such discussions are increasingly significant given the growing availability of data sources that explicitly reflect organizational instances of communication, an important motive for this volume, and have tended to analyze organizational dynamics from a qualitative perspective. While appropriate for explaining the content and processes of organizational communications, these analyses less commonly attend to the structural dimensions that nonetheless influence or indeed enable such processes. An important contribution of this volume is therefore to join the various constitutive dimensions of organizing and generate progress in this domain.

These examples aside, it clearly extends beyond the scope of this introduction to sum up all the different organizational debates that the theme of this volume might relate to, nor is it our desire to provide an all-encompassing conceptual framework to grasp its various dimensions. However, in an effort to conclude the volume, Moser, Groenewegen, and Ferguson (2017) offer an extension of Borgatti and Halgin's scheme, suggesting that the understanding of meaning in relation to organizational networks warrants a more prominent place in organizational theorizing, because it fulfils a distinct role in the emergence and evolution of networks. Whereas prior studies have tended to address network structures or narrative structures, Moser et al. suggest that organizational processes might be better understood when addressing the role of meaning *and* network structures simultaneously. This interplay between meaning and social network structures is particularly salient in an online context because of the growing significance of digitally enabled networks in organizations. Moser et al. conclude with a number of interesting points for future research, moving beyond a communication flow model. This model connects social and meaning networks to communication research, which has problematized different aspects of meaning, thus providing potential insights and levers that might be usefully deployed in organizational network studies.

While there are clearly many other debates in organization sciences that are relevant to the theme of this volume, we prefer to provide a platform for the variegated perspectives offered by the authors included, and hope to inspire the readers of this volume to engage with the challenges evoked in the combination of structure, content, and meaning in their own work.

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