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# Formal studies of culture: Issues, challenges, and current trends<sup>☆</sup>

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#### ABSTRACT

Over the last two decades, the formal study of culture has grown into one of the most exciting, systematic, and dynamic sub-fields in sociology. In this essay, we take stock of recent developments in this field. We highlight four emerging themes: (1) the maturation of the field that has occurred over the last two decades, (2) the rise and formalization of the "cultural matrix" approach to studying culture, (3) the development of various efforts to advance a more formal theory of culture, and (4) the proliferation of Big Data and the development of new kinds of quantitative and computational approaches to the study of culture, including the emergence of a new area focused on "computational hermeneutics." We conclude by discussing future opportunities, challenges, and questions in formalizing culture.

Over the course of the last two decades the formal study of culture has grown from being a somewhat exotic sub-specialty, filled by an idiosyncratic collection of quirky research programs, to emerge as arguably one of the most exciting, systematic, and dynamic sub-fields in sociology today. In this issue of *Poetics* our goal is to take a close look at some of the major issues and ideas that define contemporary research in this field and ask where it may be headed next. To this end, we sought out scholars who are making important contributions to this area, invited them to share their latest work, and asked them to discuss current issues and hopes for the future at a workshop hosted by the University of Bern. Some of that work is published in the current issue, which contains ten papers that we consider to be prime examples of the current formal paradigm to capture, analyze, and understand cultural patterns.

We define the formal study of culture as including two types of projects. The first set includes any research that employs formal methods of analysis (mathematically based and/or computational methods more broadly) to investigate empirical data that measure some cultural phenomenon or element. These are projects where cultural information (data) is collected and then analyzed in such a way that formal tools can be used to identify patterns that are expected to yield new knowledge about the phenomenon under investigation (see Mohr & Rawlings, 2012). Generally speaking, these are quantitative studies, but the formal analysis of qualitative information, including the application of Boolean and fuzzy logics as pioneered by Ragin (1987, 2000), also qualifies under this definition, as do projects that bridge between the qualitative and the quantitative. The second general type of project includes any effort to construct theoretical models of cultural phenomena that are formal in the sense that they seek to identify key mechanisms or principles of cultural operation and to specify how these models would then connect to formal measurement and analysis.

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Historically, cultural phenomena have been thought of as fundamentally "signiferous or 'meaning-bearing'" (Caws, 1988: 1) and thus most appropriately approached with a hermeneutic style of analysis, a project that has traditionally been associated with various types of qualitative, interpretive methodologies. But formal (quantitative) methodologies have also regularly been applied to the study of culture, usually as a means of correlating measures of social organization to cultural patterns. Beginning in the 1930s, Louis Thurstone, Rensis Likert, and others produced rapid advances in the use of social survey tools for measuring subjective experience, including cultural orientation, values, systems of meanings and beliefs, and subjective understandings of social situations (Converse, 1987). In the 1940s, other kinds of quantitative tools were invented to study cultural meanings. Particularly notable are Harold Lasswell and colleagues (e.g., Lasswell & Leites, 1949), who developed the foundations of modern content analysis technologies during World War II, structuralists such as Claude Lévi-Strauss, who applied formal tools of relational analysis to interpret the meaning of myths (e.g., Levi-Strauss, 1955), and cognitive psychologists such as Charles Osgood, who pioneered the use of factor analysis and "the semantic differential" as a way of measuring the deep meanings of subjective understandings (e.g., Osgood, Suci, & Tannenbaum, 1957). These (and many other) early exemplars were followed up by researchers applying various styles of formal analysis (in disciplines across the social and human sciences), with different research programs rising and falling over the decades as new theories of culture and new methods of formal analysis were adopted (see Abbott, 1997; Bulmer, 1996; DiMaggio et al., 2011; Lazarsfeld, 1961; Mohr, 1998; Mohr & Rawlings, 2012; Mohr & Rawlings, 2017; Platt, 1996).

To grasp the advantages and challenges of a formal approach to culture, it is helpful to first take a step back. All too often, quantitative studies rely on simplistic models of culture. Consider the study of musical tastes. Initially, sociologists studied musical tastes by simply asking people what genres, artists, songs, or radio stations they listened to and/or their opinions about them (e.g., Conyers, 1963; Farnsworth, 1950; Johnstone & Katz, 1957). Seeking to understand patterns of taste, a second generation of sociologists worked to classify genres into categories such as high-, middle- and low-brow, and individuals into taste groups such as uniand omnivores (e.g., Peterson, 1992; Peterson & Kern, 1996). Although these efforts were important and motivated decades-long discussions about the social nature of musical tastes (e.g., Bryson, 1996; Garía-Álvarez et al., 2007; Lena & Peterson, 2008; Lizardo & Skiles, 2012; Lizardo & Skiles, 2015), they left (a lot of) meaningful heterogeneity on the table.

As research in this area advanced methodologically, sociologists began to represent, analyze and understand more complex patterns of tastes. In doing so, they demonstrated that there is coherence and consistency that cannot be grasped by merely identifying and classifying individual tastes but that requires an attention to more abstract forms of interdependencies between them. As a result of this, we now have an extended corpus of studies that make use of formal methods to understand musical tastes in a variety of ways and at different levels (e.g., Askin & Mauskapf, 2017; Boutyline, 2017; Goldberg, 2011; Goldberg, Hannan, & Kovács, 2016; Han, 2003; Lizardo, 2014; Savage & Gayo, 2011; Silver, Lee, & Childress, 2016; Sonnett, 2004; van Eijck, 2001; van Eijck & Lievens, 2008; van Venrooij, 2015; van Venrooij & Schmutz, 2018; Vlegels & Lievens, 2017).

In a similar way, scholars have used formal approaches to contribute to an understanding of culture in other substantive areas, leveraging different forms of data and techniques. This includes areas as diverse as films (e.g., Jensen, 2010), fiction (e.g., Jockers & Mimno, 2013), media repertoires (Van Rees & Van Eijck, 2003), the building and meaning of relationships (e.g., Gondal & McLean, 2013; Gibson, 2005; Yeung, 2005), the organization of social movements (e.g., Mische & Pattison, 2000), dynamics in political discourse (e.g., Rule, Cointet, & Bearman, 2015; Vedres & Csigó, 2002), innovation and dynamics in science (e.g., Shwed & Bearman, 2010; Edelmann, Moody, & Light, 2017; Foster, Rzhetsky, & Evans, 2015), the emergence of meaning in narratives (e.g., Bearman & Stovel, 2000; Rambotti, 2017; Smith, 2007), structure and processes in artistic, literary and academic fields (e.g., De Nooy, 2003; Dubois & François, 2013; Foster et al., 2015; Lena & Pachucki, 2013; Giuffre, 2001; Serino, D'Ambrosio, & Ragozini, 2017; on measuring fields more generally, Martin, Slez, & Borkenhagen, 2016), or social ontology (Ruef, 1999).

In this introductory essay, we describe the papers in this issue and highlight four core themes in the field of formal approaches to culture that they have brought into focus: (1) the maturation of this field that has occurred over the last two decades, (2) the rise and formalization of the "cultural matrix" approach to studying culture, (3) the development of various efforts to advance a more formal theory of culture, and (4) the proliferation of Big Data and the development of new kinds of quantitative and computational approaches to the study of culture, including the emergence of a new area focused on "computational hermeneutics." We conclude by discussing future opportunities, challenges, and questions.

### 1. A maturing scientific program

The first of these themes is the institutionalization of a new sociological (sub-)field. In sociology, after an early period of development, the use of quantitative methods for studying culture underwent a long period of quiescence (during the 1960s and 1970s) but began to re-emerge again in the 1980s and 1990s, soon blossoming into a vibrant field that has exploded in popularity and sophistication in the three decades since. The story about the re-emergence of formal approaches to culture in sociology has been described in detail elsewhere (e.g., Mische, 2011; Mohr, 1998; Mohr & Rawlings, 2012). In brief, with the fall of Talcott Parsons's structural functionalism and its understanding of (core) values as guiding conscious, rational action (Parsons, 1953; Parsons & Shils, 1951; Parsons, 1951) culture as an object of study also fell out of favor. In the 1980s, scholars began to show how formal methods can help bring culture back into sociological analysis.

Among the first were Peterson and Berger (1975), who combined quantitative content analysis of music records and data on the structure of the music industry to study cycles in symbol production. Others explored how cultural meanings reflect systematic social differences such as Griswold (1987), who showed how readings of George Lamming's novels varied across different societies, or found new ways to measure symbolic codes such as Cerulo (1988, 1989), who developed an ingenious process for coding the character of musical sound in order to study the relationship between levels of sociopolitical control and the symbolic structure of

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