How New Market Categories Emerge: Temporal Dynamics of Legitimacy, Identity, and Entrepreneurship in Satellite Radio, 1990–2005

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We theorize how new market categories emerge and are legitimated through a confluence of factors internal to the category (entrepreneurial ventures) and external to the category (interested audiences). Using qualitative and quantitative analyses and multiple data sources over time, we study the evolution of the U.S. satellite radio market over its initial sixteen years. We offer convergent evidence to show that the legitimation of a new market category precipitates shifts in the focus of market actors' attention from the category as a whole to the differentiation of firms within. This effect was demonstrated for entrepreneurial identity claims, linguistic frames, and announcements of interorganizational affiliations and endorsements, as well as in the focal attention of media and financial audiences. We synthesize these findings to offer an integrated theoretical framework on new market category emergence and legitimation.●

New markets, those "business environments in an early stage of formation" (Santos and Eisenhardt, 2009: 644), open up new opportunity spaces for entrepreneurial ventures. In spite of their attraction, they are nonetheless fraught with uncertainty: technologies, products, or processes are "untested and incompletely understood" (Tushman and Anderson, 1986: 444), product definitions are unclear or unknown (Hargadon and Douglas, 2001), and the nascent market category is characteristically ambiguous or ill-structured (Santos and Eisenhardt, 2005). This uncertainty is compounded when the entrepreneurial firms populating the new market space are also new. New ventures are often incompletely formed, deficient in resources, and lacking clear or coherent identities. Consequently, the achievement of legitimacy, which can enable them to acquire resources and create wealth (Aldrich and Fiol, 1994; Rosa et al., 1999; Lounsbury and Glynn, 2001; Rindova and Fombrun, 2001; Santos and Eisenhardt, 2005), can be a particularly acute challenge for new ventures operating in new market categories.

Legitimation is a complex social process (Fligstein, 1997; Kennedy, 2008; Kennedy, Lo, and Lounsbury, 2010), involving both entrepreneurial organizations and prospective resource providers, such as investors, analysts, customers, media, and other interested audiences, in the social construction of a market category's meaning, the formation of categorical and organizational identities, and perceptions about the viability of the business model (Tripsas, 2009). Although different theoretical perspectives independently afford insights into different aspects of this process, they provide divergent and even contradictory accounts. For instance, institutionalists and ecologists emphasize how forces external to organizations, arising from isomorphic pressures at the level of fields (e.g., Deephouse, 1996; Glynn and Abzug, 2002) or the shared expectations of interested audiences (Hsu and Hannan, 2005; Hsu, 2006; Hannan, Pólos, and Carroll, 2007; Hsu, Hannan, and Kocak, 2009), drive legitimacy. By contrast, entrepreneurship and organizational identity scholars take a more interior view, emphasizing how unique features of the inner workings of organizations, such as central, distinctive, and enduring

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attributes (Albert and Whetten, 1985) or organizational practices, models, or concepts (e.g., Zimmerman and Zeitz, 2002), serve as touchstones for legitimacy. And yet, the formation of a new market category is an active, social project (Fligstein, 1997; Kennedy, 2008; Kennedy, Lo, and Lounsbury, 2010) that likely involves the interpretations and actions of both entrepreneurial organizations and interested audiences. The legitimation of a new market category thus likely results from the confluence of factors internal to the category, i.e., the strategic and symbolic actions of entrepreneurial organizations, and factors external to the category, i.e., the interested audiences who judge its credibility and appropriateness.

A new market category exists when two or more products or services are perceived to be of the same type or close substitutes for each other in satisfying market demand; the organizations producing or supplying these related products or services are grouped together as members of the same market category. The minivan automobile category, for instance, consists of organizations that manufacture minivans and includes Ford, GM, and Honda as members, among others (Rosa et al., 1999). Market categories, like all categories, have two basic properties: (1) constituent members, whose inclusion is defined by rules or boundaries pertaining to a common type of product or service, and (2) a concept, label, or identity that reflects the commonalities that link together the members of the category (Mervis and Rosch, 1981). Together, these properties define a market category as a meaningful "conceptual system" that is recognized and shared among producer organizations and interested audiences (Rosa et al., 1999: 64).

The conceptual system associated with a market category constitutes the identities for both the collective as a whole and the organizations as member firms (Navis and Glynn, 2011). An individual organization's identity consists of claims about its central, distinctive, and enduring attributes (e.g., Albert and Whetten, 1985) as well as its rightful membership in a particular market category (Glynn and Abzug, 2002; Glynn, 2008). The collective identity associated with a category coheres around a prototype, i.e., the best representation of what it means to be a member of that category (Mervis and Rosch, 1981); this expectation of the typical category member constitutes an identity code (Pólos, Hannan, and Carroll, 2002; Hannan, 2005; Hsu and Hannan, 2005) that is agreed upon by category members and understood by interested audiences (Romanelli and Khessina, 2005).

Although all members share the collective identity of the category, not all members are equivalent in the category. Category members can vary in the extent to which they claim conformity (or deviance) from the prototype through a distinctive identity (Albert and Whetten, 1985; Dutton and Dukerich, 1991; Dutton, Dukerich, and Harquail, 1994) and an alignment (or misalignment) with audiences' expectations about members' prototypicality (Mervis and Rosch, 1981) and perceived grade of membership (Hannan, Pólos, and Carroll, 2007). Thus, although collective and organizational identities lend meaning to a market category, they also pose an identity challenge: member organizations need to navigate between

their shared sameness with other category members and their individual distinctiveness from other members. Resolving the dilemma of sameness and difference in identity is important, because identities are consequential for legitimacy (Glynn and Abzug, 2002; Navis and Glynn, 2011).

We investigate these identity and legitimacy dynamics in the emergence of satellite radio as a new market category, spanning the nearly 16 years from its beginnings in mid-1990 through its establishment by the end of 2005. We map the temporal dynamics of legitimacy, identity, and entrepreneurship to develop a more complete framework on the emergence of new market categories over the initial period of a market's formation, taking into account both the organizational actors and interested audiences. The setting of satellite radio affords several theoretical and empirical advantages. Theoretically, satellite radio was defined at its inception as a clearly bounded market category with well-defined or determinate membership boundaries (Mervis and Rosch, 1981) due to a regulatory act that licensed only two firms: XM and Sirius. Empirically, such a small and clearly defined market allowed us to conduct an in-depth investigation, thereby complementing studies of market categories featuring scores of firms (Kennedy, 2008).

IDENTITY AND LEGITIMATION IN NEW MARKET CATEGORY EMERGENCE

A market category is defined as an economic exchange structure among producers and consumers that is labeled with a meaning agreed upon by the actors and audiences who use it (Kennedy, 2003); in other words, a market category serves as a "vocabulary for describing a demand environment that is always changing" (Kennedy, Lo, and Lounsbury, 2010: 2). Category labels, such as minivans (Rosa et al., 1999), describe the core features or underlying concept of the category (Mervis and Rosch, 1981), articulating its shared identity (Glynn and Abzug, 2002) and carrying identity codes that set audiences' expectations (Hsu and Hannan, 2005; Hannan, Pólos, and Carroll, 2007). New market categories can be created in a number of different ways—by new product classes (e.g., Rosa et al., 1999), by new service classes, or by opening "new worlds" for existing product or service classes (Tushman and Anderson, 1986: 461). We use the term new market category to describe all these possibilities.

New market categories originate as "unstable, incomplete and disjoined conceptual systems held by market actors . . . [and] become coherent as a result of consumers and producers making sense of each other's behaviors" (Rosa et al., 1999: 64). Producers engage in sensegiving to make the new category both understandable and appealing to consumers, analysts, investors, or other audiences and resource providers (Kennedy, Lo, and Lounsbury, 2010); in turn, audiences engage in sensemaking, using the category as a reference point to sort, order, and assess firms in the market (Zuckerman, 1999; Glynn and Abzug, 2002; Hsu and Hannan, 2005). Sensegiving and sensemaking are efforts intended to make the new market category more comprehensible (Suchman, 1995) by clarifying its meaning and associated

identity codes (Hsu and Hannan, 2005; Hannan, Pólos, and Carroll, 2007) and by making it more attractive and real (Kennedy, 2008; Kennedy, Lo, and Lounsbury, 2010). Legitimation is an outgrowth of such producer claims and audience assessments.

The legitimation of a new market category is shaped by the interplay between actors internal to the category, i.e., entrepreneurial organizations that engage in strategic and symbolic actions, and actors external to the category, i.e., interested audiences who judge its feasibility, credibility, and appropriateness. In the emergence of a new market category, legitimation functions as a pivot point that shifts entrepreneurial action and audiences' valuations from a pre-legitimation emphasis on the category as a whole, as a set of undifferentiated organizational members, to a post-legitimation emphasis on the differentiated individual organizations as unique members of the category. Important to this process are organizations' linguistic framing of their activities, claims of identities for the market and the venture, and announcements of affiliations with reputable actors, as well as audiences' responses to those linguistic frames, identities, and affiliations.

Organizational and Collective Identities in New Market Categories

The identity of a market category is collectively shared among all its members. It encodes a typification, or prototype, of the salient features of its members that forms the identity codes by which audiences gauge legitimacy (Zuckerman, 1999; Hsu and Hannan, 2005; Hannan, Pólos, and Carroll, 2007). Individual members of the category work to construct this common identity by emphasizing similarities across the firms that claim membership to the category. Once created, the identity of the category blankets all organizational members and makes them understandable, as a collective, to audiences. When an organizational member is perceived to be isomorphic to the categorical prototype, it is judged as having a high grade of membership (Hannan, Pólos, and Carroll, 2007) and as more appealing, attractive, and legitimate (Zuckerman, 1999; Hsu, 2006; Hsu, Hannan, and Kocak, 2009).

The establishment of a collective identity offers a basis for category members to tailor their distinctive identities within the category. Within the meaning system supplied by the collective whole, an individual organization can claim an identity of "optimal distinctiveness" (Brewer, 1991), distinctive enough from other members to individuate it, but not so distinctive as to make it unrecognizable as a rightful member of the category (e.g., Dutton, Dukerich, and Harquail, 1994; Gioia, Schultz, and Corley, 2002; Glynn and Abzug, 2002). Logically, the establishment and legitimation of a collective identity should precede organizations' claims of distinctiveness within it, and once the collective identity is established, organizations should shift their emphasis to individuate their identity claims:

Hypothesis 1 (H1): When a new market category achieves legitimacy, entrepreneurial organizations will shift the emphasis of their

identity claims from their collective identity as members of the same category to their distinctive organizational identities within the category.

Linguistic Frames, Labels, and Metaphors

New market categories necessitate labels that convey their identity. And although new market categories may emerge de novo, they are often hybrids of previously unconnected categories, such as "electronic" book, "mini" van, or "personal" computer. These hybrid identities need to be naturalized and blended into a new or singular meaning (Kennedy, Lo, and Lounsbury, 2010), to increase clarity (Kennedy, 2008) and appeal (Hsu, 2006; Hsu, Hannan, and Kocak, 2009). One linguistic device that effectively bridges diverse elements or domains is the metaphor, which frames the unfamiliar in terms of the familiar to make it more understandable and often more attractive (e.g., McAdam, McCarthy, and Zald, 1988; Benford and Snow, 2000). Hargadon and Douglas (2001) have shown, for instance, how new electric lighting systems gained recognition, at least in part because they were framed early on in familiar terms that called to mind existing gas lights.

Metaphors persuasively communicate "broad and sometimes abstract concepts" in their application to an unfamiliar field (Hill and Levenhagen, 1995: 1062). They function by furnishing cues that help audiences deal with ambiguity (Weick, 1979). Metaphors make a new and little-understood market category more visible and real by tethering it to preexisting conventions (Martens, Jennings, and Jennings, 2007) through stories, descriptions, or labels that produce a "more highly crystallized identity" (Ruef, 2000: 683) and lend it meaningfulness (Kennedy, 2008). Once a new market category is legitimated, however, such metaphoric language and labeling should be less needed and therefore less used. Rosa et al. (1999: 69) showed how, in emerging product markets, there is a decline in references to "preexisting categories that are linked conceptually to the new category." Or, as Powell and Colyvas (2008: 294) colorfully put it, legitimation should have the effect of "making metaphor dead. . . . If the surprise of metaphor is in its novel application, then language may be understood as a reef of 'dead' metaphors—that is, no longer surprising or unfamiliar, but routine and taken-for-granted."

With legitimation, a new market category requires less explanation; as a result, the focus of metaphors should shift from describing the category to describing the individual organizations and their distinctive membership in the category. Linguistic framing can index an organization's gradient of membership through qualifying terms. Adjectives like "true" or "technically" can differentiate category members; for example, "A sparrow is a true bird," and "A penguin is technically a bird" (Mervis and Rosch, 1981). Similarly, organizations may qualify their membership through comparisons to exemplars in established categories to position themselves as unique or elite. For example, Elsbach and Kramer (1996) found that the University of Texas business school described itself within the business school category as a top *regional* business school rather than a *national* business

school, which would have lowered its stature. Therefore, we hypothesize:

Hypothesis 2 (H2): When a new market category achieves legitimacy, entrepreneurial organizations will shift the emphasis of their linguistic framing from normalizing the collective identity of the category to qualifying the distinctiveness of their membership within the category.

Announced Affiliations

The meaning of market categories arises not only from linguistic framing but also from the practices and systems of exchange that get products or services to market. Entrepreneurial organizations typically leverage the resources of other organizations to bring together the requisite technological, manufacturing, marketing, research, and other capabilities to advance a concept from opportunity to reality (Stevenson and Gumpert, 1985; Kennedy, 2008). Such affiliations not only accomplish the work to be done but also clarify the relationship of the new category to others in the classification system through a pattern of external ties (Hsu and Hannan, 2005). Entrepreneurial organizations play an active role in this process when they select and publicize their partnerships.

In the earliest period of market category formation, entrepreneurial organizations often enter into manufacturing-focused affiliations to make their goods real. Amid the uncertainty of this nascent period, affiliations with already-established and prominent organizations can function as important proxies for quality (Stuart, Hoang, and Hybels, 1999), used by audiences to assess the feasibility and normative appropriateness of the category as a whole (Faulkner, 1983; Podolny, 1994). Prominent partners are often perceived to have strong evaluation skills that, in turn, can sanction the entrepreneurial partners they select and the market opportunities they pursue; this perception is fortified when their own reputations are put at risk in new and ambiguous environments (Stuart, Hoang, and Hybels, 1999). Partnerships can thus provide credible signals of the feasibility of a market category and cast a normative halo around the new market category.

While partnerships can make a category more credible, affiliations can also individuate firms, bolstering their uniqueness. This occurs when partnerships are exclusive, whether with an elite organization or a prominent individual or celebrity. Celebrities are "highly visible individuals that often command significant public attention in their own right" (Rindova, Pollock, and Hayward, 2006: 51), thereby providing attention-getting, interest-riveting, and profit-generating value (Rein, Kottler, and Stoller, 1987: 15) for the affiliating organization. As icons or prototypes of particular cultural, entertainment, music, sports, business, political, or other public arenas, celebrities can graft their fame and renown onto the organization through their sanctioning, thereby associating the organization with the acclaim of the celebrity. In this way, celebrities position organizations favorably in market spaces, aligning firms in recognized ways with wider cultural, social, or economic interests (Johnson, Dowd, and Ridgeway, 2006).

Following this logic, the emphasis in public announcements should shift relative to the category's legitimation: before legitimation, affiliation announcements will emphasize features of the partnership that denote the category's feasibility and appeal; following legitimation, affiliation announcements will emphasize features of the partnership that distinguish firms within the category:

Hypothesis 3 (H3): When a new market category achieves legitimacy, entrepreneurial organizations will shift the emphasis announced in their affiliations from those that sanction the feasibility and normative appropriateness of the category to those that distinguish firms within the category.

Audiences' Attention

Legitimating a new market category involves consumers, industry analysts, stock market investors, or other audiences (Meyer and Rowan, 1977; DiMaggio and Powell, 1983) whose interests transcend individual organizations (Suchman, 1995). Audiences, according to Hsu and Hannan (2005: 476), are "collections of agents with an interest in a domain and control over material and symbolic resources that affect the success and failure of the claimants in the domain." Audiences are critical because they assess the viability of categories and organizations and can grant or withhold legitimacy (Zuckerman, 1999).

Once a category is legitimated, audiences should refocus their attention away from the category as a whole and toward the individual organizations within it. As scholars have demonstrated (e.g., Zuckerman, 1999; Hsu and Hannan, 2005; Hannan, Pólos, and Carroll, 2007), the establishment of categorical identity codes serves as a rubric for evaluating individual member organizations. The more clearly an organization meets the expectations that audiences associate with the category, the more likely an organization is to be judged as positive and legitimate (Hsu, 2006); as well, organizations that conform to the categorical prototype avoid the "illegitimacy discount" that reduces the valuation of firms that are not as easily categorized (Zuckerman, 1999). Thus audiences judge individual organizations based on their perceived alignment with the category prototype. By extension, then, in the emergence of a new market category, audiences' attention will initially focus on the category as a whole; with a category's legitimation, however, audiences' attention should focus on individual organizations and their alignment with audiences' expectations of the category:

Hypothesis 4 (H4): When a new market category achieves legitimacy, audiences will shift the emphasis of their attention from the collective identity of the category to the organizational identities of the individual members of the category.

RESEARCH METHODS

We investigated the emergence and legitimation of satellite radio as a new market category, focusing on time as a key aspect of this process. In doing so, we follow a long line of research that testifies to the importance of time, including diffusion studies that show how the passage of time can

explain the adoption of innovations (e.g., Rogers, 2003), studies of technology evolution that show temporal cycles of incremental change punctuated by technological discontinuities (Tushman and Anderson, 1986; see Brown and Eisenhardt, 1997, for an alternative model), and studies of decision making that show the timing of a paradigmatic shift in high-performing groups (Gersick, 1988, 1989). Consistent with institutionalists' notion of periodicity (e.g., Glynn and Abzug, 2002), this body of work points to the role that evolutionary shifts play in demarcating significant contextual changes in industries, organizations, and groups. The shift in context that we hypothesize and test is that of legitimation at the market-category level.

Because traditional indicators of legitimacy could not be used, as they focus on large numbers of firms and the density of a population (e.g., Hannan and Freeman, 1989), we developed an alternative and robust indicator: the widespread commercialization and consumer adoption of a new market product. Such a measure, because it resonates with broader economic or social interests, indicates legitimacy (Johnson, Dowd, and Ridgeway, 2006).

Our research design employed mixed methods, using both qualitative and quantitative analyses. We followed what Creswell (2003) termed a concurrent triangulation strategy, whereby multiple methods, data sources, and units of analysis are simultaneously used to evaluate a set of theorized relationships within a single study (Greene, Caracelli, and Graham, 1989; Steckler et al., 1992; Morgan, 1998). Specifically, we merged qualitative insights gleaned from the narrative history of satellite radio with quantitative analyses designed to test our four hypotheses. An important advantage of this mixed-method approach is that it provides a means to confirm or disconfirm, cross-validate or reject, and corroborate or contradict evidence from multiple angles, thus enhancing theoretical potency (Creswell, 2003).

Our data span nearly 16 years, from mid-1990 through the end of 2005, and include (1) firm and market category descriptions of founding conditions, technological choices, and early growth; (2) narratives about the firms, presented in analysts' reports and media accounts, and (3) narratives by the individual firms, related primarily in press releases and annual reports. We treat these accounts as stories (Rosa et al., 1999; Lounsbury and Glynn, 2001; Kennedy, 2008) that function as mechanisms enabling organizational actors and audiences to make sense of, and attribute meanings to, the new market category, make claims about the viability or "reality" (Kennedy, 2008) of the market and organizations, and offer interpretations and evaluative criteria by which audiences can understand the category and assess its legitimacy (Lounsbury and Glynn, 2001: 554).

We collected the following: 1,064 XM and Sirius press releases issued through *PR Newswire*, 28 investment analysts' reports gathered through *Investext Plus*, regulatory proceedings and statements issued by the Federal Communications Commission (FCC) and the National Association of Broadcasters (NAB), over 100 major newspaper and satellite

radio trade accounts, and firms' subscriber and financial information gathered from securities reports and Yahoo! Finance stock return histories. Additionally, we collected data on the 290 alliances forged by the satellite radio firms to develop their infrastructures (e.g., launch satellites in space), programming (broadcasts), hardware (receiver chipsets and radios), and marketing and distribution (retail outlets, car/boat installations). By using archival data, we accessed real time accounts of this evolution rather than retrospective ones.

We used these data to develop an historical narrative of satellite radio that sensitized us to processes of meaning construction, legitimation, and identity formation in this setting. In addition, the narrative revealed key inflections, tipping points, or threshold effects (DiMaggio and Powell, 1983) that demarcated discrete periods in the market category's emergence and the achievement of legitimacy. This enabled us to identify critical measures that we used in our quantitative tests of hypotheses. We focused on the core actors involved in the emergence of satellite radio, including the regulating bodies, entrepreneurial firms, alliance partners, investment analysts, mainstream media, and end consumers, documenting their role in the emergence of the new market category over time. We tested our hypotheses using multiple methods, measures, and data sources.

To test H1–H3, we analyzed firms' press releases (hereafter "releases") because they present "prepackaged stories . . . that are useful in presenting an organization with a distinctive and attractive identity" (Rindova, Pollock, and Hayward, 2006). We used *PR Newswire* as the data source because it was the public, comprehensive, and primary outlet for both firms; using this single source insured comparability across firms and over time. From the first published release in 1999 through 2005, the firms issued a total of 1,040 releases; these were evenly divided between the firms, and their length was comparable across firms, averaging 795 words per release. From these, we sampled a total of 260 releases by choosing every 4th release chronologically; for this sample, XM and Sirius issued an identical number of releases (130), averaging 34 per year. Occasionally, releases lacked substantive content (e.g., providing only call-in details for investor conferences); we removed these from our sample (N = 22), leaving 238 releases for our analyses. In the industry narrative below, we reference these source materials in parentheses, providing the company name and date of the release.

We analyzed the content of the releases using NVivo 2.0 software. The authors and an independent research assistant (RA) cycled through theory and data until valid and reliable measures of our theoretical constructs were established. From these procedures, we developed a coding convention, which is summarized, along with examples of coded text, in Appendix A. To test for shifts in identity claims (H1), we coded statements of "what we do" and "who we are." To test patterns in language, labeling, and framing (H2), we coded linguistic framing (which we refer to broadly as "metaphor"), including those referencing the market category as a whole and those referencing the individual firms. To test

patterns in announced affiliations (H3), we coded announcements that emphasized the prominence of alliance partners and their sanctioning of the collective practices of the category, cataloging instances in which announcements emphasized the advantage to the category (while suppressing individual firm advantages) and advantages to the individual firms (while suppressing collective or categorical advantages).

The releases were coded randomly by date and by firm to insure against any potential sequencing biases. To avoid coding redundancies, we coded only the body of each release, disregarding the headline text and the "About firm" statements that ended each release with boilerplate firm descriptions and overviews.[1] In total, 366 codes were assigned, averaging 1.5 codes per release. We focused on patterns in the number of codes per release. To guard against artificial inflation by any single code, we defined coding rules that specified unique instances per release, e.g., a release containing an exclusive endorsement would be coded once as a single endorsement and not by each of the multiple mentions of the same endorsement throughout the single release. A code occurrence thus could span multiple sentences within a single release, and more than one code could be applied (and often was) to the same release. No releases stood out as having an unusual number of codes assigned such that it could bias results. To assess interrater reliability, the authors and an RA coded a holdout sample of 22 releases (10 percent). The 22 releases contained 32 passages of text later agreed upon by all three raters as valid in requiring code assignments. We assessed the reliability with which the 32 passages of text were assigned the same code by all three raters. Because more than two raters were used, we used Fleiss's kappa (Fleiss, 1971); we calculated $k = 0.97$, signifying almost perfect agreement. The only difference was resolved and the coding rules were clarified in the codebook.

To test H4, predicting that, with market category legitimation, the focus of audiences' attention would shift from the collective identity of the category to the individual identities of the firms within, we assessed two different types of audiences: (1) the financial community of securities analysts and market investors and (2) the mainstream news media. Securities analysts function as important gatekeepers for the legitimation of a market category (e.g., Zuckerman, 1999); similarly, market investors attempt to understand and assess an emerging category to inform investment decisions. The mainstream media is one of the sources by which the general public learns about new and evolving market categories and products. We investigated popular or mainstream press coverage of the category and the individual firms to assess the emphasis of reporters' attention to these distinctions.

We analyzed the content of analysts' reports (hereafter, "reports") that we obtained from *Thompson Financial/ Investext Plus*. From 1999 to 2005, this source published 1,060 reports on satellite radio; of these, 483 covered Sirius, 539 covered XM, and 38 covered both firms jointly. To enable comparisons, we restricted our sample to only those investment firms with analysts who provided individual coverage of

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For examples, see http://investor.sirius.com/releases.cfm.

both XM and Sirius for both the periods of emergence (1999–2001) and early growth (2003–2005). This resulted in 243 reports from three firms: Bear Stearns (N = 119); Citigroup/SalomonSmithBarney (N = 99); and Credit Suisse First Boston (N = 25); the reports were divided about evenly in their coverage of XM and Sirius.

To content-analyze the reports, we followed the same process used for firms' press releases and focused on two codes, distinguishing whether attention was directed toward the category as a whole or the individual firms. Our codebook, with code descriptions and examples of coded text, is reported in Appendix B. We coded only the body of text for each report, disregarding any tables, figures, or disclaimers. In total, 277 codes were assigned, averaging 1.1 codes per report; no report stood out as having an unusual number of codes assigned. To assess interrater reliability, both authors independently assigned codes to 50 randomly chosen passages of text. We calculated Cohen's kappa (k = 0.94), which signified almost perfect agreement (Cohen, 1960). The only disagreement was resolved and the coding rule clarified.

To gather data from mainstream news media, we searched three major newspapers—the *New York Times* (*NYT*), *Wall Street Journal* (*WSJ*), and *Washington Post* (*WP*)—for articles in which the headlines named the category as a whole ("satellite radio") or the firms individually, comparing these across periods, as a test of H4. Our analyses follow other researchers using counts of linguistic patterns in news stories (Kennedy, 2008). Using the Nexis database, we collected all articles that were returned from a keyword search of "XM," "Sirius," or "satellite radio" in the headlines. This resulted in 1,551 articles (*NYT*, N = 448; *WSJ*, N = 102; *WP*, N = 727), which we analyzed for references to "satellite radio" only in the headlines (with no mention of either firm).

SATELLITE RADIO, 1990–2005

Satellite radio originated in 1990 with a regulatory petition and was launched operationally seven years later when the Federal Communications Commission (FCC) licensed two new firms, XM and Sirius. The new market category evolved from its historical origins through three discrete periods: (1) emergence, 1997–2001; (2) commercialization, 2002; and (3) early growth, 2003–2005. We use these different time periods to organize our historical narrative of satellite radio.

Historical Origins

When Guglielmo Marconi experimented with Hertzian waves in 1894, he laid the foundation for radio. Early integration of complementary technologies, such as voice transmitters, amplifiers, and receivers, rapidly advanced its development, and by 1935, two out of three American households had radio sets. Radio evolved swiftly through the 1960s (Leblebici et al., 1991) but then slowed as corporate chains purchased stations and homogenized broadcasting content (Greve, Pozner, and Rao, 2006). When satellite radio launched three decades later, it promised to "transform" radio, by ushering in the "next generation" of broadcasting (XM release, 4/13/2000).

The seeds of the new market category were planted in 1990 when David Margolese, president of start-up Satellite CD Radio, petitioned the FCC to allocate frequency spectrum for a new digital audio radio service (DARS). Seven years of resistance ensued, driven by the National Association of Broadcasters, which sought to protect the commercial interests of terrestrial radio. In 1997, the FCC relented and auctioned the DARS licenses to two entrepreneurial firms: American Mobile Radio (later XM Satellite Radio), a wholly owned subsidiary of Motient Corporation, and Satellite CD Radio (later Sirius Satellite Radio), a de novo venture. Because XM lacked the typical resources of parent-company ventures (Helfat and Lieberman, 2002), it faced obstacles similar to those Sirius faced. Thus both firms were considered new ventures, whether they were "initiated by an established organization or independent from an established organization" (Zimmerman and Zeitz, 2002: 414).

Significant start-up capital was needed to purchase the $80 million licenses and to build technological, programming, and marketing capabilities. The firms secured the requisite funding, and satellite radio launched as the second fastest growing media format in history (after the DVD player), outpacing compact disks, MP3 players, digital video recorders, cable and local television, VCRs, and even terrestrial radio (XM release, 10/27/03).

The DARS licenses set regulatory criteria (e.g., broadcasting frequency coordination), standards (e.g., bandwidth restrictions), and deadlines but left the firms considerable discretion to develop the business model (Leblebici et al., 1991; Dobbin and Dowd, 1997; Dowd and Dobbin, 1997; Lounsbury and Crumley, 2007, Navis, 2009). Regulation specified *what* standards were required but placed few restrictions on *how* to achieve them. Thus the feasibility of satellite radio was not yet evident; consequently, the firms needed to frame what it meant to be in satellite radio and to garner support for this new market category (e.g., Gamson and Meyer, 1996; Benford and Snow, 2000).

I. Emergence, 1997–2001

The earliest innovations were technological, focused on developing the satellites for broadcasting radio signals and the receivers to decode them; both firms partnered with larger, more prominent, and more experienced organizations. With its Loral Space and Communications affiliation, Sirius launched the first satellite in July 2000 and soon had all its satellites in space, five months ahead of XM, which had partnered with Hughes Electronics. In spite of its obvious triumph over rival XM, however, Sirius lauded not its own competitive advantage but how this infrastructure achievement helped to advance the market category as a whole, proclaiming the "reality" that satellite radio was becoming (Sirius release, 7/5/00).

Partnerships were also the vehicles for developing chipsets for radio receivers. XM appropriated chipset models from WorldSpace, an international provider of digital satellite radio services, and partnered with STMicroelectronics to manufacture them. Sirius contracted out chipset development to

Lucent Technologies, which proved to be problematic. Early on, there were design problems that caused later delays, compounded by the spin-off of the Lucent chipset business unit. The manufacture of Sirius-ready products trailed XM, but, just as Sirius muted its satellite launch advantage, XM downplayed its lead and focused instead on the collective category, declaring satellite radio to be "a powerful new communications and entertainment medium" (XM release, 9/25/01).

With advances in satellites and chipsets, the firms turned their attention to product development. First-generation architecture required a large fin antenna for broadcast signals, a receiver the size of a cigar box, and chipsets that generated considerable heat, required substantial power, and were costly to produce. Because of their size, technological suitability, and mass-market appeal, automobiles were an appealing target, especially those of GM: "GM was the trifecta: It was the world's largest carmaker; back then it owned DirecTV and Hughes Electronics (making it a satellite content and manufacturing company); and it had launched its OnStar navigation services. All of which meant that GM understood satellite radio" (Breen, 2005: 54). XM and Sirius battled for the GM partnership. Ultimately, XM triumphed, primarily because of its earlier affiliation with the Hughes division of GM. Despite its loss, Sirius applauded the GM-XM partnership as good for the category because "any satellite radio in any car is good for both satellite services" (Brennan, 1999). The GM partnership proved lucrative for XM, offering substantial technology investment and access to Hughes' aerospace and electronics divisions and DirecTV satellite television. XM partnered with other prominent automakers and soon had signed 30,000 subscribers, due in large part to purchases of GM vehicles. In spite of the fact that Sirius had no subscribers at this time, the differences between firms went largely unacknowledged by either the firms or their audiences.

Sirius entered high-profile arrangements with the Ford Motor Company (June 1999) and DaimlerChrysler (January 2000), but unlike XM's exclusive GM contract, Sirius' partners committed only to "contemplate the manufacture and sale of vehicles" that would include Sirius radios (noted in the 2002 annual reports of XM and Sirius). Sirius also partnered with Volkswagen, which it shared in common with XM. This, along with Sirius's earlier setbacks in chipset technology, gave XM the lead in launching its service to the consumer market. In spite of their vigorous competition for alliance partners and their distinctive achievements, however, XM and Sirius focused in their public statements not on their differences but on their similarities as satellite radio firms. They seemingly engaged in "cultural entrepreneurship" (Lounsbury and Glynn, 2001), emphasizing the emerging market category as a whole rather than the observable differences between them, particularly in technology or alliance formation. XM and Sirius both emphasized a shared identity of "what we do" as a "satellite radio broadcaster" (e.g., XM release, 10/19/00; Sirius release, 10/13/00), rather than "who we are" as unique satellite radio organizations.

To describe "what we do," both satellite radio firms leveraged existing understandings of associated, established

categories. Because of its relatedness to industries such as terrestrial radio, satellite television, cable, broadcasting entertainment, automobiles, chipset technology, and electronic equipment, satellite radio lent itself to metaphoric comparisons that linked the unfamiliar new category to better-understood ones. Metaphors made the new category not only understandable but attractive and exciting: XM boasted that satellite radio would ". . . change radio the way cable and DBS [direct broadcast satellite] changed television" (XM release, 7/24/01), and Sirius proclaimed that satellite radio would ". . . bring to radio what cable networks have brought to television" (Sirius release, 6/15/99).

External audiences, including securities analysts and investors on Wall Street, as well as the mainstream news media, focused on the viability of satellite radio as a new market category. Securities analysts attended to critical milestones in developing the category overall, noting that "we believe the stock will react favorably to satellite launches, strategic alliances, and initial chipset production" (Credit Suisse report, 8/24/00). Much less attention was placed on individual firms' accomplishments (or setbacks) in technology, manufacturing, or consumer markets, in spite of their differences in these areas. Wall Street seemed focused on the question of whether the market category could be built and speculated, "If you build it, they will come" (Ladenburg Thalmann & Co. report, 12/6/01).

News articles from this period described how the new satellite radio service compared with more familiar offerings, especially terrestrial radio. Stated one journalist, "Imagine you're driving from state to state, and the only time you have to change stations is when you get sick of the music. . . . starting in December, motorists can take advantage of the newest concept in radio since FM was introduced 50 years ago: digital sound beamed down by satellite" (Sergent, 2000). In general, the media focused less on the firms and more on satellite radio as a category, describing it as a "concept," with uncertainty about "How it will work" (*Washington Post* headline, 4/8/99).

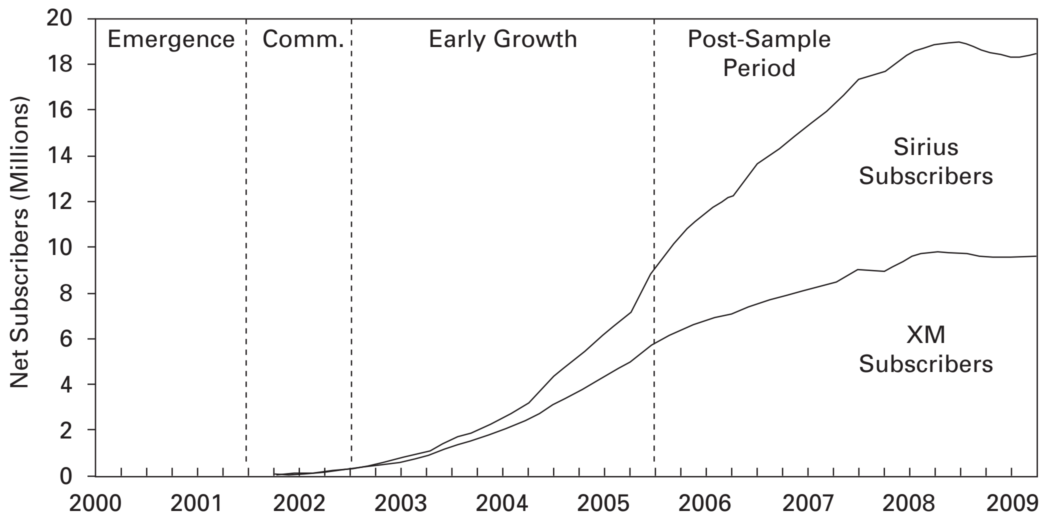
In the early period of market category emergence, the firms promoted a collective identity, muting their individual distinctiveness. Several interorganizational partnerships in technology, manufacturing, and markets were not exclusive to one firm but were shared in common by both (e.g., Volkswagen, BBC, Clarion). Thus the firms focused on jointly creating the shared economic and meaning structures that would define the new category. Overall, the firms and audiences in this early period of emergence tended to frame the organizations as undifferentiated actors within a new market category that was becoming increasingly comprehensible, real, and appealing to interested audiences. But, with the onset of commercialization, the organizations soon changed their orientation.

II. Commercialization, 2002

In 2002, a number of significant events began to transform satellite radio. Importantly, the technology advances, penetration into retail consumer markets, and increases in radio subscriptions of the earlier period yielded widespread commercialization. Such changes ushered in a new willingness by the firms to claim distinctiveness from each other.

Subscriber growth began in late 2001, with XM's entry into the auto market, but it started to take off for both firms in 2002, as figure 1 shows. Yankee Group singularly recognized XM, and *not* the category of satellite radio, as "the fastest-growing consumer electronics audio product of the last 20 years" (XM release, 7/1/02). The firms amplified their differences rather than muting them, as they had done in the earlier period. They also began to qualify their membership in the category by prefixing their "satellite radio" identity with distinctive adjectives. As shown in the example of Sirius in table 1, Sirius claimed it was the "*premier* satellite radio broadcaster," while XM claimed to be the "*leading* satellite

Figure 1. Growth in satellite radio subscribers, 2000–2009.*



* Source: XM and Sirius SEC filings (extended beyond sample period for historical perspective).

Table 1

Examples of Identity Claim Evolution of Sirius (1998–2005)*

Date range	Identity claims	Nature of claims
Oct. '98–Oct. '99	CD Radio Inc., the satellite-to-car radio broadcaster.	Identity claims use language to describe the specifics of "what we do."
Nov. '99–Apr. '02	Sirius Satellite Radio, the satellite radio broadcaster.	Identity claims describe "what we do," but with less specificity than before.
Apr. '02–Dec. '02	Sirius Satellite Radio, the premier satellite radio broadcaster.	Leadership attributes begin to be introduced into firms' identity claims.
Jan. '03–June '03	Sirius Satellite Radio, the premier satellite radio broadcaster and only service delivering uncompromised coast-to-coast music and entertainment for your car and home.	Leadership attributes boasted and more pronounced and specific than before.
June '03–Nov. '04	Sirius Satellite Radio, the premium satellite radio broadcaster known for delivering the very best in commercial-free music and sports programming to cars and homes across the country.	Emerging reputations in niche product spaces used to bolster identity claims.
Dec. '04–Dec. '05	Sirius Satellite Radio, the content leader in all of radio.	Categorical boundaries widen for identity claims.

* Source: *PR Newswire.*

radio provider" (italics added). Such claims shifted perceptions of the new market category from a set of undifferentiated firms to individuated firms that competed within it, each indexing their claimed gradient of membership.

The language used in public accounts also shifted. Table 2 provides examples of linguistic framing. Prior to 2002, firms spoke in a futuristic sense, with Sirius, for example, claiming its "service *will* bring to radio what cable networks have brought to television." But in 2002, satellite radio was present and real: e.g., "Sirius Satellite Radio *is* a new and exciting service" (italics added). Linguistic framing shifted not only from the future to the present but also from the market category (e.g., "We *intend* to change radio the way cable and DBS changed television . . .") to the particular firm ("XM *is* rapidly becoming a . . . standard just as the CD, VCR, DBS and DVD did before it"; italics added). Thus with the growing establishment of satellite radio as a market category, the firms increasingly invoked comparisons and spoke in the present to emphasize not the category but their distinctive membership.

In June 2002, the final technological hurdle fell when both firms achieved advanced sound quality; this also marked a

Table 2

Examples of Linguistic Framing in Satellite Radio Press Releases (1999–2005)*

Year	Press release excerpts
1999	"CD Radio (Sirius) service will bring to radio what cable networks have brought to television" (Sirius, 6/15/99).
	"XM will offer commuters fresh, new satellite-direct audio entertainment options much like DIRECTV has done in delivering unparalleled choices in multi-channel entertainment to millions of households across the country" (XM, 6/8/99).
2000	"We are confident that XM's market-leading entertainment service will be a real benefit to consumers and create a retail opportunity similar to DBS and DVD" (XM, 5/22/00).
	"This technology promises to do for radio what cable television did for TV by linking drivers with a multitude of listening choices" (Sirius, 2/8/00).
	"XM Satellite Radio is developing a new band of radio" (XM, 1/6/00).
2001	"Remember when there were only three broadcast television networks? Soon people will say, 'Remember when there was only AM and FM?'" (XM, 10/26/01).
	"XM, the next generation of radio—Beyond AM, Beyond FM—what we call Radio to the Power of X; We intend to change radio the way cable and DBS changed television, by providing compelling entertainment choices to consumers" (XM, 7/24/01).
2002	"Sirius Satellite Radio is a new and exciting service that provides consumers with the ability to select from 100 channels in their cars—similar to the variety of stations they get from satellite service in their homes Sirius" (Sirius, 7/30/02).
	"We believe that satellite radio may become one of the next big 'lifestyle technologies,' like cable television was in the nineties" (Sirius, 5/14/02).
	"XM is rapidly becoming a consumer electronics entertainment standard just as the CD, VCR, DBS and DVD did before it" (XM, 1/7/02).
2003	"Just as cable and satellite TV have become invaluable news resources, XM has fast become an indispensable, real-time information service provider to our mobile society" (XM, 3/26/03).
	"Satellite radio will change the radio listening experience the same way cable changed the way we watch television" (Sirius, 1/22/03).
2004	"XM's new exclusive music series again demonstrates why XM has been called the 'HBO' of satellite radio" (XM, 9/9/04).
2005	"While both companies offer commercial-free music channels . . . XM's competitor is 'more like an FM station with all the commercials sucked out' " (XM, 3/3/05).

* Source: *PR Newswire.*

turning point in analysts' attention. For the first time, analysts' reports from Bear Stearns, the predominant investment firm covering satellite radio, acknowledged the competitive threat that each firm posed to the other. With technological feasibility established, analysts now sought assurances that the firms could develop radio programs with "high profile talent" and "superior content" that would fuel market demand (Credit Suisse report, 12/4/03). Along with this, the satellite radio market widened from Wall Street to Main Street as increased numbers of distribution outlets, like Wal-Mart and Sears stores, as well as Avis and Hertz rental cars, raised the visibility of satellite radio products and helped to accelerate widespread adoption by consumers. The size and breadth of the audience shifted, from local validation (by Wall Street analysts) to general validation (by the public and consumers); such a move is suggestive of legitimation (Johnson, Dowd, and Ridgeway, 2006). The indicators observed in 2002, in audience, technology, markets, and firms' identities, seemed to demarcate a tipping point or threshold effect (DiMaggio and Powell, 1983) in the legitimacy of the new market category. With this, the firms shifted their identity claims, and external audiences shifted their attention.

III. Early Growth, 2003–2005

By 2003, significant changes were evident. Technological advances to reduce chipset size, reduce power requirements, and improve thermal management enabled new product applications and market opportunities. Given its early lag in chipset technology, Sirius tried to broaden the business model to broadcast content, where it claimed an advantage: "[XM] . . . are the technology leaders. . . . We are the content leader" (McBride, 2005). With an increasing technological ability to broadcast, the firms needed something of value to broadcast.

As they did to develop technology, the firms partnered with prominent organizations, including Viacom, National Public Radio (NPR), and Salem Communications, for programming development, although these partnerships were shared in common by the firms to a far lesser extent than in the earlier period of market emergence.[2] Competition for high-profile partners was keen and focused on sports and celebrity personalities. Both firms aggressively pursued the National Football League (NFL); Sirius won a landmark, seven-year deal worth $200M, effectively shutting XM out. Sirius declared this "a transformative event." XM countered with a $650M deal to exclusively broadcast every major league baseball game nationwide beginning in 2005, claiming it to be "the crown jewel—the deal that we've been waiting for" (XM release, 10/20/04). Later, XM extended its sports reach by partnering with the Indy Racing League, the Professional Golf Association Tour, and World Cup Soccer.

Along with prominent partnerships, both firms pursued prominent personalities who would provide exclusive endorsements. Sirius sought major football personalities and got the endorsement of New England Patriots quarterback Tom Brady, who claimed, "I only choose to endorse quality brands I believe in and that fit my lifestyle. Sirius is one of

2
We compared the emergence period (1999–2001) to the early growth period (2003–2005), examining the percentage of new alliances that were made with firms that had ever (at any point in the sample period) contracted with the other satellite radio firm. For all alliance types, we found decreases in common alliances: common programming affiliations (e.g., Bloomberg, BBC) decreased from N = 13/58 (22 percent) to N = 1/28 (4 percent); common manufacturing affiliations (e.g., Sony, Clarion) decreased from N = 9/30 (30 percent) to N = 4/31 (13 percent); common distribution affiliations (e.g., Best Buy, Crutchfield) decreased from N = 10/39 (26 percent) to N = 2/29 (6 percent).

these brands. . . . I also enjoy all kinds of music, so now I get to hear music channels that I just can't find on regular radio" (Sirius release, 6/14/04). Sirius also signed famed "shock jock" Howard Stern, at a cost of $500M, and enthused that he "is an entertainment force of unprecedented recognition and popularity in the broadcast world, who is capable of changing the face of satellite radio and generating huge numbers of subscribers for Sirius" (Sirius release, 10/6/04).

The firms competed aggressively for prominent partnerships and personalities that, through their uniqueness and exclusivity, would differentiate them. Declaring itself "the nation's premier provider of live professional and collegiate sports events and sports talk on satellite radio" (Sirius release, 9/6/05), Sirius partnered with NASCAR, which described Sirius as "the right partner" (Bachman, 2005). In April 2005, Sirius beat XM to contract an exclusive alliance with Martha Stewart Living Omnimedia (McBride, 2005). Beyond the well-publicized affiliations with Howard Stern and Martha Stewart, Sirius sought recognition as the sports leader in the new market category and solicited endorsements from major players. To introduce its new music channel for action sports enthusiasts (Sirius Faction), it paraded endorsements by skateboarding, surfing, and beach volleyball champions, quoting one to say, "Sirius Faction plays the kind of music that was part of my professional life on the beach volleyball circuit. I can't wait to join the Sirius staff and take part in this cutting-edge radio" (Sirius release, 10/1/04).

Similarly, XM pursued celebrities as a strategic differentiator; in contrast to Sirius, XM claimed to be a music purist. Notables from rock, jazz, and even hip-hop bolstered XM's standing. XM celebrated its association with one hip-hop artist, proclaiming, "Ludacris' passion for and knowledge of music, along with his remarkable talent as an artist, are *a natural fit with XM* . . . a testament to XM's commitment to create the *best original music programming* available on satellite radio" (XM release, 9/28/05; emphasis added). For advantageous positioning, the firms began to target groups of consumers—sports enthusiasts, music lovers, and celebrity fans—differentiating not only the firms' programming but also their identities.

External audiences similarly shifted attention from the category to the firms' distinctiveness. Analysts on Wall Street began to focus on the competitive threat that each firm posed to the other, identifying firm-specific advantages in technology, programming, and markets and their potential effects on subscribership. When XM released its wearable "MyFi" device, for instance, analysts claimed that it "Validates XM's position as the hardware leader (about 12 months ahead) and counterbalances Sirius's modest edge in content" (Citigroup report, 10/27/2004). Correspondingly, the mainstream news media focused increasingly on how the two firms differed, positioning them in a "pitched battle for subscribers" (Shin, 2005a). Garnering media attention was Sirius' signing of Howard Stern, dubbed the "Stern effect" (Taub, 2005), and its potential to carve into XM's subscribership lead. The public accounts of the satellite radio firms tended to claim leadership

positions for each firm, functioning much like other entrepreneurial narratives (Martens, Jennings, and Jennings, 2007).

This period of early growth saw a shift in the focus of attention, by firms and audiences, from a market category of undifferentiated organizations to a competitive space in which each firm claimed distinctiveness and leadership over its rival. In parallel, audiences placed increasing emphasis on individuating the firms. More broadly, our historical narrative revealed shifts around key transitions occurring in 2002. The widespread commercialization and consumer adoption of satellite radio seemed to mark its legitimacy. To determine if there was statistical support for these observed patterns, we formally tested the four hypotheses we advanced earlier.

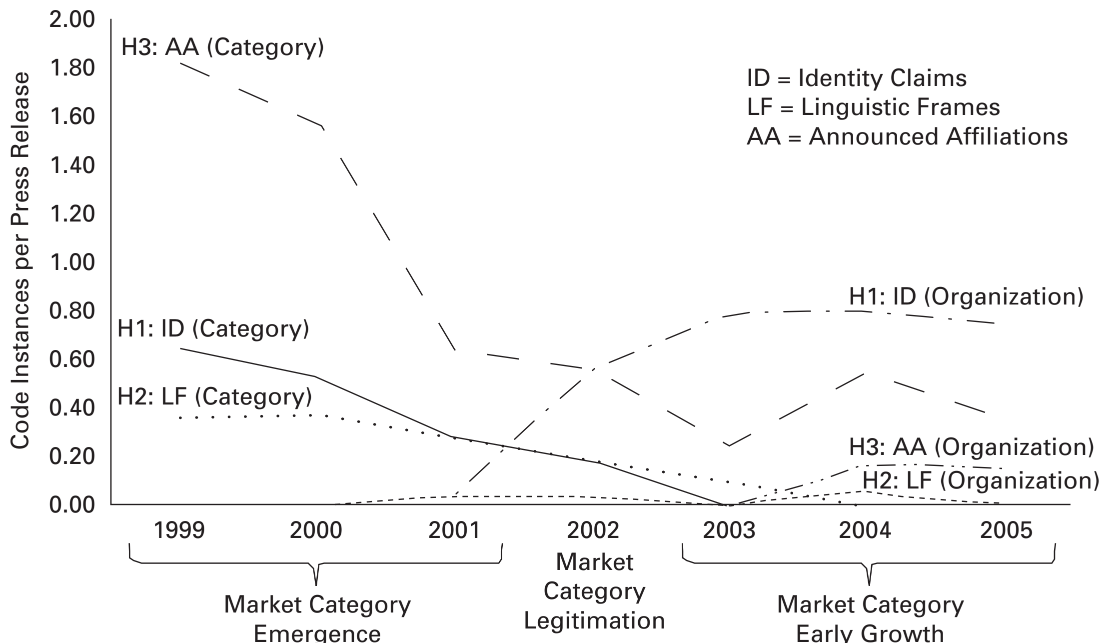
RESULTS

Organizational Identity, Language, and Affiliations

Hypotheses 1–3 theorized shifts in what firms would emphasize in their public accounts with the legitimation of a new market category. Specifically, we theorized shifts would be apparent in firms' identity claims (H1), linguistic framing (H2), and announced affiliations (H3). We tested these three hypotheses with coded data from press releases issued by XM and Sirius.

Figure 2 displays the patterns of codes in press releases by year and in reference to 2002. As hypothesized, there are clear shifts: in the emergence period (1999–2001), firms more often claimed collective identities (H1), used linguistic framing to describe the category (H2), and announced affiliations that sanctioned the category as a whole (H3). In the early growth period (2003–2005), there is a reversal: comparatively more

Figure 2. Types of codes per press release, 1999–2005.*



* XM and Sirius combined (N = 366 codes).

often, firms made distinctive identity claims (H1), used linguistic framing to individuate firms (H2), and emphasized in their affiliation announcements exclusive endorsements that differentiated firms (H3).

We conducted a series of unpaired t-tests to determine if the patterns in figure 2 were statistically significant; we found that the majority of t-values for the combined firms' releases were significant at the $p < .01$ level and in the expected direction, as reported in table 3. The only exception was firm-specific framing; as hypothesized, this occurred comparatively more often in the later period, but the t-test did not reach statistical significance, which may have been due to the low number of observations (N = 8). Across all tests, the releases of both firms exhibited the same patterns of significance. Thus the findings generally support H1, H2, and H3, which hypothesized that firms' public accounts would shift, from an emphasis on the category as a whole to the distinctiveness of firms, in claimed identities, linguistic framing, and announced affiliations.

Audience Attention

We tested H4 on shifts in audiences' attention with data from securities analysts' reports, stock valuations and returns, and the news media. Figure 3 displays the patterns of codes in analysts' reports by year and in reference to 2002. As hypothesized, there was a clear shift. In the emergence period (1999–2001), analysts' attention focused on the collective identity of the satellite radio category, consistent with H4; in

Table 3

Tests of Hypotheses (H1–H3) with Data from Firms' Press Releases*

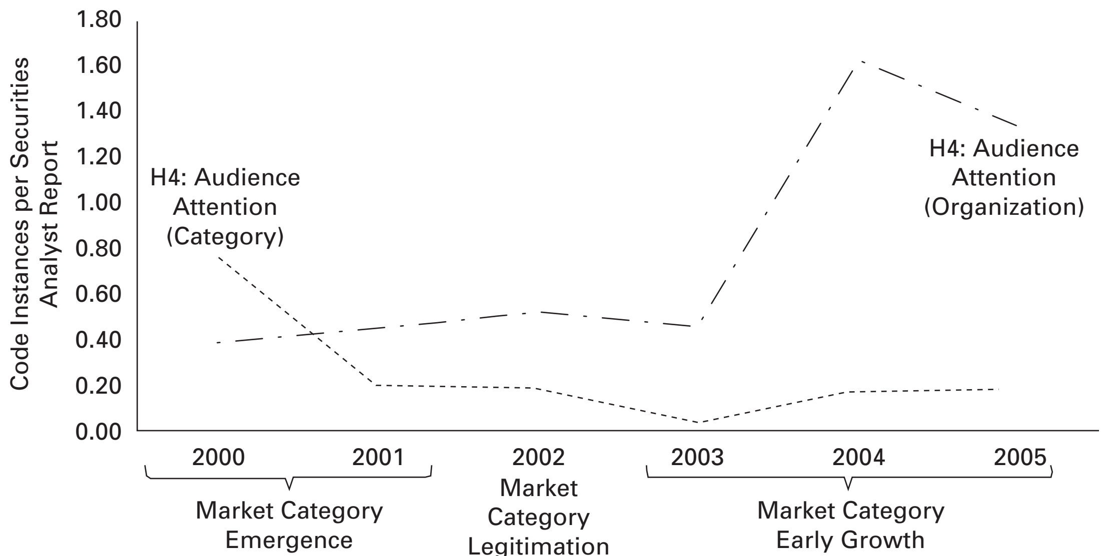
		Emergence ('99–'01) (N = 58)		Early Growth ('03–'05) (N = 146)		
Construct	Firm(s)	Mean	S.D.	Mean	S.D.	t-value
H1: Identity (category)	Sirius	.87	.34	.00	.00	-12.11•••
	XM	.14	.36	.00	.00	-2.38•
	Combined	.43	.50	.00	.00	-6.31•••
H1: Identity (organization)	Sirius	.00	.00	.68	.65	9.33•••
	XM	.03	.17	.88	.41	14.80•••
	Combined	.02	.14	.77	.56	15.08•••
H2: Framing (category)	Sirius	.13	.07	.00	.00	-1.81
	XM	.46	.12	.03	.01	-3.55•••
	Combined	.33	.08	.01	.01	-3.93•••
H2: Framing (organization)	Sirius	.00	.00	.00	.00	0.00
	XM	.03	.03	.06	.03	0.76
	Combined	.02	.02	.03	.02	0.46
H3: Announced affiliations (category)	Sirius	.83	.21	.39	.63	-2.00•
	XM	1.40	1.58	.42	.76	-3.48••
	Combined	1.03	1.27	.39	.68	-3.53•••
H3: Announced affiliations (organization)	Sirius	.00	.00	.11	.42	2.39•
	XM	.00	.00	.10	.31	2.77••
	Combined	.00	.00	.11	.37	3.54•••

• $p < .05$; •• $p < .10$; ••• $p < .001$.
* Comparisons of mean instances of codes per press release across periods. Analyses based on unpaired t-test of unequal variance.

the early growth period (2003–2005), this trend reversed, and analysts placed greater emphasis on the individual firms as separate and distinct actors, consistent with H4.

We conducted a series of unpaired t-tests to compare audience attention before and after 2002; results for the combined analysts' reports show that the patterns in figure 3 are statistically significant. All t-values are significant at the $p < .05$ level and in the expected direction. An analysis for each investment firm revealed a similar pattern, in spite of the much smaller sample sizes when looking at the firms individually. Table 4 reports the results, offering support for H4.

Figure 3. Types of codes per securities analyst report, 2000–2005.*



* Bear Stearns, Citigroup/SalomonSmithBarney, and Credit Suisse First Boston combined (N = 277 codes; 1999 results are excluded from the graphic because there was only one report that year.

Table 4

Test of Hypothesis 4 with Data from Securities Analysts' Reports*

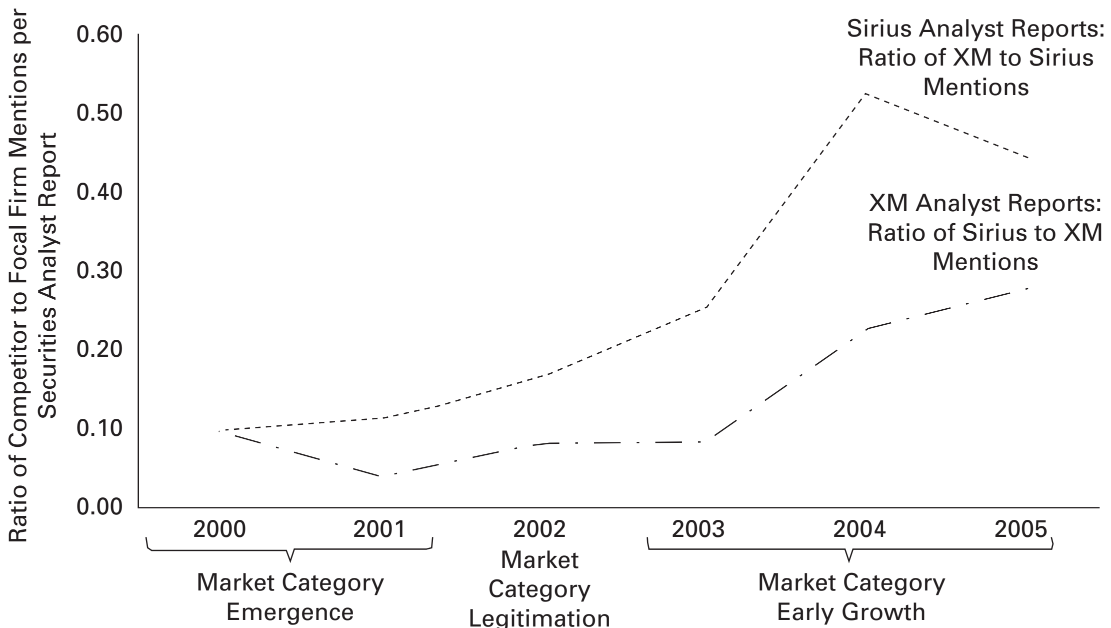
		Emergence ('99–'01) (N = 53)		Early growth ('03–'05) (N = 134)		
Construct	Firm(s)	Mean	S.D.	Mean	S.D.	t-value
Audience attention (category)	Bear Stearns	1.0	.36	.12	1.26	-1.69
	Credit Suisse	.45	.69	.00	.00	-2.19•
	Citigroup	.39	1.22	.23	.65	-0.69
	Combined	.47	1.13	.15	.45	-2.00•
Audience attention (organization)	Bear Stearns	.00	.00	.78	.10	7.86•••
	Credit Suisse	.36	.50	.50	.71	0.26
	Citigroup	.50	.70	2.71	1.43	8.27•••
	Combined	.42	.63	1.27	1.40	5.78•••

• $p < .05$; •• $p < .10$; ••• $p < .001$.
* Comparisons of mean instances of codes per analyst report across periods. Analyses based on unpaired t-test of unequal variance.

We also analyzed the relative emphasis that analysts placed on the competing satellite radio firm in their reports on a focal firm, reasoning that increased attention should be paid to firm-specific comparisons in the later period. Figure 4 shows the pattern in the ratios of competitor to focal firm mentions over time (1999–2005) and in reference to 2002. As expected, the figure reveals a robust pattern: in the emergence period (1999–2001), analysts made infrequent mention of the competitor when reporting on the focal firm, consistent with H4; in the early growth period (2003–2005), analysts dramatically increased their mentions of the competitor in their focal firm reports, consistent with H4. We conducted a two-group proportion test comparing the significance of the ratio differences across periods; we found statistical significance and in the expected direction (Sirius, $p < .001$; XM, $p < .05$). Thus our analyses of securities analysts offered further support for the shift in attention proposed in H4.

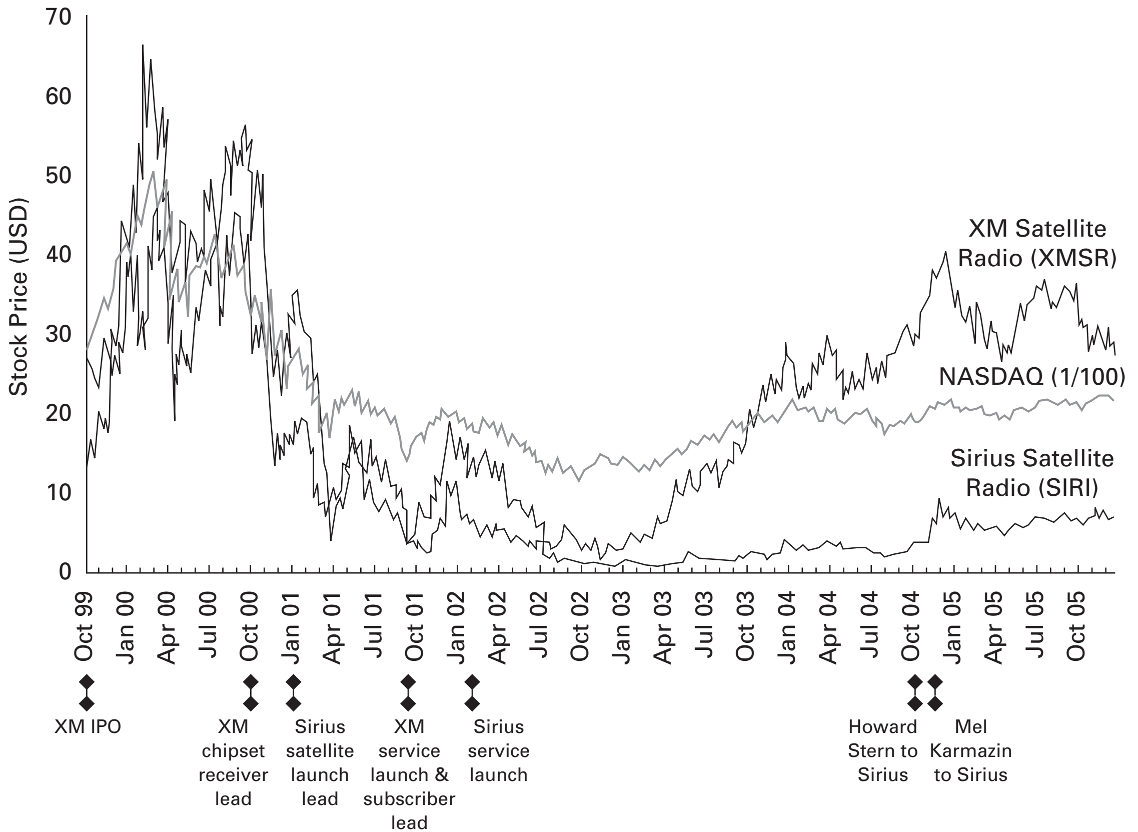
If, as H4 predicts, investors shift their attention, then we should find parallel shifts in firms' valuations and stock returns. Figure 5 graphs the pattern of daily stock returns for the satellite radio firms over time. Consistent with H4, the figure evidences a clear trend: in the emergence period (1999–2001), investors were relatively indiscriminate in their valuations, tracking both firms closely together and in synch with the NASDAQ index; in the early growth period (2003–2005) that followed, investors showed greater firm discrimination, evidenced by the stark differences between XM and Sirius stock returns. To determine if this break was statistically significant, we used the Zivot-Andrews (Zivot and Andrews, 1992) procedure to analyze the cointegration of

Figure 4. Ratio of competitor to focal firm mentions in analyst reports, 2000–2005.*



* Bear Stearns, Citigroup/SalomonSmithBarney, and Credit Suisse First Boston combined (N = 277 codes; 1999 results are excluded from the graphic because there was only one report that year.

Figure 5. Daily stock returns and key milestones of satellite radio firms, 1999–2005.



firms' stock values over time. This procedure normalizes differences in the magnitude of the firms' stock returns over time, which could be masked in the visual plot when an actual break occurs. This test revealed a statistically significant break in mid-2002 (t = 5.22, $p < .05$), indicating that investors differentially valued the firms with legitimation of the market category, offering additional support for H4.

In analyzing data from the mainstream news media, we expected to see a decrease in the number of articles that headline only the category in the early growth period, consistent with H4. H4 was supported. Such headlines decreased from 9.8 percent (1999–2001) to 4.5 percent (2003–2005), across all three newspapers: *NYT*, 22 percent to 7 percent; *WSJ*, 22 percent to 16 percent; *WP*, 5 percent to 2 percent. We tested whether the aggregate shift was statistically significant; a t-test confirmed that it was (t = –3.62, $p < .001$). Like the audiences of securities analysts and market investors, the mainstream news media shifted attention from the category to the firms, supporting H4.

DISCUSSION

Consistent with our hypotheses, convergent empirical evidence demonstrated how firms' and audiences' attention shifted over time with regard to the legitimation of a new market category. In satellite radio, the category was

legitimated in 2002, as indicated by several markers of widespread commercialization, including broad retail availability, technological realism, and rapid subscribership growth. Moreover, the legitimation of the category generated a shift in the focus of the firms' and audiences' attention from the category as a whole to the differentiation of firms within it. We can now synthesize our findings from the qualitative case narrative and the quantitative tests of hypotheses in a theoretical framework, explicating the temporal dynamics of legitimacy, identity, and entrepreneurship in new market categories.

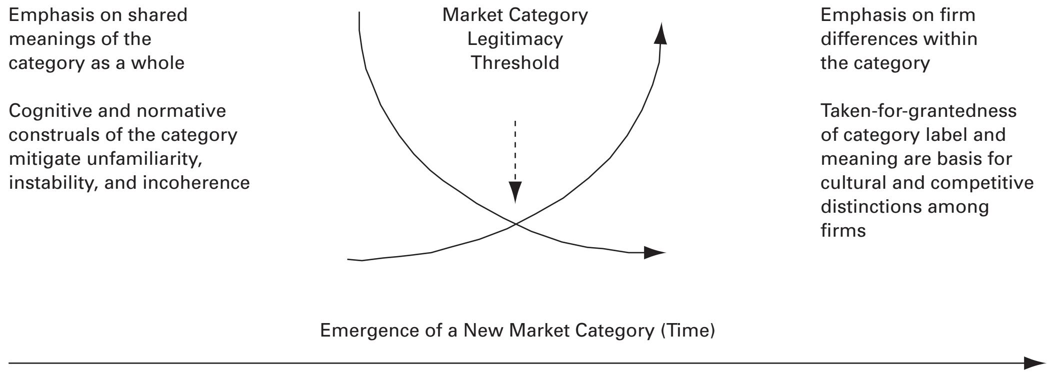
Our study of satellite radio revealed how the legitimation of a new market category precipitates attentional shifts in entrepreneurial and audience focus from the category as a whole to the individual member firms. In the early stages of market emergence, entrepreneurial organizations claimed a shared, collective identity (as "satellite radio" providers), which helped to stabilize and fix the meaning of the category. With market growth, identities claimed by firms and recognized by audiences shifted in their focus from the collectivity of the category to the individuality of the firms. These shifts seemed to be triggered by a legitimacy threshold (in 2002) marking the onset of institutionalization and the taken-for-grantedness of the new market category. Our study offers empirical evidence that complements and extends existing theories about entrepreneurial market building (e.g., Aldrich and Fiol, 1994; Lounsbury and Glynn, 2001). We summarize these findings in figure 6 and present an integrative framework on the legitimation of a new market category that focuses on the interplay of the attention, actions, and interpretations of entrepreneurial organizations and interested audiences.

Organizational Identity Claims, Language, and Affiliations

Establishing the collective identity of "what we do" as satellite radio producers functioned to normalize the category, broaden its appeal, and make it coherent in its earliest periods of emergence. Organizational identities emphasized their similarity, with homogeneity seemingly accomplished through "rapid isomorphism" (Lawrence and Phillips, 2004: 704). With category legitimation, however, firms began to emphasize identities of "optimal distinctiveness" (Brewer, 1991), balancing the sameness of category membership against the individuation of "who we are" as distinctive category members. In broader terms, our evidence suggests that initially firms cooperatively built the category in their public discourse, fixing and stabilizing the collective identity, and, with this accomplished, began to compete more outwardly, differentiating themselves within the new market space thus established.

In ways not unlike a social movement (e.g., Gamson and Meyer, 1996; Benford and Snow, 2000), firms appropriated logics, practices, and identities metaphorically from cognate fields, such as satellite television, cable, and entertainment, to normalize the new category. As institutionalists might predict, the category's legitimation made metaphors' sensegiving function less necessary and, in effect, "dead" (Powell and Colyvas, 2008); at this point, firms tended to increase their metaphoric description of their own identities, but not to

Figure 6. Model of identity and legitimation shifts in market category emergence.



Nature of Mechanisms	Descriptive Patterns		Nature of Mechanisms
Organizational Accounts			
Identity claims construct the collective identity of the market category	Collective identity describes "what we do" as category members →	Organizational identities differentiate "who we are" from other members	Identity claims construct organizational identities within the category
Linguistic frames give meaning to the market category	Frames foreshadow the future reality of the category →	Frames position organizations uniquely within the category	Linguistic frames differentiate gradients of membership
Announced affiliations sanction the viability and appeal of the category	Announcements emphasize category prominence and practices →	Announcements emphasize organizational endorsements and exclusivity	Announced affiliations distinguish firms as unique members of category
Alliances shared among members of category	Mutuality in alliances →	Exclusivity in alliances	Alliances specific to individual members
Audience Attention			
Analysts attend to market category emergence	Value tied to events demonstrating the viability of the category →	Value tied to the advantages of individual organizations	Analysts attend to organizational differences
Investors generalize market category characteristics	Higher covariance in member organizations' stock prices →	Lower covariance in member organizations' stock prices	Investors distinguish organizations within the category
Mainstream news media focus on market category as a whole	Headlines feature market category more frequently →	Headlines distinguish member organizations more frequently	Mainstream news media focus on organizations individually

a significant degree. Firms' affiliations with established actors provided needed resources and also functioned as proxies for quality (Stuart, Hoang, and Hybels, 1999; Higgins and Gulati, 2003), particularly during the market's emergence. Firms' affiliations with more established and prominent actors, who could "demonstrate or improve reputation, image, prestige, or congruence with prevailing norms in the institutional environment" (Oliver, 1990: 246), enhanced the credibility and feasibility of satellite radio. With the category's legitimation, firms' affiliations were less often shared and more often exclusive, serving to qualify their membership in the satellite radio category (e.g., as the premier sports channel) and to highlight their competitive advantage.

Audience Attention

The discourse of audiences, in concert with that of the firms, helped to structure, stabilize, and give meaning to the emerging market category (Zucker, 1977: 728). Mirroring the focus of the firms, audience attention shifted from the category as a whole to individuating XM and Sirius as firms, a pattern that was robust across analysts' reports, stock price valuations, and mainstream media coverage. Our findings bolster arguments that the uncertainty of a new market category makes it difficult for audiences to assess individual firms (Deeds, Mang, and Frandsen, 2004); as a result, audiences tend to focus on the "track" (market category) over its "jockeys" (entrepreneurs) or "horses" (firms) (Macmillan, Siegel, and Narasimha, 1985).

Although the patterns we found were robust and consistent with our hypotheses, we checked to see if alternative explanations might account for our findings. First, we investigated whether inattentiveness to firms' differences in the early period could be due to the fact that there were few, if any differences. We found it could not; rather, each firm enjoyed some significant advantages over the other in the emergent period prior to 2002. Noteworthy were Sirius's accomplishment of being the first to launch satellites and XM's leads in chipset technology and market subscriptions; however, such readily observable differences were scarcely acknowledged by the firms or emphasized by audiences. Next, we investigated whether actual and important events might have precipitated the differentiation between firms that occurred in 2002. Importantly, Sirius's signing of Howard Stern, with its subscription boost, happened in 2004. We also found that chief executive officer (CEO) succession or the hiring of "celebrity CEOs" (e.g., Wade et al., 2006) did not account for this either: Sirius hired Mel Karmazin (from Viacom) as CEO in 2004; XM had but a single CEO during the time of our study.

Lastly, we investigated whether the 2008 merger between XM and Sirius may have been anticipated in ways that biased our results. We searched for mentions of merger speculation in the business and general press; using the *New York Times*, the *Wall Street Journal, Business Week, Mergers and Acquisitions Journal,* and *Satellite News*, we located 93 articles. In 2005, vague rumors surfaced, but Sirius CEO Karmazin publicly denied the merger possibility (Shin, 2005b: 5). Only eight articles published in 2005 discussed a possible merger, and most dismissed its likelihood (Klaassen, 2005: 33). It was not until June 2006, beyond the scope of our study, that Karmazin began to publicly speculate about a merger; even if the merger had been discussed privately beforehand, regulatory approval was uncertain and not granted until July 25, 2008. Through 2005, the firms competed as if a merger were not anticipated. At most, the merger could potentially dampen the levels of firm differentiation we observed in the later period (post-2002); however, our findings contradict this explanation.

Limitations and Future Research

Our research was limited to a single market category with just two constituent firms. This setting had a number of unique

features, including high entry barriers due to licensing and technology costs, strict government regulations that specified performance hurdles, the need for a significant technological and market infrastructure, and a small number of focal firms in the market. Even so, studying satellite radio offered advantages that bolster the generalizability of our findings.[3] First, satellite radio enabled us to study a market category from its inception through early growth. Second, because this growth occurred relatively rapidly, we were able to view changes fairly soon after the category's emergence. Third, the fact that there were only two firms, with extensive public documentation, increased the probability that we analyzed all important public actions taken.

Naturally, the limitations of our setting suggest opportunities for future research. For instance, examining the robustness of our findings in market categories that are more (or less) institutionalized, complex, or broad in the range of actors or scope of activities would offer an interesting extension. For instance, the field of assisted reproductive technology comprises many different market actors (e.g., medical practitioners, clinics, surrogacy agencies), and its legitimacy is not yet clearly established. Its regulation is more uneven than satellite radio, and it has a web of connections to related market categories and practices that differ in legitimacy (e.g., obstetrics and gynecology, adoption, contraception, or techniques such as artificial insemination). These contrasting conditions raise questions about how such differences might affect mechanisms of the market category's legitimation and identity construction.

As a contrast to our research setting, in which legitimation was achieved, studies of failed entrepreneurship and legitimation efforts in new market categories hold promise for illuminating the dynamics of the emergence of a market category. For instance, the online grocery market, often associated with WebVan's unsuccessful efforts at commercialization in the late 1990s, presents an intriguing case. It would be useful, for instance, to compare how the efforts of the online grocers at the time (e.g., Streamline) compared with those of XM and Sirius. Did the entrepreneurial actors in the emerging online grocery market exert efforts comparable to XM's and Sirius's to establish the identities of the category and the firms? How does the unfolding of these processes mirror (or contest) the dynamics of legitimation in satellite radio? Is the temporal sequencing of organizational identities, first as undifferentiated and then later as differentiated, comparable with our findings? Understanding differences such as these and their implications for entrepreneurship in new market categories would provide valuable research extensions.

Our study demonstrates what has often been theorized but rarely tested empirically: legitimation of a new market category is a critical antecedent to firms' differentiated positioning within it. Moreover, we found that legitimation ensues from the interplay between audiences' interpretations and judgments as well as the active agency of entrepreneurial organizations that promote favored interpretations of their activities. We offer evidence that processes of legitimation

3 We are indebted to Reviewer #3 for pointing out some of the limitations and advantages of our research site.

and identity formation are intertwined in the evolution of a new market category: firms' construals of a collective identity can offer a touchstone for legitimation of the category and, in turn, a legitimated category can offer a touchstone for firms' individuated identities. Counterintuitively, we demonstrated that firms' collective efforts that downplay their distinct, competitive advantages can offer entrepreneurial advantages in an emerging market category, even in a potential "winner takes all" duopoly. We feel that these general processes likely characterize entrepreneurship in other market contexts but are also likely limited to those settings in which (1) firms and market categories are clearly circumscribed, (2) legitimation of the collective category is important to firms' survival, and (3) there are interaction effects between micro-level entrepreneurial efforts and macro-level category processes. The model we have advanced would not seem to generalize to market categories that are highly fragmented or ill-defined, illegitimate collectives like the Mafia, and in market categories with severe technical, regulatory, or market restrictions that are unaffected by the efforts of entrepreneurs. And yet, in spite of these boundary conditions, our research offers several contributions to organizational theories of institutionalism, identity, and entrepreneurship.

Our study contributes to institutional theory by showing how market categories become institutionalized through the sensegiving and sensemaking activities of relevant actors. We paid special attention to widespread product commercialization and how it serves as an indicator of legitimacy, not necessarily a causal determinant. Unlike density measures commonly used to assess legitimacy, commercialization has applicability in settings in which there are relatively few firms and, through the commitment required to achieve it, provides a cogent indicator of external audiences' understanding and acceptance of a market category. We expect that there are plausible extensions to institutional fields more broadly, which may reveal different types of indicators and rates of institutionalization. Moreover, our evidence suggests the possibility that the evolution of fields, like that of markets, will exhibit a significant contextual shift, from market-building to firm-building, and that this will be indicated by a legitimacy threshold. We thus draw attention to the possibility of contextual shifts in the emergence of new fields.

Our study also contributes to theories of organizational identity by supplying evidence that firms claim identities that are both similar and different but that these shift in their emphasis over time and in relation to the legitimation of a new market category. We showed how organizational identities are dynamic and contextualized, particularly for entrepreneurial firms. Analyses of press releases revealed that different institutional and strategic factors were implicated in identity claims and that these varied according to the legitimacy needs of the time: identity claims first legitimated the market category, conveying "what we do" as service providers, followed by individual firms' claims of distinctiveness, conveying "who we are" and, often, why we are better than our rival. Our study highlights the dynamism of identities, particularly for entrepreneurial firms, and that the focal

referent in identity claims, i.e., market versus competitors, can shift over time.

Finally, our study contributes to theories of entrepreneurship by embedding entrepreneurial firms in the context they collectively create (Gartner, 1985; Low and Abrahamson, 1997). We offer evidence on the temporal shifts in legitimacy and identity processes and showed not only their interplay but also the critical role of the establishment of a market category in these dynamics. Nearly all organizations in new market categories are likely to confront a legitimacy threshold at some point in time. Our research has illuminated the dynamics that give rise to it and the consequences that can emerge from it. Continuing to examine these dynamics in other contexts and organizations represents an exciting area for future research.

The empirical investigation of entrepreneurship in new market categories is, like the phenomenon itself, in its formative stage. Our research into satellite radio represents an early step in the advancement of this line of inquiry. Our findings reveal how established ideas about identity and legitimation processes apply to nascent organizations and market spaces and highlights shifts in their unfolding over time. In particular, our work fuels emerging ideas on how collective and organizational identities are two sides of the same coin, both of which are intertwined with processes of legitimation. Future research is needed to extend the reach of our work into different forms of entrepreneurship, different characteristics of market categories, and additional mechanisms of legitimation and individuation.

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APPENDIX A: Codebook for Analyzing Texts of Press Releases*

Construct	Description	Examples of coded text	N
Identity (category)	Collective identity claims that describe the functionality of "what we do" as organizations in a market category, without distinguishing them in any way from one another.	"XM Satellite Radio Inc, the satellite radio broadcaster" (XM, 10/19/00). "Sirius Satellite Radio, the satellite radio broadcaster" (Sirius, 10/13/00).	33
Identity (organization)	Identity claims that describe the essence of "who we are," claiming an organization's central, distinctive, and enduring attributes.	"XM Satellite Radio, the pioneer and leader in satellite radio" (XM, 5/11/04). "Once again Sirius has asserted itself as the leader in satellite radio sports" (Sirius, 8/31/04).	133
Framing (category)	Linguistic comparisons to familiar institutional referents, through use of analogies, metaphors, or similes that function in a "sensegiving" capacity to construct meaning around the market category.	"XM will offer commuters fresh, new satellite-direct audio entertainment options much like DIRECTV has done in delivering unparalleled choices in multi-channel entertainment to millions of households across the country" (XM, 6/8/99). "CD Radio (Sirius) service will bring to radio what cable networks have brought to television" (Sirius, 6/15/99).	26
Framing (organization)	Metaphor, as above, applied to individual organizations.	"XM has been called the HBO of satellite radio" (XM, 8/5/04).	8
Announced affiliations (category)	Publicized affiliations with prominent organizations that emphasize the prestige, reputation, size, brands, etc., of the partner over the unique advantages or exclusive distinctions they might bring an organization.	"We're delighted to form an alliance with a company of Delphi Delco's stature in the automotive industry" (XM, 4/19/99). "It goes without saying that Toyota is one of the most successful premier auto manufacturers in the world" (Sirius, 12/7/04).	150
Announced affiliations (organization)	Exclusive firm-specific endorsements by prominent and publicly recognized individuals that help to advance the exclusive image of the firm through public espousals that emphasize the unique merits and attributes of an organization.	"I am a huge XM Satellite Radio fan. I am excited to share my enthusiasm for XM's unmatched Major League Baseball programming and unprecedented choice in news, talk, entertainment and, of course, commercial-free music" (Derek Jeter endorsing XM, 11/21/05). "Sirius is a true innovator in this uniquely personal and interactive medium" (Martha Stewart endorsing Sirius, 4/18/05).	16

* Source: *PR Newswire* (1999–2005).

APPENDIX B: Codebook for Analyzing Texts of Analysts' Reports*

Construct	Description	Examples of coded text	N
Audience attention (category)	Analysts' statements that describe the functionality, characteristics, boundaries, or viability of "what the satellite radio firms do" as a market category (as a whole) or as firms together in a market category, without distinguishing the firms in any way from one another.	"Two companies, Sirius Satellite and XM Satellite, plan to provide satellite-based radio services with improved choice, nationwide coverage, digital clarity, and commercial-lite music, talk, and news programming to subscribers. As radio's first seamless nationwide platform, we believe the DARS providers stand to grab advertising share from television and other national advertising mediums" (Citigroup, 10/16/2000). "We believe assured distribution via the new vehicle market and low upfront consumer entry costs continue to distinguish the industry from other subscription models" (Bear Stearns, 4/18/2005). "Holding all else steady, the value of the SDARS business (XM and Sirius) will be maximized by adding as many subscribers as possible as fast as possible (minimizing the time to critical mass)" (Credit Suisse, 11/27/2001).	45
Audience attention (organization)	Analysts' statements that label one of the satellite radio firms in a particular way, including mentions or labels of its central, distinctive or enduring attributes, or its comparative advantages over the other firm.	"Over time, we could visualize XM being dubbed more of a mobile/portable entertainment provider rather than merely a satellite radio operator" (Bear Stearns, 10/14/2005). "Sirius also emphasized that strategic partnerships with Panasonic and Clarion augment its relationship with Freightliner and uniquely position the company to capitalize on the opportunity for satellite radio in the trucking and boating arenas" (Credit Suisse, 3/7/2000). "Sirius appears to be in a close second place to XM radio due to later than expected delivery of Agere-developed chipset" (Citigroup, 5/10/2001).	193

* Source: *Investext Plus* (1999–2005).

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