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Goal-Based Categorization: Dynamic Classification in the Display Advertising Industry

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Abstract

Goal-based categories have recently emerged as an alternative perspective to the dominant account of prototypical market categories. However, key questions remain regarding the mechanisms that would enable stable market exchanges to form around ad hoc and idiosyncratic goal-based categories. Thus, we sought to answer the following question: How can goal-based categorization enable stable market transactions? Through an inductive study drawing on industry discourse, participant observation, and interview data from the online advertising industry, we describe the category infrastructure that enables buyers and sellers to engage in market exchanges using goal-based categorization. Three mechanisms are integral to goal-based categorization in market exchanges: dimensioning (establishing a possibility space in which valuation can take place through the identification, addition, and/or deletion of product features), scoping (selecting particular features in the possibility space), and bracketing (excluding certain actors from participating in market transactions). Moreover, the fundamental principle of valuation in goal-based categorization is goal-based attribution, which involves iteratively adding and deleting features to accommodate evolving goals. Our findings suggest novel directions for work on goal-based categorization as an important element of valuation in modern markets.

Keywords

categories, goal-based categorization, markets, online advertising, valuation

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Introduction

Modern product markets are dynamic knowledge structures that are developed and negotiated by market actors to make sense of producer and consumer behavior (Kennedy, 2005; Rosa, Porac, Runser-Spanjol, & Saxon, 1999). Within these product markets, systems of categories facilitate and stabilize transactions between different producers and consumers by establishing shared definitions of the entities exchanged (Beckert & Aspers, 2011; Lounsbury & Rao, 2004; Porac & Thomas, 1994; Rosa et al., 1999). Using such categories enables market actors to value products more efficiently and agree upon the terms of exchange (Alexy & George, 2013; Khaire & Wadhvani, 2010; Koçak, Hannan, & Hsu, 2014; Vergne & Wry, 2013; Zuckerman, 1999). Further, as organizations leverage information technology to construct marketplaces with differentiated categories and features, understanding the relationship between organizational strategy and categorization becomes ever more important (Beckert & Aspers, 2011; Beunza, Hardie, & MacKenzie, 2006; Delmestri & Greenwood, 2016; Karthikeyan, Jonsson, & Wezel, 2015; Kennedy & Fiss, 2013).

In prior organizational research on categorization in markets, scholars have drawn primarily on the concept of prototypes when explaining how buyers, sellers, and intermediaries use categories (e.g., Durand, Granqvist, & Tyllström, 2017; Mervis & Rosch, 1981). Relatively stable prototypical categories tend to emerge through a process that involves the creation of a category label and subsequent establishment of agreement about the meaning of that label (e.g., Hannan, Pólos, & Carroll, 2007), resulting in shared and viable market categories (Lo, Fiss, Rhee, & Kennedy, 2019). These prototypical categories are marked by a graded structure such that instantiations are more or less associated with the category based on their membership scores, and audiences engage in a process of comparison to evaluate the degree to which a producer or product is a member of a market category (Hannan, 2010; Hannan et al., 2007). Prototypical categories are thus based on a taxonomy of the environment that bundles together entities that appear to “belong” together due to “common or similar physical or material attributes” (Durand & Khaire, 2017, p. 89). For instance, market actors extensionally apply the category “minivan” to particular members (e.g., a Honda Odyssey, Dodge Caravan, etc.) and intensionally agree on the defining characteristics of a prototype (e.g., can seat at least seven, handles like a car, etc.) (Rosa et al., 1999). Building on this view, categories research typically “deals with stable situations in which categories have a taken-for-granted character” (Hannan, 2010, p. 162).

However, Durand and Paoletta (2013), along with other scholars, have more recently advanced an alternative account that views categories as goal-based rather than prototypical (Barsalou, 1983; Durand et al., 2017; Paoletta & Durand, 2016). With goal-based categories, membership is defined in relation to a goal, such as “cars that I want to drive,” and might include a diverse set of members such as sports cars, sport utility vehicles, or luxury sedans. Goal-based categories thus violate what Barsalou (1985, p. 632) called the “correlational structure of the environment” in that they frequently group together heterogeneous entities that would not belong together from a prototypical perspective. Additionally, actors often create goal-based categories on an ad hoc, idiosyncratic basis to achieve particular objectives (Barsalou, 1983; Durand & Paoletta, 2013, p. 1101), rendering them particularly dynamic. Taking this perspective, researchers have begun to empirically explore the role of such goal-based categories in markets. For instance, Paoletta and Durand (2016) showed how actors rely on goal-based categories to deal with challenges associated with complex, non-recurring problems. Similarly, Pontikes and Kim (2017) demonstrated that producers may strategically use goal-based categories (see also Karthikeyan et al., 2015; Montauti & Wezel, 2016).

Although a goal-based view of categorization thus appears important and highly relevant to our understanding of market situations, goal-based categorization currently remains a “blind spot” in

categories research (Durand & Khaire, 2017, p. 89). A key aspect of why goal-based categorization has so far failed to fulfill its promise stems from the challenges associated with viewing goal-based categorization as the basis of market exchanges. In this regard, Durand and Paoella (2013, p. 1106) noted possible limits to the theoretical potential of a goal-based category perspective. First, goal-based categories are idiosyncratic and differ for individual actors, rendering the construction of socially shared meanings problematic. Second, goal-based categories are inherently unstable because many are ad hoc in nature and actors' goals may dynamically adjust depending on temporal and contextual circumstances.

To illustrate these challenges of organizing markets around goal-based categories, consider the categories used in the Italian wine industry (Negro, Hannan, & Rao, 2010, 2011; Negro & Leung, 2013). This market is organized around prototypical categories, with the categorical identity of wine determined by the grape varietal and the geographic location of the vineyard. Pricing is influenced by the quality of wine as reported by influential critics (Negro & Leung, 2013). While market actors often use goal-based categories even in this industry, there are significant challenges to goal-based categorization as the basis of market structures. Goals vary based on individual preferences (e.g., how much and to what extent particular individuals like certain types of wine) and the ad-hoc construction of goals ("wines to serve with dinner," "wines to give as a gift," "wines to bring to a picnic," etc.). Accordingly, with idiosyncratic, ad hoc, goal-based categorization, it remains unclear how actors can agree on the value of a given exchange product or service. This reveals a fundamental question for categories researchers: How can goal-based categorization enable stable market transactions?

We examine this question in an empirical context that serves as an extreme case (Pettigrew, 1990) for developing theory about goal-based categories: online display advertising. Display advertising is an appropriate context because the market, which initially relied on prototypical categories associated with producer identity, has increasingly shifted toward goal-based categories associated with product dimensions. Buyers (i.e., advertisers) use transactional information about advertising impressions (such as demographics, contextual placement, behavioral history, or geographic location) to optimize the effectiveness of their marketing campaigns, and sellers (i.e., media publishers) use such information to optimize advertising revenue yield from their websites. Furthermore, the use of categories is particularly salient in this context, as market actors employ continuously updated goal-based categories to pursue their respective goals, thus providing ample data to study goal-based categorization. Leveraging industry discourse (i.e., blogs and magazine articles) and in-depth semi-structured interviews with stakeholders in the online advertising industry, we reveal how buyers and sellers use goal-based categorization to structure market transactions.

Our findings suggest that the challenge of achieving stable market transactions in the face of idiosyncratic, goal-based categorization is overcome by the creation of a classificatory infrastructure that enables market actors to dynamically categorize products and assign value. Specifically, we argue that market structures—relatively stable patterns of market interactions between buyers and sellers that rely on rules and social structures to guide and organize exchange (e.g., Fligstein, 2001; Rosa et al., 1999)—associated with goal-based categories (i.e., categories derived from individually idiosyncratic, ad hoc meanings) rely on three core mechanisms: *dimensioning* (i.e., establishing a possibility space in which valuation can occur through the identification, addition, and/or deletion of product features), *scoping* (i.e., selecting particular features in the possibility space), and *bracketing* (i.e., excluding certain actors from participating in market transactions). Additionally, whereas prototype-based categories feature a valuation principle derived from the categorical imperative, goal-based categories feature a distinct principle of valuation: *goal-based attribution*, which involves the iterative addition and deletion of categorical features based on

value in order to achieve a particular goal. Our study thus contributes to our understanding of categories by explaining how goal-based categories enable market transactions.

Theoretical Background

A rapidly growing literature is dedicated to examining how categories help audiences evaluate organizations and market offerings (e.g., Durand & Paoletta, 2013; Hsu, 2006; Kennedy, 2008; Kennedy, Lo, & Lounsbury, 2010; Navis & Glynn, 2011; Rosa et al., 1999; Zuckerman, 1999). Categories influence valuation and support market activities by establishing the identity and comparability of objects of exchange, allowing buyers and sellers to determine their value (Espeland & Stevens, 1998; Lounsbury & Rao, 2004). For instance, categories such as West Texas Intermediate or Brent Crude indicate grades used to benchmark pricing for crude oil.

For stable market exchange systems to emerge, categories typically must provide buyers and sellers with an understanding of the properties of the products being exchanged, yet create broad enough product definitions to ensure liquidity in the market (Hannan, 2010). Thus, market actors use categories as a mechanism to understand exactly what they will receive from a particular exchange agreement, enabling them to value the exchanged item and control uncertainty associated with the transaction (Beniger, 1989). In fact, as Schneiberg and Berk (2010) argued, “even the least formalized classifications do substantial work in ordering and stabilizing markets and fields” (p. 256), and the failure of category systems to commensurate different products may lead to a lack of liquidity and volume in markets (Huault & Rainelli-Weiss, 2011).

In the organizational literature on categories, scholars have embraced a prototypical view that takes inspiration from psychological conceptualizations of categories as typified concepts comprising specific instances that can be described in terms of particular properties or attributes (Mervis & Rosch, 1981; for a summary, see Murphy, 2004). For example, a concept such as “bird” can be represented by examples (such as a robin or an eagle) and can be described using a schemata of properties or attributes (e.g., can fly, has wings, has a beak, etc.). Studies have shown that some instances are more or less associated with a category than others (e.g., a robin is more like a bird than a penguin; an elephant is less like a bird than a bat) (Mervis & Rosch, 1981). Additionally, individuals evaluate whether a particular instance is an instantiation of a concept by comparing the features of the instance to the typified features of the concept (e.g., a person might evaluate whether an unknown animal is a bird by asking whether the animal can fly, has wings, etc.). Psychologically, categories are thus abstractions that connect typified concepts with particular instances of those concepts and the properties associated with those instances.

Organizational scholars have leveraged this understanding of categories to theorize market interactions between producers and audiences (Hannan, 2010; Zuckerman, 1999). For instance, Hannan et al. (2007, p. 32) suggested that market categories emerge through a process of codification whereby audiences label and categorize similar producers or products. A key insight in the organizational categories literature is that categorical impurity or category spanning—the incorporation of attributes from more than one category—tends to be associated with less positive audience evaluations (Zuckerman, 1999). This ecological principle of allocation (Hsu, 2006) indicates that firms face a tradeoff between niche breadth and strength of appeal, as attempts to broaden a niche and reach multiple audiences decreases an offering’s appeal to any individual audience (Carroll, 1985; Hannan et al., 2007). The benefits of categorical purity for valuation have been explained through mechanisms such as the cognitive challenges market critics face in evaluating products or producers due to unclear market identities (Negro et al., 2010). Scholars have further extended this perspective by identifying factors moderating the influence of this categorical imperative, such as category valence (Kennedy et al., 2010), salience (Vergne, 2012), high contrast

between categories (Negro et al., 2010), audience type (Pontikes, 2012), and the stability of the existing category system (Ruef & Patterson, 2009). In summary, findings suggest that audiences evaluate producers and products using cognitive mechanisms associated with the processes by which they evaluate categorical identities (Hannan et al., 2007; Vergne & Wry, 2013).

Towards an understanding of goal-based categories

As outlined above, prior research has been characterized by a shared conceptualization of categories as prototypes or exemplars (Durand & Paoletta, 2013), which assumes that actors use categories as a classification system or taxonomy that is based on the observable characteristics of the producers or products by which they evaluate the legitimacy of a set of objects (Durand & Paoletta, 2013; Murphy, 2004; Rosch, 1978).

Drawing on an alternative view of categories in the psychology literature (e.g., Barsalou, 1983, 1991), some scholars have recently challenged this perspective by suggesting that actors also create categories to pursue particular goals in organizational activities (Durand et al., 2017; Durand & Paoletta, 2013). Barsalou (1983, p. 214) illustrated this concept by describing how a goal of “going on a trip” may compel an individual to create a category for “things to pack in a suitcase.” In this view, actors combine concepts based on their general knowledge of categories and categorical attributes to achieve idealized objectives or goals (Barsalou, 1991). Importantly, instances of “goal-based categories are often quite dissimilar to each other” (Barsalou, 1985, p. 632). To illustrate, the goal-based category “things to pack in a suitcase” might include dissimilar items such as clothes, toiletries, and gifts, rendering a goal-based approach quite different from a prototypical approach that tends to group entities based on family resemblance (e.g., Rosch & Mervis, 1975). Thus, from the goal-based perspective, categories are concepts that actors dynamically combine in ad hoc and individually idiosyncratic ways to pursue goals, rather than stable concepts reflecting socially shared meanings (Durand & Bouloungne, 2017).

This goal-based perspective has advanced categories research by enabling scholars to develop theory for contexts that they have struggled to explain from the prototypical perspective (Durand et al., 2017; Paoletta & Sharkey, 2017). For instance, Durand and Bouloungne (2017) argued that some groups such as entrepreneurs are more likely to use goal-based categories to pursue idealized objectives (see also Delacour & Leca, 2017; Delmestri & Goodrick, 2017; Delmestri & Greenwood, 2016). Additionally, Paoletta and Durand (2016) suggested that market actors are more likely to use goal-based categories when objectives are complex, while Pontikes and Kim (2017) argued that goal-based categories form the basis for strategic categorization (see also Montauti & Wezel, 2016).

At the same time, some scholars have observed that the goal-based perspective relies on assumptions that are problematic for many contexts in which categories need to be stable for market transactions to take place (Durand & Paoletta, 2013). Specifically, although individual actors might use goal-based categories when making decisions, two properties of goal-based categories make them difficult to apply as a categorical basis for market transactions: (a) they are tied to individual actors (i.e., particular market actors have particular goals); and (b) they are ad hoc and change over time (i.e., the goals of market actors change depending on circumstances).

To compare both perspectives, prototypical categorization systems thus rely on a shared understanding of category features, allowing exchange-based commodities markets to produce homogeneous products through a classification scheme that creates “generalized impersonal knowledge out of idiosyncratic personal knowledge” (Carruthers & Stinchcombe, 1999, p. 356). In contrast, goal-based categories are—by nature—idiosyncratic, individual, ad hoc, and subject to change. Consequently, if goal-based categories enable market actors to develop goals for particular

contexts, how can these idiosyncratic categories provide the foundation for stable market structures that facilitate product liquidity? We therefore ask: *How can goal-based categorization enable stable market transactions?*

Research Design and Methods

Empirical context

The empirical context of our study is the online display advertising industry. Display advertisements are a form of online advertising “where an advertiser’s message is shown on a destination webpage of a media publisher, generally set off in a box at the top or bottom or to one side of the content of the page” (IAB.net Wiki, 2014). The first display ad was sold in 1994, when AT&T paid digital publisher HotWired.com \$30,000 to place a banner advertisement on its website for 3 months (Cook, 2016). As the internet became an increasingly popular source of media content for consumers, the display advertising market grew dramatically. By 2016, the size of the display advertising market for desktop and mobile devices totaled \$31.7 billion (PricewaterhouseCoopers, 2017, p. 11).

Key market actors in the display advertising industry include media publishers (sellers) and advertisers (buyers), along with a wide variety of third-party intermediaries that facilitate market exchanges such as advertising networks, advertising exchanges, demand-side platforms, supply-side platforms, agency trading desks, and creative optimizers (Luma Partners, 2017). To offer a concise description of this complex industry, we explain how sellers (i.e., media publishers) and buyers (i.e., advertisers) of online advertising use categories to execute transactions of the primary product (i.e., the advertising impression).

Sellers. Media publishers include major web companies (e.g., Facebook or Google), major news media outlets (e.g., the *Wall Street Journal* or the *New York Times*), and blogs (e.g., sports blogs such as www.bruinsnation.com or technology blogs such as www.techcrunch.com). Media measurement and analytics companies such as ComScore or Alexa measure traffic to such sites through metrics such as the number of monthly visitors, their demographic profiles, and the amount of time each visitor spends on the website (Alexa, 2017). Media publishers generate revenue by selling advertising space through sales channels ranging from traditional rate cards to programmatic trading in online marketplaces, using strategies of “holistic yield management” to optimize revenue from their digital properties (Wright, 2016).

Buyers. Buyers in this market are organizations that attempt to generate demand for products by placing advertisements with media publishers. Famous and prominent advertisers include large consumer product firms that promote global brands such as Procter & Gamble—which spends more than 25% of its multi-billion dollar advertising budget on digital advertising channels (Neff, 2013). Advertisers try to maximize the effectiveness of their advertisements by reaching a targeted number of people and trying to generate as much of a response as possible.

Product. The product traded by publishers and advertisers is the advertising impression, “a single display of online content to a user’s web-enabled device” (IAB.net Wiki, 2014). In the early instantiation of the market for online advertising impressions, market activities revolved around prototypical categories grounded in the identity of media publishers in terms of content such as finance (e.g., the *Wall Street Journal* or the *Financial Times*), sports (e.g., *ESPN* or *Sports Illustrated*), or general interest (e.g., *Time Magazine* or *The Atlantic*). Publishers would sell directly to advertisers

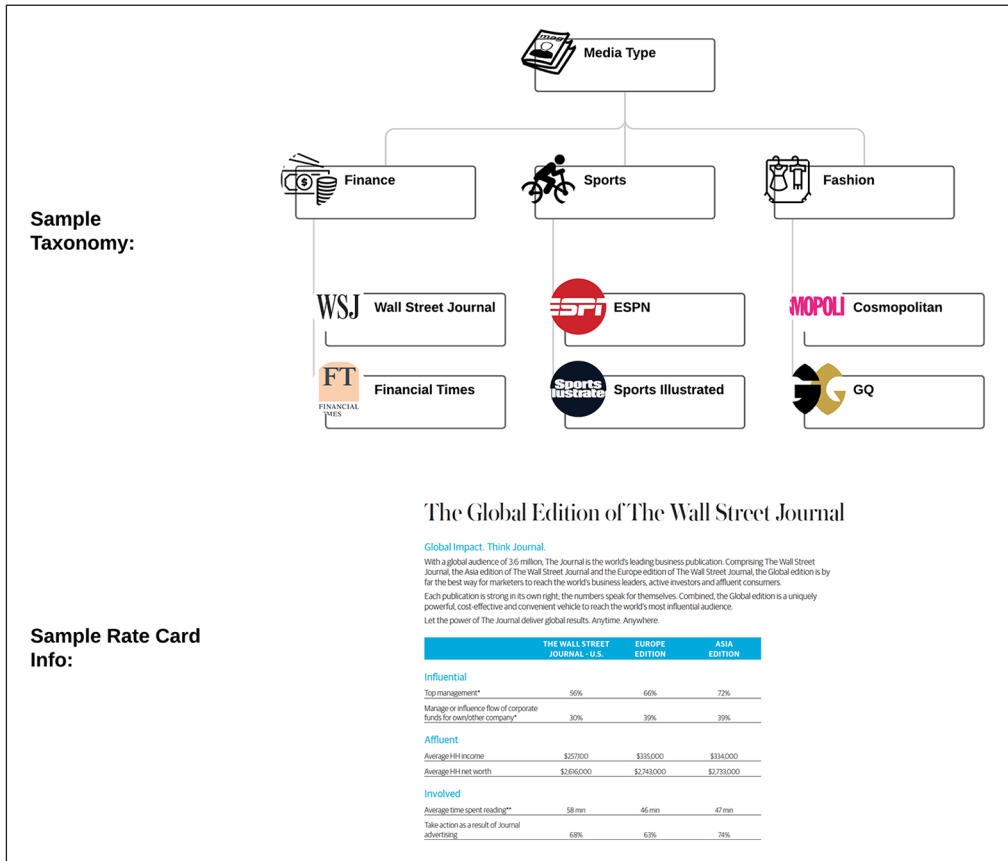


Figure 1. Prototypical categories in display advertising.

or advertising agencies by setting prices that treated every individual who viewed their media publication as commensurate and part of an overall audience. For example, the *Wall Street Journal's* rate card showed average statistics for subscribers such as average household income and other broad demographic characteristics of its reader base. Particular advertisers would use this information to develop their own categories (e.g., “periodicals viewed by our target customers”).

To sum up, market exchanges in the online advertising industry traditionally have been organized into categories based on the content produced by media publishers, and advertisers would, on an idiosyncratic basis, use whatever information they had available to engage in goal-based categorization. We summarize this prototypical use of categories in online advertising in Figure 1.

In the display advertising industry, market actors increasingly engage in transactions structured by a goal-based category system. Specifically, impressions are classified by a category system featuring various dimensions ranging from descriptions of website visitors (i.e., demographic characteristics, behavioral history, geographic location, or real-time context) to descriptions of advertising products (i.e., banners, rich media, sponsorship, and videos) (Hallerman, 2010). Advertising impressions thus can be associated with a potentially infinite amount of information regarding category membership (e.g., shown after five previous ads on a website, on the weekend, in the afternoon, to a female, married, no kids, in a large metropolitan area, interested in politics and sports, who has visited similar sites before, etc.). Therefore, advertising impressions are both

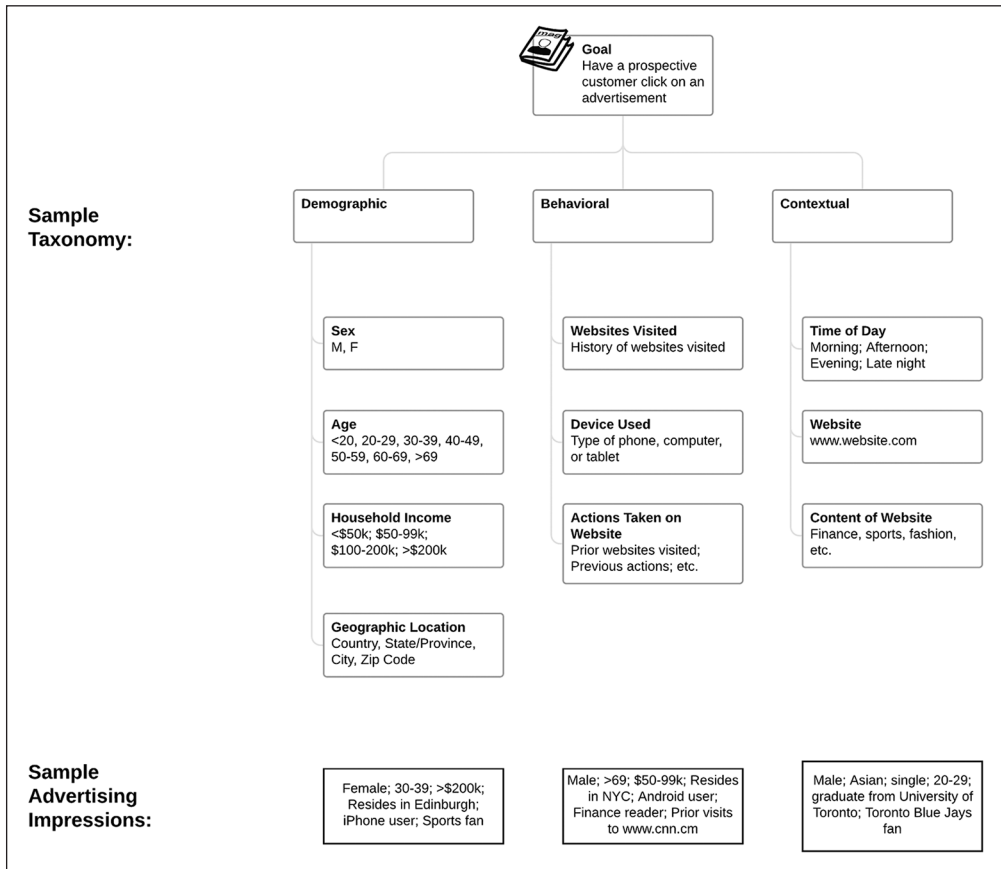


Figure 2. Goal-based categories in display advertising.

unique and perishable: unique, because every visit to a website represents a different combination of person and context; and perishable, because after a website is displayed, that particular view is irrevocably lost (Glaser, Fiss, & Kennedy, 2016; John, 2010). This renders the market for advertising impressions particularly appropriate for a study of goal-based categorization.

When trading display advertising impressions, advertisers and publishers try to figure out how to use categories to reach their goals. For example, advertisers value display impressions based on an expected level of consumer response to their advertisements that will result in product sales. However, advertisers typically struggle to predict consumer reactions accurately, making the valuation of impressions a challenging exercise for both advertisers and publishers. Similarly, although publishers often have extensive information about visitors to their websites, they must decide how much ad space to sell to bulk advertisers (which provide limited categorical information about ad impressions) and how much to sell via online marketplaces (which provide detailed categorical information about ad impressions). Advertisers and publishers thus attempt to appraise the value of display advertising impressions by employing a system that facilitates the creation of ad hoc categories. These categories can be used to value impressions through pricing practices that typically rely on either the number of viewers (e.g., cost per thousand viewers or “CPM”) or ad performance (e.g., how many viewers click on an advertisement). We illustrate the categorical taxonomies of goal-based categories in Figure 2.

In selecting the online display advertising industry as our empirical context, we therefore examine a critical case in which the phenomenon of interest—how goal-based categories explain the stability of market transactions—is transparently observable. Additionally, the online advertising industry is a particularly appropriate context because the market initially relied on categorical prototypes but increasingly relies on goal-based categories. Finally, the industry serves as an ideal empirical context because discourse is well documented due to a proliferation of sensegiving and sensemaking via blogs and industry conferences.

Data collection

We collected a comprehensive text corpus related to how online advertising market actors bought and sold display advertising impressions, gathering data from sources including industry periodicals and blog posts, the Interactive Advertising Bureau (IAB), research reports from organizations such as eMarketer, and industry analyses from specialists such as investment bankers.

We used these data to map the industry structure, which revealed four categories of market actors with perspectives relevant to our research question. The first category includes buyers, specifically advertisers, advertising agencies, and corporate advertising departments. The second category, publishers, includes traditional publishers such as *Business Week* and online publishers such as WebMD or AOL. The third category consists of a variety of market makers—organizations that provide the technological infrastructure that facilitates the buying and selling of online display advertising impressions, and thus are most closely involved in the construction and modification of category systems. Examples of these organizations include advertising exchanges, advertising networks, demand-side platforms (DSPs), supply-side platforms (SSPs), and data exchanges. Although many types of data are available, we focused on collecting data which explain how these organizations facilitate the use of categories for advertisers or publishers. Finally, the fourth category comprises observers with an industry-wide perspective, including industry associations (i.e., the IAB or the Online Publisher's Association), strategic service providers (i.e., investment bankers, academics, and market research firms), and media providers (i.e., magazines and blogs).

We gathered information from these four types of industry participants in three ways. First, we conducted 51 semi-structured interviews with individuals we identified as being experienced and knowledgeable of our context. These interviews lasted approximately 1 hour and involved individuals from every type of organization described above. We wrote detailed notes and commentaries after each interview. As we progressed in our analysis of the interview data, we performed additional interviews for verification purposes and to ensure the “sturdiness” of our findings (Miles & Huberman, 1994). After completing these analyses, we checked back with respondents to ensure that our emerging narrative reflected their experiences, while also corroborating our findings whenever possible with the accounts of other industry observers and analysts.

Second, the first author attended three digital media conferences sponsored by the IAB in 2010, 2011, and 2017 that directly addressed the impact and nature of new technologies for buying and selling online display advertising impressions. The first author participated in and observed activities at these conferences by attending plenary and breakout sessions, and visiting with representatives of online display advertising companies. These conferences offered organizational representatives opportunities to articulate their philosophies of marketplace exchange. During each conference, the first author took extensive field notes which were transcribed within one day of observation.

Third, key actors in this industry publish a significant amount of data on the internet via blog posts and web articles. Accordingly, we collected a specialized text corpus through internet searches based on key terms including the product exchanged in the marketplace (i.e., “online

display advertising impression”) and the organizational forms facilitating market exchange (i.e., “advertising exchange,” “advertising network,” “demand-side platforms,” etc.). In sum, by collecting data on each of the four actor types, we were able to obtain a comprehensive perspective on how market actors in the online display advertising industry use goal-based categorization in their marketplace.

Data analysis

Due to the limited existing theoretical literature on valuation processes in goal-based category systems, we adopted an analytical approach following the tradition of grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1998) and proceeded with an inductive, interpretive case study. We developed a customized analytical approach to create a fit between our theoretical investigation and our empirical context (Gehman et al., 2018) that relied on iterative engagement between our empirical data and theoretical research related to our research question (Tavory & Timmermans, 2014) that we now describe as occurring in four phases.

During the first phase of our analysis, we sought to understand the processes by which market actors buy and sell online display advertising impressions. We created case narratives to understand the roles of the various market actors, and conducted a preliminary round of data coding to identify any and all concepts emerging from discourse data, interviews, and observation notes (Strauss & Corbin, 1998). Based on these narratives, we identified a central challenge faced by industry actors: producing liquidity in the market. This challenge stems from the many possible ways to categorize advertising impressions and idiosyncratic perspectives on how to value particular categorical dimensions and features.

During the second phase of analysis, we paid particular attention to how market actors came to agree on categories for transactions, given their idiosyncratic approaches to evaluating advertising impressions. We consulted relevant theoretical research to develop a more refined understanding of our identified concepts and themes. In particular, we coded our field notes to try to understand the themes associated with the actions of market participants aimed at addressing a fundamental challenge: Given the ad hoc and idiosyncratic goals of market actors in the industry, how did buyers and sellers handle the infinite number of potential categorical elements describing online advertising impressions? To answer this question, we “zoomed in” (Nicolini, 2009) on two fine-grained data sources: (a) blogs and interviews associated with market intermediaries who attempted to resolve this challenge, and (b) an intensive, half-day interactive session during a 2017 conference called “Programmatic 101” detailing the mechanics of how market transactions operate in the industry. We then used the constant comparative method (Strauss & Corbin, 1998) to code these focused data in order to identify the themes of interest, organizing our context-dependent first-order concepts into more abstract theoretical concepts (Gioia, Corley, & Hamilton, 2013; Van Maanen, 1979).

During our third phase of analysis, we paid particular attention to the market activity revolving around the ways actors use goal-based categories to value advertising impressions. Here, we recoded the data that we zoomed in on during the second phase of our analysis to try to understand the themes associated with buying (i.e., understanding the potential value of an advertising impression) and selling (i.e., realizing the maximum value for website inventory).

In a fourth and final phase of analysis, we returned to the existing literature (Tavory & Timmermans, 2014) on categories (particularly prototypical categories) to compare and contrast valuation practices from prototypical and goal-based perspectives, respectively. This comparison enabled us to refine our understanding of the codes identified in the second and third phases of analysis, and to develop a grounded framework explaining both how goal-based categories can

Table 1. Contrasting mechanisms of market stability and principles of valuation in goal-based and prototypical categories.

Mechanism/principle	Prototypical categories	Goal-based categories
Category features	Stable Socially shared Meaning given	Ad hoc Individually idiosyncratic Meaning dynamically constructed
Role of category features	Grade of membership	Dynamic dimensioning
Role of categorical abstraction	Unidimensional vertical abstraction	Multidimensional scoping
Principle of category membership	Pooling (who's in)	Bracketing (who's out)
Principle of valuation	Categorical imperative – Legitimacy judgments based on categorical purity	Goal-based attribution – Iterative addition and deletion of categorical features based on value to achieve particular goals

explain the stability of market structures, and the valuation principles that operate in goal-based categories. We provide a summary of this comparison in Table 1.

Goal-Based Categorization in the Display Advertising Industry

Our findings indicate that buyers and sellers in the display advertising industry create stable market structures in the face of idiosyncratic, ad hoc goal-based categorization by creating a classificatory infrastructure that enables market actors to dynamically categorize products. This process relies on three mechanisms: *dimensioning*, *scoping*, and *bracketing*. By dimensioning, we mean the establishment of a possibility space within which valuation takes place, involving the identification, addition, and/or deletion of dimensions of product features. By scoping, we mean the process by which buyers and sellers select particular properties within the possibility space to maximize the potential of achieving a market transaction. By bracketing, we mean the process whereby market actors exclude certain parties from participating in market transactions. Additionally, findings show that valuation in goal-based categorization operates according to a principle of goal-based attribution: iteratively adding and deleting categorical features based on their utility for achieving particular goals.

Dimensioning: The creation of a possibility space

Categories mitigate the complexity of information in a marketplace by organizing products into meaningful groups. In our empirical context, market actors use categories to describe advertising impressions and to develop a shared understanding of product value in order to agree on an exchange price. However, determining *how* to categorize an advertising impression is a complicated process for market participants, who struggle to choose the “right” categorical information to use in market transactions. Traditionally, market actors employed high-level, prototypical categories (e.g., such as the “typical viewer” of *www.wsj.com* in Figure 1). However, more recently market actors have employed low-level, goal-based categories (e.g., the single, 20-something-year-old Asian male who graduated from University of Toronto and follows the Toronto Blue Jays in Figure 2). One industry participant described the potentially infinite variety of display advertising impression categories available to market actors: “With online media, there are as many categories of ad impressions as there are of humanity. Everybody’s interests can be thought of as a vector, where the interests of a person are multiplied by their responsiveness within different contexts” (interview, demand side platform executive, 10/2010).

To take advantage of this multi-dimensional category space, a variety of market actors have built categorical taxonomies that enable market participants to create almost any desired ad hoc categorical configuration. As one market intermediary explained:

What makes our system revolutionary is that the system itself contains no data, but instead revolves around a searchable dictionary that lists individual audience data sources, available segments, and standalone analysis/segmentation algorithms. . .By combining these elements, virtually any digital audience can be created and acquired. (www.brilig.com, 9/2010)

Furthermore, market actors seek to control this categorical complexity by grouping categories into broad dimensions such as the impression viewer's demographic characteristics, behaviors (i.e., past activities on the internet such as browsing history), and contextual features based on the content surrounding the advertisement. These broad categorical dimensions form the skeleton of a goal-based category system that facilitates the creation of idiosyncratic ad hoc categories by market actors (see Figure 2).

For example, one broad dimension used by market actors is the notion of "behavioral" characteristics based on the past online behavior of individuals tracked through "cookies" (i.e., data about users stored on websites). An advertising executive observed:

The goal behind every advertisement is to marry the audience with the product, and that's what's at the core of the advertiser's valuation scheme. Cookie-level data is collected that gives information based on specific characteristics of different websites customers visit. It's all about what combination of websites are visited beforehand. (interview, advertising agency executive, 7/2013)

Once collected, buyers exploit cookie data to construct a custom taxonomy:

A data taxonomy is created by equating user data to cookies. Each website serves to ascribe an attribute to that cookie, which in turn is used to categorize attributes in the form of a taxonomy. In this case, the taxonomy provides a framework where the market can check attributes associated with a cookie. (interview, market intermediary, 7/2013)

Buyers can consequently target individuals based on their past behavior; advertisers can "find people who browse FamousFootwear.com, then. . .find these people and serve them shoe ads while they are on other sites" (field notes, 10/2017).

The market actors we observed created novel dimensions suited to their goals (or those of their customers). For instance, some market intermediaries have created a "ratings table" that evaluates the contextual characteristics of an advertisement to help advertisers ensure content is appropriate for a particular brand:

Tens of thousands of publishers need ratings. For example, even a website such as CNN might have specific pages covering news such as a plane crash that might not be brand safe. [The ratings table] can be used to check a bid request in terms of this table, so you can use this table to avoid the bad stuff. (field notes, 10/2017)

Similarly, some intermediaries have created ways for publishers to evaluate whether particular advertisements might be appropriate for particular websites. Innovative techniques to create categorical data such as ratings tables or viewability metrics thus provide market actors with an additional categorical dimension—context—that can be used to pursue their idiosyncratic goals.

In summary, dimensioning creates the possibility space of a goal-based category system that facilitates the creation of idiosyncratic, ad hoc categories by market actors. The fundamental concept

associated with dimensioning is that market actors come to an agreement about the dimensions of value and the nature of the possibility space, even if they do not directly agree on how valuation takes place or the value of a particular entity—in fact, the very nature of the possibility space allows a given impression to be categorized in a large number of meaningful ways, providing considerable classificatory flexibility to the market actors.

Scoping: The selection of preferred combinations of categorical dimensions and features

Advertising impressions can be categorized based on a constellation of dimensions and features, and advertisers participating in auctions for individual impressions can flexibly choose which combination of specific features they want to purchase. However, the process of scoping—the selection of a particular configuration of categorical features—is challenging because market actors have to balance the objective of audience appeal with the volume of available inventory. To illustrate, in a parallel process to the principle of allocation, increasing specificity (narrowness) of the category improves the *value* of an impression but simultaneously reduces the *audience reach* realized by the impression. One executive explained this tradeoff:

There is a tradeoff between reach and targeting impressions: the more specific the requests, the less the reach of the advertisement. This conversation occurs frequently with advertiser clients. You can target females in San Francisco who are in the education field and like radishes; this will get you about 4,000 people. But that's pretty narrow, and probably not the best use of the budget, so you drop the radishes piece of the impression, and now you target 20,000 people. (interview, data exchange executive, 9/2013)

Increased categorical specificity consequently increases the value to the advertiser and the publisher's corresponding ability to charge for the impression, but at the same time reduces the reach of the advertisement in terms of the potential volume of impressions available and therefore the overall transaction value.

Advertisers have the ability to create idiosyncratic categorical profiles in order to achieve their objectives. The variables they use to analyze historical customer data do not necessarily correspond to traditional demographic (i.e., prototypical) categories that dominate direct sales channels. Instead, buyers use the additional granular information within multiple categorical dimensions to focus in on particular category combinations that will help them realize their particular goals. Category selection in this process is based on adding and subtracting categorical features that help buyers achieve their goals: “We try to find a bunch of mundane things including browser types and Flash, etc. that will help [our customers] identify which ad impressions are most likely to deliver results” (interview, demand side platform executive, 10/2010). However, if too many features are layered on top, the possible target audience becomes too constrained, rendering the combination less viable.

Sellers also can manipulate the categorical information associated with their inventory. Here, publishers face the challenge of price deterioration for inventory that does not sell through a premium, negotiated channel. In the online display advertising context, publishers must address the diminished value associated with selling inventory on ad networks or exchanges, since auction pricing typically involves advertisers paying lower prices for impressions—publishers risk channel conflict if they sell excess supply of premium inventory for a lower value on an ad exchange. One way sellers can address this issue is by manipulating the level of categorical detail characterizing an impression:

The publishers might actually need to “damage” the advertising impression so that they can maintain the value of their top-tier impressions. The way that publishers damage the information is by removing some of the information attached to the impression. (interview, industry expert, 2/2012)

Controlling the information flow thus involves altering the level of categorical detail that sellers convey to buyers, thereby moving the impression to a preferred level of categorical scope that presumably optimizes their revenue.

To summarize, scoping refers to a process by which buyers and sellers focus on specific properties of the possibility space by zooming in and zooming out on particular categorical features. Market actors thus dynamically engage in scoping in order to adjust the breadth and depth of product properties; this renders their products more concrete or abstract and aligns them with their idiosyncratic, ad hoc goals.

Bracketing: The exclusion of actors and segments of the market

Although scoping enables actors to select certain categorical combinations best suited to their goals, the flexibility of the possibility space makes it challenging for market actors to find common ground. Bracketing reduces the complexity of the possibility space by excluding particular actors and market segments from possible transactions, thus supporting scoping and making successful transactions more likely.

Market actors engage in bracketing by constructing “blacklists.” For example, a media publisher committed to health products might want to avoid displaying ads featuring tobacco or alcohol products. Similarly, a media company like the *New York Times* does not want a competitor such as the *Wall Street Journal* displaying ads on its sites. Restricting the set of possible market participants ensures these goals are met. As one publisher explained: “I ignore your bids. It’s a smart business choice, but I don’t make as much money” (field notes, 10/2017). This form of bracketing thus enables sellers to avoid being associated with undesirable advertisers, even at the expense of reducing short-term revenues generated by specific transactions.

Market actors also construct mechanisms such as private exchanges that limit sections of the marketplace to certain actors. Publishers “fence-off” the market by assigning deal IDs:

Publishers are willing to provide preferred access to inventory in exchange for price and volume commitments. . . Once publishers and advertisers agree on the business terms of a private marketplace, the publisher’s ad exchange assigns a deal ID to the transaction. All qualifying bid requests are populated with an optional deal ID parameter, and the advertiser’s bidder targets this deal ID. (Jounce Media, 2017)

This enables the use of detailed goal-based categories while limiting the potential participants of exchange, thereby enabling market actors to “disrupt the typical ‘highest bid wins’ model of programmatic transactions” (Jounce Media, 2017) and making it more likely that offers will be accepted and deals will be completed. Private exchanges and deal IDs enable sellers to create sub-sections of the market tailored to their preferred goal-based categories.

Buyers similarly want to exclude portions of the market. Specifically, many advertisers want to ensure their brands are not contaminated by inappropriate content. One executive reflected: “The canonical illustration used is that an advertiser who cares about brand wants to avoid having ads on porn sites. If it does happen, who is responsible? Which connection needs to be severed?” (interview, advertising exchange executive, 8/2010). To protect the interests of advertisers in this regard, ratings tables are used.

Every bid request contains a publisher identifier—either a URL or an app name. Bidders can analyze this identifier to determine whether the available impression meets campaign targeting material. By checking the publisher against a ratings table, bidders can prevent ads from running alongside inappropriate content. (Jounce Media, 2017)

In summary, market actors use bracketing to exclude certain parties from participating in market transactions. Whereas dimensioning and scoping refer to constructing and selecting the properties of a product, bracketing is a categorization mechanism that, instead of constructing homogeneity at the product level, reduces the heterogeneity of the possibility space.

Principle of valuation: Goal-based attribution

In our context, valuation using goal-based categorizing occurs through a process of bidding on specific advertising impressions that feature detailed categorical information. Advertisers value specific impressions by collecting data on prior customers to predict which viewers are most likely to become future customers. An executive for a data exchange described the inductive process of determining the characteristics of customers most likely to purchase a product:

You need to measure transactions with a comprehensive understanding of what the customers are. For example, find out who your last 2,000 converters are. Then you find out what their characteristics are—build a comprehensive understanding. . .you are using your data to define the ideal type of customer, and then you develop your marketing plan to hit that. (participant observation, breakout session at an industry conference, 9/2010)

This valuation process is primarily data-driven, with information on category membership from past customers forming the basis for identifying future customers.

Advertisers commonly utilize mathematical models to identify variables that will increase the probability that an individual will make a purchase as a result of viewing an advertising impression. An industry service provider explained:

We use between 1,000 variables and 100,000 variables and have an algorithm that determines what categories are most important to identify “converters.” This is based on a likelihood model of who is most likely to purchase the product. This data can then be integrated with about 20 million cookies that can be targeted. . .The advertiser can then use this information to either use it on their own existing sources, or buy these type of impressions directly from the publisher. (participant observation, breakout session at an industry conference, 9/2010)

In this inductive, experimental valuation process, buyers apply a focused scope to multiple categorical dimensions to clarify the values that they assign to advertising impressions. Category selection in this process tends to be based on a combination of categorical dimensions and features, and buyers might not be aware of (and often do not seem to care about) how the inductive process of category selection works, as their bidding strategies are based on adding categorical features that generate results: “We deliver results. . .the customers don’t know how it works and they aren’t as curious as to what is happening [underneath the hood]” (interview, demand side platform executive, 10/2010).

To accommodate buyers’ increasingly narrow and specific demands for ad hoc categories, sellers in the auction market must provide more detailed information about their impression inventories. In addition, third-party market intermediaries analyze and interpret the performance of impressions based on predictive mathematical models and algorithms. Publishers, in essence, relinquish control

to these intermediaries, who take some of the profit margin as they associate new, valuable information with impressions, thereby enabling advertisers to make sense of the greater number of options available. However, publishers also generate higher returns when they allow advertisers to target more specific audiences by offering customized solutions that enable advertisers to realize particular goals. One executive explained:

By offering a package of sponsorship and a more targeted network, you as a publisher can offer more value to an advertiser, which in turn can get you a better return. By packaging your audience rather than your content, you can actually optimize your profits. (participant observation, industry conference breakout session, 9/2010)

Publishers use this type of value-added service to maximize their yields and deal with their challenge of understanding exactly how to value incremental inventory. The accretive value of such inventory is not clear because value is assessed one feature at a time and is further complicated by the fact that different advertisers may value each feature quite differently. As a result, publishers must come up with alternate methods for understanding value. An industry manager described the publishers' approach to this problem: "Publishers will, however, try to set a floor price, and they'll sell whatever they can above that price. Publishers determine that floor price by attempting to understand the incremental value they assign to something that doesn't sell" (interview, demand side platform manager, 8/2013). Publishers therefore aim to set a minimum price for incremental inventory that assures some profit. Publishers typically determine these floor prices inductively, mirroring the process used by advertisers by examining the sales history of sold inventory and extrapolating the minimum price for remaining inventory that yields optimum profit.

Moving between different degrees of categorical scope also entails adding or removing information about the product being exchanged. Such movement happens on both sides of the market. On the buyer side, advertisers continuously aim to test the effectiveness of their categories, either by refining their theories about their potential buyers or by engaging in empirical experimentation. An ad network executive explained:

How granular (segmented) they want to get has to do with testing. If advertisers test enough audiences to see if they target certain attributes and whether they will achieve the desired scale, then they will adjust price accordingly. How much to spend on Facebook depends on the advertiser looking at all targeting parameters of interest. For example, advertisers can start with age group, and segment the Facebook market into different age group "buckets," which advertisers individually test against each other. What advertisers end up doing is "building a large test matrix." Each square in the matrix represents a particular type of target (e.g., women 21–24 who like Coach handbags, women 25–30 who like Louis Vuitton handbags). There are hundreds of thousands of squares in this matrix, and each square is tested multiple times. . . Advertiser budgets are then adjusted according to these test results. (interview, ad network executive, 8/2013)

In adjusting their requested categories, buyers continuously aim to optimize their category levels in order to determine the "right" degree of categorical scope based on a considerable number of parameters, including the universe of categories provided, the actual categories available, and competition for this inventory.

During this process of feature selection, how buyers attribute the benefit of adding a feature to the categorical process is of particular importance. To respond to this issue of proper feature selection, advertisers attempt to determine which category specifically affects consumer behavior. An executive observed:

One of our customers does “last-click” attribution. It is an interesting puzzle: What kind of experiments can you do to figure out which of your impressions you get credit for and which ones you don’t? In a pack of crowded bikers, how do you not get your tire clipped by the person in front of you? Those pieces are both little and quite significant. (interview, demand side platform executive, 10/2010)

For more granular categorization to work, buyers must ensure that categorical data are accurate. Buyers in particular struggle to obtain high quality information. Low quality data, incorporated into the predictive algorithms used by many in the industry, have the potential to establish inaccurate and misleading valuations of impressions. One industry executive described this challenge:

A parade of limousines filled with elaborately dressed high schoolers is a sure sign that prom season has arrived. The season evokes memories of confusion and awkwardness. Whether it happened to you or one of your friends, there’s no doubt you are familiar with at least one prom crash-and-burn in which someone asked that special someone else to prom, only to elicit the dreaded response “I like you. . .but not in that way.” You (or your friend) misinterpreted signals and bet everything on bad data. Worse yet, you (or your friend) lost precious time courting the wrong person while alternative dance cards filled up quickly. This is the same fate that digital advertisers face every day. (interview, digital advertising executive, 8/2013)

Goal-based categories thus become a central means by which market actors address the potential challenges of data accuracy.

In summary, in goal-based attribution, market actors iteratively add and delete categorical features in attempts to better understand the value of the marketplace product to them. They begin with information provided by the category and then construct and apply features that help them realize their idiosyncratic and often changing goals.

Discussion

Goal-based versus prototypical categorization as the basis of market transactions

Our findings reveal how market actors use dynamic, individual, heterogeneous ad hoc categories as they pursue idiosyncratic objectives (Barsalou, 1983, 1991) in a manner that creates the foundation for stable market transactions. Whereas the traditional prototype and exemplar-based perspectives on categories focus on how audiences or intermediaries evaluate the legitimacy of producers or products, a goal-based category perspective explains how market actors use categorical infrastructure to realize their own idiosyncratic objectives. The core concepts introduced in this paper—the goal-based categorization mechanisms of dimensioning, scoping and bracketing, and the valuation principle of goal-based attribution—differ from the related concepts associated with prototypical categorization, as contrasted in Table 1.

First, prototypical and goal-based categories differ in their use of category features. In the prototypical view of categories, features are part of a schema that reflects the socially shared understanding of the central features associated with a particular category (Mervis & Rosch, 1981). From this perspective, members that share more features with the prototype have a higher “grade of membership” than those that share fewer features with the prototype (Hannan et al., 2007). In contrast, our study shows that for goal-based categories to form the basis of market transactions, market participants must agree about which dimensions are important—but not necessarily particular features of those dimensions. Because goals are ad hoc, idiosyncratic, and dynamic, dimensions facilitate the matching of buyer and seller preferences. In goal-based categories, dynamic dimensioning creates a possibility space in which market actors can identify, add and delete features relevant to their ad hoc goals.

Second, the role of categorical abstraction differs between prototypical and goal-based categories. Regarding its vertical dimension, the prototypical category view uses as its reference point the basic level category, which carries the most information and has the greatest cue validity (Rosch, 1978). Vertical movement in the category, either in terms of more abstract superordinate categories or more concrete subordinate categories, revolves around a singular dimension and creates a fundamental tradeoff between reach and appeal (Cattani & Fliescher, 2012; Hsu, 2006). In contrast, our study shows that for goal-based categories, abstraction occurs across multiple dimensions, with no established hierarchy and no dominant individual dimension—enabling market actors to flexibly move up and down levels of abstraction to identify different locations in a multidimensional space to select a preferred set of features within the possibility space that might optimize reach to high appeal audiences.

Third, prototypical views of categorization emphasize conformity to the prototype (Zuckerman, 1999). Conformity and appeal operate at the level of the category, with a focus on inclusion (“who’s in?”) and homogeneity achieved by the pooling of similar entities (Sharkey, 2014). However, with goal-based categories, appeal is determined by individual actor *goals* rather than category properties, and as a complexity reduction mechanism, bracketing operates at the level of the possibility space rather than the category. In bracketing, the focus is on exclusion (“who’s out?”) by means of delimiting which actors and market segments can participate in transactions. While the conformity mechanism of the prototype view is focused on constructing homogeneity at the category level, bracketing is focused on reducing the heterogeneity of the possibility space. A correlate of this postulate is that the iterative, unfolding, and dynamic nature of ad hoc goal-based categories makes it more important not to get the transaction wrong (i.e., not transact with the wrong party or market segment) than to optimize the transaction (i.e., transact with the ideal exchange partner or segment).

Finally, our analysis suggests that prototypical and goal-based categories differ as they rely on fundamentally different principles of valuation to generate market stability. Specifically, for prototypical categories, existing research has shown how the principle of valuation is the categorical imperative based on categorical purity (Zuckerman, 1999). In contrast, for goal-based categories, the principle of valuation is goal-based attribution, which involves the iterative addition and deletion of categorical features based on their perceived value in the pursuit of particular goals. Fundamentally, categories are conceptual markers that provide information to actors related to the pursuit of particular goals (Durand & Boulongne, 2017); these different principles of valuation suggest that researchers should examine the classification system more broadly to further develop a dynamic account of how market actors use categories to structure transactions and determine value.

Contributions

Our study offers three contributions to organizational research. First, we offer a theoretical explanation for how goal-based categories enable stable market structures despite the ad hoc and idiosyncratic nature of such categories. In contrast to existing research on prototypical categories that explains how actors respond to established category meanings, we show how goal-based categories provide actors with a conceptual infrastructure that can be used to dynamically construct meanings and continually value and revalue products in marketplace exchanges. This categorical infrastructure allows market actors to accommodate the uncertainty arising from idiosyncratic ad hoc categories.

Second, our study carries implications for the literature on valuation in markets. Although valuation may be conceptualized in terms of moral, aesthetic or economic value, economic value in market transactions is tightly tied to pricing and exchange value (Beckert & Aspers, 2011), and relies on the explanation of commensuration associated with ideal-typical product markets

(Carruthers & Stinchcombe, 1999). However, recent findings suggest that rather than conceptualizing in terms of a “real” underlying value, new insights can be gained by focusing on the processes by which actors value products and services (Fourcade, 2011). Our study shows how market actors use goal-based categories to generate different valuations of the same product in the same context by constructing a classification system that uses different mechanisms of categorization—dimensioning, scoping, and bracketing.

Third, we contribute to the sociology of markets (e.g., Fligstein & Dauter, 2007) by providing a detailed case study of the construction and evolution of a novel market infrastructure. Specifically, our study describes a market that has shifted from a structure originally based on aggregate, abstract, prototypical categories to a dynamic classification system that facilitates goal-based categorization. Our findings may imply that prototypical categorization provides a foundation on which subsequent goal-based category systems can build, just as the dynamic mechanisms described in our paper build on and require the epistemological infrastructure of developed prototypes.

Limitations, boundary conditions, and directions for future research

Our use of a case study approach has yielded considerable insights into the workings of goal-based category systems in our chosen setting, but comes with the typical tradeoffs regarding cross-context generalization. Nevertheless, we believe that our overall theoretical model of contrasting category dynamics between the prototypical and goal-based category perspectives outlined in Table 1 should apply to other product markets, particularly consumer goods markets using online transaction systems.

We also note two boundary conditions for our theoretical model. First, we suggest that what we call *classificatory viability*—the possibility of meaningfully categorizing the entities that violate the correlational structure of a prototypical taxonomy—is a necessary condition for the emergence of market structures based on goal-based categories. Specifically, market actors must be able to meaningfully deconstruct an object into a number of dimensions or features—which may not be possible or useful with some types of goods (such as crude oil). Second, we suggest that market actors need to be able share information about the dimensions used in goal-based categorization through a sufficiently rich communication infrastructure. In this regard, it is important to reiterate that prototypical and ad hoc categorization in markets are not mutually exclusive; many category systems allow for both—most online retailers being a case in point.

Future research might develop a more in-depth understanding of how actors use goal-based category systems. For instance, with the growing availability of data about consumer choices in online marketplaces, there appear to be opportunities for scholars to engage in both archival studies and field experiments to examine how categorical infrastructure and buyers’ search behaviors in particular might affect valuation of the goods exchanged using goal-based categories. Researchers also might explore how different strategies for manipulating the scope at which products and services are offered might affect buyer preferences manifested as willingness to pay, or examine how shifting levels of self-categorization by firms may affect audience evaluations such as through pricing in initial public offerings (Rhee, 2014). Scholars might also investigate how innovators strategically use and develop goal-based categories in the construction of entrepreneurial possibilities (Lounsbury & Glynn, 2019).

Finally, in the current study, we have focused on the challenges of how idiosyncratic, ad hoc categories can enable stable market transactions. However, when ad hoc categories are used repeatedly and over time by a variety of actors, they may become institutionalized. Institutionalization of course does not change the goal-based nature of these categories, but it does make them less idiosyncratic and ad hoc. As with prototypical categories, such stable and widely shared categories are

accomplishments (Kennedy & Fiss, 2013; Lo et al., 2019) rather than the natural state of affairs. Consequently, scholars might also develop theory to explain how goal-based categories might become institutionalized or which categories are particularly likely to become institutionalized.

Conclusion

Research on categorization has been an exciting and growing area of investigation for management and organization scholars and is likely to remain a topic of interest. In this study, our goal has been to expand our understanding of goal-based category dynamics. Such dynamics are of increasing relevance due to the construction of technological infrastructure that facilitates rapid dissection of categories into a plethora of dimensions and features. These technological infrastructures have been growing in prevalence and importance across various marketplaces, yet their dynamics have so far largely remained neglected in extant work. By calling attention to this phenomenon and offering a framework, we believe our study opens up a wealth of opportunities for future research on how goal-based category dynamics shape valuation processes and outcomes.

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References

- Alexa. (2017, September). Retrieved September 23, 2017, from <https://www.alex.com/pro/dashboard>
- Alexy, O., & George, G. (2013). Category divergence, straddling, and currency: Open innovation and the legitimation of illegitimate categories. *Journal of Management Studies*, 50, 173–203.
- Barsalou, L. W. (1983). Ad hoc categories. *Memory & Cognition*, 11, 211–227.
- Barsalou, L. W. (1985). Ideals, central tendency, and frequency of instantiation as determinants of graded structure in categories. *Journal of Experimental Psychology*, 11, 629–654.
- Barsalou, L. W. (1991). Deriving categories to achieve goals. In G. H. Bower (Ed.), *Psychology of learning and motivation* (Vol. 27, pp. 1–64). New York: Academic Press.
- Beckert, J., & Aspers, P. (2011). *The worth of goods: Valuation and pricing in the economy*. New York: Oxford University Press.
- Beniger, J. (1989). *The control revolution: Technological and economic origins of the information society*. Boston, MA: Harvard University Press.
- Beunza, D., Hardie, I., & MacKenzie, D. (2006). A price is a social thing: Towards a material sociology of arbitrage. *Organization Studies*, 27, 721–745.
- Carroll, G. R. (1985). Concentration and specialization: Dynamics of niche width in populations of organizations. *American Journal of Sociology*, 90, 1262–1283.
- Carruthers, B. G., & Stinchcombe, A. L. (1999). The social structure of liquidity: Flexibility, markets, and states. *Theory and Society*, 28, 353–382.
- Cattani, G., & Fliescher, M. (2012). Product category interactions in cultural industries: Spaghetti Westerns' influence on American Western movie genre. In L. Lazerretti (Ed.), *Creative industries and innovation in Europe* (pp. 212–231). London: Taylor & Francis.

- Cook, K. (2016, September 12). A brief history of online advertising. Retrieved July 4, 2018, from <https://blog.hubspot.com/marketing/history-of-online-advertising>
- Delacour, H., & Leca, B. (2017). The paradox of controversial innovation: Insights from the rise of impressionism. *Organization Studies*, 38, 597–618.
- Delmestri, G., & Goodrick, E. (2017). Looking away: Denial and emotions in institutional stability and change. *Research in the Sociology of Organizations*, 48A, 233–271.
- Delmestri, G., & Greenwood, R. (2016). How Cinderella became a queen: Theorizing radical status change. *Administrative Science Quarterly*, 61, 507–550.
- Durand, R., & Boulongne, R. (2017). Advancing research on categories for institutional approaches of organizations. In R. Greenwood, C. Oliver, T. Lawrence, & R. E. Meyer (Eds.), *The Sage handbook of organizational institutionalism* (2nd ed.). London: SAGE Publications.
- Durand, R., Granqvist, N., & Tyllström, A. (2017). From categories to categorization: A social perspective on market categorization. In R. Durand, N. Granqvist, & A. Tyllström (Eds.), *From categories to categorization: Studies in sociology, organizations and strategy at the crossroads* (pp. 3–30). Bingley, UK: Emerald Publishing Limited.
- Durand, R., & Khaire, M. (2017). Where do market categories come from and how? Distinguishing category creation from category emergence. *Journal of Management*, 43, 87–110.
- Durand, R., & Paoletta, L. (2013). Category stretching: Reorienting research on categories in strategy, entrepreneurship, and organization theory. *Journal of Management Studies*, 50, 1100–1123.
- Espeland, W. N., & Stevens, M. L. (1998). Commensuration as a social process. *Annual Review of Sociology*, 24, 313–343.
- Fligstein, N. (2001). Social skill and the theory of fields. *Sociological Theory*, 19, 105–125.
- Fligstein, N., & Dauter, L. (2007). The sociology of markets. *Annual Review of Sociology*, 33, 105–128.
- Fourcade, M. (2011). Cents and sensibility: Economic valuation and the nature of “nature.” *American Journal of Sociology*, 116, 1721–1777.
- Gehman, J., Glaser, V. L., Eisenhardt, K. M., Gioia, D., Langley, A., & Corley, K. G. (2018). Finding theory–method fit: A comparison of three qualitative approaches to theory building. *Journal of Management Inquiry*, 27, 284–300.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16, 15–31.
- Glaser, B., & Strauss, A. C. (1967). *The discovery of grounded theory: Strategies for qualitative research*. New Brunswick, NJ: Aldine Transaction.
- Glaser, V. L., Fiss, P. C., & Kennedy, M. T. (2016). Making snowflakes like stocks: Stretching, bending, and positioning to make financial market analogies work in online advertising. *Organization Science*, 27, 1029–1048.
- Hallerman, D. (2010). *US ad spending: Online outshines other media*. eMarketer, Inc.
- Hannan, M. T. (2010). Partiality of memberships in categories and audiences. *Annual Review of Sociology*, 36, 159–181.
- Hannan, M. T., Pólos, L., & Carroll, G. R. (2007). *Logics of organization theory: Audiences, codes, and ecologies*. Princeton, NJ: Princeton University Press.
- Hsu, G. (2006). Jacks of all trades and masters of none: Audiences’ reactions to spanning genres in feature film production. *Administrative Science Quarterly*, 51, 420.
- Huault, I., & Rainelli-Weiss, H. (2011). A market for weather risk? Conflicting metrics, attempts at compromise, and limits to commensuration. *Organization Studies*, 32, 1395–1419.
- IAB.net Wiki. (2014). Interactive Advertising Bureau.
- John, G. (2010, February 23). You can’t manage online ad inventory like a stock market. VentureBeat. Retrieved from <http://venturebeat.com/2010/02/23/you-cant-manage-online-ad-inventory-like-a-stock-market/>
- Jounce Media. (2017). The little black book series. Retrieved November 1, 2017, from Jounce Media website: <https://jouncemedia.com/little-black-book/>
- Karthikeyan, S. I., Jonsson, S., & Wezel, F. C. (2015). The travails of identity change: Competitor claims and distinctiveness of British political parties, 1970–1992. *Organization Science*, 27, 106–122.

- Kennedy, M. T. (2005). Behind the one-way mirror: Refraction in the construction of product market categories. *Poetics*, 33, 201–226.
- Kennedy, M. T. (2008). Getting counted: Markets, media, and reality. *American Sociological Review*, 73, 270–295.
- Kennedy, M. T., & Fiss, P. C. (2013). An ontological turn in categories research: From standards of legitimacy to evidence of actuality. *Journal of Management Studies*, 50, 1138–1154.
- Kennedy, M. T., Lo, J., Yu-C., & Lounsbury, M. (2010). Category currency: The changing value of conformity as a function of ongoing meaning construction. In G. Hsu, G. Negro, & Ö. Kocak (Eds.), *Research in the Sociology of Organizations* (Vol. 31, pp. 369–397). Bingley, UK: Emerald Group Publishing.
- Khaire, M., & Wadhvani, R. D. (2010). Changing landscapes: The construction of meaning and value in a new market category—modern Indian art. *Academy of Management Journal*, 53, 1281–1304.
- Koçak, Ö., Hannan, M. T., & Hsu, G. (2014). Emergence of market orders: Audience interaction and vanguard influence. *Organization Studies*, 35, 765–790.
- Lo, J. Y.-C., Fiss, P. C., Rhee, E. Y., & Kennedy, M. T. (2019). Category viability: Balanced levels of coherence and distinctiveness. *Academy of Management Review*. <https://doi.org/10.5465/amr.2017.0011>
- Lounsbury, M., & Glynn, M. A. (2019). *Cultural entrepreneurship: A new agenda for the study of entrepreneurial processes and possibilities*. Cambridge: Cambridge University Press.
- Lounsbury, M., & Rao, H. (2004). Sources of durability and change in market classifications: A study of the reconstitution of product categories in the American mutual fund industry, 1944–1985. *Social Forces*, 82, 969–999.
- Luma Partners. (2017, September). Display Lumascape. Retrieved September 23, 2017, from <http://www.lumapartners.com/lumascape/display-ad-tech-lumascape/>
- Mervis, C. B., & Rosch, E. (1981). Categorization of natural objects. *Annual Review of Psychology*, 32, 89–115.
- Miles, M. B., & Huberman, M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: SAGE Publications.
- Montauti, M., & Wezel, F. C. (2016). Charting the territory: Recombination as a source of uncertainty for potential entrants. *Organization Science*, 27, 954–971.
- Murphy, G. L. (2004). *The big book of concepts*. Cambridge, MA: MIT Press.
- Navis, C., & Glynn, M. A. (2011). Legitimate distinctiveness and the entrepreneurial identity: Influence on investor judgments of new venture plausibility. *Academy of Management Review*, 36, 477–499.
- Neff, J. (2013, August 20). Does P&G Really Drop 35% Of Its Marketing Dollars On Digital? Retrieved September 23, 2017, from <http://adage.com/article/digital/procter-gamble-spends-35-marketing-dollars-digital/243718/>
- Negro, G., Hannan, M. T., & Rao, H. (2010). Categorical contrast and audience appeal: Niche width and critical success in winemaking. *Industrial and Corporate Change*, 19, 1397–1425.
- Negro, G., Hannan, M. T., & Rao, H. (2011). Category reinterpretation and defection: Modernism and tradition in Italian winemaking. *Organization Science*, 22, 1449–1463.
- Negro, G., & Leung, M. D. (2013). “Actual” and perceptual effects of category spanning. *Organization Science*, 24, 684–696.
- Nicolini, D. (2009). Zooming in and out: Studying practices by switching theoretical lenses and trailing connections. *Organization Studies*, 30, 1391–1418.
- Paoletta, L., & Durand, R. (2016). Category spanning, evaluation, and performance: Revised theory and test on the corporate law market. *Academy of Management Journal*, 59, 330–351.
- Paoletta, L., & Sharkey, A. (2017). Forging consensus: An integrated view of how categories shape the perception of organizational identity. In R. Durand, N. Granqvist, & A. Tyllström (Eds.), *From categories to categorization: Studies in sociology, organizations and strategy at the crossroads* (pp. 327–353). Bingley, UK: Emerald Publishing Limited.
- Pettigrew, A. M. (1990). Longitudinal field research on change: Theory and practice. *Organization Science*, 1, 267–292.
- Pontikes, E. G. (2012). Two sides of the same coin: How ambiguous classification affects multiple audiences’ evaluations. *Administrative Science Quarterly*, 57, 81–118.

- Pontikes, E. G., & Kim, R. (2017). Strategic categorization. In R. Durand, N. Granqvist, & A. Tyllström (Eds.), *From categories to categorization: Studies in sociology, organizations and strategy at the crossroads* (pp. 71–111). Bingley, UK: Emerald Publishing Limited.
- Porac, J. F., & Thomas, H. (1994). Cognitive categorization and subjective rivalry among retailers in a small city. *Journal of Applied Psychology, 79*, 54–66.
- PricewaterhouseCoopers. (2017). *LAB Internet Advertising Revenue Report: 2016 Full Year Results*. Interactive Advertising Bureau.
- Rhee, E. Y. (2014). Managing categories: Categorical sensegiving by vertical and horizontal changes in self-categorization. Working Paper, University of Seattle.
- Rosa, J. A., Porac, J. F., Runser-Spanjol, J., & Saxon, M. S. (1999). Sociocognitive dynamics in a product market. *Journal of Marketing, 63*, 64–77.
- Rosch, E. (1978). Principles of categorization. In E. Rosch & B. L. Lloyd (Eds.), *Cognition and categorization* (pp. 189–206). Hillsdale, NJ: Lawrence Erlbaum.
- Rosch, E., & Mervis, C. B. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology, 7*, 573–605.
- Ruef, M., & Patterson, K. (2009). Credit and classification: The impact of industry boundaries in nineteenth-century America. *Administrative Science Quarterly, 54*, 486–520.
- Schneiberg, M., & Berk, G. (2010). From categorical imperative to learning by categories: Cost accounting and new categorical practices in American manufacturing, 1900–1930. *Research in the Sociology of Organizations, 31*, 255–292.
- Sharkey, A. J. (2014). Categories and organizational status: The role of industry status in the response to organizational deviance. *American Journal of Sociology, 138*, 1380–1433.
- Strauss, A. C., & Corbin, J. M. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Los Angeles, CA: SAGE Publications.
- Tavory, I., & Timmermans, S. (2014). *Abductive analysis: Theorizing qualitative research*. Chicago: University of Chicago Press.
- Van Maanen, J. (1979). The fact of fiction in organizational ethnography. *Administrative Science Quarterly, 24*, 539–550.
- Vergne, J.-P. (2012). Stigmatized categories and public disapproval of organizations: A mixed-methods study of the global arms industry, 1996–2007. *Academy of Management Journal, 55*, 1027–1052.
- Vergne, J.-P., & Wry, T. (2013). Categorizing categorization research: Review, integration, and future directions. *Journal of Management Studies, 51*, 56–94.
- Wright, J. (2016, March 4). Rethinking holistic revenue optimization: Stop tweaking, start transforming. Retrieved September 23, 2017, from AdExchanger website: <https://adexchanger.com/the-sell-sider/rethinking-holistic-revenue-optimization-stop-tweaking-start-transforming/>
- Zuckerman, E. W. (1999). The categorical imperative: Securities analysts and the illegitimacy discount. *American Journal of Sociology, 104*, 1398–1438.

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