



*integrated theoretical and methodological framework for the analysis of logics across a range of settings.*

**Keywords:** Institutional logics; institutional complexity; practice; institution

The concept of logics has seen a resurgence in institutional and cultural analysis, often in order to understand issues of diversity, durability, conflict, and change (Sewell, 2005; Thornton, Ocasio, & Lounsbury, 2012). Much of this resurgence has taken place within organizational institutional theory. Institutional logics describe socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality (Friedland & Alford, 1991, p. 243; Thornton & Ocasio, 2008). Institutional researchers have identified and examined logics at the level of countries (Biggart & Guillén, 1999), sectors (Scott, Ruef, Mendel, & Caronna, 2000), and industries (Thornton & Ocasio, 1999). These analyses share several aspects in the understanding of logics: first, logics reside at the field level – they organize and regulate collective action and cannot be understood by looking at single actors (Lounsbury, 2007; Scott & Meyer, 1983). Logics also connect signification/meaning, on the one hand, with social structures and practices on the other, for example, by linking actors' identities and actions to cultural values (Breiger & Mohr, 2004; Rao, Monin, & Durand, 2003; Sewell, 2005; Weber, Heinze, & DeSoucey, 2008); and logics are carried by social groups that participate in a field of activity (Marquis, Glynn, & Davis, 2007; Scott, 2003).

The logics perspective is especially important for institutional theory because it provides an avenue for analyzing *historically situated pluralities*; or the nature of fields as having, at some point, the capacity to carry more than one paradigm (Greenwood, Raynard, Kodeih, Micoletta, & Lounsbury, 2011; Kraatz & Block, 2008). It should be noted that the analytical approaches involved in analyzing institutional logics closely resemble those of analyzing pluralities in other research streams, such as cultural repertoires (Lamont, 1992; Swidler, 1986), social sensemaking vocabularies (Mills, 1940; Weick, 1995), justification orders (Boltanski & Thévenot, 2006 [1991]), or varieties of capitalist systems (Hall & Soskice, 2001; Thelen, 1999). The institutional work on logics is, in fact, part of a more general analytic approach in the social sciences that Sewell (1998, pp. 250–251, 2005)

characterizes as *semiotic*. In this approach, explanation takes the form of identifying codes or paradigms that prompt human agents to perform certain practices; this in contrast to mechanistic forms of explanation that seek to identify cause and effect.

Identifying pertinent codes and paradigms must fundamentally be an empirical task for institutional researchers; as logics are meant to represent lived social realities rather than merely presenting analytic ideal types and models that the researcher identifies a priori for analytic convenience (Schütz, 1967 [1932]; Weber, 1995 [1904]). This is despite Thornton et al.'s (2012, pp. 52–57) praise of ideal types as a tool for theory construction. Ideal types may be formed to distill the essence of a logic, but the construction of the ideal type by the researcher must be grounded in empirical observation, not simply abstract formal reasoning. This is where the ideal type approach differs from formal (mathematical) theory – see, for example, Max Weber's original formulation of ideal types of domination systems from historical observation. A challenge for advancing the work on logics is thus to find reliable methods for empirically establishing logics and for assessing their distinctiveness and coherence of over time.

Much of the extant research on logics in the institutional tradition has, however, treated the existence of logics as the starting point of analysis rather than the end point: logics and their distinctiveness are treated as natural and well-defined. This is evident in the early formulation of Friedland and Alford (1991) who distinguish logics anchored in societal domains of action, such as the family or market. Plurality here coincides with well-established societal sectors and domains. A parallel body of research, inspired by practice theorists in the tradition of Boltanski and Thevenot (2006 [1991]), examines logic-like justification regimes that also originally organized different societal spheres (e.g., civic, industrial, or domestic worlds), but that are now linked to these domains metaphorically rather than indexically. Recent empirical research in organization theory has largely moved from these broad sectoral logics to logics at more intermediate levels, especially organizational fields (Thornton et al., 2012). Because these more “local” logics are not predefined by the macro organization of society into spheres and domains, identifying logics and pluralities is empirically more challenging. The approach commonly employed is to claim and perhaps anecdotally illustrate, coherent and encompassing preexisting logics, and then focus on showing their effect on action or the relationship between different logics. For example, Thornton's (2004) study of the publishing industry traces a shift from an editorial to a market logic; and Lounsbury (2007) documents how different historically formed logics account for practice variation in the financial service industry. While this approach

offers indirect pragmatic proof for the conceptual utility of the logics concept, it provides limited understanding of the logics themselves.

Far less research directly studies the internal properties and dynamics of logics and how they are structured over time. A few more recent studies have examined rhetorical processes in the rise of new logics (Green, 2009; Jones, Maoret, Massa, & Svejenova, 2012; Ocasio & Joseph, 2005; Suddaby & Greenwood, 2005); but studies of the temporal dimension of logics, and especially their emergence and change, remain rare. This leaves important questions unanswered: When can we speak of a logic that has the structuring power suggested by institutional theorists? How can we represent the “content” of logics to examine their influence on institutional agents? Are there dimensions of logics that allow for a comparison of their coherence, strength, and scope?

The purpose of this paper is to propose a general method for directly studying logics, as semiotic systems, over time. We advocate for an analysis of logics that is grounded in a repertoire view of culture (Swidler, 1986; Weber, 2005). This approach involves identifying the set of cultural categories that can make up logics, and measuring empirically the dimensions that mark a cultural system as more or less logic-like. Discursive data has the advantages of being produced by participants themselves, of being an unobtrusive form of observation, and of offering rich unstructured information about meaning making that is increasingly available in electronic format. Although this is not our focus here, we believe that the procedures described below can be analogously applied to non-textual data. Our approach thus provides an integrated theoretical and methodological framework for the analysis of logics across a range of settings.

The paper is structured as follows. We briefly review some of the prior approaches to conceptualizing and analyzing logics, then introduce the setting from which the empirical illustrations are drawn: the field of alternative livestock agriculture. The main part of the paper describes a seven-step analysis process for assessing the emergence of a single logic without presuming its existence. For each step, we identify options and methodological choices and use examples from the study as illustrations.

## CONCEPTUAL ISSUES IN THE STUDY OF LOGICS

As discussed above, much existing institutional research starts with the presence of alternative logics and examines their interplay. The methodological approach that follows is to identify and track key indicators of the

given logics. The rise and fall of an existing logic can then be documented through event history or count model studies that show the diffusion of archetypical practices or forms (Davis, Diekmann, & Tinsley, 1994; Marquis & Lounsbury, 2007; Thornton & Ocasio, 1999), or through interpretive methods, such as content analysis (Nigam & Ocasio, 2010; Scott et al., 2000). This “indicator approach” to logics starts with the assertion of a logic based on a holistic understanding of a field, and then proceeds to trace the logic over time or in comparison to others. While appropriate in many contexts, a major limitation of this approach is that it lacks a disciplined way for establishing the origin, emergence, and possible transformation of a logic. Thornton et al. (2012, pp. 52–58), for example, advocate for identifying ideal-typical logics but do not provide much guidance for how ideal types should be derived. The indicator approach also detracts from examining the internal structure of logics and from comparing different logics on properties that may explain their institutional power. Instead, all logics are implicitly treated as equivalent when in fact, as cultural systems, they may vary in coherence, complexity, scope, and other dimensions (Sewell, 1992; Swidler, 2001b). Understanding these dimensions may offer useful insights into institutional dynamics.

Some recent approaches to conceptualizing and measuring logics have taken a more emergent perspective and looked at the processes through which a new logic is articulated in the first place. In particular, several studies look at how rhetorical processes and strategies, such as theorization, lead to the emergence of new logics (Jones et al., 2012; Nigam & Ocasio, 2010; Suddaby & Greenwood, 2005). Using inductive text analysis, these studies focus on whether words and passages from informative publications (identified as key words or coded into themes) form a pattern that reveals distinct logics. Implicit in these approaches is a view of logics as emerging from cultural processes of social construction (Weber & Dacin, 2011). Our goal is to build on these advances and offer a more general methodological framework for empirical studies of the constitution, evolution, and comparison of logics.

Prior to being recognizable as a more or less legitimate alternative, a set of innovative practices and symbolic representations has to attain the internal coherence and value infusion that distinguishes a logic from a less structured set of ideas and activities. The study of logic emergence benefits from an analytic shift from a holistic starting point for conceptualizing logics – in terms of basic principles, archetypes, and root metaphors such as market and family – toward a dynamic and detailed view of logics as empirical relationships between basic cultural categories (cf. Thornton et al., 2012).

The emergence of a logic is akin to the structuring of relationships between elements of a community's cultural register (Barley & Tolbert, 1997): A loose toolkit of meanings and practices becomes increasingly ordered, aligned, expansive, and cohesive, in the understanding of participants. This process of expansion and organization is a distributed, but nevertheless an active, process of construction; at its core, this process involves theorization (Greenwood, Suddaby, & Hinings, 2002; Lawrence, Suddaby, & Leca, 2009; Strang & Meyer, 1993), the self-conscious development and specification of abstract categories and the formulation of patterned relationships such as chains of cause and effect (Strang & Meyer, 1993, p. 492). Theorization aims to rationalize innovative practices by aligning different cultural categories, and in the process may structure the meaning system into emerging logic. If and how this structuring of signification coincides with the structuring of practices and social relations can then be studied empirically, allowing for useful distinctions between integrated institutional logics and related but more partial concepts, such as ideologies, collective myths, epistemic cultures, or theories (Foucault, 1970; Hirsch, 1986; Sahlins, 1978; Sewell, 2005).

Analyzing the construction of a logic, therefore, requires identifying the cultural categories that in the aggregate may constitute a logic; and then assessing the degree to which these elements are structured as a systematic logic. In somewhat simplistic terms, logics can be seen as a special case of cultural registers or toolkits that are highly structured and impose rigidities on the selection of cultural resources (Swidler, 1986; Weber, 2005). This view raises the questions of what are the cultural building blocks of logics, and how the degree of structuration is conceptualized. Regarding the former, we follow the tradition of social anthropologists and sociologists who have identified cultural categories – conventionally defined concepts that organize experience through classification – as the elementary building blocks of meaning systems (D'Andrade, 1995; Douglas, 1986; Durkheim & Mauss, 1963 [1903]; Levi-Strauss, 1966 [1962]). Practice theory inspired approaches to institutions point to three core cultural meta-categories that typify social reality (Breiger, 2000; Mohr, 2000; Mohr, Bourgeois, & Duquenne, 2004; Swidler, 2001b): actor identities, classes of social practices, and dimensions of value. Each meta-category corresponds to cultural codes that mark categorical distinctions or taxonomic relationships between the included cultural categories. For example, the work of organization ecologists centers on social codes that define identities (Hannan, Polos, & Carroll, 2007), while cultural psychologists have been concerned with practice codes that give rise to concepts that typify behaviors into categories

such as “cooperation” (Keller & Loewenstein, 2011). While the institutional logics perspective also draws on categories at the level of broad societal domains, such as the family or the market, we are in this paper concerned with the “smaller” concept categories that allow for some degree of bricolage and assembly into more complex formations. Through theorization or recurrent sensemaking, practices, identities, and values are aligned into ready-made assemblies, such as scripts of actor-practice combinations (Weber & Glynn, 2006), strategies of action (Swidler, 2001a) – or, complex systematic wholes (logics). Notably, each of the elementary cultural building blocks can, in turn, be embodied in discourse, interactions, social, and other structures. Fig. 1 offers a schematic representation of a hypothetical transition as a result of increased structuration from a flexible repertoire of cultural categories to a coherent institutional logic.

In addition to identifying the building blocks of logics, to analyze their construction, we need attributes that mark a set of identities, practices, and logics as more or less structured. Conceptual work on theorization (Greenwood et al., 2002; Strang & Meyer, 1993) alludes to some dimensions associated with a move toward a logic-like system of cultural categories. Here we suggest that a more systematic conceptualization of the “logic-ness” of a cultural system should include at least four dimensions: (1) the expansiveness of the system; (2) the cohesiveness, or the degree to which elements are seen as interrelated and connected to each other; (3) the extent of internal

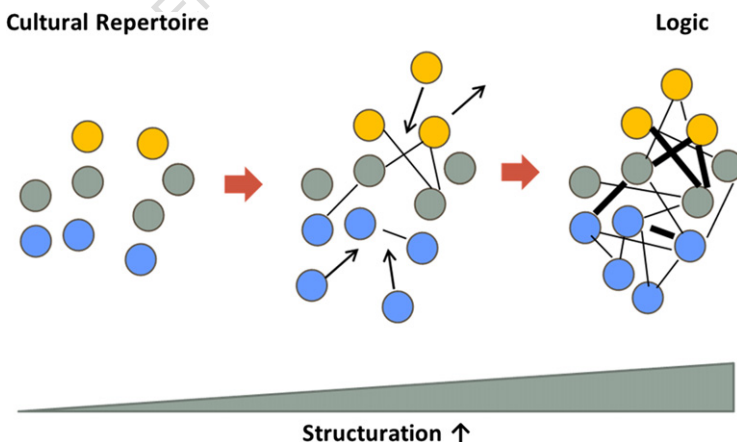


Fig. 1. Schematic Transition from Repertoire to Logic.

structure and organization; and (4) the distinctiveness of the system within a larger context. In terms of expansiveness, to accommodate the complexity of most institutional fields, logics need to bring a wide range of practices and identities within the scope of a common framework. Logics also need to densely interrelate different elements to create perceptions of coherence (Greenwood et al., 2002). And the organization of meaning in logics often rests on maintaining central core meta-categories as anchors, such as archetypical practices and identities, and on developing an internal structure of associated categories, for example, in terms of connected subclusters of ideas (Swidler, 2001b). Lastly, to be recognizable, logics, at a minimum, must be meaning systems with distinct content; but logics are also normally explicit representations of boundaries in relation to cultural categories that should be considered not compatible with the logic (see Weber et al., 2008 for an example of oppositional semiotic codes that mark such boundaries). A meaning system that is narrowly focused on a small set of element lacks the power to organize larger complex fields. A meaning system that lacks connectivity between elements lacks the power to provide strong guidance and is less likely to be recognized as a whole.

### **EMPIRICAL CONTEXT FOR ILLUSTRATIONS: ALTERNATIVE LIVESTOCK AGRICULTURE**

To illustrate our proposed approach, we use data from the context of alternative livestock agriculture, specifically discourse in trade journals of this field. We collected data on the field of livestock agriculture over a period of 27 years, focusing on the possible emergence of a logic around alternative approaches centered on pasture-based farming, whereby animals are kept on pasture rather than brought to a feedlot. This type of farming involves economic and technological innovations to make consistent, high-quality products for geographically and culturally dispersed consumers; however, pasture-based farming is also a social innovation. Practices are not only designed to change the environmental and health impact of food production, but also aim to reconfigure the agricultural supply chain and the social organization of rural economies away from a corporate industrial model (see Weber et al., 2008).

Pasture-based practices have led to a successful and growing grass-fed meat and dairy market. What were once considered inferior products are now served in high-end restaurants, sold at a premium by retailers, and



referenced in prime news outlets. The diffusion of pasture-based over the past 30 years is driven by the institutional work of a diverse alliance of participants who sought to articulate and promote alternatives to the incumbent industrial feedlot system. Through central publications, these actors, including those in agriculture as well as journalists and nutrition experts, helped to connect, legitimate, and disseminate the practices, values, and identities around pasture-based production and consumption.

From early on, ideas around pasture-based production were communicated through a central outlet – the *Stockman Grass Farmer*. The *Stockman Grass Farmer* is a monthly trade publication “devoted to the art and science of making a profit from grassland agriculture” (website). Since the early 1990s, the *Stockman* has been the main source of information for farmers and ranchers who are focused on pasture-based animal husbandry (or grass-fed production). The magazine includes detailed profiles of successful farmers and ranchers; articles on scientific discoveries relevant to pasture-based; step-by-step “how-to” pieces on the specifics of production, marketing, and business plans; and editorials. In addition, the *Stockman Grass Farmer* hosts conferences and workshops and publishes books. All together, the *Stockman* has helped to create a community of farmers and ranchers; and the publication, in particular, has served as a vehicle for discourse around pasture-based agriculture.

Although the relationship between discourse and practice is not our primary concern, the practice of pasture-based agriculture has evolved, too. Early innovations focused on the practicalities of the production process, as farmers and ranchers struggled with learning practices that deviated from existing paradigms in their industry. As new ideas became connected with pasture-based agriculture, such as the nutritional and environmental benefits, these helped to further motivate producers and inform choices about technology, processes of production, and how to connect with consumers. Producers adopted rotational grazing systems, new fencing technology, and methods for growing forage suitable to local climate conditions. They identified breeds of cattle best suited to a grass diet, and selected distribution channels and numerous other practices and technologies. Eventually, issues of marketing became more central, as challenges around production eased.

As this narrative suggests, a new logic around pasture-based practices may have emerged over time as new participants joined a movement that sought to articulate an alternative to the logic of industrial agriculture. Yet, the resulting “logic-ness” of this theorization is an open empirical question that we will assess empirically.

## AN ANALYTIC STRATEGY

The cultural repertoire approach described above can be applied to study several aspects of logics, including material practices, individual subjectivities, and social relationships. Here, we focus on the communicative dimension of institutions, that is, discourse (Phillips, Lawrence, & Hardy, 2004). To map the emergent discursive meaning system, we use data from the *Stockman*, the publication described above, to analyze the structuration of the pasture-based logic. Our sample includes all issues of the *Stockman* for the years 1981–2007, resulting in a total of 3,692 articles. This is not to suggest that institutions or culture can be reduced to discourse, rather we believe that to analyze institutional processes it is useful to analyze their diverse dimensions separately and treat the relationships between, for example, discourse and material practices as objects of empirical analysis in their own right. The relationship between cultural categories (our focal unit of analysis), specific linguistic labels in manifest discourse, and material practice or subjectivities, can be understood as a semiotic relationship between referent, signifier, and signified (Fig. 2). The relationships between the three semiotic components are based on social convention, not necessity, and are hence subject to empirical analysis (see, e.g., Ruef, 1999).

The analytic process we describe and illustrate here involves seven steps: first, the conceptualization of the boundaries of an emerging meaning system; second, the identification of data sources to capture collective meaning; third, the identification of the cultural categories at play; fourth, the creation and validation of measurement instruments; fifth, text analysis

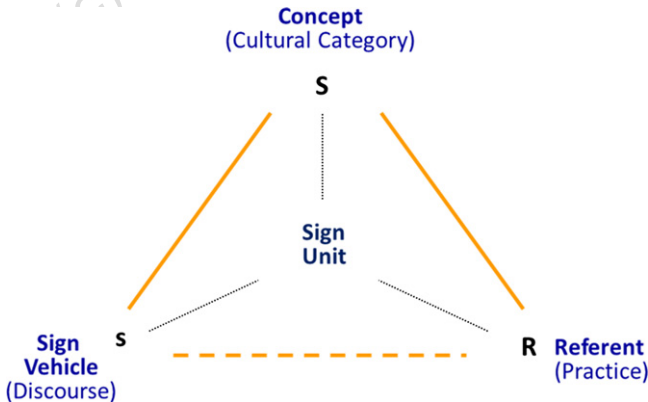


Fig. 2. Semiotic View of Practice, Discourse, and Culture in Logics.

of the categories found in data sources; sixth, the mapping of aggregate changes in the categories; and finally, dynamic modeling of the relationships among categories over time. We begin the discussion of each step with identifying key issues and decision points, followed by illustration from the field of alternative agriculture.

### *Step 1: Conceptualizing the Boundaries of the Cultural System*

Our approach to studying logics takes as its starting point not the existence of a logic, but of a system of meaning whose content and properties can be analyzed to assess the presence and strength of one or several logics. The question is then, what are the boundaries of the system to be analyzed? The challenge for the researcher is to identify appropriate boundaries, since the inclusion and exclusion of discourses and institutional agents directly affect the properties of the system. Yet by the very nature of meaning being studied as emergent rather than presupposed, boundaries are not easily defined. This challenge is complicated by the fact that boundary creation is endogenous to the process of structuration that is central to the rise of logics.

One solution to this dilemma is to define the boundaries of a meaning system with reference to its carriers, so that the social boundaries of communities may be used to approximate boundaries of meaning. For example, different cities with stable populations may support different cultural repertoires and institutional logics (Lounsbury, 2007; Marquis et al., 2007). A second solution involves a focus on particular issues and activities across society. Discourses and meaning systems can be structured around focal “keywords” (Williams, 1985), practices (Fine, 1996), or “problems” (Hilgartner & Bosk, 1988), with or without giving rise to institutionalized logics that address these ideas. Another common solution to identifying boundaries is to fall back on the more comprehensive concept of the institutional field or arena (Fligstein & McAdam, 2012; Scott, 2001). At least in more settled institutional settings, the boundaries of fields may be relatively transparent and also important for meaning making. The best basis for identifying the boundaries of the meaning system in question likely depends on the scope of the research question and should be driven by the researcher’s contextual knowledge.

In our case of the field of alternative agriculture, we used a combination of carriers, practices, and preexisting fields. We started with agriculture as a well-recognized institutional field, but then focused on the social community

of alternative farmers and ranchers within this field, since our question concerned the structuredness of meaning in this subfield. Had our interest been in understanding the potential plurality, comparison or blending of logics in Western agriculture, we would have had to remain at the field level. From our contextual understanding of the agricultural community, we also recognized the centrality of grass-fed and pasture-based production practices involving animals, and the market context of production that extended the cultural system to activities related to production, exchange, and consumption.

### *Step 2: Identifying Data Sources*

A second major task is to determine and locate data sources that represent the meaning system. The requirements for these data sources are twofold: first, the data must allow us to draw valid conclusions about the meaning system within its particular context; and second, the data must be collected over a period of time that permits the observation of temporal variation and change (Zaheer, Albert, & Zaheer, 1999). Each of the building blocks of potential logics – cultural categories of identities, practices, and values – can be represented in discourse. The data for analyzing the possible construction and existence of a logic should be representative or encompassing of, or influential for the discourses in question. Especially useful are data that offer real time traces of communications produced by a specific community, such as trade journals, mail or email lists, recorded interviews, and company documents.

In our illustration, we used a corpus of 3,692 articles published in a leading trade journal in the field. This journal, the *Stockman Grass Farmer*, is recognized as the grass-fed and pasture-based farming movement's central publication. We obtained all issues of the *Stockman Grass Farmer* for the years 1981–2007. The journal was repeatedly identified during interviews as a key source of information on alternative agriculture. In addition, the long time span of this publication and the diversity of its content make it an excellent source for studying the alignment of the three key dimensions of logics over time. By virtue of its format, editorial policy, and circulation, the *Stockman* has long provided a forum for many participants in the discourse around alternative livestock agriculture. The journal is subscription-based, and consists of articles written by both practitioners and professionals of alternative agriculture. The intended audience of these writers consists of producers or potential producers. In addition, the articles are diverse in

authorship, purpose, and topical focus. Formats range from accounts of concrete experience (e.g., ranchers providing tutorials or accounts of their particular challenges and practices) to general or abstract knowledge (e.g., scientific research reports, regulatory issues, and general news) and editorials. The topical focus is broad enough to include a range of issues across the agricultural value chain, such as grazing, soil, animal handling, business models, marketing and distribution, human health, and food consumption. In this sense, the observable discourse includes the full spectrum of the market of alternative agriculture, from potential production and production, to distribution and consumption; and discourse is sampled directly from those who participate in the community.

An additional component of the determination of a textual data source is a solid understanding of the context of that source. Texts only acquire significance in regard to their meaning and interpretations in the specific contexts of their use (Krippendorff, 2012). A proper understanding of the interaction setting that a researcher is interested in studying helps to inform later decisions during the analytic process. In our study of alternative agriculture, we drew on extensive contextual data to supplement our main text corpus. We consulted third party accounts of the field, conducted 61 semi-structured interviews, and drew on extensive archival sources, such as websites, books on alternative agriculture, and articles in national newspapers. In addition, we obtained 23 hours of audio recordings of presentations and panel discussions at conferences from 1986 to 2004, and podcasts of speeches by prominent journalists from 2005 to 2010. We also constructed biographies of eight individuals that were widely credited in the community with having made major contributions during the time period of our study. These data are described in detail in an earlier article (Weber et al., 2008). As a whole, these data give us the background knowledge to perform an informed text analysis.

### *Step 3: Identification of the Cultural Register of Practices, Identities, and Values*

The next step in our methodology involves the identification of the register of cultural categories available. We use the term register to indicate the comprehensiveness of this set of cultural categories across time and participants, and in contrast to the term repertoire, which represents the set of categories available to individual participants or subgroups (see also Weber, 2005). The analysis of logics from a cultural repertoire perspective

imposes two challenges for the identification of categories for subsequent text analysis. First, the conceptual unit of analysis is the cultural category, while the text corpus data is composed of linguistic units (words). The cultural categories are latent and must be extracted from the manifest use of words in the text. As discussed in the context of the semiotic representation in Fig. 2, the relationship between conceptual categories – such as “livestock,” as the signified, and manifest words, such as “Angus,” “dairy cow,” or “cattle,” as signifiers – is by social convention, and requires the researcher to establish a reliable correspondence between words and categories over the temporal and spatial scope of the analysis. (The distinction between signified and signifier is similar to the distinction between type and token in linguistics – the analysis is at the level of types, not tokens.)

Second, the analysis of discourse is inherently inter-textual. Different documents and the cultural categories employed in them are located in time and space, and the contextual information about this location offers important information about discursive coherence, change, and other parameters of interest. Hence, the register of categories used in the analysis must facilitate the representation and comparison of the entire set of documents that comprise the text corpus. Fig. 3 combines the two dimensions (within text – context, and concept – signifier) to distinguish our emphasis on the analysis of a cultural register from other units used in textual analysis. A register is at the level of cultural concepts and is

	<b>Concept/Type</b>	<b>Signifier/Token</b>
<b>Context</b>	Cultural Register	Lexicon
<b>Text</b>	Cultural Repertoire	Vocabulary

Fig. 3. Focus of Different Forms of Textual Analysis.

constructed not from a single text, but from a larger discourse that puts individual texts or clusters of text in context. In contrast, repertoires pertain to specific texts or producers of text (Weber, 2005); and lexicons and vocabularies are equivalent terms that describe manifest words or labels.

To identify the cultural categories that are part of a meaning system's register, researchers have at least three fundamentally different options. One choice is to take a deductive approach and derive categories from extant research. This approach is similar to the "indicator approach" described above, in that the categories to be measured are not grounded in the text corpus at hand but decided upon a priori. Arguably, this approach is difficult to justify when the meaning system is assumed to be emergent or evolving. A second broad approach is to identify the register of cultural categories from the data in hand. Two methods hold most promise in this regard. One uses standard *qualitative-interpretive* procedures, such as thematic coding, or more structural coding approaches found in semiotic and rhetoric theory (Feldman, 1995; Manning, 1987; Weber, 2005). The researcher sifts through the data and draws on interpretive insight to understand the categories used by the producers of discourse. This method is most promising when the researcher has access to the broader culture and social position of the text producer. An alternative method of deduction uses *computational-algorithmic* procedures to identify concept categories. More commonly used in information science and computational linguistics, this family of methods uses statistical analyses of word frequencies in the text corpus, co-occurrence patterns, and universal linguistic rules to extract latent meaning structures from the text corpus. Most suitable for identifying categories are some applications of latent semantic analysis (LSA, Deerwester, Dumais, Furnas, Landauer, & Harshman, 1990; Dumais, 2005), generative topic models (Blei, 2012; Blei, Ng, Jordan, & Lafferty, 2003), and statistical corpus linguistics (Manning, Raghavan, & Schütze, 2008; McEnery & Hardie, 2011). This methodological approach is most useful for very large corpora and when non-textual information yields little additional information.

Regardless of the choice of methods, it is important to utilize documents across the entire corpus to create the categories that make up the cultural register. It is also beneficial to use multiple interpreters (researchers) or computational algorithms to increase the robustness of the categories identified.

In our illustrative case, we aimed to construct an exhaustive set of categories that could represent the entire time period and had the potential to go beyond the discourse manifest in the text corpus. Our methodology

was qualitative-inductive. We not only sampled documents from different years, but we also included other data sources, such as interviews and audio recordings. We used inductive semiotic techniques to identify the conceptual categories corresponding to the meta-categories of practices, identities, and values. For example, the meta-category of practices included the categories of “heritage breeding” (as a type of production) and “buy-local” (as a type of consumption). The process started with two of the authors initially constructing categories individually from samples of text, as well as contextual understandings of the setting. The authors then refined the emerging category scheme over multiple iterations of discussion, checking for logical consistency and cross-references categories with the sample data.

While extensive background knowledge of a particular setting is a key component of determining the substance of cultural categories in a cultural system, qualitative semiotic techniques can help to structure this process and increase a researcher’s confidence that the elements selected are discrete. We used semiotic techniques including paradigmatic clustering, commutation tests, and semiotic squares that allowed us to have more certainty regarding the distinctiveness of each of our concepts (Weber, 2005). The technique of paradigmatic clustering suggests that words can be grouped with other words if they act as signifiers of the same concept, while commutation tests help establish the distinctiveness of concepts by testing whether one concept can be substituted for another without changing the meaning in a statement (Barthes, 1967 [1964]; Feldman, 1995). Using these methods, we achieved saturation with a resulting category scheme consisting of 52 exhaustive categories. Table 1 shows the category scheme.

#### *Step 4: Developing a Measurement Instrument*

The fourth step involves creating and validating measurement instruments for the categories defined in the previous step. Measurement in text analysis establishes the relationship between a latent concept and manifest signifier in a reliable way (see Figs. 2 and 3). Measurement instruments allow the researcher to represent a cultural register through key words and phrases that reflect each category.

The computational-algorithmic methods described above use statistical algorithms to select and weigh words that are most informative for discriminating between categories and documents (e.g., the commonly used term frequency–inverse document frequency (tf/idf) statistic). Note that most computational algorithms jointly and simultaneously optimize



**Table 1.** Coding Categories for Practices, Identities, and Values.

Meta-Category	Category Grouping	Category	Example of Key Phrases for Coding
Practices	Production – Animal breeding	Heritage breeding	Devon, Angus, Galloway
		Performance breeding	Holstein, cross-bred
	Production – Soil management	Chemical treatment	Pesticide, chemical + soil
		Nonchemical treatment	Manure, compost
	Production – Animal feeding	Grazing	Grazing, pasture, paddock
		Feedlot	Corn + pen, CAFO
	Production – Animal care	Conventional animal care	Antibiotics, hormone treatment
		Natural animal care	Natural sheep care, Pat Coleby
	Production – Processing	Processing	Butcher, slaughter
	Exchange – Marketing	Internet marketing	Online + marketing, internet + advertise
		Mass marketing (conventional)	Agrimarketing, television + advertise
		Word of mouth	Customer referral, word of mouth
	Exchange – Retail	Selling direct	Direct + sale, sell + on the farm
Selling through mass retail		Middleman, sell + supermarket	
Consumption – Purchase	Buy chain	Buy + chain, mass + distribution	
	Buy local	Farmers + market, buy + local	
	Buy online	Buy + internet, mail order	
Consumption – Food preparation	Food preparation	Recipe, prepare + food	
Identities	Producer	Other alternative	Rodale, Steiner, biodynamic
		Conventional	Large + farm, industrial + farm
	Animals	Grass fed	Small + farm, grazier
		Cattle/Bison	Cow, steer, buffalo
	Animal product	Other livestock	Horse, sheep, goat
		Dairy	Cheese, butter, cream
	Agroindustry	Meat	Pork, steak, venison
		Agroindustry	Kraft, Dole, Dean

*Table 1. (Continued)*

Meta-Category	Category Grouping	Category	Example of Key Phrases for Coding
	Retailer	Distributor Mass retailer	Supplier, distributor Retail chain, mass + retailer
	Consumer	Restaurant Consumer	Café, restaurant, eating place Buyer, spender, client
	Expert	Academics Consultants	Professor, researcher, scholar Extension service, soil consultant
	Advocates	Consumer groups Producer groups	Chefs collaborative, Eatwild American Grassfed Association, producer + association
	Media	Media	Reporter, journalist, press
	Government	Government	EPA, agent, government
Value dimensions	Authentic–manipulated	Authentic	Heritage, genuine, raw
		Manipulated	Processed, modified
	Natural–artificial	Natural	Pure, organic, natural
		Artificial	Pollution, contaminated
	Sustainable–exploitative	Sustainable	Stewardship, preserve
		Exploitative	Depletion, erosion, chemical contamination
	Humane–inhumane	Humane	Humane treatment, animal rights
		Inhumane	Abuse, poor treatment + animal
	Sickness–health	Sickness	BSE, cholesterol, sickness
		Health	Nutritious, omega-3
Regulation–freedom	State regulation	Tax, law, regulation, industry standard	
	Individual freedom	Liberties, antigovernment	
Financial	Financial (good)	Profit(able), money making, make a living	
	Financial (bad)	Shortfall, income loss, debt	
Taste quality	Meat taste (high)	Tender, juicy, taste + flavorful	
	Meat taste (low)	Gamey, dry + meat, taste + cardboard	

categories and indicators (although technically, categories could be deduced from a different sub-corpus). The analogy to this approach in (psychometric) measurement theory is the notion of formative measurement, where the manifestations (words) directly constitute the variable (category). The advantage of this approach is that the algorithm makes use of all data and is highly consistent; the challenge is most often the substantive interpretability of the resulting categories (see, e.g., for topic model, [Blei, 2012](#)).

Category schemes developed through a qualitative-interpretive approach can be made measurable via classic content analysis ([Krippendorff, 2012](#); [Neuendorf, 2001](#)). Coding guides for manual coding and coding dictionaries for computer-automated coding provide rules for assessing the presence of different categories in texts. The phrase lists in coding dictionaries can be understood as analogous to items on a reflective scale in measurement theory. Reflective scales require some validation that the items (coding rules or word phrases) reliably reflect the latent variable (cultural category). This can be established via inter-rater reliabilities between different coders, including between human and computer-automated coding of the same text segments ([Krippendorff, 2012](#)). An advantage of this form of measurement over formative measurement in computational approaches is that text-specific ambiguities in language can be addressed more directly and that a closer link to theoretical interested can be maintained. The challenge is that the words used to measure cultural categories may be relatively sparse in the text and that proper validation of a measurement scale for a specific text corpus can be time consuming.

To measure the categories developed in step 1, we followed a content-analysis approach. We created a coding dictionary by identifying the key words and phrases that act as signifiers for the categories we established. We used a variety of methods in combination in order to construct this set of signifying key words and phrases. The first method was through a straightforward search of text samples. Words and acronyms that writers commonly used to refer to specific categories were included as signifiers of those categories. Second, we used KWIC (keyword-in-context) searches of text samples. Many text analysis software packages offer the option to examine the textual “neighborhood” of a word, a word pattern, or a specific category that is already partially determined. This allowed us to identify additional words and phrases that signified the concept categories from the previous step. Additionally, we utilized a thesaurus-based approach to search for words that may similarly signify the same category. These steps in combination not only allowed us to construct a set of reliable search phrases



























