

Categorizing Categorization Research: Review, Integration, and Future Directions

J.-P. Vergne and Tyler Wry

Ivey Business School, Western University; The Wharton School, University of Pennsylvania

ABSTRACT This paper offers a systematic review of the literature on organizational categories and categorization published in the last 14 years (1999–2012). After identifying a core of roughly 100 papers on categories that appeared in management, organization, and sociology journals, we classified them based on several key dimensions, and analysed a few trends within the categorization literature. Our most surprising finding may be the fact that until recently, there was no mutual recognition of the existence of a distinct ‘literature on categories’ despite the wealth of published material on the topic. After summarizing some core theoretical features of that emergent literature, we propose integrative definitions of its core constructs and suggest several areas of research that could further enrich it in the future.

Keywords: categories, categorization, classification, review

INTRODUCTION

Over the past two decades, the study of categories has become popular among management scholars to the point where it now accounts for a number of highly influential papers and a growing base of dedicated scholars. Reflecting this, there is mounting recognition that ‘category studies’ is emerging as a distinct domain of organizational research. Looking back, the *Journal of Management Studies* (*JMS*) played a key role sparking this trend. Specifically, Porac et al.’s (1989) classic ‘Competitive groups as cognitive communities: the case of Scottish knitwear manufacturers’ was the first management study to integrate insights about categorization and remains a highly cited contribution to category studies (Kaplan, 2011; Porac et al., 2011). The journal has also recently published a Point–Counterpoint debate aimed at advancing new perspectives that build on Porac and colleagues’ cognitive psychological approach (Durand and Paolella, 2013; Glynn and Navis, 2013; Kennedy and Fiss, 2013). However, despite many signs that category studies is on the rise in management scholarship, much of this research takes place under the auspices of other organizational theories – rather than as a distinct area

Address for reprints: J.-P. Vergne, Ivey Business School, Western University, 1151 Richmond St, N6A 3K7 London, Ontario, Canada (jvergne@ivey.ca).

of inquiry – and has shifted strongly towards a sociological perspective, thus neglecting foundational insights from cognitive psychology. We believe that there is much to be gained through the emergence of a more integrative and focused research programme in ‘category studies’. Thus, on the occasion of *JMS*’s 50th anniversary, we analyse the nature and extent of the fragmentation in the categories literature with the aim of contributing to the emergence of ‘category studies’ as a distinct – and distinctively organizational – research domain.^[1]

As with many areas of management scholarship, categories research draws heavily on insights from adjacent disciplines in the social sciences (Corbett et al., 2013). In this regard, however, ‘category studies’ is somewhat unique in that foundational research is carried out in both psychology and sociology. As such, there are vibrant research programmes that examine categories and their consequences at micro *and* macro levels of analysis. In the management literature, this is reflected in a divide between early studies that were rooted in cognitive psychology and examined how organizations categorize themselves (Porac et al., 1989) and more recent efforts that draw on sociology and theorize categories as components of a firm’s external environment (Zuckerman, 1999). In recent years, management scholars have shown considerable interest in the sociological approach and its utility for understanding an organization’s external environment. For instance, studies in strategy (Durand et al., 2007), organizational ecology (Hsu and Hannan, 2005), neo-institutionalism (Lounsbury and Rao, 2004), and collective organizational identity (Glynn, 2008) have all been enriched through the integration of sociological perspectives on categories. On the one hand, this has been incredibly useful for building interest in category studies and for conveying the power of categories as a lens for viewing organizational phenomenon. At the same time, though, there has been minimal integration of micro and macro approaches and the dispersion of studies across research domains has contributed to the proliferation of terms that are used to represent similar concepts. Thus, even while different research streams conceptualize categories in similar ways (see Negro et al., 2010), the literature is characterized by a series of weakly integrated research conversations anchored in the theoretical legacies of different base disciplines.

Based on this, our paper focuses on two goals. (1) We aim to identify points of intersection among the various streams of category studies within the management literature. In particular, we note that this work has become dominated by sociological perspectives associated with the categorical imperative. As such, there are no big ontological fissures that stand in the way of an inclusive and cohesive research conversation around categories among organization theorists (Negro et al., 2010). Rather, what is needed is a common lexicon that can help to facilitate the generation of additive knowledge organized directly around categories – rather than the extant management theories that they are typically used to support. (2) We see a great deal of potential latent in the divide between psychological and sociological approaches to category studies. Although there has been minimal integration among these perspectives – and the field has converged fairly dramatically around the latter – they provide organizational scholars with wide-ranging insights about categories and categorization at both the micro and macro levels. Thus, rather than trying to extend a macro approach to contexts that it is ill-equipped to address (see Wry et al., 2013), category studies offer natural points of

intersection between micro and macro. As such, we envision exciting possibilities to draw on insights from cognitive psychology to enrich understandings about macro-level category effects. In this way, a research programme that bridges psychological and sociological approaches may facilitate the development of 'indigenous' organizational theory as a composite of fragments from other fields (Corbett et al., 2013).

With this in mind, our paper is oriented around three themes, each aimed at contributing to the coherence required for the emergence of a distinctive – and distinctively organizational – research conversation around category studies.

First, to understand the evolution of the relatively recent literature on category studies, we conduct a systematic review of research published on the topic since 1999. In doing so, we aim to identify common assumptions and complementary insights among studies that draw on different theoretical perspectives and that use categories to advance distinct research agendas.

Second, based on our review, we classify the core publications of categorization research along several dimensions of interest, such as level of analysis, type of dependent variable studied, and type of mechanism used to explain the phenomena of interest. This helps us to summarize existing work and propose integrative definitions of core constructs, such as 'organizational category', 'organizational audience', 'category straddling', and 'category emergence'. The purpose of this exercise is to provide a state of the art for categories research, a common lexicon that bridges the various streams of management research that are currently utilizing categories.

Third, we suggest that the literature on organizational categories would be enhanced through a more programmatic integration of insights from cognitive psychology and economic sociology. Linking back to our lexicon, we argue that overlooked insights from cognitive psychology may hold the key to unlocking novel understandings about the relationship between organizations and categories. In this regard, our aim is to extend and formalize an integrative research agenda that helps to crystallize an organizational perspective on categories. The paper thus ends with a research agenda and discusses some methodological guidelines that could be used in future works that advance the organizational categories perspective.

CATEGORIZING CATEGORIES RESEARCH (1999–2012)

Origins of the Literature and Core Assumptions

Categorization is a ubiquitous process that plays out across a wide variety of contexts. For instance, movies are categorized into genres (Hsu, 2006a), patents into technology classes (Wry and Lounsbury, 2013), mutual funds into high and low risk (Lounsbury and Rao, 2004), and listed corporations into industries (Zuckerman, 1999). While the boundaries between categories cannot always be neatly drawn (Wittgenstein, 2010), categories nonetheless play a key role in imposing coherence on the social world by partitioning items into groups. As such, they are shaped by perceptions and in return shape cognition, thereby helping individuals to quickly and efficiently process vast amounts of information (Douglas, 1986; Zerubavel, 1996). Further, by enabling commensuration, categories provide an anchor for making judgments about value and worth. Some categories are

systematically privileged over others (Lakoff, 1987) and the meaning systems embedded within categories facilitate the stratification of their members based on certain attributes (Rosch and Lloyd, 1978). Based on these properties, researchers in the social sciences have cultivated research programmes dedicated to studying the micro-cognitive mechanisms behind category perceptions and categorization processes as well as the macro-social implications that these have for actors and organizations.

This line of research underlies several important assumptions that are shared among category scholars. First, categories embody behavioural expectations shaped at the interface between producers and audiences. These two groups of actors have limited attentional and cognitive resources, and they can make mistakes as they formulate judgments (Baum and Lant, 2003; Porac et al., 1995). As well, producers and audiences are conceived of as agentic, that is, what they do and how they interact can modify the structure of the categories in which their cognition is embedded (Rao et al., 2005). In terms of intellectual heritage, this means that category studies depart both from the rational 'efficient-market' perspective and from a neo-institutionalist view which sees institutions as stable patterns that mostly constrain agency to produce increasing amounts of organizational homogeneity (Zuckerman, 1999). In addition, by redefining an industry as *a category of organizations* that resemble each other and compete to some extent, category studies question the implicit assumptions of research streams that see competitive patterns as the result of an exogenously-given industry structure (e.g., see the Porac and Thomas (1990) critique of Porter's 1980 classic book). Thus, it is against those three influential research traditions that the categories literature must be assessed.

In psychology, scholars have made considerable efforts to understand the micro-foundations of categorization, examining both the properties of categories and the cognitive processes through which actors perceive them. While by no means an exhaustive list, research has examined the internal attribute structure of various categories (Rosch and Lloyd, 1978), the arrangement of categories into hierarchies that classify items into more or less inclusive groups (Rosch, 1999), variation in the schemes that different actors use to categorize the same objects (Johnson and Mervis, 1997), the varying bases for constructing categories (Spalding and Murphy, 1996), and the ways in which individuals comprehend items that mix elements from multiple categories (Cohen and Murphy, 1984; Hampton, 1988). By comparison, sociologists have tended to be more concerned with the consequences that categories have once they are formed and their meanings widely shared. Again, while not an exhaustive list, studies in this milieu have focused on the meaning systems embedded within categories and category systems, particularly as they relate to role conformity, collective identity dynamics, social sanctioning, and the evaluation of category members by external audiences (DiMaggio, 1991; Douglas, 1986; Mohr and Duquenne, 1997). Cognate research in economic sociology has focused on the ways in which categories partition fields and markets, and thus provide the infrastructure necessary for economic exchange (Pachucki and Breiger, 2010; White, 2002).

Drawing on these base literatures, management scholars have used categories as a lens for understanding a wide range of organizational phenomenon. Anchored by early work published by Porac and colleagues (Porac and Thomas, 1990; Porac et al., 1989, 1995), the cognitive psychological perspective has proven especially fruitful for understanding

how strategists conceive of the external environment and their firm's position therein. Indeed, evidence suggests that competitive dynamics within industries are structured through the mental models of organizational managers (McNamara et al., 2002; Porac et al., 1989). On the macro-side, organization theorists starting with Ezra Zuckerman (1999) have theorized categories as a feature of the external environment, and focused on their disciplining functions. For instance, studies have examined how categories shape the allocation of attention among various organizations (Zuckerman, 1999; Zuckerman and Kim, 2003) as well as their role in facilitating comparisons among the firms and products that comprise different categories (Hsu and Hannan, 2005; Phillips and Zuckerman, 2001; Rao et al., 2005). In particular, this work has emphasized the organizational 'imperative' of fitting into a specific category as a precursor to acquiring both social approval and material resources (Lounsbury and Glynn, 2001; Zuckerman, 1999).

Review Methodology

To formally assess the integration of categories insights into the management literature, we began by constructing a sampling frame designed to capture the full population of relevant studies. Several definitions for 'organizational category' have been proposed by scholars and, even though they overlap to a large extent (Negro et al., 2010), they are still different enough for the boundaries of category studies in the management literature to be fuzzy. Acknowledging the existence of a variety of approaches to the notion of 'organizational category', we thus relied on an iterative approach that resulted in the identification of 97 papers that form the core of this literature stream over the last 14 years. We chose 1999 as the start of our observation window because it coincides with the publication of two seminal pieces: Zuckerman (1999), which is seen by many as the origin of the sociological view on industry categories, and Rosa et al. (1999), which crystallized scholarly interest around the socio-cognitive dynamics of product categories.^[2]

After a naïve search in Thomson Reuter's Web of Science (WOS) database using 'categor*' as a keyword, we skimmed through the titles and abstracts of the papers published in more than 150 journals. We found that all the papers using categories as the primary level of analysis were published in the second half of the 1990s and later. Looking at these articles, it was clear that many bore the imprint of Porac and colleagues' early work (Porac and Thomas, 1990; Porac et al., 1989, 1995) and focused on the self-categorization of organizations into strategic groups. Starting at the turn of the millennium, another stream of papers began to appear, anchored by Zuckerman's (1999) sociological view of categories as carriers of the cultural infrastructure that audiences use to understand and evaluate organizations.

To identify journals that publish categorization research, we searched for all papers that cited both Porac et al. (1989) and Zuckerman (1999). Our final list of journals included the 20 which published the most papers citing these two seminal works, as well as all of the journals in the Financial Times 45 list, resulting in a final sample of 52 journals. To identify core papers in the organizational categories literature, we searched each journal from 1999 to 2012 using two filters. First, we searched for 'categor*' or 'organizational form*' in the title, keywords, and abstract fields of the WOS database.^[3] At this stage, we excluded papers that used these terms without reference to the theoretical

concept of ‘organizational category’ (e.g., quotes like: ‘We also find that the greater the range of upper echelon affiliations across the categories of upstream, horizontal, and downstream affiliations, the more . . .’ were excluded). Second, from the remaining articles, we excluded those that did not substantially address (at least one of) the following concepts: audience*, collection*, group*, evaluat*, classif*, critic*, producer*, member*, cluster*, code*, identit*, boundar*.^[4] This yielded a final sample of 97 papers comprising the core organizational categories literature published between 1999 and 2012.

We read each of the 97 papers in full, systematically analysing their main characteristics: research methods, dependent variables of interest, explanatory mechanisms, theories drawn upon, and the type of category examined. The Appendix at the end of the paper details the codes that we assigned to each paper. This Appendix is meant to be a simplified representation of the evolution of categorization research over the last 14 years. Papers are presented in chronological order but the list can be searched through easily using seven criteria: author name, method, dependent variable, explanatory mechanism, audience type, category type, and complementary theoretical perspectives.

Surveying the Scholarly Landscape

Theoretical fragmentation and a shifting worldview. The overriding finding of our review is that the research on organizational categories is fragmented. Reflecting the division of category studies among social sciences disciplines, the organizational literature shows evidence of a divide between studies that draw on cognitive psychology and focus on organizational self-categorization (Porac et al., 1989), versus those that are oriented in sociology and the categorization of organizations by (usually) external audiences (Hsu and Hannan, 2005; Zuckerman, 1999). Figure 1 displays this divide. In recent years,

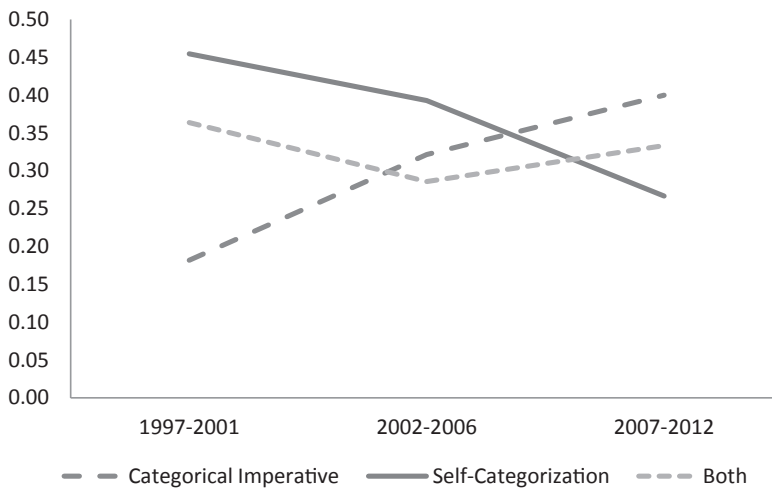


Figure 1. Self-categorization vs. categorical imperative in categorization research

Note: In Figures 1–5, y-axis displays the number of papers concerned as proportions (calculated from the full sample of 97 papers).

Table I. Self-categorization vs. categorical imperative

	<i>Self-categorization (SC)</i>	<i>Categorical imperative (CI)</i>
Category dynamics	Emphasis on the ability of organizations to construe/create categories and act upon that basis	Emphasis on the ability of external audiences to impose constraints or sanctions on category members (e.g., organizations)
Category boundaries	In flux, fuzzy, and ambiguous	Defined clearly by external audiences but can change over time or differ across audiences
Inter-organizational identity dynamics	Managerial attention and cognition, and organizational rivalry shape categories	Collective identities and identity codes are selected, borrowed, and recombined
Source of legitimacy	Self-selection into the category, imitative behaviour, strategic use of linguistic tools (rhetoric, storytelling etc.)	Understanding of externally imposed codes and norms, and conformance of identity claims to those codes and norms
Source of contestation	Cognitive limitations; management errors	Category straddling, hybridity, ambiguity of boundaries
Category legitimacy comes from	Shared understanding and interpretive frames among members	Shared understanding and interpretive frames among external audiences
Importance of labels	Crucial when organizations seek membership into an existing category	Crucial when external audiences agree on labelling practices

there has been a trend towards examining organizational self-categorization from a sociological perspective – as indicated in the ‘both’ line in Figure 1 – with studies arguing that legitimacy is predicated on an organization conveying an identity that fits within an established category (e.g., Lounsbury and Glynn, 2001; Navis and Glynn, 2011; Wry et al., 2011). However, studies that take a cognitive psychological view to ‘self-categorization’ can be distinguished from ‘categorical imperative’ studies based on their conceptualization of category dynamics, boundaries, and identities, as well as in their approach to contestation, and the importance of labels. Table I contrasts the two perspectives in more detail.

In this regard, studies adopting a psychological perspective to self-categorization take the view that organizations with common attributes see themselves as cohabitants within the same category. Sparked to a considerable extent by Porac and colleagues’ early work (Porac and Thomas, 1990; Porac et al., 1989, 1995) this view was responsible for much of the early integration of categories insights into the management literature. The majority of this work focused on how the category structure of an industry, and the associated cognitive maps used by managers, affect competitive dynamics. This work is commonly associated with the literature on competitive groups in strategic management (e.g., McNamara et al., 2002; Reger and Huff, 1993).

Looking at these studies, it is interesting to note that while they opened the door for management scholars to draw on the broad categories literature in cognitive psychology, this integration was ad hoc and selective. For example, Porac and colleagues (Porac and

Thomas, 1990; Porac et al., 1989, 1995) drew on research about hierarchical category structures (Rosch and Lloyd, 1978) – see the definition of ‘*classification hierarchy*’ below – to map the category structure of the Scottish knitwear industry. However, subsequent studies did not engage the implications of this insight in a systematic way, nor did they engage the broader range of insights that cognitive psychologists were generating about the internal structure of categories, the comprehension of mixed categories, and the potential for individuals to use different grouping criteria to form categories (Cohen and Murphy, 1984; Hampton, 1988; Spalding and Murphy, 1996; Rosch and Lloyd, 1978). We see this as a missed opportunity.

In comparison, the ‘categorical imperative’ treats categories as components of the external environment and associates them with the expectations that audiences such as critics, regulators, employees, and consumers impose on different ‘types’ of organizations (Hsu and Hannan, 2005; Zuckerman, 1999). The central insight is that categories convey the cultural ‘codes’ that are associated with belonging to a particular category and thus facilitate a two-mode evaluation process where audiences first determine which category an organization fits into, and then determine the degree to which it conforms to category expectations (Phillips and Zuckerman, 2001; and see Durand and Paoella, 2013 for a discussion and review). This view can be traced to Zuckerman’s (1999) influential study showing that firms which failed to conform to specific industry categories were systematically overlooked by analysts who specialized in their industries, resulting in lower, and more volatile, share prices (see also Hsu, 2006b; Hsu et al., 2009; Zuckerman et al., 2003).

As Figure 1 shows, there has been a progressive shift towards the categorical imperative view among management scholars. Given that culture and meaning are important to most contemporary organization theories (Weber and Dacin, 2011), it is not surprising that the categorical imperative has diffused across multiple management disciplines. For example, it is now widely accepted in the identity literature that organizations seek out distinctive identities within the context of collective identity categories (Lounsbury and Glynn, 2001; Wry et al., 2011). Organizational ecologists have drawn on similar insights to sharpen their theorization of organizational forms and niches as grounded in collective identity ‘codes’ (Hannan, 2010; Hsu and Hannan, 2005). Institutional theorists have also found common cause with the categories literature, showing that categories shape action by conveying cultural norms and expectations, such as those associated with institutional logics (Jones et al., 2012) and social movement frames (Rao et al., 2003). In this regard, categories are a useful theoretical tool because they capture meaning at a level that is organizationally proximate, amenable to empirical modelling, and capable of integrating meanings from higher-order aggregates, such as logics, without being subsumed by them.

By comparison, the literature on competitive groups associated with early category papers published in the aftermath of the Porac et al. contributions, has lost momentum as an auxiliary to organizational category studies. Figure 2 plots integration of category insights across various domains of management literature over time.

Along with the ascendance of the categorical imperative, there has been a shift in the dependent variables typically used in category studies. Figure 3 plots seven outcome variables that have been examined since 1999. From this, it is clear that focus has

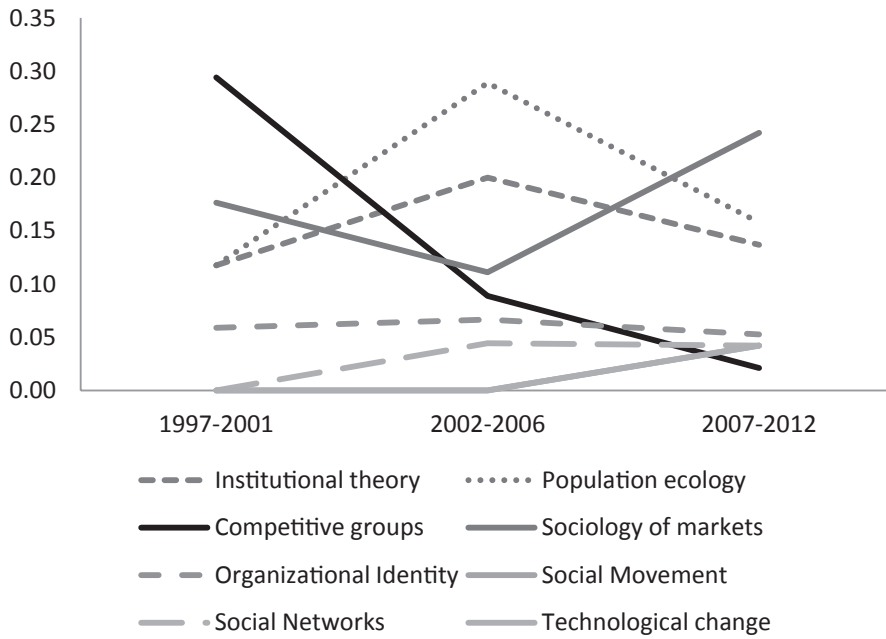


Figure 2. Comparative use of various complementary theories in categorization papers

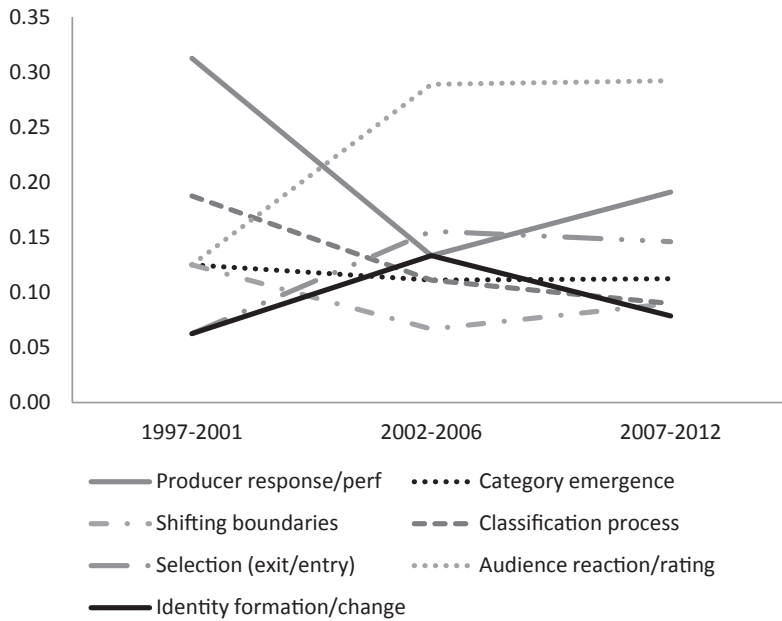


Figure 3. Comparative study of various dependent variables in categorization research

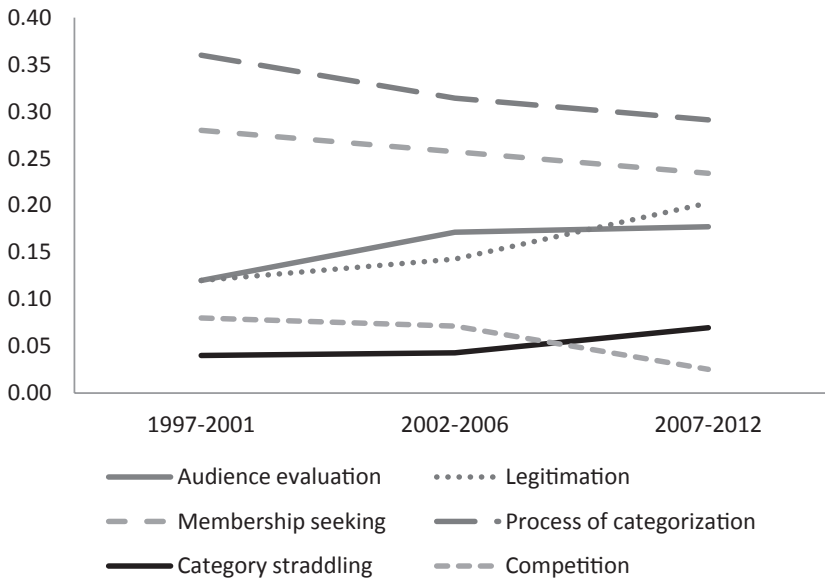


Figure 4. Comparative use of various explanatory mechanisms in categorization research

shifted away from the producer-side of the category equation – typically associated with a cognitive psychological approach – to the audience-side view advanced by the categorical imperative. Looking within these studies, it is also clear that sociological mechanisms have become the most prominent means used to explain category effects. As Figure 4 shows, the most common mechanisms found in recent papers are the characteristics of the categorization process itself, membership-seeking behaviour, and the need to acquire legitimacy. As such, whereas early research on organizational self-categorization focused on psychological explanations to explain perceptions of industry structure (Porac et al., 1989), more recent work highlights the role of legitimacy and membership-seeking in self-categorization processes (Glynn, 2008; Navis and Glynn, 2011; Wry et al., 2011).

Methodological pluralism. As shown in Figure 5, categorization research welcomes diverse methodologies. Still, quantitative regression-based studies have dominated the field. Interview-based papers are rare, while theoretical refinements based on case studies have become more popular and, to some extent, seem to have replaced pure theory papers in recent years. There is also a trend towards papers using content analysis to examine the cultural meanings associated with specific categories (see Weber et al., 2008 as an exemplar of this approach).

A decentralized research arena. We looked at the university affiliations of the 97 papers' authors. For each paper, we attributed one point in the following way: for single-authored papers, the point was attributed to the primary university with which the author was affiliated at the time of publication; for co-authored papers, each affiliated university was attributed $1/N$ points, with N being the number of authors. In total, we

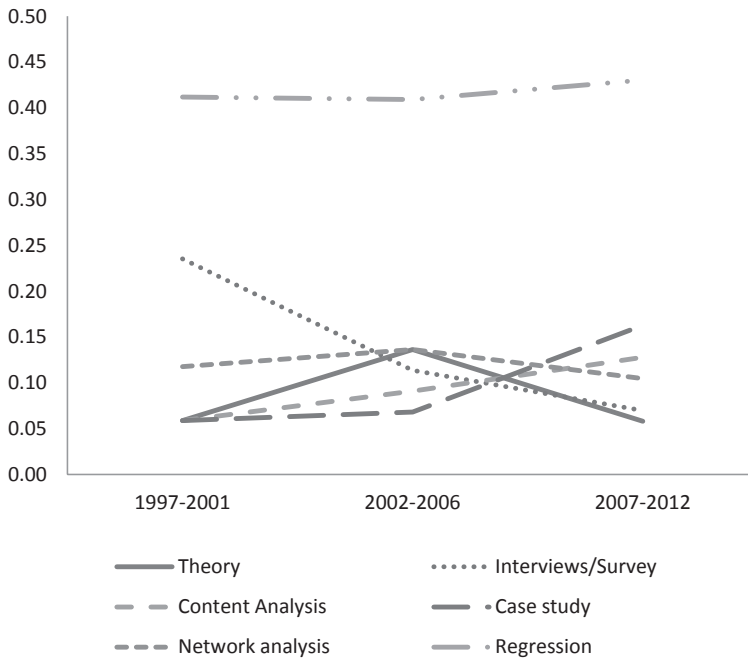


Figure 5. Comparative use of various methods in categorization research

attributed 97 affiliation points. Two universities stand out and seem to play a central role in this research arena: Stanford University (11.6 points) and Emory University (8.8 points). University of California–Davis places as a far third with 3.6 points, and another seven universities score more than 2 points. But the top ten affiliations only account for 42.8 points out of 97, which means that the literature has been enriched over time by contributions coming from dozens of institutions, in a very decentralized fashion. Geographically, though, the affiliation patterns show a fair amount of concentration on the USA (16 affiliations out of the top 20 correspond to US universities; 2 are Canadian, 1 is Asian, and 1 European).

‘Category studies’ do not exist . . . until 2009. Reflecting the fragmentation at the level of scholarly engagement and the associated proliferation of terminology across various strands of research, there have historically been very few references to ‘category studies’ as a distinct area within management research. Indeed, we searched for occurrences of ‘categor* theory’, ‘categor* literature’, ‘categor* research’, and their common variants in the 97 papers that we identified and found almost no mention of these terms before 2009. In earlier papers, categories were mostly referred to as intermediary constructs that could complement our understanding of organizational phenomena from the viewpoint of already established theories. However, since 2009, references to a distinct categories literature have been much more frequent, with scholars increasingly examining categorization systems (Fleischer, 2009; Ruef and Patterson, 2009; Wry and Lounsbury, 2013), category properties (Kennedy et al., 2010; Negro et al., 2011; Pontikes, 2012), and new category emergence (Kennedy, 2008; Khaire and Wadhvani, 2010).

Indeed, there is evidence of authors reversing the approach of using categories to enrich other theories, and instead borrowing elements from other perspectives to enrich categories research (see, for instance, the increasing use of ‘legitimation’ in Figure 4). For example, in their 2004 paper on product categories in the mutual fund industry, Lounsbury and Rao drew on the concept of product category to contribute to the literatures on ‘industry media’, ‘institutional analysis’, and the ‘political-cultural approach to markets’ (pp. 990–93). Eight years later, Jones et al. (2012), in a paper on product categories in architecture, drew on institutional analysis primarily to ‘extend category research’ (p. 1524). In other words, categories are no longer exclusively considered an independent variable that has the potential to contribute to established theories. Rather, they are beginning to emerge as a research area that scholars are claiming contributions to, possibly drawing on auxiliary literatures in the process. Still, if we consider Porac et al. (1989) as a seminal paper that catalysed the early integration of categories insights into the management literature, it means that it took 20 years for the scholarly community to begin recognizing the emergence of category studies as a distinct area of management scholarship!

Despite this recent trend, the definitional landscape of category studies bears the imprint of its history as an auxiliary to other approaches. Thus, while there are a number of common assumptions about categories and their effects among management theories (Negro et al., 2010), there has been a proliferation of terms used to label concepts that are conceptually quite similar. And, while this has likely helped to propel categories research within specific domains, we suspect that some pruning would help to facilitate a more inclusive research conversation with ‘category studies’ – rather than extant management disciplines – as the key theoretical anchor.

ANOTHER CATEGORICAL IMPERATIVE: BUILDING A COMMON LEXICON

Despite increasing recognition of ‘category studies’ as a unique area within management scholarship, the conceptual landscape is littered with terms that are nominally distinct, yet refer to similar or overlapping constructs. Still, when we examine current category studies, it is clear that almost all share a sociological orientation. As such, there are no fundamental ontological differences standing in the way of a research conversation emerging among category scholars with an interest in organizational ecology, collective identity, strategy, or neo-institutionalism. At the same time, the convergent insights that may be generated through such conversation may help to significantly advance ‘category studies’ as a distinct and impactful research area.

In this section, we provide integrative definitions of the categorization perspective’s core constructs in an attempt to bridge the various research streams identified in our literature review. While we feature relevant definitions from earlier studies based in cognitive psychology, our lexicon reflects the current prominence of the categorical imperative, and is thus dominated by definitions associated with this ontological approach. In what follows, we lump together different labels that are similar enough for us to identify a meaningful common denominator. Our definitions essentially delineate categories of phenomena, and we sought to maximize contrast between definitions and minimize the number of duplicate labels as we worked towards writing this lexicon.^[5]

Organizational Category

An organizational category is recognized as such when similar member organizations and a set of associated external audiences come to a mutual understanding of the material and symbolic resources that serve as a basis to assess membership in the category. Material resources include technologies, skills, and funding sources. Symbolic resources include identities, certifications, and cultural features (see Wry et al., 2013). Often, material and symbolic aspects of categories are ‘thickly interwoven’ (Porac et al., 2011, p. 652). A category only exists to the extent that it is recognized as a salient unit of analysis by a sufficient number of member organizations and external audiences (e.g., critics, the media, or regulatory bodies). This definition, in most contexts, would overlap to a large extent with that of an ‘organizational form’, defined as a category whose legitimation among relevant audiences exceeds a certain threshold (Hannan et al., 2007, p. 85).

Product Category

A product category is recognized as such when similar sociotechnical artefacts come to be exchanged as products within a distinct market segment that serves as a basis for interaction between producers, buyers, and external audiences (e.g., critics). A product category coalesces around a set of sufficiently similar product features involving technologies, cultural features, values, and potential uses.

Audience

In many respects, the concept of ‘audience’ transposes the notion of ‘stakeholder’ from the organizational to the organizational category level. *An audience is a group of individuals or organizations that enters into a relationship of mutual dependence with an organizational category. This relationship is based on the following characteristics: (1) an audience attends to category members’ offerings (e.g., products, jobs, shares, suggested policy reforms, information, values) as part of a comparison set, considering both the offerings of the category as a whole and, comparatively, of the category’s various members; (2) an audience directly or indirectly exerts control over the material and symbolic output of category members; and (3) an audience can reward or sanction category members.* An audience can be internal (e.g. employees) or external to the category’s member organizations (e.g. financial analysts).

For example, financial analysts specializing in the restaurant industry provide an opinion about the industry as a whole, and then, comparatively, formulate recommendations for investors about the various corporations categorized in that industry (Hsu and Hannan, 2005; Zuckerman, 1999). By influencing investor decisions, they exert indirect control over the financial resources available to category members, and direct control over members’ reputation, thereby affecting both material and symbolic aspects of the category. When analysts decide to upgrade or downgrade their rating of category members, they reward or sanction members.

Classification Hierarchy (or Categorization Hierarchy)

A classification hierarchy is a cognitive representation of the structural relationships between categories that has achieved some consensus among category members and/or audiences. A classification hierarchy

describes the various levels at which categorization takes place and defines how these levels are embedded or nested within one another (e.g., firms are often categorized by industry, then within industries by product type). In industry-based classification hierarchies, certain sub-categories within industries are also known as niches. At the population level, niches are defined at the intersection of certain types of organizational capabilities, product offerings, and audience tastes (Hannan, 2010).

While categories are meaningful at all levels of a hierarchy, they are not equally influential or salient (see definition of ‘category saliency’ below). The types of distinctions that managers rely on to determine key competitors (Porac et al., 1989) and audiences use to evaluate organizations and products (Zuckerman, 1999) are based on ‘basic’ level categories: the level of categorization that maximizes the number of attributes shared by members, and minimizes the number of attributes shared with other categories (Rosch and Lloyd, 1978).

A classification hierarchy is said to be stable when both category members and key audiences recognize it. When there is disagreement, the hierarchy is said to be ‘contested’ or ‘in flux’. Contested hierarchies typically witness an ongoing evolution of the category boundaries that underlie their structure.

Category Boundaries (or Categorical Boundaries)

In absolute terms, category boundaries define what lies inside and what lies outside a category. In relative terms, category boundaries help distinguish between different categories. Category boundaries often consist of lists of category attributes that offerings must possess to fall within the category’s boundaries. Category boundaries can be more or less stable, more or less clear, and can be subject to disagreement among category members and audiences (see Lamont and Molnar, 2002). Congruence between an organization’s offerings and what lies within a category’s boundaries is not enough for the organization to establish membership in the category (i.e., it is a necessary but not sufficient condition).

Category Membership

An organization is recognized as a category member by audiences and other members when: (1) they believe that the organization’s offerings fall within the boundaries of the category; and (2) they believe that the organization is focused enough. In the late 1980s, many financial analysts specializing in the restaurant industry did not cover PepsiCo despite the fact that the firm’s offerings fell within the boundaries of that industry (via brands such as Taco Bell, KFC, or Pizza Hut). That is because PepsiCo did not meet the second requirement – the firm was not focused enough and was mostly seen as a beverage company (Zuckerman, 1999). Note that perfect agreement across all audience members is not a requirement of this definition or limitation to its applicability. In fact, disagreement represents an empirical opportunity to measure membership in a non-binary way (e.g., Zuckerman found that 20 per cent of analysts considered PepsiCo a member of the fast-food category, so membership was neither 0 nor 1 at the aggregate level). Different research streams within the literature have come to a similar conclusion regarding the existence of ‘diagnostic attributes’, i.e. core attributes that are most correlated with others to

predict category membership (Porac et al., 2011, p. 656; this notion is akin to the ‘test code’ described by Hannan et al., 2007, p. 81 and parallels discussions about ‘cue validity’ in cognitive psychology, e.g. Rosch and Lloyd, 1978).

Partial Membership

Based on the previous definition, *partial membership in a category occurs when: (1) the partial member’s offering possesses some, but not all, the category attributes used to make a boundary assessment; and (2) the partial member is not focused enough, in terms of its offerings, to be perceived as a full member.*

Partial membership can be caused by (1) or by (2), exclusively, or by a combination of the two. For an organization to fall within the ‘fast-food restaurant’ category, for instance, it must possess attributes such as ‘friendly atmosphere’, ‘counter service’, ‘limited menu’, and ‘bright colours’ (Porac and Thomas, 1994). A restaurant chain could be considered a partial member of the ‘fast-food’ category if it possesses only three of the four category attributes cited above. Or it could be considered a partial member if it is also significantly involved in other activities (say, farming), thereby decreasing perception of focus among audiences because of diversification. PepsiCo, for instance, was judged focused enough by only two out of ten analysts specializing in the restaurant industry (Zuckerman, 1999), resulting in an assessment of partial membership from the viewpoint of that audience, and despite the firm’s restaurant chains possessing all the attributes listed in the category’s definition.

A widely-used measure of a member’s focus on any given category is *grade of membership* (or GoM, cf. Hannan et al., 2007). For example, if a restaurant ‘is categorized as belonging to “Chicken wings” and “Fast food”, we assign it a GoM of one-half in each of these categories and a GoM of zero in all of the others’ (Kovács and Hannan, 2010). There are limitations to this approach, though. In the previous example, GoM captures requirement (2) above but not (1), so it is only a partial measure of partial membership (e.g., it does not capture how many ‘fast-food’ attributes the restaurant possesses out of the four identified by Porac and Thomas). Also, while there are a variety of ways that an organization might dilute its GoM in a category, the measure treats them as equivalents. This has been recognized as problematic in the cognitive psychology literature (Cohen and Murphy, 1984).

External Identity (or Code)

The material and symbolic resources that serve as a basis for external audiences to assess membership in a category define the category’s external identity (or code). External identities form the basis of audience expectations. Violation of those expectations can lead to social sanctions for category members (Durand et al., 2007; Hannan et al., 2003; McKendrick et al., 2003). External identities may be construed by borrowing elements from several *institutional logics* (Jones et al., 2012) – defined as coherent nexuses of material practices and sociocultural elements that convey meaning and drive agency – but this is not required for a code to emerge (Kennedy, 2008; Khaire and Wadhvani, 2010; Weber et al., 2008).

Category Straddling (or Category Spanning)

An organization engages in category straddling when it has simultaneous membership in two or more categories located at the same level of the classification hierarchy. For instance, an ‘American thriller’ does not straddle categories, but a ‘comedy-thriller’ does (at the ‘genre’ level of classification), and an American-Indian comedy does too (at the ‘country’ level of classification). Both ‘genre’ and ‘country’ are salient categories in the movie industry, as visible in the Internet Movie Database for instance.

Category straddling makes social evaluations more neutral, i.e. a positively-perceived organization that straddles categories will receive less positive social evaluations (Hsu, 2006a; Hsu et al., 2009), and a negatively-perceived organization that straddles categories will receive less negative social evaluations (Vergne, 2012). This effect is reinforced when: the straddled categories have high contrast (Kovács and Hannan, 2010) or high saliency (Vergne, 2012), when the audience consists of market-takers as opposed to market-makers (Pontikes, 2012), when an organization straddles more than its peers (Durand et al., 2007), or when the straddling organization is strongly identified with the illegitimate category of which it becomes a member (Alexy and George, 2013). Conversely, this effect is mitigated when the straddled categories are nascent (Ruef and Patterson, 2009) or have low currency (Alexy and George, 2013), when many peers have already straddled in the past (Rao et al., 2005), or when the straddled categories involve either common types of knowledge or similar economic activities (Wry and Lounsbury, 2013).

Category Legitimacy vs. Category Legitimation

As visible in Figures 2 and 4 above, both organizational ecology and institutional theory have significantly contributed to the development of category studies within organizational research. But these two theoretical streams differ in important ways and this may partly explain the lack of theoretical integration within categories research. In particular, the concepts of legitimation (Hannan et al., 2007) and legitimacy (Suchman, 1995) refer to different phenomena, but these differences are often overlooked by category researchers, sometimes resulting in confusing statements.^[6]

Whereas for category researchers inspired by institutional theory, *legitimacy is about congruence with broad social norms* (Suchman, 1995), scholars in the ecological tradition view *legitimation as ‘conformity of feature values to schemata’, such that ‘legitimation grows with the level of consensus within the audience about the meaning of a label’* (Hannan et al., 2007, p. 98). Thus, according to the former, a criminal organization is not legitimate because it violates many of the norms that society regards as appropriate. But according to the latter, a criminal organization can be legitimate provided that it conforms to the population schemata (e.g., the boss must be chosen among close family members).

In studies of category emergence, where congruence with social norms and internal fit with population schemata are simultaneously at stake, conflating category legitimacy and category legitimation can be very problematic. In particular, a category of organizations may well achieve legitimation without achieving legitimacy, as Hudson and Okhuysen (2009) showed in the case of men’s bathhouses (see also the definition of ‘stigmatized

category' below, and Vergne (2011) for methodological implications in terms legitimacy measurement). As well, an emerging category of firms can gain legitimacy without gaining legitimation, as is the case in new industries that serve appropriate social goals but still lack consensual schemata that guarantee the industry's economic sustainability (e.g., the solar energy industry).

The notion of 'category currency', defined as the extent to which a category has 'clear meaning and positive appeal' (Kennedy et al., 2010, p. 372), can be seen as a way to bridge the notions of legitimation ('clear meaning') and legitimacy ('positive appeal'). As currency increases, audience attention shifts from the category as a whole to the differentiation of firms within (Navis and Glynn, 2010). However, in industry settings where legitimacy and legitimation are uncorrelated – typically in stigmatized industries and in certain emerging markets – it may be preferable to maintain the distinction between meaning clarity and appeal by keeping separate the two notions of category legitimation and category legitimacy. In fact, attending simultaneously to phenomena of legitimation and legitimacy represents a promising avenue for integrating the institutional and ecological streams within a broader theory of organizational categories.

Category Prototype

There are several accepted definitions of what constitutes a prototype. The term derives from the Greek word 'prototypon' which refers to the original or primitive form. According to this definition, the most prototypical firm in an industry would be the oldest one. However, modern category studies have insisted on the central role of the producer–audience interface, which led to a redefinition of the *category prototype as the most representative or central member of a category in the eyes of a given audience* (Rosch and Mervis, 1975).

Still, this definition has been interpreted in three different ways. Some see the prototype as the *average member* of a category (see Tunney and Fernie, 2012, for a discussion). Accordingly, a prototypical industry member is a firm that scores average values on the most salient attributes of the industry category (e.g., average revenues, average profits, average product quality). Others conceive of the prototype as the *most salient* member of a category from the viewpoint of the audience. More specifically, the prototypical firm in an industry would then be the one that respondents name first when asked: 'Could you name a firm in industry X?' If respondents were asked to name a firm in the mobile phone industry, they may first think of Apple because the firm is highly visible, although it is probably very far from the industry's average member (perhaps HTC would be closer to that average and fit best the definition of prototype-as-average in that industry). Note that these two interpretations of the notion differ in significant ways: whereas the 'prototype-as-average' helps identify the central tendency in a category, the 'high-saliency-prototype' will likely point to an extreme case, that is, an outlier. Finally, a third stream of research conceives of the prototype not as a member of a category (average or extreme) but as an *abstract representation* that encodes the salient attributes of the category members (Jones et al., 2012).

While it is well beyond the scope of this paper to provide a unified theory of prototypicality, we believe that category scholars should be aware of the different definitions

of this construct. To foster knowledge accumulation in the long run, we suggest testing these different perspectives against one another using qualitative research designs (e.g., surveying a category's audience would help understand which prototypes they actually have in mind). In the short run, instead of trying to measure prototypicality in general terms, scholars could focus their measurement effort on more precise constructs with higher internal validity, such as saliency (by surveying the audience of interest), isomorphism (often measured as deviation from industry average), or fit with schemata (by looking at departure from population templates).

Category Properties

Category attributes. These are *dimensions of an organization's offering that are used by category members and audiences to assess whether the offering falls within categorical boundaries.* The inclusion of attributes in a category's definition can be more or less consensual among category members and audiences, and certain category attributes may weigh more than others in the boundary assessment. Possession of certain attributes but not others can lead to an assessment of partial membership in the category.

Category fuzziness. A category's boundaries are fuzzier *when: (1) there is disagreement among producers and audiences about which attributes enter the category's definition; and (2) category members have multiple memberships in other categories* (or, equivalently, have a low GoM). Fuzzier boundaries result in more difficulties to assess category membership. For instance, if audiences disagree on whether a restaurant must have counter service to be considered a fast-food category member, or if many members of that category have simultaneous memberships in the coffee shop industry, then the fast-food category will be fuzzier and membership harder to assess.

Category contrast. This is the *average GoM across all category members* (e.g., Negro et al., 2011). A higher contrast logically implies fuzzier boundaries (but the opposite is not true, since fuzziness can be caused by disagreement about category attributes).

Category leniency. This is the *extent to which category membership constrains affiliated organizations. A category is more lenient to the extent that it has: (1) fuzzier boundaries; and (2) a stronger overlap in attributes with other categories.* As a consequence, lenient categories tend to be populated by organizations with multiple category memberships (Pontikes, 2012).

Category saliency. This corresponds to *how much attention audiences devote to a particular category within the broader classification hierarchy.* For instance, as they classify arms producers, expert journalists devote more attention to country categories than to industry categories (e.g., whether an arms producer is American or Chinese matters more than its membership in other industry categories, such as medical devices) (Vergne, 2012). In the Internet Movie Database, a movie's genre is systematically displayed before the movie's country affiliation, suggesting that genre categories are more salient than country categories in the film industry.

Category similarity. This reflects the *extent to which two (or more) categories share attributes in common*. For instance, the categories for haute and nouvelle cuisine became increasingly similar as chefs transposed practices and ingredients from one category into the other (Rao et al., 2003). The penalty for spanning between categories is attenuated when categories become similar (Wry and Lounsbury, 2013).

Category stigmatization. A stigmatized category carries a *persistent liability that prompts out-group members to keep their distance to avoid a potentially harmful association* (Devers et al., 2009; Hudson and Okhuysen, 2009; Vergne, 2012). Stigmatized industry categories include weapons manufacturing, tobacco, abortion service providers, pornography (Jensen, 2010), or cadaver trade (Anteby, 2010).

BUILDING AN INTEGRATIVE RESEARCH AGENDA

As our review suggests, the turn towards the categorical imperative in organizational research has been exceptionally fruitful for developing insights about the relationship between organizations and their external environment. From this perspective, categories provide a powerful lens because they embody meaning at a level that is both organizationally proximate and amenable to empirical modelling. Perhaps more importantly, though, categories can be empirically linked with audience perceptions and, in turn, their willingness to provide material support to an organization. Based on this – and as our lexicon shows – scholarship has progressed from illustrating the existence of category effects (Hsu, 2006b; Hsu et al., 2009; Zuckerman, 1999) to more directly examining category properties, relationships, combinations, and how these affect audience perceptions (Hsu and Hannan, 2005; Ruef and Patterson, 2009; Vergne, 2012; Wry and Lounsbury, 2013). On one hand, this work has deepened our understanding of category effects. However, it has also deflected attention away from the earlier cognitive approach to categories research, arguably to the detriment of the field (Durand and Paoletta, 2013; Kennedy and Fiss, 2013).

As ‘category studies’ continue to emerge as a distinct research area, we see a number of benefits in the field returning to its roots and embracing insights from cognitive psychology (e.g., Porac and Thomas, 1990; Porac et al., 1989). To be clear, we are not agitating for an ontological repositioning of categories research (Durand and Paoletta, 2013), or the reinvigoration of studies that link organizational self-classification to competitive dynamics (Kaplan, 2011). Rather we argue that powerful insights may emerge by identifying points of intersection between micro and macro approaches to categories research. In particular, leveraging micro insights, such as how audience members conceive of category prototypes and stereotypes (Durand and Vergne, 2012), may help to provide a fresh perspective on macro-level category effects, while laying the foundation for a uniquely organizational approach to category studies. Thus, whereas the use of categories as an auxiliary perspective focuses on its intersection with different organizational theories, a discrete focus on category studies signals the utility of ‘looking across the fence’ (Agarwal and Hoetker, 2007) to consider multiple perspectives on categories and how these might be bridged in ways that advance management scholarship more generally (see also Durand and Paoletta, 2013;

Kennedy and Fiss, 2013). Indeed, we find it somewhat ironic that studies which have pursued questions about category structure, audience perceptions, and strategic categorization, have largely ignored research in adjacent disciplines that deal directly with these issues. In what follows, we discuss a few – but by no means exhaustive – insights from cognitive psychology that relate to these issues, highlighting their implications for organizational category studies.

Category Structure

One of the main contributions of recent research on the categorical imperative has been to show that its effects are moderated by category structure (Kovács and Hannan, 2010; Negro et al., 2010; Ruef and Patterson, 2009; Wry and Lounsbury, 2013). As reflected in our lexicon, this work importantly directs attention towards the importance of category ‘similarity’, ‘fuzziness’, and ‘contrast’. However, while these are nominally different considerations, each assumes that categories are more or less related in terms of shared members and/or attributes, and that this affects the potency of their organizational effects. While this is undoubtedly true in some cases, insights from cognitive psychology suggest that it is a partial view and that categories may be related in a variety of other ways.

As reflected in early research on managerial categorization (Porac and Thomas, 1990; Porac et al., 1989), studies in cognitive psychology have shown that categories are related through their positions within a ‘classification hierarchy’ (Rosch et al., 1976). As with other types of inter-category relationships, this may have important implications for the potency of category effects. For instance, a higher-level category may comprise multiple sub-categories. And, while the categorical imperative assumes that category mixing is only problematic when categories at the same hierarchical level are mixed, this is not assured. For instance, products or organizations may enjoy considerable leeway when it comes to combining categories that share a common root (Rosch, 1978). To the extent that this is true, it signals a potentially fruitful research direction examining the ways in which categories variously enable and constrain innovation depending on their historical trajectory. Indeed, it seems quite possible that categories with many sub-classes may allow their members more leeway to innovate – and thus accommodate a broader range of legitimate positions – than categories with few sub-categories (Brewer, 1993). Thus, whereas the categorical imperative focuses on categories primarily as constraints, closer consideration of hierarchical category structures may contribute to a broader understanding about the varying capacity of categories to accommodate innovation as well as different strategic differentiation vectors (Deephouse, 1999).

In addition, the concepts of ‘fuzziness’ and ‘similarity’ associated with the categorical imperative may be combined with insights about hierarchical relationships to offer insights about the multifaceted nature of inter-category relationships. For instance, categories at the same level of a classification hierarchy may be more or less similar to each other, and categories may comprise sub-classes with varying levels of contrast. In an initial attempt to bridge these views, Wry and Lounsbury (2013) examined what happened when nanotechnology firms spanned individual patent classes and how these effects shifted when these classes were associated with

different higher-level categories, namely 'science' and 'technology'. Whereas all types of spanning had a detrimental effect on the likelihood of a firm receiving venture capital, this effect was attenuated when spanning took place across similar categories, and was reversed when it took place among similar patent classes that were associated with different high-level categories. Building on this, we anticipate research that embraces categorization as multifaceted and grapples with the implications that this complexity has for our understanding of category effects (see also Zhao et al., 2013).

In addition to highlighting the importance of considering hierarchical category-relationships, cognitive psychological research has shown that categories can be symbiotically related (Cohen and Murphy, 1984; Hampton, 1988; Murphy, 1988). Thus, rather than locating categories along a continuum ranging from similar/fuzzy to distinct/high-contrast (Pontikes, 2012; Ruef and Patterson, 2009), this approach evokes a view of categories as distinct, yet potentially related in a variety of different ways. This has a number of implications for how we theorize category spanning and organizational hybridity (Battilana and Dorado, 2010; Durand et al., 2007). For instance, the categorical imperative assumes that mixing elements of multiple and distinct categories causes problematic ambiguity about how an organization should be classified and evaluated (Zuckerman, 1999). However, viewing category combinations as composites directs attention to the ways that categories can be symbiotic and mutually supporting. Indeed, studies have shown that 'science' can be a key input into 'technological development' (Rosenberg and Nelson, 1994) and that the economic activities of microfinance institutions can help to enable their social outreach (Frank, 2008). Likewise, haute and nouvelle cuisine were distinct categories for many years, during which understandings evolved about how they might be appropriately mixed (Durand et al., 2007). In the global arms industry, category spanning is the norm as industry members tend to have memberships in multiple, unrelated industries, and only realize half of their revenues in the defence sector on average (Vergne, 2012). While some hybrids are negatively viewed, it is problematic to assume that this is always the case. As such, the integration of insights from cognitive psychology highlights the importance of considering how categories are related and the degree to which audiences view particular mixes as appropriate. A key implication is that evaluation may not always take place against the backdrop of individual categories: this is a considerable point of departure from the categorical imperative, and something that future studies should take into account when theorizing category effects.

Audience Perceptions

As reflected in our lexicon, 'audiences' and 'codes' are key explanatory mechanisms that sociological approaches use to account for category effects (Hannan et al., 2003; Hsu and Hannan, 2005; Lounsbury and Glynn, 2001; Wry et al., 2011). In this regard, extant work makes a close association between individual categories and the codes that audiences use to evaluate their members. As per our discussion above, cognitive psychology points to opportunities for broadening this perspective. Indeed, studies of composite concepts such as cognition (Hampton, 1988; Murphy, 1988) have shown that, while

individual categories do indeed play an important role shaping cognition, audiences may also have codes that are relevant to category combinations. Thus, audiences may be readily able to interpret ‘category straddling’ organizations, contrary to the prediction of the categorical imperative (see also Kennedy and Fiss, 2013).

More specifically, this approach directs attention to the importance of category ‘attributes’, and shows that the perception of category mixing relies on an asymmetric structure where one category anchors interpretation, but has its attributes modified by those of the other category (Cohen and Murphy, 1984). So, for instance, a ‘boathouse’ is a type of house, whose attributes are modified to fit with the attributes of the category ‘boat’. Similarly, ‘apartment dog’ implies a subset of the dogs whose attributes, such as size and energy level, fit with the features of an ‘apartment’ (Hampton, 1988). This has two potentially important implications for macro-category studies. First, it implies that when theorizing about ‘category straddling’, it is important to account for the other-category features of a product or organization, rather than just its ‘partial membership’ in a focal category (Hannan, 2010). Indeed, different forms of straddling may elicit very different audience reactions. For example, two beverages might share an 80 per cent ‘grade of membership’ in the category ‘vodka’, but be perceived very differently depending on whether the 20 per cent dilution is ‘tonic’ or ‘acid’. Second, it suggests that the relative balance between the categories that a product or organization straddles might consequentially affect how it is evaluated. Indeed, mixing the same two categories may elicit very different responses, depending on which is more prominent: a ‘boathouse’ for example, is very different than a ‘houseboat’! In a more organizationally relevant context, Frank (2008) suggests that, while all microfinance institutions mix profits and social mission, those that lead with the former are more attractive to commercial capital investors, while those that lead with the latter are typically forced to rely on grants and donations.

The perception of category members by audiences also depends on social position and expertise. High-status audiences are more likely to influence the evolution of category boundaries, as was shown in the context of the rise of nouvelle cuisine (Durand et al., 2007). As well, audience expertise is key in explaining category effects, yet little research has looked into this issue thus far. Often, there are huge discrepancies between what expert and non-expert audiences know about a particular category and its members. This difference between expert and non-expert audiences may overlap to some extent with the distinction between internal and external audiences, but this is not a necessity. For instance, in the global arms industry, many large companies prefer to avoid public association of their name with the industry and thus communicate very little about their activities. Therefore, the general public heavily depends on what expert journalists write about the sector in authoritative newspapers such as *The New York Times* to construe their perception of the ‘arms producers’ category (Vergne, 2011, 2012). In fact, a deeper examination of audience expertise may represent a promising way of researching the implications of the divide between category legitimation and category legitimacy (cf. lexicon above). In many industries, legitimacy understood as social appropriateness is primarily derived from non-expert audiences (e.g., society at large has an opinion about whether genetically-modified organisms (GMOs) should be sold at grocery stores), but it is expert audiences that provide legitimation (e.g., scientists and government regulators

validate or not certain organizational templates among producers of GMOs, and such templates remain largely invisible to the broader society). Thus, certain audiences primarily *legitimize* categories (i.e., provide legitimacy) while others primarily *legitimate* them (i.e., provide legitimation).

Strategic Categorization

Despite acknowledging that organizations 'often try to shape category systems and influence the choice of categories into which they are classified' (Negro et al., 2010, p. 4), studies associated with the categorical imperative tend to downplay this type of agency, focusing instead on the influence of external audiences in categorization processes. A notable exception, however, is the sociological research on entrepreneurship, which highlights the importance of new ventures establishing their identity within an existing category in order to establish legitimacy and mitigate the liability of newness (Lounsbury and Glynn, 2001; Navis and Glynn, 2011; Wry et al., 2011). Still, the emphasis here is on conforming to *any* category, rather than strategically pursuing membership in one category versus another.

In recent years, however, there has been a move to embrace the type of agentic self-categorization evident in early research on categories and cognition. Integrating this with a sociological approach to categories and meaning, a nascent research stream has begun to develop and test theory about the emergence of new categories (Kennedy, 2008; Khaire and Wadhvani, 2010; Navis and Glynn, 2010). Rather than viewing categorization as an externally driven process (Hsu and Hannan, 2005), these studies show that producer organizations can act strategically to theorize new categories around 'codes' and 'attributes' which may be discounted within extant categories. We welcome this research and advocate for a fuller integration of strategy and agency into organizational category studies.

In particular, we envision exciting research in the area of strategic categorization. Whereas emergence studies focus on the processes of building new categories, opportunities abound to explore the ways in which organizations strategically signal their affiliation(s) within an existing category system. For instance, Vergne (2012) showed that organizations can manipulate how they and their competitors are classified in order to dilute a stigmatized identity. Advancing this direction, Zhao et al. (2013) also showed that signalling membership in legitimate categories can help to offset the penalties associated with genre spanning in the film industry. By providing a bridge between studies of internal and external classification, these studies point to the tension that can exist between organizations and their audiences and the potential role that power, resources, and politics play in classification processes (Cornelissen, 2012; Santos and Eisenhardt, 2009; Wry et al., 2013).

These topics are currently under-theorized in the categories literature, yet have a number of potentially important implications. For instance, we anticipate research that examines cases where groups struggle to define which category is 'salient' for evaluating a firm. For example, there has been an ongoing fight between Uber (a car service that integrates a smartphone app) and various taxi commissions over whether the most salient category for the firm is as a 'technology' company or a 'taxi' company (Chen, 2012).

Regulators argue that the firm most closely resembles a taxi company and, as such, should be subject to regulatory oversight. Uber, however, argues that it is a technology company and should not be required to pay licensing fees or be accountable to regulatory restrictions. The outcomes of this contestation have implications for the company's very survival (Chen, 2012). Likewise, in 2011, a US Congress bill blocked a Department of Agriculture effort that would have made it harder to offer pizza in the federally subsidized school lunch programme. Within days, the news spread across the world that the US government had categorized pizza as a vegetable under the pressure of various lobbies (*Los Angeles Times*, 2011). In 1963, a 'district court ruling enabled Dr Pepper to expand when the United States Fifth District Court of Dallas declared that Dr Pepper was not a cola. This ruling allowed independent bottlers to carry Dr Pepper along with Pepsi-Cola or Coca-Cola, since bottlers could now carry Dr Pepper without violating their franchise contracts' (Farl, 2013). This is yet another case of 'categorical entrepreneurship', whereby managers facing powerful audiences such as regulators influenced categorical memberships, with huge implications for their business and broader industry. Related to this, future research might also examine cases where organizations actively avoid categorization, rather than assuming that this is something that marginal firms aspire towards (Fiol and Romanelli, 2012; Khaire and Wadhvani, 2010). For example 'dubstep' musicians have tried to avoid categorization by audiences like iTunes in order to duck the constraints that a category 'code' may place on their creative freedom (Yenigun, 2010).

In addition, the focus on 'attributes' and 'salience' implied by this approach also signals opportunities to study how 'attributes' might be ordered in ways that benefit some category members over others. Indeed, a key argument in the categorical imperative is that products and organizations – once categorized – are evaluated against a stable 'code' that defines appropriate behaviours and features (Phillips and Zuckerman, 2001). Going a step further, a number of studies in cognitive psychology have examined the internal characteristics of different categories, arriving at a general conclusion that attributes have different 'cue validity' for determining categorization and valuation (e.g., Rosch and Mervis, 1975). As such, the internal ordering of 'category attributes' may affect how different entities are perceived. For instance, hotel star rankings are based on a number of considerations including location, facilities, room size, finishings, service, etc. (e.g., Dolnicar, 2002). If we consider that any given property may have different vectors for each measure, the way that these are weighted within the category may affect how a hotel is evaluated. For instance, it is theoretically possible that a property which scores highly on multiple peripheral attributes may be relegated to a lower star category than one that scores highly on only a few core attributes. Thus, the integration of insights from cognitive psychology signals the relevance of not only studying category membership, but also the organizational consequences associated with the internal structure of various categories.

CONCLUSION

As a distinctively organizational body of work, category studies are still in their infancy, but this paper shows that there is much work conducted in the area upon which scholars

can already build to further this exciting research agenda. We are hopeful that our systematic review of prior works as well as the lexicon offered in the paper will provide scholars with a useful toolbox that can be used to nurture an organizational theory of categories and categorizations in the years to come.

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NOTES

- [1] In 2011 and 2012 respectively, the two authors of this piece received the Grigor McClelland Doctoral Dissertation Award, supported by the *JMS* and the Society for the Advancement of Management Studies (SAMS), for their dissertation research on categories.
- [2] Our iterative approach was especially useful to identify early publications that did not explicitly acknowledge their contribution to research on categories because the relevant organizational literature was nascent and not yet recognized as a distinctive perspective. By proceeding iteratively, we also did not have to include or exclude, *ex-ante*, certain journals from our search criteria, thus enabling us to search through a broad range of journals that are relevant to management and organization scholarship.
- [3] The term ‘organizational form’ is used in categorization research inspired by population ecology and overlaps to a large extent with the notion of organizational category. We discuss this in more detail in the definitions section below.
- [4] We chose those terms as search keywords because they frequently appeared in the abstracts of the most-cited papers on organizational categorization. After inspecting the list of papers returned by our database search, we decided to exclude those that were peripheral to categorization research à la Porac or à la Zuckerman, such as: papers on strategic groups written primarily from the perspective of industrial economics; papers referring to typological categories unrelated to socio-cognitive or knowledge dynamics (e.g., categories à la Porter such as ‘differentiators’ and ‘low cost competitors’); papers primarily focused on dyadic interactions (e.g., research on alliances); papers focused exclusively on resource partitioning and niche dynamics; papers examining managerial cognition at the individual level only; and papers on brand categories, published in marketing journals, that do not explore the socio-cognitive and identity mechanisms underlying category formation. Finally, we included all the papers (except the introduction) published in volume 31 of *Research in the Sociology of Organizations* (2010) focusing on ‘Categories in Markets: Origins and Evolution’. Note, however, that our paper identification procedure is not without limitations. A few relevant papers whose title, abstract, and keyword fields do not contain ‘category*’ or ‘organizational form’ may be missing.
- [5] Our lexicon echoes, and draws upon, the project conducted by Hannan et al. (2007), but also differs in several ways. First, we seek to establish a common lexicon for category researchers from various disciplinary backgrounds – not just sociologists – and one that bridges different research traditions. Second, based on our findings from the literature review that demonstrate the increasing autonomy of the literature on categories, we do not see the need to anchor categories research within the broader organizational ecology framework. Third, we wish to provide an accessible state-of-the-art of the categories literature, and thus offer definitions in plain language that do not require a formal logics background. Fourth, we seek to propose definitions that are precise yet general enough, so they can serve as a common lexicon for a broad variety of categories scholars across the social sciences. Moreover, our definitions bridge the ‘feature list’ and ‘frame’ traditions in categorization research (Barsalou and Hale, 1993) since they are based on assumptions of limited perceptual, attentional, and cognitive skills by human agents. As such, the critique that feature list classifications are ‘not sufficient to capture all the information in natural knowledge’ because the process of assigning category attributes to entities ‘could continue indefinitely’ (Barsalou and Hale, 1993, pp. 134–35) would not apply in real-world organizational contexts, where actors were shown to use just a few attributes to categorize their surroundings (e.g., Porac et al. (1995) found that knitwear producers used only five categories: Scottish, non-Scottish, hosiery, knitwear, and lace).

[6] The distinction echoes in part the one made by Aldrich and Fiol (1994) and Suchman (1995) between cognitive and normative legitimacy.

APPENDIX

Author (Year)

Papers with three or more authors are identified with 'et al.'. The full references can be found in the paper's reference list.

Method

Theory/formal model (T); Interviews or surveys (I); Content Analysis (CA); Case study (C); Network or relational analysis (N); Regression (R); Other methods (Oth).

Dependent Variable (DV)

A category member's performance/response (M); Category Emergence (CE); shifting Category Boundaries (CB); Categorization Process (CP); Selection (entry/exit) (S); Audience Reaction/ Rating (AR); Identity formation/change (I)

Explanatory Mechanisms

Audience Evaluation (AE) – process by which audiences and critics express an evaluative opinion

Legitimation (L) – process related to how categories or category members gain, maintain, or lose acceptance

Membership Seeking (MS) – process by which organizations actively seek to be recognized as members of a category by some relevant audience

Classification (CL) – process by which a system of classification is created or changed by organizations

Category Straddling (CS) – process by which a member is simultaneously associated with two or more categories located at the same level of the classification hierarchy

Competition (Cm) – process by which producers come to behave as rivals in an environment characterized by resource scarcity

Theoretical Lenses Used as Complementary Perspectives

Institutional Theory (IT); Organizational Identity (OI); Population Ecology (PE); Social Network theory (SN); Competitive Groups and managerial cognition (CG); Social Movement theory (SM); Sociology of Markets (SoM); Technological Change (TC); Social Identification Theory (SIT)

Abbreviations: catg = category/categories; org = organization(s)

<i>Author (year)</i>	<i>Method</i>	<i>DV</i>	<i>Explanatory mechanisms</i>	<i>Critic/audience</i>	<i>Category: Product (P)/Org (O)</i>	<i>Theoretical lens</i>
Clark and Montgomery (1999)	I, R, Oth	CP	(MS, Cm): Competitor's categorization, Managerial cognition	Managers	(O): Competitor's groupings	CG
Porac et al. (1999)	R	M, CP	(MS): Board-level blending of informational and political forces in peer group identification; (CL): industry self-categorization	Shareholders	(O): Peer org groups	Taxonomy
Rosa et al. (1999)	CA, R	M, CE	(CL): producer-consumer convergence towards prototype; (MS, AE): story telling; shared sensemaking revealed in media stories	Consumers; Published media	(P): Minivans	SoM; sensemaking
Carroll and Swaminathan (2000)	I, R	S, CE	(L, AE): form's normative valuation relative to identity claims and social visibility; (Cm): Resource partitioning	Mass Producers	(O): Microbreweries vs. mass/contract brewers	PE
Ferguson et al. (2000)	R	AR	(L): Reputation of strategic group; (CL): Strategic group identity	rating agencies	(P/O): U.S. property/casualty insurers	CG
Zuckerman (2000)	R	M	(AE): diversification discount caused by category straddling (CS); de-diversification more likely when mismatch between strategy and identity (CL, MS) is attributed to the firm by analysts	Stock analysts	(O): publicly held U.S. firms	SoM; IT
Labianca et al. (2001)	I, N	M	(MS, CL): emulating a reference group on the basis of reputation, organizational image, and org identity	Other orgs	(O): Higher education institutions	OI; CG
McKendrick and Carroll (2001)	C	CE	(MS, CL): new markets cannot cohere into a 'form' when firms derive their primary identities from other activities	Audience (generic)	(O): Disk array firms	IT; PE
Phillips and Zuckerman (2001)	R	M, AR	(L): Conformity; (CL): Status hierarchy	Stock analyst	(O): Silicon Valley legal and investment advice firms	SoM; status/conformity
Daniels et al. (2002)	R, N	CP	(MS): cognitive convergence in institutional environment; (Cm): cognitive divergence in task environment	Managers	(O): UK Personal finance firms	IT; CG; IO
Foreman and Whetten (2002)	I, R	AR, I	(L, AE): Member's cognitive legitimacy rating of the co-op org form; (CL): Form level identity gaps	Co-Op members	(O): Rural Cooperatives as Hybrid-Identity Orgs	OI; IT
Glynn and Abzug (2002)	I, R	I, AR	(L): symbolic isomorphism; (CL): Accurate categorization; (MS): naming convention	Public	(O): Org field domains	IT; OI

APPENDIX *Continued*

<i>Author (year)</i>	<i>Method</i>	<i>DV</i>	<i>Explanatory mechanisms</i>	<i>Critic/audience</i>	<i>Category: Product (P)/Org (O)</i>	<i>Theoretical lens</i>
Lee and Pennings (2002)	N, R, Oth	S	(CL, L): interaction between selection at the level of sector and imitative adoption at the firm level; (AE): Market feedback	suppliers, customers	(O): partner-associate structure in professional services firms	PE; IT; SN
McNamara et al. (2002)	I, R	M	(CL, Cm): Complexity of managerial knowledge categories of strategies and competitors	Managers	(O): Strategic groups – Banks	CG
Pólos et al. (2002)	T	CE	(L): code deviance after periods of conformity causes a devaluation of the entity; (MS, CL): common minimal external identity	Audience (generic)	(P/O): Boundaries of various types	SoM; PE;
Baum and Lant (2003)	N, I, R	CP	(MS, Cm): managerial cognition (mis)shapes competitive groups	Hotel managers	(O): Manhattan Hotels	CG
Hannan et al. (2003)	T	AR	(CL): allocation principles; (L): code enforcement; (MS): Social position; (CL, MS): common minimal external identity defines pop	Audience (generic)	(O): Niches	PE
McKendrick et al. (2003)	R	CE, S	(MS, CL): Focused individual identities make firms cohere into a distinct collective identity	Audience (generic)	(O): Geographically agglomerated disk manufacturers	Form emergence; PE
Zuckerman and Kim (2003)	R, N	AR	(CL): market structures restrict identity; (MS): role structures place constraints on the identities available to individuals	Film critics; Film audiences	(O): Major vs Independent studios in US film industry	Structural role theory; SoM
Zuckerman et al. (2003)	R, Oth	CP, M	(CL, MS): focused identities foster entry at first but later impose increasing limitations; (AE): typecasting	Film audiences	(P/O): Film actors	typecasting; SoM; labor mkt
Lounsbury and Rao (2004)	R	CE, CB	(AE): performance variability affects new product entry and replication; (CL): reconstitution of prod categories by the media	Industry media	(P/O): Product categories of mutual fund industry in US	IT; SoM
Zuckerman and Rao (2004)	R	AR	(CL): investors distinguished among internet stocks consistently; return comovement patterns reveal categorical complexity	Internet stocks' analysts	(O): internet firms	PE; SN
Zuckerman (2004)	R	AR	(CS): incoherent stocks are traded more because of: differences in interpretive models (AE); the fact that common interpretation relies more heavily on self-recursive market dynamics (CL)	Stock analysts	(O): stocks of U.S. firms	SoM
Hardy et al. (2005)	T	I	(MS): conversations create discursive resources that build identity	Other firms	(O): Collective identities	IT; OI;
Hsu and Hannan (2005)	T	CE, I	(CL, MS): how identity drives form emergence and persistence	generic audience	(O): Identity based grouping	PE
Kennedy (2005)	CA, R, N	S, AR	(AE, MS, Cm): Rival identification through media coverage drives market category emergence	Rival	(P): Computer workstation manufacturers	SoM; PE
Labianca and Fairbank (2005)	T	AR, M, CP	(MS, AE): managers monitor other firms based on a 3-dimensional categorization process (emulation, imitation, competition)	Other orgs	(O): groups of firms used for comparison	Monitoring; CG

APPENDIX *Continued*

<i>Author (year)</i>	<i>Method</i>	<i>DV</i>	<i>Explanatory mechanisms</i>	<i>Critic / audience</i>	<i>Category: Product (P) / Org (O)</i>	<i>Theoretical lens</i>
Lamertz et al. (2005)	C, CA	CP, CB	(MS, CL, L): firms self-categorize using identity attributes that reinforce legitimacy	Relevant stakeholder	(O): Canadian beer brewers	IT; Org image
Rao et al. (2005)	I, R	M, AR	(CL): boundaries weaken when the borrowing of elements from a rival category (CS) by high-status actors triggers emulation (L). (AE): Expert ratings	Industry publication	(P): classical and nouvelle cuisines restaurants	Mathew effect
Romanelli and Khessina (2005)	T	I, M	(AE): shared understandings of residents and investors about the suitability of a region; (MS, CL): Clusters, the results of historical investments, signal the type of business that can thrive in the future	Residents; Investors	(O): Firms in region based industries	PE
Suddaby and Greenwood (2005)	CA, C	CE, AR	(MS): using rhetorics (institutional vocabularies and theorizations of change); (L): contestation through conflicting logics	opponents to the new form	(O): Big 5 accounting firms entry into Law	IT
Zhao (2005)	C	I, AR, CP	(MS): classifications are political processes that confer identities and: channel audience perception (AE); create social boundaries (CL); signify standing of social actors (MS, L)	Critics and media	(P): American (grape) and French (region) wines	IT; Cultural sociology
Dobrev and Kim (2006)	R	S, CB	(CL): market segmentation; (Cm): Proliferation	Auto manufacturers	(P/O): market segments in the U.S. auto industry	PE
Dobrev et al. (2006)	R	CE; S	(L): Legitimation transfer from existing pop; (CL): Overlap of identity spaces, comparison; (MS): Categories' name changes	Commercial banks	(O): financial co-ops in Singapore	PE
Hsu (2006a)	R	AR, M	(CS): Category spanning creates ambiguity among audiences (AE); (CL): Principle of allocation	Consumers; critics	(P/O): Film genres in IMDB	PE
Hsu (2006b)	CA, N	AR	(AE, CL): actors' tendency to favor arenas in which they have developed clear and structured schemas	Professional film critics	(P): Film genres in IMDB	IT; PE; SoM
Kuilman and Li (2006)	R	S	(MS, CL): Identity structure based on country of origin	Generic audience	(O): Shanghai banks	PE
Benner (2007)	T	AR, M	(AE): Stock price; (MS, Cm): Stock market identity gap b/w current and new category	Stock market	(O): Company Stock – Income vs growth	IT; TC
Durand et al. (2007)	R	AR	(AE): Ratings of restaurants/chefs; (CL, MS): code-preserving vs. code-violating change (in relation to form)	Industry publication	(P): haute cuisine	PE
Nadkarni and Narayanan (2007)	N, R, Oth	M	(L, MS): Consensus, collective beliefs and assumptions. (CL): Social networks and characteristics of change in the collective frames	Other orgs	(O): firms in aircraft and semiconductor industries	CG; industry velocity
Rindova et al. (2007)	C	S, I, AR	(AE): media coverage, attention; (MS): Firm actions in emerging category to gain media attention	Media	(O): e-commerce firms	Reputation/legitimacy

APPENDIX *Continued*

<i>Author (year)</i>	<i>Method</i>	<i>DV</i>	<i>Explanatory mechanisms</i>	<i>Critic/audience</i>	<i>Category: Product (P)/Org (O)</i>	<i>Theoretical lens</i>
Sinc et al. (2007)	R	S, M	(AE, L): Legal endorsement of a sector/certification; (AE): media coverage (negative/positive)	Government/regulator; media	(O): firms in emergent independent power sector in US	IT
Anand and Jones (2008)	C	CE	(AE, CL): enactment of tournament rituals distinguishes product categories; Structures of domination	Booker Prize	(P): English Fiction	IT, Field Theory
Archibald (2008)	R	S	(L): political and cultural normative; (Cm, CL): Identity enclosure: identity-based (rather than resource-based) barriers to entry	influential activists	(O): Self-help/mutual-aid HMO	PE
Cattani et al. (2008)	R, N	S	(L, AE): Audience consensus and legitimation; (CL): Inter-org network b/w producer and distributor	Distributors	(O): Producers in U.S. motion picture industry	PE; SN
Kennedy (2008)	CA, R	S, AR	(CL, L): Few links to other entrants in early stages of market formation; (AE): Media coverage; (MS, Cm) Rival reference	Competitor, Media	(O): Market participants	SN; sensemaking
Perretti et al. (2008)	R	S	(MS, L, CL): identity framing of emerging org domains, and identity matching of candidate orgs	Public discourse	(O): US commercial TV operators	PE; social markedness
Roberts and Khaire (2008)	R	M, AR	(MS, L): quality signalling – publicity of specific career info about skilled employees; (AE): critic coverage decision	Wine publications	(O): Australian Wine producers	SoM; SN
Simons and Roberts (2008)	R	S, M	(MS): non-local industry experience prior to founding increases the odds for a new entrant of selecting an organizational form (CL)	Consumers	(O): Israeli wineries (non-kosher)	IT; PE
Weber et al. (2008)	C, CA	CE	Actors mobilize codes (CL) to motivate producer entry in nascent market. Shapes production choices and collective identity (MS)	Social movement	(O): grass fed dairy and meat producers	SoM; SM
Yu et al. (2008)	T	CE	(L): crisis spillover process is contingent on the characteristics of – (CL): the org form to which the stricken org belongs, (MS): the characteristics of other orgs in the industry	Stakeholders	(O): Orgs in crisis	PE
Fleischer (2009)	R	AR	(AE): relations creating conflicts of interest in rating process	Equity researchers	(O): US Brokerage Firms	Classification
Hsu et al. (2009)	R	AR, M	(CS, AE): Category spanning and audience-producer interface	Film audience and critics; Consumers	(P): US film ratings in IMDB; Ebay product categories	PE
Jamerson (2009)	I	CP, AR	(AE, CL): Tasting room hosts in Napa valley as intermediaries controlling critic ratings; (MS): Consumer education/gatekeeping	Wine critics	(P): Wine	Cultural production; SoM
Jonsson et al. (2009)	CA, R	AR, M	(L, CL): Deviance, social standing of deviant actor, spillover to similar orgs	Media	(O): mutual funds owned by insurance firms in Sweden	SoM; social identification

APPENDIX *Continued*

<i>Author (year)</i>	<i>Method</i>	<i>DV</i>	<i>Explanatory mechanisms</i>	<i>Critic / audience</i>	<i>Category: Product (P)/Org (O)</i>	<i>Theoretical lens</i>
Kuilman and Li (2009)	R	S	(L, CL): heterogeneity among sub-pop affects the degree to which orgs contribute to and benefit from the population's legitimacy	Media	(O): Shanghai banks	PE
Purdy and Gray (2009)	I, CA, C	CE	(MS, L): legitimacy-seeking for new form; (AE, L): field level expectations; (CL): multi-level dynamics and multiple logics	Field level audience	(O): state offices of dispute resolution	IT
Ruef and Patterson (2009)	R	AR	org membership in multiple catg (CS) not problematic when catg are emergent or in flux (CL) and orgs avoid rare combinations of ambiguous identities (MS)	R. G. Dun and Company	(O): Firms that received credit ratings by R. G. Dun	PE
Santos and Eisenhardt (2009)	C	S, M	(MS, CL): Shaping org and market boundaries; (L, CL): usage of 'soft-power' strategies by which entrepreneurs compete in highly ambiguous markets	dominant competitors	(O): Firms at the confluence of computing, electronics, and telecom	IT; resource dependence
Schmutz (2009)	CA, Oth	AR	(CL): involves symbolic distinctions that are often linked to social categories (gender) (MS); (CL): as musical hierarchies shift and new genres gain legitimacy, social hierarchies remain intact (L)	Media	(P): Popular vs. classical musical genres; Male vs. female performers	Symbolic and cultural classifications
Tripsas (2009)	C	CB, I	(MS): because identity is intertwined in the routines and beliefs of both an org and its external constituents, shifting identity to accommodate identity-challenging technology is difficult (CL)	Stock analysts	(O): Linco	OI; PE; TC
Zuckerman (1999)	R	M	(CL, L, AE): since stock analysts specialize by industry, diversified firms are harder to categorize and suffer an illegitimacy discount	Stock analysts	(O): Publicly listed corporations	IT, SoM, finance
Bogaert et al. (2010)	R	S	(CL): fuzziness created by sociopolitical contention among associations; (L): fiercely contested on the basis of cultural-frames	Professional associations	(O): early Dutch accounting firms	Hannan et al. '07; IT
Carroll et al. (2010)	R	S, M	(CL): degree of contrast (distinctiveness and visibility) from other formats; (Cm): Producer density of formats	Drive manufacturers	(P): New tech formats in tape drive industry	TC; identity focus
Hannan (2010)	T	CE	(L, MS, CL): Meaning establishment; Labels and schema	Generic audience	(P/O): Categories and niches	PE, SoM
Jensen (2010)	R, N	AR, I	(L): legitimate identity based on categorical recombination (CL); isomorphic with and differentiated from preexisting categories (MS)	Film audiences	(P): pornography in Denmark	SoM
Kahl et al. (2010)	R	M	(L, CL): having Black originators and White early adopters; inauthentic indicators (type of record company, group's association with a venue); (MS): racial identities	Audience (generic)	(P): U.S. jazz recordings in 20 th century	Categorical meaning

APPENDIX *Continued*

<i>Author (year)</i>	<i>Method</i>	<i>DV</i>	<i>Explanatory mechanisms</i>	<i>Critic/audience</i>	<i>Category: Product (P)/Org (O)</i>	<i>Theoretical lens</i>
Karthikeyan and Wezel (2010)	R	CB, AR	(CL): Trade-off b/w specialism and generalism; (L): borrowed issues contributed to extend and clarify the ideological roots	Newspaper	(O): British Liberal Democrats Party post WWII	Fuzzy identities
Kennedy et al. (2010)	CA, C	M	(L, AE): Catg currency – clear meaning and positive appeal for audiences. (CL): field actors changing category meaning	Audience (generic)	(P): nanotechnology firms	SoM
Khaire and Wadhvani (2010)	CA, C, Oth	CE	(L, CL): reinterpreting historical constructs in ways that enhanced commensurability and enabled aesthetic comparisons and valuation	Art collectors and galleries	(P): Indian Modern Art	IT; SoM
Kovács and Hannan (2010)	R	AR	(AE, CS): Fuzziness of category boundaries modifies the consequences of category spanning	Consumers	(O): Restaurants	Category spanning
Mohr and Guerra-Pearson (2010)	N	CP, M	(CL, MS): institutional ‘‘logic space’’ defined by the kinds of organizational forms that are understood to exist	Audience (generic)	(O): poverty relief orgs operating in New York City	McPherson; logic space
Navis and Glynn (2010)	C, CA, R	CE, CB	(MS): Identity claims; linguistic framing; (AE): attention; (CL, MS): collective identity	Media and financial	(O): US satellite radio stations	SoM; OI; Sensemaking
Negro et al. (2010)	I, R	AR	(MS): widespread (CS) decreases contrast; (CL): lower contrast blurs boundaries, impairs comparison, creates disagreement (AE, L)	Critics and Wine journalist	(P): Wine	PE
Rao et al. (2010)	R, Oth	AR, S	(MS): self-catg into collective identity influenced by racial homogeneity of protestors against Wal-Mart’s entry; (CS): community identity spanning/racial diversity	Wal-Mart	(O): Protesting community	SM; SIT
Roberts et al. (2010)	R	M, AR	(CS): crossing the kosher categorical boundary exposes producers to experience-based penalties (lower product quality ratings) (AE)	Wine critic (Rogov)	(O): kosher Israeli wine producers (formerly non-kosher)	SoM
Schneiberg and Berk (2010)	C	CB, CP, CE	(L): mass production and its disciplinary use of catg prompted efforts by manufacturers, associations, and cost accountants to reconstruct cost accounting catg (CL)	Firms	(P): Accounting categories	Other
Shepherd (2010)	R	M	(CL): Organizational context and rules of the classifying organization affect the classification system	World bank	(O): Countries seeking loans	Classification systems
Staber (2010)	R	CP, I	(CL, I): the role of imitation and its relationship to social interaction in managerial identification with the cluster (MS)	Other orgs	(O): Textile mills cluster in SW Germany (Location cluster)	SIT; imitation
Tan and Roberts (2010)	R, N	AR	(CL): assessments of similarity between new and existing technologies; (CS): heightened ambiguity leads to more examiner-added citations (AE)	Patent examiner	(P): Technologies seeking patents	SoM; SN

APPENDIX *Continued*

<i>Author (year)</i>	<i>Method</i>	<i>DV</i>	<i>Explanatory mechanisms</i>	<i>Critic/audience</i>	<i>Category: Product (P)/Org (O)</i>	<i>Theoretical lens</i>
Kim and Jensen (2011)	R	AR	(AE, CL): order in which the products or product features that determine their market identities are offered	season ticket holder; critics	(P/O): Opera	SoM
King et al. (2011)	N	I	(L, CL): Identity based groupings; (MS): Identity realization	School board	(O): Arizona charter schools	SoM; OI; SM
Negro et al. (2011)	R	S	(CL): members of the endangered catg become partial defectors and category straddlers (CS); (MS, L): their history challenges identity of non-defectors and inhibits further change	Other orgs	(P): Barolo and Barbaresco wines 'traditionalism' and 'modernism'	SoM; grade of membership
Perretti (2011)	C	CB, I	(MS, CL): construction and interplay of different identities leading to hybridity as a pop level process; (L): actor status	Audience (generic)	(P): US feature film industry – film genres; (O): project orgs	SoM
Phillips (2011)	R, N	AR	(AE, CL): difficult-to-categorize outputs appealing when associated with a source (city) high in disconnectedness	Audience (generic)	(P/O): Midwest music recordings by cities	social structure of creativity
Smith (2011)	R, N	AR	(MS): Typicality of identity; (L): nonconformance	Investors	(O): hedge fund companies	SoM; OI
Waguespack and Sorenson (2011)	R	AR	(MS): distribution by high status actors leads to more lenient classf (AE) compared to independent/peripheral distribution (MS)	Censor	(P): movies that are certified in the U.S.	SoM; Halo; Prototypicality
Wry et al. (2011)	T	CP	(L): legitimacy when members articulate a clear defining collective identity story (MS) that identifies the purpose and core practices (CL)	Audience (generic)	(O): Entrepreneurial firms with nascent collective identity	IT
Benner and Tripsas (2012)	R	M	(MS): with others firms from prior industry; (L): pressures from other participants of prior industry	competitors in prior industry	(P/O): Firm in the nascent Digital Cameras category	PE; IT; CG; TC
Fiol and Romanelli (2012)	T	CE, CP	(L, MS, CL): Collective identity emergence	External audience	(O): Collective identity of entrepreneurs	IT; PE; OI; SM
Hsu et al. (2012)	CA, R	M	(AE): evaluative schema clarity; (MS, CL) producer social position	Wine critics	(P): Wine	SoM
Jones et al. (2012)	CA, N	CE	(CL, MS): catg theorization; (CL, Cm): fights over logics	Generic audience	(P): 'modern architecture' catg	SoM; IT
Negro and Leung (2012)	I, R	AR	(CS): blind and no-blind tasting; (CL): implicit schema of wine taster; (AE): quality inference based on identity	Wine taster	(P/O): Barolo and Barbaresco wines	SoM
Pachucki (2012)	I, Oth	AR	(CL, AE): implicit status hierarchies and classification biases in cognition; Museum Quality evaluation/classification	museum professionals	(O): Museums	Socio-cognitive assessment
Pontikes (2012)	R	AR	(AE): ambiguity of labels for market-takers and -makers, appeal; (MS): Identity claims; (CS): label spanning	Consumers, VCs	(O): U.S. software firms	SoM; PE; classf
Vergne (2012)	C, CA, R	AR	(CS): straddling multiple categories dilutes stakeholder attention (AE) to membership in stigmatized catg (L)	defence journalists	(O): global arms producers	SoM; IT; stigmatization

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