Contagion Entrepreneurship: Institutional Support, Strategic Incoherence, and the Social Costs of Over-Entry
by Richard A. Hunt

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Existing literature on the legitimizing role of institutions tilts toward a "more is better" perspective, proffering the notion that the liabilities of smallness and newness can be mitigated through institutional policies that foster acceptance, trust, and confidence. Although this may seem reasonable, even desirable, institutional munificence can trigger massive over-entry, potentially causing unintended consequences and unwanted social costs. Using a data set of nearly six million transaction-level decisions involving all 612 companies and 56,240 permitted projects from a complete industry history, I find that unforeseen costs arise when small, early-stage firms substitute the legitimizing effects of institutional support for strategic coherence. The findings are surprising and significant. While institutional support for new markets does in fact generate a surge in firm formations, the ill effects of munificence are evidenced by indiscriminate, contagion-style market entry by unfit firms that perform poorly, fail quickly, and leave a long trail of regulatory violations in their collective wake. The study offers opportunities for scholars, practitioners, and policymakers to reassess the core assumptions related to the benefits and costs of institutional support for new industries, firms, and entrepreneurs.

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Introduction

With few exceptions, governments are highly motivated to seek out and facilitate the economic benefits accrued from the expansion of entrepreneurial activity (Acs, Desai, and Hessels 2008; Wennekers and Thurik 1999). Although actual success rates vary dramatically nation-to-nation (Acs and Szerb 2007; Acs, Desai, and Hessels 2008; Greene, Mole, and Storey 2008; Van Stel, Storey, and Thurik 2007), an increasingly large body of evidence demonstrates that governments have the capacity to fuel increased firm formation and new market entry through incentives (Acemoglu 1995; Baumol 1990), protections (Carree and Thurik 1996; Casson 1982), and regulatory engineering

(Van Stel, Storey, and Thurik 2007). By taking steps to make the "rules of the game" (Baumol 1990; North 1990) more entrepreneur-friendly, government entities have taken seriously the notion that the prevailing conditions in any entrepreneurial ecosystem (Isenberg 2010a) are highly germane to the quantity and quality of entrepreneurial activity (Isenberg 2010b, 2011; Vogel 2013; Zahra and Nambisan 2012).

As promising as this high-involvement approach seems, however, there is little evidence that scholars, entrepreneurs and policymakers have fully come to terms with a sobering, counterpunctal reality: highly munificent conditions may not translate into stable industries, viable firms and social welfare gains. "In fact," wrote Isenberg, "ignoring the

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interconnected nature of the ecosystem elements can lead to perverse outcomes" (Isenberg 2010a, p. 10). These "perversions" include driving up the quantity of market participants while driving down the average quality of goods and services these firms bring to the marketplace.

The purpose of this paper is to dissect the complicated assortment of positive and negative outcomes associated with the munificent conditions that are created through institutionally endowed legitimacy. Extant scholarship related to firm fitness has demonstrated the benefits of less munificent entry conditions, what Swaminathan called a "trial by fire" (Swaminathan 1995). Barnett, Swanson, and Sorenson (2003) showed that munificent conditions result in lower average firm fitness. Still, the unanswered question continues to be: Why is heightened firm failure associated with munificent market conditions? Surely, that is not the intent of sponsoring institutions seeking to build sustainable entrepreneurial ecosystems.

Using exhaustive data from an industry created by a 1985 Act of the U.S. Congress, my results suggest that increased support from formal institutions is indeed associated with not only a dramatic increase in market entry, but also an equally dramatic decrease in strategic coherence, meaning that market entry is driven by a generalized belief that an opportunity exists, rather than a careful, strategic pairing of firm resources with environmental conditions.

This examination of institutional support and strategic coherence strikes straight to the heart of several long-running debates regarding the relationships between entrepreneurial action (Alvarez and Barney 2007; McMullen and Shepherd 2006), strategic processes (Sarasvathy 2008; Slevin and Covin 1997), strategic content (McDougall and Robinson 1990; McDougall et al. 1994; Schoonhoven and Romanelli 2001), firm-level outcomes (Hitt, Ireland, and Hoskisson 2007; Lumpkin and Dess 2001; Rauch et al. 2009), and the role of institutions in facilitating new sector growth. In this context, institutional support refers to policies, practices, and policing activities aimed at creating a munificent business environment, characterized by attractive opportunities for new market participants.

Existing literature on the legitimizing role of institutions (Brousseau and Glachant 2008; DiMaggio and Powell 1983; Meyer and Rowan 1977; North 1990; Oliver 1990; Scott 1987, 1995) has often tilted toward a "more is better" perspective (Baum and Oliver 1991; North 1990; Powell 1988; Rothwell and Zegveld 1982), proffering the notion that cognitive and sociopolitical resistance to emergent industries can be mitigated through a greater emphasis on institutional policies and actions that help to build acceptance, trust, and confidence (Aldrich and Fiol 1994; Baum and Oliver 1991). This favorable perspective toward the role of formal institutions may be unnecessarily one sided, particularly in the context of small, nascent-stage firms and emergent industrial sectors. Using a data set of 5.7 million transaction-level decisions involving all 612 companies and 56,240 permitted projects from the entire history of the Colorado asbestos abatement industry, I find that firms will often substitute the legitimizing effects of institutional support for strategic coherence, meaning that firms will tend to focus on the perceived benefits of favorable public policies rather than the development and implementation of viable, logically consistent plans for entry and survival in a competitive arena. The ill effects of this phenomenon are evidenced by indiscriminate, contagion-style market entry by unfit firms that perform poorly and fail quickly, leaving a long trail of regulatory violations in their collective wake.

By capitalizing on the discovery of a complete industry population, this study poses a number of vital questions that are impossible to address in the context of less exhaustive data sets: Why might institutional support yield anything other than completely positive results? How does institutional support affect the formation and implementation of coherent strategies by small firms? Why might institutional support reduce patterned strategic behavior? Under what circumstances would a newly founded firm enter the market and seek to operate without a coherent strategy? What are the characteristics of in-context, small firm strategic incoherence? What is the fate of strategically incoherent firms and what is their market-level impact?

In addressing these questions, this study makes several noteworthy contributions. First, the study constitutes the most comprehensive and definitive demonstration to-date of the role institutions play in increasing the rate of firm foundings (Brittain and Freeman 1980;

Carroll and Hannan 1989; North 1990; Zucker 1989). To a far greater degree than prior empirical work, the transaction-level analysis presented in this study provides explicit measures of the extent to which formal institutions are able to directly influence rapid formation of industries and firms. On the other hand, the study also provides the important revelation that prior research was too sweeping in its generalizations regarding the positive role of institutions in reducing firm mortality (e.g., Baum and Oliver 1991) and improving operational performance (e.g., Swaminathan 1995). Through the discovery and explication of a complete industry population, I repair and redirect existing theory regarding institutional effects on mortality and performance to reflect a significantly more complex interaction that exists between institutional support, individual entry decisions and firm-level outcomes.

More broadly, the paper contributes to entrepreneurial strategy (Hitt, Ireland, and Hoskisson 2007; Hitt et al. 2011; Ireland, Hitt, and Sirmon 2003; Ketchen, Ireland, and Snow 2007; Kuratko and Audretsch 2008) and Industrial Organization (IO) theory (Caves and Porter 1977; Porter 1980; Rumelt, Schendel, and Teece 1995) by empirically detailing the circumstances under which small, nascent-stage firms enter markets and conduct operations despite the absence of a coherent strategy (Mintzberg 1978). While extant scholarship has focused on the benefits of institutionally induced firm formation and market entry, the concomitant rise of contagion entrepreneurship may bring with it an unexpectedly high price tag.

In the next section, I delve into the relevant literature related to legitimacy and institutional support, exploring the ways in which scholars have related each to market-entry decisions and firm performance. Applying this prior work, I identify gaps related to the understudied domain of strategic coherence. This leads to the development of six testable hypotheses, framing the connected relationships between institutional support, excess entry, unfit firms, and adverse social outcomes. Following this, I detail the methods used to collect and analyze a complete industry population. After presenting the major results, I discuss practical and theoretic implications of the findings and important considerations for future research.

Theoretic Development and Hypotheses

Legitimacy and the Effects of Institutional Support

Legitimacy, as defined by Suchman, "is a generalized perception that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values beliefs and definitions," (Suchman 1995, p. 574). The strategy and IO literature has focused principally on two elements of this social construction: sociopolitical legitimacy and cognitive legitimacy. Consistent with Aldrich and Fiol, sociopolitical legitimacy is taken to be the "process by which key stakeholders, the general public, key opinion leaders or government officials accepts a venture as appropriate and right given the existing norms and laws," while cognitive legitimacy "refers to the spread of knowledge about a new venture" to the extent that "an activity becomes so familiar and well known that it is taken for granted" (Aldrich and Fiol 1994, 648; Hannan and Freeman 1984, 1989).

Conventional wisdom regarding the role of institutions suggests that a firm or population of firms benefits from institutional support (Aldrich and Fiol 1994; Oliver 1990, 1991; Powell 1988; Zucker 1989). Empirical studies have found that the presence of a sympathetic institutional environment accounts for meaningful improvements in performance (e.g., Baum and Oliver 1991; Swaminathan 1995); although often this munificence forms over the course of many years, and sometimes multiple generations (Aldrich and Fiol 1994; Klepper and Graddy 1990). The asbestos abatement industry dramatically accelerated this set of conditions. From the outset, there was no institutional vacuum. Instead of a painstaking process of building legitimacy, institutional, and environmental munificence were created by-fiat through Congressional legislation. In the absence of any incumbent service providers, this Act strongly encouraged new firm formation and market entry.

One of the most popular and controversial mechanisms used by governments to stimulate new sector development and firm formations involves bestowing "legitimacy-by-fiat," meaning that societal use of particular goods and services is legally stipulated. *Fiat* literally means, "let it be done." In the context of new commercial sectors, "legitimacy-by-fiat"

involves action by formal institutions to fuel entrepreneurial activity by removing the expensive and extensive barriers to market acceptance that confronts most new products and services (Klepper and Graddy 1990). By largely eliminating the liabilities of newness and smallness (Aldrich and Fiol 1994; Hannan and Freeman 1984; Stinchcombe 1965), formal institutions aim to create munificent conditions marked by receptive markets and plentiful customers. Institutional support should create more attractive decision sets in the entrepreneurial ecosystem (Isenberg 2010a, 2011; Vogel 2013; Zahra and Nambisan 2012), which in turn should drive entrepreneurial action:

H1: Institutional support is positively related to market entry.

Stampede of Unfit Firms

Intuitively, the support generated through institutionally endowed legitimacy would seem to be a boon to new market entrants (Baum and Oliver 1991). Greater munificence should translate into broad-based market acceptance for nascent firms, removing entry barriers while driving down firm-level survival risk. Indeed, these are precisely the developments typically envisioned by proponents of institutional support (Baumol 1990; Brousseau and Glachant 2008; North 1990). It comes as a great irony then that periods of institutionally sponsored munificence are often accompanied by a staggering decrease in average operational performance and a sharp increase in firm-specific survival risk. In what is tantamount to a "gold rush effect," poorly equipped, relatively unfit firms enter in droves (Barnett, Swanson, and Sorenson 2003; Haveman 1993) without proper consideration for industry dynamics (Porter 1980, 1985) or environmental signals (Aldrich 2008; Beal 2000; Hambrick 1982; Thomas, Clark, and Gioia 1993). As is the case with all gold rushes, contagion draws out the heroes, the hopeful and the hapless. "For every miner with a sack of gold dust, there are a thousand more who are starving and ragged," remarked one Eastern observer about the spectacle of the 1858 Colorado gold rush (New York Herald 1859).

The gold rush parallel is not strictly metaphoric. While the failure rate for new firms seeking fortune in asbestos abatement is less staggering than the desultory results of 19th-century gold prospectors, the firm failure rate is still shockingly high. Of the 612 total firm foundings during the 25-year history of the Colorado asbestos abatement industry, only 104 were operational in 2011. Of course, high failure rates among nascent-stage firms are not unique to the abatement industry (Cochran 1981; Watson and Everett 1996). The failure rate for all new businesses in the United States is 25 percent in year 1 and 44 percent by year 3 (Shane 2008, 99). Dismal as these survival statistics are, the asbestos abatement industry fared even worse, with 63 percent of all entrants failing to survive beyond year 3 (Hunt and Lerner 2012). The question is: Why would an industry that enjoyed cognitive and socio-political legitimacy from its inception so dramatically underperform industries that are not privy to the unequivocal support of formal governmental institutions or the widespread market acceptance of its target customers?

Prior research strongly suggests that institutional support (DiMaggio and Powell 1983; Meyer and Rowan 1977; Scott 1987; Swaminathan 1995; Zucker 1987), institutional relations (Baum and Oliver 1991; Singh, Tucker, and House 1986), and institutional legitimacy endowments (Aldrich and Fiol 1994; Suchman 1995) are associated with improved performance (Baum and Oliver 1991; Oliver 1990; Powell 1988; Swaminathan 1995) and improved odds of survival (Baum and Oliver 1991; DiMaggio and Powell 1983; Hannan and Freeman 1984; Meyer and Rowan 1977; Scott 1995). If so, then why are not these favorable effects evidenced in outcomes for firms in the abatement industry? Why would these firms actually fail more quickly than firms in other, less advantaged industries?

Perhaps the role of institutional support is more equivocal than originally suspected (Nemet 2009). Barnett, Swanson and Sorenson demonstrated the paradox of munificence in their longitudinal study of U.S. mainframe businesses, noting, "It appears that precisely those conditions that increase organizational founding end up decreasing the life spans of these new organizations" (Barnett, Swanson, and Sorenson 2003, p. 690). Barnett, Swanson, and Sorenson (2003), specifically highlighted the facilitating role of a change in "legal regimes or institutions easing foundings" (p. 691), but data limitations prevented them from fully exploring these important avenues. Equipped with highly granular set of nontruncated data, I predict that in the context of a complete industry population:

H2: Institutional support is inversely related to firm fitness.

Strategic Coherence

The empirical treatment of strategic coherence has little precedent in management literature, owing primarily to the paucity of data. In the absence of quality alternatives from the management literature, coherence is defined for this study as "the quality of being logical and consistent, forming a unified whole" (Oxford English Dictionary 1989). There is support for this perspective in strategy studies, including Andrews's assessment that "corporate strategy is the *pattern* of decisions in a company that determines and reveals its objectives, purposes, or goals" (Andrews 1971, 13; emphasis is mine).

The revelatory component of Andrews's definition is that a firm's strategy should be evident from patterns of decisions, represented by observed behaviors, particularly as the pattern is made manifest in business transactions. In this sense, strategic coherence is the observable presence of consistent market-based action, evidenced by business behaviors that display strong similarities in terms of time, space, scale and purpose or outcomes. Regardless of whether a strategy is planned or emergent (Mintzberg 1978; Mintzberg and Waters 1985), it is only through its operationalization in transactions that it truly assumes the form of what Whittington termed strategy-in-practice (Whittington 1996, 2006).

The notion of consistent, patterned behavior runs through the handful of prominent efforts to examine coherence in strategic management. Teece and Rumelt (1994) took up the issue in the context of corporate coherence, asking why firms choose to diversify coherently. In their view, "firms are coherent to the extent that their constituent businesses are related to one another" (Teece and Rumelt 1994, p. 2). Exhibiting their IO perspective and primary interest in the effects of diversification, Teece and Rumelt (1994) asserted that "businesses are related if there are economies to their joint operation and/or ownership" (p. 3). Nath and Sudharshan (1994) took a different approach by "measuring strategic coherence through patterns of strategic choices." Specifically, the authors developed novel measures to test the degree to which acute care hospitals displayed internal consistency between their respective business and functional strategies. In their cross-sectional analysis of data collected between 1986 and 1987, Nath and Sudharshan (1994) found that performance differences were evident as a consequence of "greater or lesser strategic coherence" (p. 59).

The element of time is critical to the examination of strategic coherence because firms and the market environment are continually interacting (Eisenhardt 1989) so that the appearance of coherence at any given point may prove to be a nonrecurring, nonpersistent state. For this reason, coherence is not a construct that can be determined from snapshot methodologies. Lamberg et al. (2009) sought to address the temporal considerations of strategic coherence in a longitudinal study of Finnish grocery chains, through data spanning 1945–1995. By analyzing advertising behavior across this 50-year period, Lamberg et al. sought to relate strategic consistency to long-term organizational survival. By conjoining evolutionary theory streams highlighting the role of adaptation (Zajac, Kraatz, and Bresser 2000) with the role of continuity (Nelson and Winter 1982), the authors demonstrated that successful retail firms exhibited a higher degree of strategic consistency.

A long line of strategy and IO scholars have propounded the view that the key to developing an effective business strategy is to properly match a firm's resources and capabilities to the environmental conditions that exist in the present or are likely to exist in the future (Abell 1980; Ansoff 1965; Hofer 1985; Hofer and Schendel 1978; Porter 1980, 1985). As noted earlier, under conditions of perceived munificence, firms may be less likely to engage in these processes (Barnett, Swanson, and Sorenson 2003), such that contagion entry is driven by the generalized belief that an opportunity exists, rather than a detailed analysis of firm resources and environmental conditions. Aldrich and Fiol (1994) termed this the "fools rush in" phenomenon. Brinckmann, Grichnik, and Kapsa (2010) went further by performing a meta-analysis of studies on small business planning that asked, "Should entrepreneurs plan or just storm the castle?" This is the right question to ask, but answers have been less apparent in determining the extent to which institutional and environmental conditions result in greater or lesser strategic coherence. As institutional support for the asbestos abatement industry materialized through legitimacy-by-legislative-fiat, it provides an exceptional arena to simultaneously engage conditions,

strategy and outcomes among small and new firms suddenly encountering a munificent environment. In extending the argument that munificent circumstances will be characterized by contagion entry and unpatterned behavior, I expect that the strategic-matching process that is a hallmark of IO frameworks (Abell 1980; Hofer 1985) is weakly evidenced, or ignored altogether.

H3: Institutional support is inversely related to strategic coherence.

Strategic Coherence and Firm-Level Performance

Significant debate has ensued regarding the importance—or lack of importance—related to strategic behaviors. Recent studies involving bricolage (Baker and Nelson 2005) and improvisation (Baker, Miner, and Eesley 2003) as well as effectuation (Sarasvathy 2001), transformation (Sarasvathy and Dew 2005), and exaptation (Dew, Sarasvathy, and Venkataraman 2004) have each sought to emphasize the extent to which strategy assumes a subordinate role to exploration and survival among nascent-stage organizations. These various frameworks posit organic, highly iterative early-stage business behaviors (e.g., Sarasvathy 2001) on the part of entrepreneurs. Individually and collectively, these various approaches have contributed to a fuller understanding of opportunity identification and exploitation (Busenitz 1996; Short et al. 2010). However, these research streams may have over-romanticized the chaos of nascent firms and markets, while understating the potential benefits of strategic coherence. As post hoc studies involving surviving firms, these approaches also suffer from a selection bias that fails to properly account for circumstances faced by the many failures, which significantly outnumber the few successes. Untested in these emerging theories is the possibility that the small populations of successful individuals that form the basis of these theories are able to survive *in spite of* strategic incoherence, not because of it.

Earlier, I predicted that unpatterned behavior will be commonplace among market entrants that are enticed by an institutionally driven legitimacy-by-fiat. Extending the findings of Barnett, Swanson, and Sorenson (2003) in the context of a complete population, I predict that the absence of an orderly approach to market opportunities will, on average, prove to be a significant liability.

H4a: Strategically incoherent firms are less likely to survive than strategically coherent firms.

H4b: Strategically incoherent firms will exhibit lower operational performance than strategically coherent firms.

Unsafe Entrants—The Social Cost of Incoherence

Ultimately, the purpose of enacting asbestos abatement legislation was to institutionalize and enforce practices that promulgate more effective norms for individual and collective health and safety. The engineering controls associated with fully compliant asbestos abatement are complex, requiring specialized training, equipment, and materials. Controls are also expensive. Abatement routinely adds 10 percent or more to the cost of renovation or demolition. For a large structure, abatement costs can total millions of dollars (Vitra 2006). To the uninitiated, the asbestos abatement process may appear to be labyrinthine (Fumento 1999). Given the regulatory complexity, high costs and specialized knowledge, the owners of structures requiring abatement confront significant hazards (Fumento 1999) and daunting information asymmetries (Jamal and Bowie 1995). In this context, there is a risk that contractors may be motivated to shirk their responsibilities, although noncompliant work practices. When this occurs, an additional social cost is created that may be directly related to unfit firms in the context of institutional support. This would be ironic as the purpose of the institutional support for asbestos legislation ostensibly stems from a desire to reduce health risks, not escalate them. The test of this potential social cost involves examining whether or not strategically aimless firms choose to compromise service quality, despite the obvious risks associated with a hazardous material and in the context of institutionally endowed legitimacy.

Under the protective cover of sociopolitical legitimacy (Aldrich and Fiol 1994), strategically aimless and financially weak firms might be motivated to compromise service quality despite the obvious risks associated with a hazardous material. Shoddy work, uneven standards, weak accountability, and ill-formed

grievance procedures, might together conspire to unhinge the basic premise of the original institutional intervention: public safety. More formally:

H5: Strategically incoherent firms will commit more regulatory violations.

Institutional Support and the Asbestos Abatement Industry

For the 4,000 years leading up to 1986, the use of asbestos was synonymous with wondrous product durability, safety, and esthetic quality. More than 5,500 documented uses of asbestos were developed in products that circumscribed the entirety of human existence, including: asphalts, cement, resilient flooring, fire-proofing, sound proofing, children's pajamas, bed sheets, toasters, blow dryers, pipe insulation, electric wiring, roofing, siding, insulations, water pipes, funeral pyre shrouds, reusable napkins, pottery, ovens, and thousands of others.

Health Risks and Public Policy

Unfortunately, the glass-like, barbed structures emanating from asbestos crystals are a scourge to the human respiratory system (Vitra 2006). Although highly inert in its manufactured state, asbestos-containing material (ACM) that is disturbed releases tiny asbestos fibers that can migrate past natural protective systems and become lodged in the lungs, causing irritation, inflammation, scarification and eventually, dysfunction. Sustained exposure to high doses of airborne asbestos fibers can potentially result in asbestosis, lung cancer, and mesothelioma.

Regulatory History. Until the mid-1980s, concern regarding human exposure to asbestos in existing buildings progressed slowly, given the long latency periods for asbestos-related illnesses and the absence of definitive studies connecting low-level asbestos exposure to potential health risks. The general concern regarding the handling of ACM in existing building materials was loosely conveyed in a number of air quality and worker safety provisions, until the passage of the Asbestos Hazards Emergency Response Act (AHERA) in 1985. Although specifically concerned with asbestos in schools, the Act formally established standards requiring the professional abatement of asbestos in existing

structures. Functionally, enforcement was delegated to state-level agencies.

State-Level Enforcement. Many states chose to administer federal enforcement of the new asbestos regulations in a minimalist fashion, through simple reference to AHERA, while investing little or no state-level oversight over and above that dictated to the states by the Environmental Protection Agency (EPA). However, in a limited number of instances, states elected to implement regulations that were stricter than federal law and that placed the power of enforcement in the hands of newly formed regulatory divisions devoted to monitoring compliance. Colorado was one of these "high-enforcement" states, whereby regulations were adopted that required professional certifications, company licenses and project permitting that were idiosyncratic to Colorado.

Institutional Support

The highly compressed nature of the asbestos abatement industry growth trajectory affords an unusually provocative array of insights regarding the effects of institutional changes on industry entries and exits. Three institutional shocks are evident in the 1986–2010 period—1986, 1995, and 2005—each representing a major governmental policy change that expanded the abatement industry's customer base, thereby increasing the resources available to the industry population, which has the effect of increasing the carrying capacity. In 1986, strident legislative action substantively created a "closed" abatement industry in Colorado. In 1995 and 2005, Colorado expanded the abatement requirements by mandating that residential structures undergoing renovation or demolition must first be abated. Each one of these legislative acts increased the level of regulatory munificence for industry participants. In addition to increasing the addressable market, the actions taken in 1986, 1995, and 2005, increased public awareness of asbestos hazards and more fully legitimized the role of abatement contractors.

In response, the periods following these institutional developments are marked by a rapid increase in market entrants and state-certified abatement personnel. The effect of these institutional shocks succeeded in having the intended effect of accelerating firm formation and market entry. Contrary to the composite industry growth curve developed by

Klepper and Graddy (1990) that indicates a 25–30-year-long ramp-up in the market acceptance of new goods and services, the Colorado Asbestos Abatement Industry achieved similar market acceptance in just 4 years. This accelerated growth for the abatement industry underscores the extent to which institutional support was decisive in stimulating rapid, and sometimes indiscriminate, market entry.

Methods and Data

This empirical analysis of the Colorado asbestos abatement industry involves a retrospective research design with archival data comprised of the complete population of firms having ever entered or exited the asbestos abatement market. The methodology employed in this study is an event-history analysis (Delacroix and Carroll 1983; Tuma, Hannan, and Groeneveld 1979) of a comprehensive database hand-collected from more than 1 million records at the Colorado Department of Public Health and Environment. Three years of data were available online from the Colorado Department of Public Health and Environment (CDPH&E) public website. Data for 1986–2007 were obtained through a formal request under Colorado public access laws and involved merging data sources from hardcopy, decommissioned hard disk drives and remote storage systems of state records. The complete data set covers the entire history of the industry, extending from the first year of regulated abatement in 1986 to the end of 2010. This 25-year period witnessed 612 firms obtaining Colorado licenses. A total of 56,240 project permits were issued toward for the removal of 21 million lineal feet and 234 million square feet of ACM, for revenue totaling approximately $1.8 billion. Information is likewise available for all of the annual supervisor and worker certificates.

As a consequence of the strict monitoring and reporting requirements associated with the removal and disposal of asbestos, an unusual level of detail is available. By law, the removal and disposal of any material containing more than 1 percent asbestos in a quantity that exceeds the diminimous threshold (i.e., 50 linear feet or 32 square feet) must be performed by certified personnel on behalf of a licensed firm. Companies must obtain (and annually renew) a state-issued license prior to commencing any abatement work. There is no reciprocity with other states for individual certificates or company licenses. Every firm that seeks to perform abatement in Colorado must possess a state license. This allows for comprehensive tracking of every firm into and out of industry population. It also captures nascent stage firms that are contemplating commercial activity, but may decide, for whatever reasons, to not pursue the business. This marks perhaps the first time that a data set includes a statistically significant population of organizational forms that fail prior to becoming substantively operational.

Variables and Model Analysis

Dependent Variables. Reflecting the highly granular data for this complete population and the transaction-level focus of my strategic coherence investigation, five separate dependent variables were used to test the six hypotheses that form the basis of this study: industry entry, firm survival, firm fitness, regulatory violations, and strategic coherence.

Strategic coherence, in particular, warrants detailed elaboration. The purpose of this study was to examine the consequences of massive, unequivocal support by formal institutions of a nascent industry; the kind of support that often occurs when governmental institutions are compelled by circumstances or popular mandate to grant legitimacy-by-fiat in order to protect an existing sector or jump-start a new one. The central argument of the paper is that while institutional support of this magnitude is often well intended, it may invite contagion entry of aimless, unfit firms that create unforeseen social costs. The cornerstone of this inquiry rests on the examination of each firm's *strategic coherence*, which is calculated through a summation of the observed effects associated with patterned operational behavior. The variable is a scaled value ranging between 0 and 1. It is calculated in a two-step process: (1) evaluating the extent of each firm's patterned operational behavior; and then (2) using the patterned behavior evaluation to calculate a scaled strategic coherence score in the context of all industry activity. First, each firm's degree of patterned operational activity is calculated as a function of six elements:

(1) Project location variance: The standard deviation of the project distance from each firm's headquarters as a function of the total distance for all the firm's projects.
(2) Project size variance: The standard deviation of project size by each firm as a function of the total size of all the firm's projects.

(3) Project complexity variance: Asbestos abatement always involves some measure of engineering control, including containment of the workspace, establishment of negative pressure and extensive protection of workers and occupants. There are, however, certain kinds of asbestos abatement involving the removal of highly friable (i.e., easily pulverized) ACM that require sophisticated controls. Abatement of this nature is much more complex and expensive than removal of nonfriable materials. A firm that primarily does nonfriable abatement is likely to encounter financial and logistic complications in attempting to complete an abatement project involving the removal of friable material. For each of the 56,240 projects comprising this study, a project complexity value was calculated, ranging from 0 to 1, based on the specific engineering controls required to legally complete the abatement.

(4) Project simultaneity: This measures the extent to which firms simultaneously pursued proximal versus distant projects, large versus small projects, complex versus less complex engineering controls. The value, calculated as a proportion between 0 and 1, represents the proportion of days in a given year that a firm is simultaneously engaged in all six project characteristics.

(5) Project switching: This measures the number of times in a given year that a firm alters its operational activity. A switch is counted each time a firm changes from having more than 75 percent of their operations oriented in a specific project category to having 75 percent in a different category. For instance, if a firm has 75 percent of its operations engaged in large projects, the switches to having 75 percent of its operations in small projects, this would count as a "switch." The variable is intended to identify firms that are not operationalizing a strategic approach in the deployment of their respective resources.

(6) Activity–inactivity ratio: This measure is designed to identify firms that experience a prolonged period of inactivity, indicative of an inability to operationalize the firm's resources toward the generation of business activity. For each firm, the total days of inactivity is subtracted from active days, divided by 365. Many successful firms will have no inactive days, generating a value of 1. Meanwhile, other firms may have prolonged periods of inactivity, generating values at or near zero. Detailed start–stop data for all 56,240 projects, it possible to ascertain when each firm is active or inactive.

In step two, after calculating the extent to which each of the 612 firms exhibit patterned operational behavior, *strategic coherence* is determined by evaluating each firm's operational activity in the context of all projects completed throughout the entire industry during each firm's lifespan. For example, consider an abatement firm, AAA Abatement, which entered the industry at the beginning of 2000, and exited through a cessation of operations at the end of 2001. During this 2-year period, the firm completed 17 projects of varying location, size, and complexity, while 4,939 total projects were completed industry-wide. As there were 107 firms in the abatement industry from 2000 to 2001, there are 528,473 combinations of potential firms and potential projects. Therefore, the 17 projects AAA completed, and the 4,922 projects AAA did not complete can be placed in the context of more than one-half million permutations involving all the possible decisions that ultimately paired each project to a specific abatement firm. The ability or inability of AAA to remain active while pitted against the competition of 106 other firms is a function of many factors for which the analytic model will control: firm size, age, and location; macroeconomic conditions; owner-specific capabilities; and industry-specific features. But, it is also hypothesized that if AAA has a very low level of patterned behavior (captured by the six criteria described earlier), then it will exhibit strategic incoherence in the context of all the pairing decisions representing all the industry activity. In this fashion, the opportunity for consistency for a given period is compared with firm's actual consistency. The resulting value is the degree of *strategic coherence*, represented by a scaled value between 0 and 1. H3 predicts that high levels of institutionally endowed legitimacy will be inversely related to strategic coherence.

The other dependent variables are defined as follows.

Firm Formation. This continuous variable indicates the annual number of new asbestos

abatement firms. It is used to test the predictions that institutional support is positively related to the industry entry rate. Entry rates for the three years following favorable legislative developments in 1986, 1995, and 2005, are compared with all the other rolling 3-year periods.

Firm Fitness. This continuous variable consists of the average annual number of abatement projects completed by a given firm.

Firm Survival. This is a dummy coded dichotomous variable with an indication of "1" if a firm was still operational in 2010 and "0" if a firm had discontinued operations. Firms that were acquired were excluded from the analysis so that only failed firms were coded as "0."

Regulatory Violations. This is a continuous variable measuring the annual number of citations issued by the CDPH&E Asbestos Control Division. In accordance with Colorado Regulation 8, the CDPH&E has authority to cite asbestos contractors for noncompliant activity, resulting in fines, license revocation and possible criminal charges. Violation details are a matter of public record and data are available by-firm, by-year.

Independent Variables. In addition to serving as dependent variables in the manner described earlier, three variables are also employed as predictors in testing selected hypotheses: *strategic coherence*, *firm fitness*, and *firm survival*. Additional independent variables are as follows.

Institutionally Endowed Legitimacy. This is a dummy coded variable distinguishing between periods of heightened institutional support and periods of normalized environmental conditions. The 3 years that involved significant policy changes (1986, 1995, and 2005) are coded as "1" and all other years are coded as "0." This serves as a proxy for the infusion of additional institutionally endowed legitimacy for the industry and its participants.

Total Industry Projects. This variable represents the annual number of projects completed by the entire Colorado abatement industry. Several of the dependent variables in the study would be expected to vary with the total industry activity, such as regulatory violations.

State Inspection Resources. This variable is the number of full-time state asbestos inspectors. Regulatory violations should vary with the compliance-related resources.

Control Variables. Asbestos abatement typically accompanies the planned demolition or renovation of aged structures. Abatement activity is, therefore, highly sensitive to construction activity, which is itself closely linked to macroeconomic cycles. Three covariate vectors were developed using the Statistical Package for the Social Sciences (SPSS; SPSS, Inc., Chicago, IL, USA) to control for a wide array of macroeconomic, industry-specific, and firm-specific effects. Each vector consists of an aggregation of covariates that were equally weighted. The macroeconomic vector contains Colorado measures for construction, demolition permits, unemployment, and state economic activity. Industry-specific measures consisted of controls for industry-wide licensed firms, permitted projects, and credentialed employees. Firm-specific controls were included for firm size (total employees) and age. Additionally, a firm-level control vector was developed for cohort size, total population at entry and cohort size relative to population at entry (Hannan and Carroll 1992; Hannan and Freeman 1984, 1989).

Analytics. Logistic regression, ordinary least squares (OLS) regression and significant mean differences were employed to test the predicted relationships. Additionally, I analyzed the hypothesized relationship between coherence and firm survival using a Cox proportional hazard (PH) model. The logistic regression provides insights regarding the significance of strategic coherence from birth as a function of founding conditions, while the Cox PH analysis examines the instantaneous probability of failure based on evolving conditions, which vary over time by the level of coherence displayed in the project-level transactions for each firm.

Results

The six hypotheses that were examined in this study comprised three inter-related lines of inquiry: Does institutional support drive industry and firm formation? If so, do munificent conditions result in high-quality firms that are strategically coherent? And finally, do less strategically coherent firms exhibit adverse

Table 1
Descriptive Statistics

Variable	Metric	Min.	Max.	Mean	S.E.
Strategic coherence	Scaled value (range: 0–1)	0	0.99	0.15	0.25
Firm formation rate	Annual firm formations	14	41	24.48	7.15
Firm survival	1 = operational	0	1	0.17	0.37
Firm fitness	Average annual projects completed	0	166	9.22	20.66
Regulatory violations	Annual CDPH&E citations	25	112	69.04	15.42
Institutional legitimacy	1 = favorable legislative change	0	1	0.12	0.33
Firm size	State-licensed employees	1	134	8.33	10.43
Firm age	Years as licensed firm	1	25	3.73	4.45
State inspectors	Full-time equivalents	3	11	7.14	2.07
Total projects	Lifetime projects—by firm	0	2817	88.71	286.72

CDPH&E, Colorado Department of Public Health and Environment; S.E., standard error.

characteristics and do they promulgate adverse outcomes? These questions are addressed through an analysis of a complete industry. Descriptive statistics and a correlation matrix are presented in Tables 1 and 2, respectively.

The directionality and magnitude of the correlations are consistent with the anticipated relationships between the various dependent and independent variables. From the descriptive statistics it is apparent that the average abatement firm displays low strategic coherence (mean value: 0.15, on a 0–1 scale). Meanwhile, firm fitness and firm survival is highly correlated with strategic coherence. In order to draw significance from these correlations, two things must be demonstrated in the statistic models: (1) institutional support, in the form of institutionally endowed legitimacy, must be significantly related to market-entry decisions and each firm's level of strategic coherence; and (2) strategic coherence must be a significant driver of firm performance over and above the control variables. Without support for both of these elements, the tripartite relationship between institutions, strategic coherence and outcomes, is not tenable.

As noted at the outset, extant theory related to the legitimizing influence of institutional support (Aldrich and Fiol 1994; Oliver 1990, 1991; Powell 1988; Zucker 1989) suggests that nascent firms will benefit from the enhanced munificence accompanying institutionally endowed legitimacy (Baum and Oliver 1991; Baumol 1990; North 1990). Because of this, potential entrants are likely to interpret munifi-cence as a strong signal that market entry is unusually propitious (Barnett, Swanson, and Sorenson 2003). As an explicit test of the extent to which legitimacy-by-legislative-fiat drives market entry, H1 predicted that periods of pronounced institutional support (1986, 1995, and 2005) would be marked by increased market entry. Model 1 in Table 3 below confirms this hypothesis ($F^* = 38.8$, $p < .001$, $\Delta R^2 = 0.25$).

The increased market entry that accompanied legislative changes related to asbestos abatement appears to indicate that the public policy aims of were achieved. However, there is also evidence that the industry population following each legislative act dramatically exceeded the carrying capacity (Carroll and Hannan 1989; Hannan and Freeman 1977, 1984) of the Colorado market for asbestos abatement. Gold rush-style excess entry is evidenced in Table 3 by the heightened rate of firm failure in the years subsequent to legislative changes. Heightened firm failure despite formal institutional acts to legislatively sponsor growth of an emergent sector runs counter to the expectation that a rising tide should lift all boats.

H2 tested the possibility that the desultory performance of new entrants in times of increased munificence may be a function of mass entry by unfit firms. Model 2 in Table 3 reveals that this is exactly what happens. The negative coefficient associated with institutional support demonstrates that in the context of a complete population of firms institutional support results in lower average firm fitness ($F^* = 47.6$, $p < .001$, $\Delta R^2 = 0.31$).

Table 2
Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 Strategic coherence	—											
2 Firm formation rate	*(0.31)*	—										
3 Firm survival	*0.34*	*(0.21)*	—									
4 Firm fitness	*0.42*	*(0.35)*	*0.40*	—								
5 Regulatory violations	0.07	0.28	0.18	*(0.27)*	—							
6 Institutional legitimacy	0.11	0.48	*(0.23)*	*(0.32)*	0.22	—						
7 Firm size	0.40	*(0.13)*	0.33	0.36	*(0.08)*	*(0.16)*	—					
8 Firm age	0.37	*(0.22)*	0.30	0.25	*(0.11)*	*(0.21)*	*0.45*	—				
9 State inspectors	*(0.03)*	0.05	*(0.03)*	0.02	0.04	*(0.01)*	0.02	0.01	—			
10 Total projects	*0.39*	*(0.14)*	*0.45*	0.28	0.03	*(0.32)*	*0.22*	*0.31*	*0.29*	—		
11 Macro controls	0.04	0.05	0.05	0.03	0.04	*(0.02)*	0.03	0.03	0.04	0.05	—	
12 Indus controls	*(0.02)*	0.01	*(0.01)*	0.02	0.06	0.02	0.03	0.02	0.03	0.02	0.03	—
13 Firm controls	*(0.03)*	0.03	0.01	0.02	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.02

Note: Italicized values are significant at $p < .01$.

Table 3
Ordinary Least Squares Regression Models for Hypotheses 1, 2, and 3

Dependent Variable	Model 1 Firm Formation (New Licensed Firms)		Model 2 Firm Fitness (Avg Annual Projects)		Model 3 Strategic Coherence (Scaled Values 0 to 1)	
Hypotheses	Controls	Firm Formation Is Positively Related to Institutional Legitimacy	Controls	Firm Fitness Is Inversely Related to Institutional Support	Controls	Strategic Coherence Is Inversely Related to Institutional Support
Independent variables						
Constant	Incl	Incl	Incl	Incl	Incl	Incl
Controls—macro	3.7*	3.3*	2.5*	2.3*	0.05*	0.03
	(1.7)	(1.8)	(0.8)	(0.6)	(0.03)	(0.02)
Controls—industry	6.2**	5.4*	2.1*	1.4	0.02	0.02
	(4.3)	(3.7)	(1.1)	(0.8)	(0.01)	(0.01)
Controls—firm level	1.30	1.1	1.3	1.2	0.01	0.01
	(0.7)	(0.7)	(0.7)	(0.6)	(0)	(0)
Firm size (number employees)		—		3.3*		0.21**
				(2.1)		(0.17)
Firm age (years)		—		7.3**		0.24**
				(5.2)		(0.13)
Institutionally endowed legitimacy		8.9***		−11.8***		−0.31***
		(3.6)		(7.0)		(0.18)
Adjusted R^2	0.32	0.57	0.43	0.74	0.27	0.81
F-value	11.2	38.8	17.5	47.6	9.6	63.9
Δ adjusted R^2		0.25		0.31		0.54

$N = 612$.
Nonstandardized coefficients. Units are expressed in terms of each model's dependent variable.
*$p < .05$
**$p < .01$
***$p < .001$

In similar fashion, institutional support is also inversely related to strategic coherence. *Institutionally endowed legitimacy* was found to be a significant predictor of strategic *inco*herence. The 3-year periods directly following supportive institutional activity exhibited significantly less strategic coherence among the new market entrants than during all other periods. As a first step toward relating institutional action, firm performance, and strategic coherence, H3 predicted that periods of pronounced institutional support would display evidence of lower strategic coherence. In demonstrating support for H3, model 3 shows a significant negative coefficient in relating institutional support to strategic coherence ($F^* = 63.9$, $p < .001$). This means that institutional support invited a sharp increase in market entrants, thereby increasing access to licensed abatement services and at least ostensibly reducing asbestos-related health risks. However, the munificent, open door circumstances created by legislative action also contributed to lower firm fitness and lower strategic coherence.

The direct relationship between strategic coherence and firm fitness is tested by H4a, which examines survival as an outcome, and H4b, which examines operational performance as an outcome. The results support both hypotheses as *strategic coherence* was found to be a significant predictor of firm survival and operational performance. Model 4a in Table 4 is a logistic regression testing the impact of strategic incoherence on survival prospects. Even after controlling for firm resources and age, strategically incoherent firms were almost four times more likely to fail than strategically coherent firms (odds ratio: -3.85, $p < 0.001$, $\chi^2 = 78.2$). Operationally, incoherent firms significantly underperformed more strategically coherent counterparts.

The logistic regression model 4a clearly demonstrates the significance of strategic coherence as a predictor of firm survival; however, as the model involves calculating the probability of survival from birth there are limitations. While logit analysis is interesting from the standpoint of assessing the relationship between firm survival and institutional support at birth, this analysis does not provide any insights regarding survival prospects as conditions continue to evolve. That is, the survival odds of a firm making it to 2 years old from 1 year old are not the same as the survival odds of making it to 10 years old from 9 years old. In order to examine the ongoing survival prospects, I used a Cox PH model. For ease of interpretability, the hazard rates have been converted to the probability of failure. The results are summarized in Table 5.

State gross domestic product growth and firm characteristics such as size, experience and productivity all reduce the hazard. Cohort size, institutional support and strategic incoherence all increase the hazard of failure. For each variable, the probability of survival indicates the relative likelihood of failure for a one-unit change in that variable. For instance, a one-unit change in age would mean that each additional year of experience decreases the relative risk of failure by 2 percent. For the strategic incoherence hazard rate, the units are expressed in percentage points: for each additional percentage point that a firm exhibits strategic incoherence, that firm increases the relative risk of firm failure by 3 percent, indicated in Table 5 by the 1.03 hazard rate.

The relationship between strategic coherence and survival probability is also evident in Figure 1, a Kaplan–Meier estimate separated by quartile. The first quartile consists of the top 25 percent of firms with respect to strategic coherence, which is a function of the six facets discussed in the methods section and analyzed by part in Table 5. As the four curves demonstrate, industry participants exhibiting low levels of strategic coherence face a precipitous drop in survival prospects soon after entering the market.

The hazard rate analysis also reinforces the extent to which institutional support is a significant predictor of survival (Table 5). Firms entering the market under highly munificent conditions during times of renewed institutional support are 2.43 times more likely to fail than a firm entering the market in other years. This provides strong support for the assertion that institutionally fueled contagion entrepreneurship attracts unfit firms that fail quickly.

As the Cox PH assumes constant proportionality across the observation window, robustness checks must be performed to insure that the model is not misspecified by virtue of proportionality violations (Lin and Wei, 1989). Robustness tests revealed an absence of evidence contradicting the proportionality assumption. Therefore, the Cox PH results are reliable.

Table 4

Analytic Models for Hypotheses 4a, 4b, and 5

Dependent Variable	Model 4a (Logistic) Firm Survival (1 = Still Operational) (Odds Ratios)		Model 4b (OLS) Firm Fitness (Avg Annual Projects)		Model 5 (OLS) Regulatory Violations (CDPH&E Citations)	
Hypotheses	Controls	Strategically Incoherent Firms Have Lower Survival Rates.	Controls	Strategically Incoherent Firms Exhibit Lower Firm Fitness	Controls	Strategically Incoherent Firms Commit More Regulatory Violations.
Independent variables						
Constant	Incl	Incl	Incl	Incl	Incl	Incl
Controls—macro	1.04*	1.01*	2.5*	2.0*	1.7*	1.6*
	(0.22)	*(0.22)*	*(0.8)*	*(0.6)*	*(0.8)*	*(0.8)*
Controls—industry	1.15*	1.11*	2.1*	1.6	2.9**	2.7**
	(0.23)	*(0.21)*	*(1.1)*	*(1.0)*	*(1.9)*	*(18)*
Controls—firm level	1.03*	1.0	1.3	1.2	2.0*	2.0*
	(0.18)	*(0.17)*	*(0.7)*	*(0.7)*	*(1.3)*	*(12)*
Firm size (number of employees)	3.18**	3.18**		3.8**		-1.4
	(1.32)	*(1.32)*		*(2.4)*		*(0.7)*
Firm age (years)	3.94***	3.94***		9.2***		-1.9*
	(2.02)	*(2.02)*		*(4.8)*		*(1.1)*
Total projects		—		—		-1.6*
						(0.9)
State inspectors		—		—		0.3
						(0.1)
Strategic incoherence (i.e., higher values = less coherence)		-3.85***		-8.8***		4.3***
		(1.89)		*(4.2)*		*(5.1)*
Adjusted R^2	—	—	0.43	0.69	0.38	0.67
F-value	—	—	14.1	31.3	12.5	30.8
Δ adjusted R^2				0.26		0.29
χ^2	17.8	78.2		—		—
Predictive Accuracy	75.90 percent	96.1 percent		—		—

$N = 612$.

Nonstandardized coefficients. Units are expressed in terms of each model's dependent variable.

*$p < .05$

**$p < .01$

***$p < .001$

CDPH&E, Colorado Department of Public Health and Environment; OLS, ordinary least squares. The italicized values are standard deviations.

Table 5
Results from Cox PH Model ($N = 612$)

Variables	Model 4a (Cox PH)			Model 4a (Cox PH)—Detailed		
	Probability of Failure (95 percent CI)	S.D.	p-Value	Probability of Failure (95 percent CI)	S.D.	p-Value
Institutional support	2.43	0.15	<0.001	2.43	0.15	<0.001
Entry cohort size	1.01	0.06	0.01	1.01	0.06	0.18
Colorado gross domestic product growth	0.93	0.04	0.07	0.93	0.04	0.07
Total projects—industry	0.98	0.11	0.30	0.98	0.11	0.30
Firm size (number of employees)	0.99	0.05	0.01	0.99	0.05	0.01
Firm age (years)	0.98	0.02	0.01	0.98	0.02	0.01
Average annual projects	0.99	0.04	0.03	0.99	0.04	0.02
Strategic incoherence	1.03	0.02	<0.001	—	—	—
Location variance	—	—	—	1.008	0.002	0.004
Size variance	—	—	—	1.002	0.000	0.07
Complexity variance	—	—	—	1.014	0.002	<0.001
Simultaneity	—	—	—	1.001	0.000	0.21
Switching	—	—	—	1.005	0.001	0.05
Activity–inactivity	—	—	—	1.001	0.000	0.15
χ^2	94.4			87.1		
p-value	<0.001			<0.001		

CI, confidence interval; PH, proportional hazard.
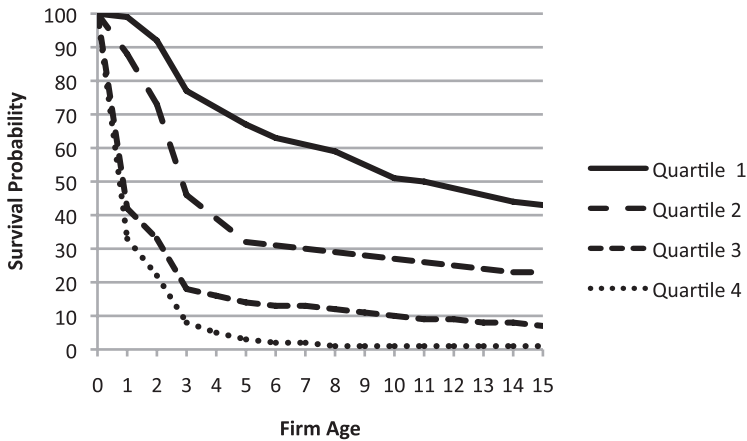
The interplay between coherence and survival that was underscored through the hazard rate model can be extended to the analysis of H4b, which predicted that lower strategic coherence would be associated with lower firm fitness. Predictably, this too finds support. The OLS Model 4b in Table 4, displays a significant negative coefficient for strategic incoherence (*F*-test = 31.3, $p < .001$), indicating that strategically incoherent firms will, on average, complete far fewer projects than firms that exhibit coherence.

Lastly, H5 predicted that the costs related to strategic incoherence would not be borne solely by unfit firms and their founders. As a proxy for social costs, regulatory violations were used to measure the broader deleterious effects of unfit firms that operated in a strategically incoherent fashion. Model 5 in Table 4 confirms this prediction (*F*-test = 30.8, $p < .001$, $\Delta R^2 = 0.29$). After controlling for an array of macroeconomic, industry-specific, and firm-specific factors, as well as regulatory resources under the command of the CDPH&E, strategic incoherence was positively related to regulatory violations, meaning that firms exhibiting strategic incoherence are associated with a higher relative frequency of noncompliant work practices. As more than 90 percent of the 1,726 violations that have been prosecuted by the CDPH&E consist of failures to properly perform asbestos abatement in a safe, healthful fashion, an increase in violations represents an increase in asbestos-related health risks. Concomitantly, this represents an increase in social cost.

Discussion

Governments are often mandated to jump-start emergent sectors by activating formal institutional mechanisms to produce high-velocity outcomes (Baumol 1990; North 1990). Indeed it often appears as though formal institutions are uniquely well equipped to accomplish this aim. In reality, this study demonstrates that forceful sponsorship and the munificent conditions it aims to create may be highly problematic. The central argument of this paper was that institutionally driven legitimacy-by-fiat reduces the propensity of new market entrants to develop coherent entry strategies. Instead, indiscriminate, contagion-style market entry by unfit firms is marked by unplanned, strategically incoherent activity, causing firms to perform poorly and fail quickly, all while creating unwanted social costs from regulatory noncompliance.

Limitations and Alternative Explanations

Given the implications of the findings from this study and the cross-theoretic formulation of methods, alternative explanations could reasonably be launched. Three potential alternatives are particularly germane, one resting on

Table 6
Industry Entrants—By Mode

Entry Mode	Number of Firms	Percentage of Firms (%)	Average Lifespan (Years)	Operational Performance (Projects per Firm-Year)
De novo	110	18	5.6	37.3
Diversifying incumbents (de alio)	54	9	3.1	12.0
Entrepreneurial spinoffs (unsponsored)	448	73	3.1	18.1
Total entrants	612	100	3.7	23.8

practical grounds and the other two grounded in theory; namely, resource dependence theory (RDT) (Pfeffer and Salancik 1978) and IO theory (e.g., Porter 1980).

Addressing the practical grounds first, it could be asserted that the failure of new, small abatement firms represents the same failure that most new, small firms experience. The liabilities of smallness and newness are well-established premises in the strategic management literature (Aldrich and Auster 1986; Bruderl and Schiissler 1990; Freeman, Carroll, and Hannan 1983; Schoonhoven 2005). In this case, however, all the firms were small at entrance. Diversifying incumbents constituted a small proportion of the industry entrants and, as can be seen in Table 6, de alio firms exhibited the worst performance. Entrepreneurial spinoffs, involving firm formations by employees who have departed a previous employer, performed slightly better than de alio firms, but significantly worse than de novo firms.

In the context of a complete population in a nascent-stage industry, it is apparent that newness and smallness are much less of a liability, especially with institutionally endowed legitimacy. Attrition is clearly high. Of the 612 firms that were formed for asbestos abatement in Colorado, only 104 still survived in 2011. However, the distinguishing feature of the surviving firms is not that they were older or bigger than the firm failures, but rather that they possessed strategic coherence. The U.S. government and the state of Colorado ensured that there would be customers by rule of law. The foregoing data have demonstrated that those firms that approached formation and market entrance by developing a coherent approach to market opportunities survived in large numbers. Those that entered solely on the coattails of institutional legitimation did not survive. For this reason, the story is more potent and complex than can be subsumed by reference to the liability of newness (Aldrich and Auster 1986; Bruderl and Schiissler 1990; Freeman, Carroll, and Hannan 1983; Schoonhoven 2005) or the liability of smallness (Aldrich 1990; Aldrich and Auster 1986; Freeman, Carroll, and Hannan 1983; Hannan and Freeman 1984, 1989; Singh and Lumsden 1990).

Other alternative explanations could be grounded in RDT (Pfeffer and Salancik 1978), by asserting that the failure of firms is not based on strategic incoherence, but rather their respective inability to marshal and deploy the resources and relationships essential to firm survival; the argument perhaps being that a firm's strategy could be coherent, but its ability to operationalize it is flawed. Without question, resource deprivation constitutes the tipping point for failed abatement firms. However, while resource dependence might provide information about the immediate cause of death, it does not elucidate the factors that delivered selected firms to the precipice of that fate. The fact that a firm died of "malnutrition" does not explain why the firm never learned how to recognize food. As we shall see, high mortality rates in the context of full-throated institutional support are a function of a firm's inability to establish a pattern of business behaviors that is favorably selected by the environment for survival. That is, resource deprivation is the result of strategic incoherence, not the cause of it.

Addressing the findings from this study through the competitive strategy framework of industry-level analysis (Porter 1980) is also attractive at first as there appears to be dynamics at play in the Colorado asbestos abatement industry that reflect the advantages of increasing economies to scale and the barriers that accompany such advantages. Based on this perspective, the attrition rates experienced by less fit firms could be viewed as the natural consequence of the inability to deploy one of several generic strategies (Porter 1980, 1985). However, in a fashion similar to the RDT perspective, the IO approach has a limited ability to assess the complex array of developments that accompanied strong institutional support. While the IO perspective certainly contemplates the potential role of government policy changes, the role they propound (Andrews 1971; Caves and Porter 1977; Porter 1980, Spence 1977) does not address the consequences of legitimation-by-legislative-fiat in a fledgling industry, particularly one in which there are no incumbent firms. IO would be accurate in predicting that there is a highly finite number of strategic options available to abatement firms, but the perspective does not explain the preponderance of rudderless firms that are strategically incoherent. Ultimately, positioning theories do not explain why firms substitute perceived legitimacy for strategic coherence.

Key Findings and Implications

By conducting the first detailed test of strategic coherence for an entire industry across its entire history, this study offers a number of compelling findings. The results of this empirical investigation strongly suggest that performance and survival vary with patterned operational activity. Firms occupying the lower quadrant of strategic coherence were generally destined for speedy extinction. This is a finding that has broad and deep implications for strategy and entrepreneurship scholars. The paucity of work in strategic coherence owes to weak construct development and few transaction-based data sets that allow for a comprehensive treatment of the subject. Although the context for this study involved new and small firms in a niche service sector, my findings are relevant to the study of strategic coherence across all industries and across firms of any age or scale. As the hazard rate analyses demonstrated, incoherent firms face dim prospects for survival at any time and under any environmental conditions, even those that are comparatively munificent.

The results also provide an engaging portal to the puzzling machinations of contagion entrepreneurship. In no small part, the demise of strategically incoherent firms is closely tied to the contagion-style entry of unfit firms. Of course, contagions are not unique to the asbestos abatement industry; they occur with great frequency in rapidly unfolding melodramas (Kindleberger and Aliber 2011). Despite the frequency of contagions and manias; much is still unknown about how and why they occur, and at what social cost they transpire, particularly among new and small firms that form and fail with great speed. To that end, this study offers an exhaustive explication of how conditions, strategies and outcomes can be simultaneously modeled through the use of a transaction perspective. Importantly, the 5.7 million transaction-level permutations are traced from firm formations all the way to both successful, vibrant firms and those that generate steep social costs through regulatory violations.

In this regard, my study also offers a more thorough understanding of the ways in which strong institutional support can generate unintended, deleterious consequences. Prevailing theories suggest that institutions function as a source of legitimacy for nascent firms and industry populations (Baum and Oliver 1991, 1992; Baum and Powell 1995; Hannan and Freeman 1989; Hannan and Carroll 1992; Zucker 1989). Institutional relations are seen as a source of support and credibility that decreases firm mortality rates (Baum and Oliver 1991). However, using a complete population I show that the reality is far more complex. Unintended consequences from strong institutional support can include increased mortality, increased public ills such as regulatory violations, and decreased levels of strategic coherence.

For policymakers seeking to favorably influence an entrepreneurial ecosystem (Isenberg 2011; Vogel 2013; Zahra and Nambisan 2012), my study also contributes surprising and significant results detailing the ways in which strong institutional support circumvents strategy formation. As Isenberg (2010a, 2010b) has noted, governmental policies designed to encourage and safeguard entrepreneurs often have the capacity to foster entrepreneurial

action on a grand scale. Ultimately, however, an entrepreneurial ecosystem is reinforced, not created from scratch, by formal institutions (Isenberg 2011).

At a minimum, the foregoing results suggest strongly that excessive munificence is a very slippery slope. Not only do new firms look to legitimation-by-legislative-fiat as a justification for entry, but also as a replacement for strategic planning. At all stages of the abatement industry history, it is apparent that legislatively fueled market expansion invites the entry of firms that display significantly lower levels of strategic coherence. Given the hazardous nature of asbestos, a decrease in firm fitness had the deleterious effect of generating unwanted social costs. While little issue can be taken with government involvement in spawning an abatement industry for the sake of public safety, formal institutional capabilities to evaluate firm fitness and police abatement activities were needed to mitigate the ill effects of contagion-style entry.

From a practitioner perspective, my study offers a number of insights. First, the results lend considerable support to recent revisionist efforts to better articulate the potential benefits of strategic planning (e.g., Brinckmann, Grichnik, and Kapsa 2010), some facets of which have been upended through the development of alternative frameworks that posit a central role for mechanisms such as bricolage and improvisation (Baker and Nelson 2005; Baker, Miner, and Eesley 2003), effectuation (Sarasvathy 2001, 2008), and exaptation (Dew, Sarasvathy, and Venkataraman 2004).

Second, there is evidence that would-be entrepreneurs are not sufficiently vigilant about guarding against a proximity bias in making market-entry decisions. Given that 73 percent of the abatement firms entered the market as entrepreneurial spinoffs (Table 6), it appears that individuals who were situated as industry insiders precipitated much of the contagion-style entry. Not only did spinoff founders significantly underperform *de novo* entrants, but they also exhibit half the average lifespan. The apparent inability of industry insiders to outperform newcomers suggests the importance of guarding against biased interpretations of environmental signals (Hunt and Lerner 2012).

Third, firms can gain insights from a reevaluation of strategic coherence. Corporate entrepreneurial ventures may be equally predisposed to contagion-style activity, and with

equally unimpressive results. The work by Teece and Rumelt (1994) plainly demonstrated in the domain of mergers and acquisitions that firms straying from their core businesses destroyed value more often than they created it. Similarly, strategically incoherent, operationally unpatterned attempts to enter emerging domains are far more likely to be punished than rewarded. In eschewing coherent strategy and misapplying institutional legitimacy as a substitute for strategy development and implementation, firms fail to develop utilizable, reproducible patterns, or what Nelson and Winter refer to as "organizational routines" (Nelson and Winter 1982). The inability of firms to establish a strategically coherent set of routines results in significantly weaker operational performance.

Conclusion

"The wide gap throughout history," wrote Douglass North, "between intentions and outcomes reflects the persistent tension between the scaffolds that humans erect to understand the human landscape and the ever changing "reality" of that landscape" (North 2005, p. ix). When formal institutions endeavor to alter "the rules of the game" (Baumol 1990; North 1990, 2005), in order to protect existing systems or to create new systems, the gap between intentions and outcomes has the potential to cause unintended consequences and unforeseen social costs. In particular, this empirical study of the asbestos abatement industry suggests that forceful government-led advocacy of a nascent sector may invite aimless entry of strategically incoherent firms, which at least partially undermines the original public health intentions underlying institutional support.

Heretofore, strategic coherence has been weakly defined and thinly studied. The absence of thorough data has weakened the ability to draw conclusions about patterned operational activity and firm-level outcomes. Recent efforts to theoretically critique strict causation-oriented models of entrepreneurial behavior (Baker and Nelson 2005; Baker, Miner, and Eesley 2003; Dew, Sarasvathy, and Venkataraman 2004; Sarasvathy 2001, 2008) represent an emerging trend to devise a more dynamic, organic, iterative conception of early-stage business behaviors. These alternate conceptions have contributed texture and sophistication to the subject, but may prove to be limited in their capacity to find empirical

support. In the context of a complete population that borne of institutionally sponsored legitimacy, it appears that only through the combination of institutional munificence and strategic coherence can the gap between "intentions and outcomes" (North 2005) be minimized.

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