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Strategic Management Journal, Vol. 15, Special Issue: Competitive Organizational Behavior (Winter, 1994), 29-44.

Stable URL:
http://links.jstor.org/sici?sici=0143-2095%28199424%2915%3C29%3ATSCORC%3E2.0.CO%3B2-A

Strategic Management Journal is currently published by John Wiley & Sons.

Strategic Management Journal, Vol. 15, 29–44 (1994)

THE SOCIAL CONSTRUCTION OF REPUTATION: CERTIFICATION CONTESTS, LEGITIMATION, AND THE SURVIVAL OF ORGANIZATIONS IN THE AMERICAN AUTOMOBILE INDUSTRY: 1895–1912

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Despite widespread agreement among organizational researchers that intangible resources underlie performance differences among organizations, little empirical evidence exists in the literature. Building on the idea that reputation is socially constructed, this paper depicts reputation as the outcome of the process of legitimation. It observes that organizational researchers have overlooked how certification contests legitimate organizations, generate status orderings, and create favorable reputations. This paper suggests that victories in certification contests are credentials that enable firms to acquire a reputation for competence. It predicts that cumulative victories improve the survival of organizations and better the life chances of startup organizations more than those of lateral entries. These predictions are analyzed in the American auto industry during 1895–1912 when special-purpose product rating agencies were absent and reliability and speed contests served as credentialing devices. The results show that cumulative victories in contests extend the life chances of winning organizations but there is no evidence that new startup organizations benefit more than lateral entries. These findings underscore the significance of intangible assets and point to the need for an institutionally informed theory of competences.

Why performance differences exist among organizations is one of the central questions in strategic management. If the industrial organization paradigm emphasizes industry structure and market power as the determinants of firm performance (Bain, 1956; Porter, 1991), the resource-based perspective traces the fortunes of organizations to resources and capabilities that are firm-specific, rare, durable, and difficult to imitate or substitute (Selznick, 1957; Penrose, 1959; Snow and Hrebeniak, 1980; Wernerfelt, 1984; Barney, 1986, 1991; Rumelt, 1984; Prahlad and Hamel, 1990; Teece, Pisano, and Shuen, 1990; Teece *et al.* 1992). The resource-based perspective defines resources as inputs into the production process and depicts capabilities as capacities to coordinate and deploy resources to perform tasks. Resources may be tangible (e.g., equipment, finance) or intangible (e.g., brand name, trade secrets) and capabilities may consist of subroutines and master routines (e.g., product development, distribution) that integrate subroutines into performance (Nelson and Winter, 1982; Grant, 1991).

A core element of the resource-based perspective is the proposition that intangible resources such as reputation significantly contribute to performance differences among organizations because they are rare, socially complex, and difficult to trade and imitate (Itami, 1987; Barney, 1991; Peteraf, 1993; Amit and Schoemaker, 1993). In a related vein, organizational theorists also assert that legitimacy is an intangible asset that determines the ability of organizations to garner capital and personnel, and thereby influences the survival of organizations (Dowling and Pfeffer, 1975; Pfeffer and Salancik, 1978;

Key words: Reputation, legitimation, certification, contests

CCC 0143–2095/94/100029–16

Hannan and Freeman, 1989). However, there is little empirical evidence to support the widely shared beliefs about the effects of reputation on financial performance (Fombrun and Shanley, 1990) or the impact of legitimacy on organizational survival (Zucker, 1989; Singh, 1993). Indeed, much of the available empirical evidence in the resource-based literature pertains to the significance of tangible resources and capabilities (Cool and Schendel, 1988; Dierickx and Cool, 1989; Collis, 1991). Some surveys of entrepreneurs (Aaker, 1989) and CEOs (Hall, 1993) show that respondents perceived intangible resources such as company reputation and product reputation to be important determinants of performance but there is no direct evidence that social identity underlies performance differences among firms.

Hence, the motivation for this study to investigate the effects of social identity on the survival prospects of organizations. This paper extends the idea that reputation is a socially constructed entity by portraying reputation as the outcome of legitimation processes. It observes that organizational researchers have overlooked how certification contests legitimate organizations and enable them to create favorable reputations. It proposes that certification contests are credentialing mechanisms that invest organizations with cognitive validity, create a status hierarchy, and build the reputations of organizations. It predicts that cumulative victories improve the survival of organizations and extend the life chances of new startup organizations more than those of preexisting organizations that enter an industry. These hypotheses are investigated in the American auto industry during 1895–1912 when reliability and speed contests served as *de facto* credentialing devices given the absence of special-purpose product rating agencies.

REPUTATION, LEGITIMATION, AND THE SURVIVAL OF ORGANIZATIONS

Although all organizational researchers agree that the social identity of organizations significantly constrains their fates, they employ different vocabularies. Some organizational researchers, following the lead of economists, analyze issues of social identity under the rubric of reputation (See Weigelt and Camerer, 1988 for a review) and depict it as a critical antecedent of organizational performance (Itami, 1987; Fombrun and Shanley, 1990; Hall, 1993). Other organizational researchers, drawing on a long tradition in sociology, study issues of social identity using the label of legitimacy (see Scott, 1987, 1994 for a review) and hold that it influences the life chances of organizations (Meyer and Rowan, 1977).

Models of reputation are predicated on the decision-theory vision of a world of imperfect information in which actors rely on proxies or signals to make rational assumptions about the intentions and future behaviors of other actors (Kreps and Spence, 1985; Fombrun and Shanley, 1990). In turn, signals are valid when they are derived from past observations and serve as a stable basis to form rational beliefs about the actors in question (Wilson, 1985). Thus, models or reputation presume a tight coupling between past actions and future expectations, and organizational attributes and the evaluation of organizations (Weigelt and Camerer, 1988).

Organizational sociologists distinguish between sociopolitical legitimacy and cognitive legitimacy (Aldrich and Fiol, 1994; Hannan and Carroll, 1992). Put simply, sociopolitical legitimacy consists of endorsement by legal authorities, governmental bodies, and other powerful organizations. Cognitive legitimacy implies the taken for granted assumption that an organization is desirable, proper, and appropriate within a widely shared system of norms and values (Zucker, 1986; Scott, 1987). Models of legitimacy presume a loose coupling between the endowments of organizations and their credibility and hold that organizations acquire standing when they use environmentally preferred symbols and their actions conform to institutionalized rules (Dowling and Pfeffer, 1975; Pfeffer and Salancik, 1978; Meyer and Rowan, 1977).

However, reputation and legitimacy need not be viewed as competing specifications of organizational identity but are rather complementary aspects of creating an organizational identity. If reputation is based on signals and legitimacy flows from symbols, both signals and symbols are needed to create impressions on audiences (Goffman, 1969; Feldman and March, 1981). Similarly, if models of reputation emphasize a tight coupling between endowments and evaluations, then models of legitimacy direct attention

to the collective processes by which reputation is created and sustained. Some writers suggest that economic models of reputation overlook how reputation is the product of social construction and validation (Fombrun and Rindova, 1994).

If one extends this idea further, then reputation becomes an outcome of the process of legitimation. In turn, legitimation means not only the normative justification of organizations but also the cognitive validation of an entity as desirable, proper, and appropriate in a widely shared system of beliefs and norms (Berger and Luckmann, 1966). More concretely, legitimation consists of creating an account of an organization, embedding that account in a symbolic universe, and thereby endowing the account with social facticity (DiMaggio, 1991). Thus, skillful cultural operatives seeking to legitimate their project may draw on wider institutional logics to show that their innovation is cognitively cogent and morally defensible. Rival operatives may draw on other cultural frames to buttress their accounts and invalidate the accounts of opponents (Friedland and Alford, 1991). On other occasions, third parties such as professional societies, ratings agencies, auditors, and governmental regulators may endorse an organization and the very act of endorsement embeds an organization in a status hierarchy and thereby builds the reputation of an organization (Scott, 1994).

There are very few empirical studies of how legitimation generates a favorable reputation and improves the survival of organizations (Aldrich and Fiol, 1994). Wiley and Zald (1968) asserted that accreditation enabled educational institutions to create a desirable image, garner resources and enjoy enhanced survival. In another case study, Miles (1982) showed that rebuilding legitimacy was crucial to the survival of cigarette producers who were undermined by the assults of the anti-smoking movement. Wilson (1985) suggested that certification by established auditors enabled firms to secure low cost capital. Beatty and Ritter (1986) reported credentialing by investment banks allowed initial public offerings to attract inexpensive capital. Singh, Tucker, and House (1986) showed that voluntary social service organizations that received a charitable registration number from Revenue Canada and were listed in the *Community Directory of Metropolitan Toronto* enjoyed better credibility and therefore lived longer than others. Singh *et al.* (1986) also sought to show that organizations create favorable identities by coopting key constituencies via board memberships and found that board size at the time of founding significantly reduced death rates of organizations.

More recently, organizational ecologists have proposed that legitimation and competition underlie a U-shaped relationship between population density (the number of organizations) and the failure rate of organizations. The underlying idea is that population density initially reduces failures by establishing the track record or reputation of the organizational form but, subsequently, unbridled increases in density lead to competition and boost the failure rate. Studies of several industries support the predicted U-shaped relationship between population density and the failure rate of organizations (see Hannan and Carroll, 1992 for a detailed review). But the density dependence thesis has been assailed on two counts. For one, other researchers have challenged the legitimation effect of population density and suggested that it masks other effects (Zucker, 1989; Peterson and Koput, 1991). Delacroix and Rao (1994) suggest that density effects need to be unbundled because they aggregate the effects of the reputation of the organizational form, vicarious learning, and an institutional infrastructure.[1] Additionally, the density dependence thesis focuses attention on the reputation of the organizational form rather than individual organizations and thereby emphasizes a collective good that is freely accessible to all organizations within an industry rather than an organization-specific endowment that is inaccessible to rivals.

Moreover, studies of how legitimation generates favorable organizational reputations have neglected the crucial role played by certification contests. Despite their popularity, certification contests[2] have been overlooked as a source of cognitive validity and social standing in the

[1] These critiques have led to the 'density as process' view wherein population density connects the processes of legitimation and competition to failure rates (Hannan and Carroll, 1992).

[2] I use the term 'contest' to denote a yardstick competition in which performances are ranked and argue subsequently that early performances are more significant. Thus, my usage is different from that of Turner (1960), who defined contest mobility as a system in which selection is delayed because people have multiple chances to compete.

literature on organizational legitimacy. In many industries, special-purpose organizations organize contests to evaluate products or firms and rank-order participants according to their performance on preset criteria and sometimes, give 'prizes' to winners in yardstick competitions (Holmstrom and Tirole, 1989).[3] For example, insurance companies are rated by A. M. Best or Moody's and classified on the basis of their viability. *Michelin* guidebooks and the *AAA* tour books rank-order restaurants and determine their standing in the eyes of consumers. *Consumer Reports* ranks rival products in numerous product categories ranging from exercise machines to automobiles and influences their taken for grantedness. *J. D. Powers* ranks automobiles according to their performance on predefined criteria and shapes the image of automobile manufacturers. Similarly, business magazines such as *Forbes, Business Week, Money*, and *Smart Money* rank mutal funds on the basis of their performance in 'up' and 'down' markets and reduce uncertainty for prospective investors.

Such certification contests are *social tests* of products and organizations (Thompson, 1967) wherein the technical criteria chosen to evaluate performance are themselves the outcomes of institutional processes. Victories in certification contests legitimate organizations and validate their reputation because of the taken for granted axiom that winners are 'better' than losers and the belief that contests embody the idea of rational and impartial testing. Contests structure search in crowded and confused markets and circumvent the issue of measuring capabilities.

Indeed, certification contests may induce artificial distinctions between equivalent participants and foster Type II errors (false positives) and winners in one year may have lesser capabilities than winners of other years (March and March, 1978; Rosenbaum, 1989: 337–338). From this point of view, victories in certification contests are small, fortuitous events that create a reputation that becomes magnified by positive feedback. Wins reassure risk-averse prospective customers of the competence of the organization, induce them to support the organization, increase its overall reputation and life chances. Thus, like other path-dependent processes (See Arthur, 1989), the legitimation provided by certification contests consists of small chance events that trigger a self-reinforcing reputation and generate increasing returns to organizations. More concretely, certification contests provide extrinsic criteria of fitness and reduce the ambiguity caused by the lack of standards and the absence of complete knowledge (Thompson, 1967; 86–91). As a result, certification contests enable organizations to score favorably in relation to their rivals, induce them to devote resources to visible criteria of performance, stratify organizations, and generate status orderings of organizations that determine their access to resources (Shrum and Wuthnow, 1988).

In turn, status orderings are important because of the 'Matthew effect.' Merton (1968) derived the phrase 'Matthew effect' from the following line from the first book of the New Testament: 'For unto everyone that hath shall be given, and he shall have abundance; but from him that hath not shall be taken away even what he hath.' Merton used the Matthew effect to capture the discrepancy in the citations of high- and low-status scientists for similar findings. More generally, the Matthew effect simply means that higher status actors derive greater rewards than lower-status actors for performing an identical task (Podolny, 1993). By creating status orderings, certification contests indirectly create the basis for the 'Matthew effect' and enable higher-status firms to extract greater rewards for producing even the same good as lower-status firms, and thereby enable them to enjoy higher survival prospects.

Winning organizations acquire cognitive validity in the eyes of risk-averse consumers and financiers. Victories in contests 'explain' the organization to consumers, financiers, and competitors and justify organizations by investing them with a sheen of reliability. Thus, cumulative victories in contests are likely to enrich the reputation of winning organizations, improve their access to resources, and, thereby enhance their survival prospects. However, cumulative

[3] Their meager research on yardstick competitions pertains to the effects of contests on individuals rather than organizations. Sociologists have analyzed yardstick competitions under the rubric of tournaments and studied the effects of early performance on the mobility of individuals in hierarchies (Rosenbaum, 1989). By contrast, economists depict yardstick competitions as incentive mechanisms and have empirically investigated the effect of prize structure of tournaments on the performance of sports athletes, CEOs and salesmen (see Rosen, 1986). However, there has been little research on product certification contests as a source of organizational legitimacy.

wins may increase the reputation of an organization at a decreasing rate and initial victories may be more consequential than later victories. Therefore:

> *Hypothesis 1: The greater the natural logarithm of the number of cumulative victories accumulated by organizations in product certification contests, the greater is their reputation, and the lesser is their exit rate.*

Certification contests may generate asymmetrical effects on startup organizations and lateral entries. Lateral entries are pre-existing organizations established in another industry that have entered the industry in question. Startup organizations are *de novo* organizations. Both classes of organizations are confronted by the liabilities of newness (Stinchcombe, 1965). Internal liabilities of newness center around problems of developing internal routines and external liabilities of newness revolve around the establishment of reputation. Lateral entries and startup organizations face internal liabilities of newness: the former because they are entering a new arena and the latter because they have to commence operations. However, lateral entries are less likely than startup organizations to confront external liabilities of newness because they possess a track record, albeit in other fields. By contrast, startup organizations lack any track record or standing because they are *de novo* entities. Hence, victories in contests are likely to be more consequential for startup organizations than lateral entries. Put simply, victories in contests are likely to improve the reputation of startup organizations to a greater extent than those of lateral entries. Therefore:

> *Hypothesis 2: Cumulative victories decrease the exit rate of startup organizations more than those of lateral entries.*

CERTIFICATION CONTESTS IN THE US AUTOMOBILE INDUSTRY: 1895–1912

I elected to test these hypotheses in a single industry rather than multiple industries at multiple time points. This enabled me to control for industry effects and to define the institutional context in which contests legitimated organizations and fostered the reputations of firms. I chose the early American automobile industry as the research site because it was a new organizational form characterized by considerable ambiguity caused by the lack of standards. Many new firms were established in the industry and several firms from allied industries (such as boatmaking) entered the industry and were confronted with the task of establishing a reputation. Numerous contests were organized by automobile enthusiasts in the early years of the industry to evaluate cars and build the reputations of their producers.

Although the origins of the American automobile industry can be traced to Selden's two-stroke engine design developed in 1879, or to William Morrisons' electric car of 1892, or Ransom Olds' steam vehicle purportedly sold to a Indian firm in Bombay, the first firm to make automobiles was set up by the Duryea brothers in 1895 (Flink, 1970). The appearance of the motor car spurred considerable enthusiasm. Thomas Edison proclaimed in 1895 that the 'horseless carriage is the coming wonder . . . It is only a question of time when the carriages and trucks in every city will be run with motors.'

A new journal called *Horseless Age* came into being and opined in its first issue that the chief want was 'news. Not only those directly concerned in the perfection of the new vehicle, but the reading public as well, wish to be informed of the progress of this great mechanical movement; to know the forms or styles in which the new vehicle is to appear, and to examine the claims that are offered, no less than the facts that are accomplished' (Ingersoll, 1895).

As a novel technology, the automobile *per se* was unfamiliar to prospective consumers and putative inventors. Consumers were confused because the source of power, the number of cylinders, systems of steering and control, and the mode of stopping were topics of considerable controversy (Thomas, 1977: 19). The only point of agreement about the automobile was that it could not be powered by animals. Consumers were hesitant to purchase cars because they felt that were in no position to decide if the engineers could not agree on the best design (Epstein, 1928: 89–92). Moreover, consumers were still reeling from an earlier débâcle: the explosive growth and collapse of the bicycle industry (Rae, 1959).

Consumers also could not evaluate the products offered by producers. In turn, producers also suffered from a dearth of information about the strengths and weaknesses of rival designs. Hiram Maxim, a pioneer of the industry, wrote that he was 'blissfully ignorant that others were working with might and main . . . on road vehicles' (cited in Thomas, 1977: 17). Writers in automobile magazines and the local press complained about the proliferation of firms without track records and reputations (Flink, 1988). Many cars were unable to complete a drive successfully and had to be hauled back by a team of horses. Quite a few vehicles were designed with whip sockets and harness hitches (Epstein, 1928) and the misleading advertisements issued by some firms evoked complaints against the 'endless amount of nonsense being published in the public press' (*Scientific American*, August, 17, 1985).

Additionally, since the automobile threatened to displace the horse-drawn carriage, it evoked some opposition from horse breeders, livery stable owners, and horse-drawn vehicle driver associations (Flink, 1970: 64). These groups would frequently present petitions urging civil authorities to ban the automobile on public roads because it jeopardized safety and was a plaything of the rich.

The dearth of institutional standing for the automobile industry and individual firms was complicated by the fact that customers with the potential to influence the market such as the War Department, the Post Office, and municipal governments were late to adopt the automobile (1908–09) and even then their policies did not authorize any one technology or manufacturer (Flink, 1988: 120–125). Trade associations and professional bodies did not exist in the first 5–6 years of the industry. Although the National Association of Automobile Manufacturers was established in 1900, it failed to ensure product quality and was superseded by the Association of Licensed Automobile Manufacturers (ALAM) which was formed in 1903. The ALAM was a trade association formed to license the Selden patent and ostensibly set up to prevent 'incursion of piratical hordes who . . . desire to flood the market with trashy machines' (*Motor Age*, 1903: 3). But the Selden patent was widely disregarded and the ALAM was unable to secure quality by enforcing its threat of litigation due to internal divisions.

A rival association called the American Motor Car Manufacturer's Association (AMCMA) was established in 1905 and also proved to be an ineffective mechanism of collective action. Both trade associations disintegrated during 1909–11 as a result of legal battles and their secondary functions were assumed by the Society of Automotive Engineers (SAE) which was established in 1905. In turn, the SAE was a professional body of engineers which focused on common standards for automobile components made by suppliers but had little ability to police the technical quality of the cars made by automobile producers (Flink, 1970: 289).

It was in this context that contests were organized by numerous enthusiasts in the industry. The first contest was the *Times–Herald* race held on Thanksgiving Day in 1895. The publisher of the *Times*, H. H. Kohlsaat, wanted to organize the competition 'with the desire to promote, encourage and stimulate the invention, development and perfection and general adoption of motor vehicles' (quoted in Thomas, 1977: 21). Five of the 11 entrants participated and only two vehicles were able to complete the race. The first prize of $10 000 was won by a Duryea car powered by gasoline which had a winning speed of 8 miles an hour. The *Times–Herald* report the next day stated that the race had been run in 30-degree temperatures 'through deep snow and along ruts that would have tried horses to the utmost' and implied that automobiles were practical.

Soon *Cosmopolitan Magazine* offered a prize of $3000 and held a contest on May 30, 1896 which was won by a Duryea. Subsequently, the Rhode Island State Fair Association offered $5000 in prize money and organized a competition which was won by an electric car. The Riker electric car won the race but spectators found the contest to be so dull that they originated the cry 'get a horse' (Flink, 1970: 42). The stage was set for numerous enthusiasts to sponsor reliability contests (hill-climbing runs, endurance tours, and fuel economy contests) and speed races. Contests were organized in Trenton, Detroit, Omaha, Chicago, Empire City, Brighton Beach, Florida, and speedways such as Indianapolis and Atlanta. In 1901, the Automobile Association of America, New York City formulated a set of racing rules and assisted promoters.

Organizers placed few restrictions on participants in order to increase the number of entries.

There were strong incentives for firms to participate in these contests because they had a chance to test technical improvements and acquire publicity as innovators (Flink, 1988). Manufacturers sponsored cars directly in these contests although a few contests (especially the Glidden tour) stipulated that cars were to be driven by their owners: however, firms circumvented this because any executive of an auto firm could drive the recent models himself (Flink, 1970: 42). Some contests were one-shot exercises and others such as the Glidden reliability tour or the Vanderbilt Cup speed races were organized by different groups of organizers each year. All competitions awarded a prize to the first-place contestant whereas a few also dispensed additional prizes to second- and third-place contestants. Moreover, organizers of contests also sought to assure the viewing public of their integrity by allowing extensive press coverage and instituting grievance procedures (Thomas, 1977). Despite the fact that these contests were 'free' to the viewing public, there were sufficient incentives for organizers to schedule such events. Many of the organizers were enthusiastic activists committed to the development of the automobile: there was no incentive problem because the organizers could exclude others from the psychological benefits of contributing to a cause or the creation of automobile clubs (Rae, 1959; Flink, 1988).

As the public watched contests and learnt about them through the media, knowledge of the automobile *per se* diffused across different sections of American society. Newspapers such as the *Chicago Times–Herald* and newsmagazines such as *Cosmopolitan Magazine* sponsored contests. Specialized trade journals arose to disseminate information about the automobile and many of them dedicated resources to the coverage of contests such as the Glidden tour, the Vanderbilt races, Indy races, and more local contests. Another benefit of contests was that they spawned the creation of automobile clubs such as the Automobile Club of America and in turn these clubs organized more contests (Flink, 1988).

As a result, the automobile began to be considered to be more reliable than a horse. In 1899, *Harper's Weekly* reflected the common presumption that a 'good many folks to whom the horse is a wild beast feel much safer on a machine than behind a quadruped' (*Harper's Weekly*, November, 18 1899)—so much so that the automobile was no longer a novelty purchased by other engineers who desired to buy and experiment with the automobile or physicians prizing mobility but a necessity for the middle class. Frank Munsey noted that the 'uncertain period of the automobile is now past. It is no longer a theme for jokers and rarely do we hear the derisive expression "Get a horse"' (Munsey, 1906). Although the diffusion of the automobile into rural areas evoked hostility from farmers in some areas, the resentment did not snowball into a large movement of a call for restrictive legislation (Flink, 1970). Thus, even during the 1907 financial panic, *Harper's Weekly* predicted that 'there is no question that the [automobile] business is going to get steadily better. There is one reason for this . . . the automobile is essential to comfort and happiness' (Palms, 1907). Charles Duryea remarked in 1909 that the 'novelty of the automobile has largely worn off' (Duryea, 1909).

Apart from establishing the identity of the automobile industry, victories in contests enhanced the reputations of individual firms. The contests also provided consumers with data on the fuel economy, ruggedness, durability, speed, and dependability of the cars produced by participating firms. Winning firms reaped substantial publicity because of press coverage and proclaimed these victories in their advertising campaigns. After winning some hill-climbing contests, the Peerless Company advertised its car as 'a rapid and powerful hill climber.' Similarly, St Louis Motor Carriage Company, after faring well in some endurance contests, touted its cars as 'rigs that run.' The Stearns Organization modestly depicted its products as 'reliable gasoline motor cars,' Oldsmobile grandly proclaimed that the Olds 'runs everywhere,' and Cadillac coined the slogan that 'when you buy a Cadillac you buy a round trip' (Thomas, 1977: 47). Buick, after winning several contests, proclaimed 'Tests tell—could you ask for more convincing evidence?' Thus, the advertising campaigns planned by automobile producers were mechanisms to inform the public of their winning record (Epstein, 1928).

DATA, MEASUREMENT, AND METHODS

Data on hill climbing, fuel economy, endurance, and speed contests organized during 1895–1912

were collected from the *Horseless Age*. The window of observation began in 1895 when the first competition was organized. The sample included contests organized in the United States during the period 1895–1912 and consisted of 381 contests. Data on winners of first prizes were collected in regard to each contest. Some contests did not award second and third prizes and information on second and third prize winners was not available for many contests. Manufacturers such as Buick or the makers of Marmon cars publicized winning first prizes and rarely gloated about winning second or third prizes. The window of observation ended in 1912. By then, the automobile had become widely accepted and the four-cylinder gasoline-powered car had become the dominant design (Epstein, 1928).

Data on firms in the automobile industry during the period 1895–1912 were collected from the *Standard Catalogue of Cars* (Kimes, 1985; Kimes and Clark, 1989). An organization was defined as an entity producing cars for sale and was deemed to have been founded in the year in which it commenced operations. Lone inventors who made experimental cars were not included in the study. An exit was defined as bankruptcy, cessation of operations, or withdrawal by an organization. Mergers were not defined as exits.

The exit rate of organizations was defined as:

$$r(t) = \lim_{s \to 0} P(t,t+s)/s$$

where $P(t,t+s)$ is the probability of an organization experiencing an event in the interval from t to $t+s$ given that an organization was at risk at time t and s is the time interval (Allison, 1984). The exit rate was modeled using the following specification:

$$r(t) = \exp[\alpha X(\tau)], \tau_{(j-1)}$$

where $X(\tau)$ is a vector of covariate values at time τ, and α is a vector of coefficients. In this exponential model, the transition rates are postulated to be log-linear functions of the variables in X. The event history of an organization was split into yearly spells in order to allow for time-varying covariates and each spell was coded as right censored unless a firm exited. The models were estimated using the RATE program (Tuma, 1980).

A winner was defined as an organization whose product was awarded the first prize in an event. Organizations that won second and third places could not be treated as winners because some competitions did not award second and third prizes. The natural logarithm of cumulative victories plus unity was computed for each firm to allow valid observations for organizations with zero victories. This measure was lagged by a year.

Several organizational level and population level controls were used in the analysis of exits. A variable called STARTUP was created to account for *de novo* organizations and these firms were expected to exit at a higher rate than pre-existing organizations. Organizations making gasoline-powered cars (GASOLINE TECHNOLOGY) were expected to fare better than others. Organizational age was anticipated initially to increase mortality and subsequently reduce mortality. Hence, first-order and second-order measures of age were used as control variables. Table 1 shows the correlations among the variables used in the analyses of exits.

Size was expected to depress exits. However, production was not used as a measure of size because data on the total number of cars produced by each firm for every year of its existence were available for only the six largest producers. The number of employees was also not used as a measure of size because data on the number of workers by each firm for every year of its existence were unavailable. But data on the capital possessed by some firms at the time of their founding were available and these limited data were used to test if cumulative wins reduced exits net of the effects of log of capital.

Since population density was expected to exert a legitimation effect and a subsequent competition effect, first-order and second-order population density were used as controls (Hannan and Carrol, 1992). Contests were also expected to increase opportunities for certification, diffuse knowledge about the automobile industry, foster its standing, and thereby reduce the exits of organizations. Accordingly, the natural logarithm of the number of accumulated contests was computed as a control and lagged by a year. Prior exits were expected initially to open up resource spaces and diminish exits but beyond a point subsequent increases in exits were expected to impair the standing of the organizational form

Table 1. Correlations among variables used to study the effects of contests on the exits of organizations

Variable name	Variable number									
	1	2	3	4	5	6	7	8	9	10
1. Gasoline technology		−0.04*	0.02	0.23*	0.23*	0.18*	0.13*	0.25*	0.08*	0.25*
2. Startup			−0.04*	−0.05*	−0.04*	−0.04*	−0.05*	−0.06*	0.04	−0.05*
3. Age				0.15*	0.18*	0.13*	0.42*	0.21*	0.10*	0.19*
4. Population density					0.85*	0.77*	0.16*	0.90*	−0.00	0.92*
5. Income						0.64*	0.19*	0.88*	0.01	0.90*
6. Prior exits							0.13*	0.70*	0.02*	0.79*
7. Log of accumulated victories								0.21*	0.37*	0.19*
8. Log of automobile sales									0.01*	0.94*
9. Log of capital										0.01
10. Log of accumulated contests										

* $p < 0.05$
Note: Correlations of variables with capital only pertain to the sub-sample with size data.

and increase exits. Hence, first- and second-order measures of prior exits were also computed. The natural logarithm of annual automobile sales was also used as a control. Deflated per capita income was also used as a control variable because it was deemed to affect the demand for automobiles and the survival of firms. All of these variables were also lagged by a year.

RESULTS

Table 2 shows the results obtained by modeling the exit rate of organizations. Model 1 shows that the effects of organizational characteristics conform to expectations. Startup organizations exit at a significantly higher rate than lateral entries, firms making gasoline-powered cars exit at a significantly lower rate than others, and there is a significant ± relationship between age and exits. The effects of first- and second-order population density are in the right directions but insignificant. This pattern of effects, contrary to the predictions of density dependence theory, may be due to our short window of observation and the fact that density dependence models are sensitive to specification (Hannan and Carroll, 1992). First-order exits have a marginally significant negative effect but the second-order effect is insignificant. Income and automobile sales and both terms for prior exits exert insignificant effects. The effect of the logarithm of the number of accumulated contests is significant and negative, thereby implying that exits diminished as knowledge about the industry diffused and the organizational form became taken for granted.

Model 2 adds the effects of cumulative victories. As predicted, accumulated victories in contests significantly diminish exits, thereby implying that victories in these wins legitimated organizations. The effects of all other variables remain unaltered and there is a marked increase in the chi-square statistic. Model 3 adds an interaction term to test if startups benefit more from victories than lateral entries. However, the effects of the interaction term are insignificant, thereby implying that lateral entries may not possess an *ex ante* cushion of relevant reputation by virtue of a pre-existing track record, albeit in other industries. Model 4 drops the effects of the interaction term and reduces multicollinearity by eliminating second-order population density, first- and second-order prior exits, income, and sales. The effects of gasoline technology, startup, age, population density, and log of victories remain unchanged from previous models. However, the effect of the logarithm of contests becomes insignificant.

Model 5 uses the subsample with size data to test whether the effects of victories persist after controlling for size. A *t*-test was conducted to rule out the possibility that the subsample with size data consisted of shorter lived organizations

Table 2. Exit rate of automobile producers: Maximum likelihood estimates

Variable	Model 1	Model 2	Model 3	Model 4	Model 5 subsample	Model 6 subsample
Constant	−2.378***	−2.450***	−2.453***	−2.332***	−5.839***	−2.711***
	(0.6881)	(0.6879)	(0.6880)	(0.1705)	(2.524)	(0.6406)
Gasoline technology	−0.3209***	−0.2672***	−0.2671***	−0.2789***	−0.3687***	−0.3945***
	(0.0683)	(0.0688)	(0.0688)	(0.0687)	(0.1953)	(0.1943)
Startup	0.2122***	0.1831***	0.1875***	0.1870***	−0.1431	−0.1600
	(0.0891)	(0.0891)	(0.0907)	(0.0890)	(0.3182)	(0.3157)
Age	0.0946***	0.1205***	0.1208***	0.1255***	0.5837***	0.5977***
	(0.0386)	(0.0360)	(0.0360)	(0.0366)	(0.1618)	(0.1598)
Age^2/100	−1.068***	−0.9335***	−0.9364***	−0.9885***	−5.911***	−6.127***
	(0.3366)	(0.3025)	(0.3031)	(0.3100)	(1.765)	(1.757)
Log of capital					−0.0072	−0.0102
					(0.0057)	(0.0507)
Population density	−0.0007	−0.0009	−0.0009	0.0046***	0.0451	0.0028
	(0.0075)	(0.0075)	(0.0075)	(0.0001)	(0.0348)	(0.0042)
Population density^2/100	0.0003	0.0003	0.0003		−0.0098	
	(0.0013)	(0.0013)	(0.0013)		(0.0067)	
Prior exits	0.0382*	0.0388*	0.0388*		−0.0324	
	(0.0257)	(0.0257)	(0.0257)		(0.0773)	
Prior exits^2/100	−0.0241	−0.0254	−0.0254		0.0264	
	(0.0195)	(0.0195)	(0.0195)		(0.0583)	
Income	0.00001	0.00001	0.00001		−0.00006	
	(0.0008)	(0.0008)	(0.0008)		(0.0025)	
Log of automobile sales	0.1272	0.1446	0.1444		0.2701	
	(0.1133)	(0.1133)	(0.1134)		(0.2993)	
Log of contests	−0.2451**	−0.2386	−0.2383**	−0.0778	−0.2848	−0.0353
	(0.1322)	(0.1322)	(0.1322)	(0.0559)	(0.3603)	(0.1609)
Log of victories		−0.8810***	−0.8168***	−0.8824***	−1.121***	−1.104***
		(0.1427)	(0.2668)	(0.1426)	(0.4835)	(0.4988)
Startup × log of victories			−0.0867			
			(0.3190)			
Events	917	917	917	917	120	120
Spells	4124	4124	4124	4124	554	554
χ^2	85.09	152.55	152.63	138.54	43.64	38.45

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Standard errors of estimates are in parentheses. (One-tailed tests for log of victories and density.)

than the subsample without size data. The *t*-test showed that the mean age of the subsample with size data (3.29, S.D. = 2.75) was not significantly different from the mean age of the subsample without size data (3.33, S.D. = 2.77).

Model 5 is a replica of Model 2 except for the addition of log of Capital as a control variable. Interestingly, the dummy for startup organizations is insignificant but the effects of age and gasoline technology are identical to those observed in Model 1. Income, automobile sales, first-order exits, and second-order exits continue to be insignificant. There is an insignificant relationship between population density and exits. This pattern of density dependence may be due to the fact that density dependence results, especially for mortality, are sensitive to specification (Hannan and Carroll, 1992). The effects of size are negative but insignificant. The effect of accumulated contests is insignificant; however, the effect of accumulated victories is to significantly dampen exits. Model 6 deletes second-order population density, first- and second-order prior exits, income, and sales to reduce collinearity. The effects of victories, capital, gasoline technology, startup status, and age are identical to those observed in the previous model.

Although the results shown in Table 2 indicate that victories significantly diminished exits, the results should be interpreted with caution because

data constraints prevented a test of whether victories diminished exits when size was included as a time-varying variable for all cases in the complete sample. The lack of data on size as a time-varying variable is problematic in event history analyses of exits in the early histories of populations.[4] In a comprehensive study, Banaszak-Holl (1991) analyzed Manhattan banks over a 200-year time period and used size (assets) as a time-varying variable for all firms and found that size significantly reduced bankruptcies but rendered the effects of organizational age insignificant. If size and age are as significantly correlated as Banaszak-Holl (1991) suggests, then the results obtained from our modeling exercise can be viewed with some confidence because they were net of the effects of organizational age. Nevertheless, the evidence that victories in contests significantly dampen exits but do not benefit startups more than lateral entries needs to be interpreted with care.

DISCUSSION

These results extend the reach of the resource-based perspective. As noted at the outset, although the proposition that intangible assets such as reputation underlie performance differences is a core element of the resource-based perspective, there is little empirical evidence on the issue. The results obtained in this study show that the reputation of individual organizations influenced their survival even after controlling for the reputation of the organizational form. The reputation of the organizational form is a 'free resource' that may be exploited in all instances of the form, and therefore assists all organizations. By contrast, the reputation of individual organizations is a private good that is difficult to accumulate, imitate, substitute, or transfer. In contrast to density dependence researchers who argue that density legitimates individual organizations by establishing a track record for the organizational form, this study relied on a proximal measure of the reputation of the organizational form—the number of accumulated contests. There is also some suggestive evidence in the first three models that the reputation of the organizational form is an intangible resource that improves the survival of organizations but its effects do not endure in the other models. More importantly, the findings show that even after controlling for the effect of the number of contests, the number of victories significantly reduced exits, and thereby demonstrate that the reputation of individual firms is a crucial intangible asset.

Moreover, the results obtained in this study also extend longitudinal research in the resource-based perspective. Zajac and Kraatz (1993) observe that the resource-based perspective has tended to focus on cross-sectional variations in the resource endowments of firms. They point out that longitudinal research on resource possession and acquisition is needed if the resource-based perspective is to transcend the basic point that firms that possess resources are more fortunate than those who do not. This study used event history methods and a continuous time-varying measure of reputation (the natural logarithm of accumulated victories) and showed that initial increases in reputation are more consequential than later additions to reputation.

The findings obtained in this study also expand organizational research on legitimation and how it underlies the construction of reputations and social identities. Sociological analysts of organizations have analyzed governmental bodies, trade associations, and professional societies as mechanisms of legitimation (see DiMaggio, 1991; Scott, 1987) but overlooked how ratings agencies legitimate organizations and make them trustworthy (Zucker, 1986; Shapiro, 1987). The findings obtained in this study show that product certification contests organized by independent intermediaries are social tests that invest organizations with credibility. Victories in product certification contests are credentials that ascribe cognitive validity, objectify presumptions of competence, reduce justification costs, and thereby increase access to resources and extend the life chances of organizations. The results also suggest that certification contests do not generate asymmetric consequences for startup organizations and lateral entries. Although startup organizations tended to exit at a higher rate than lateral entries, the interaction term for victories

[4] For example, size at the time of founding was used as a time constant in analyses of the death rate of labor unions during 1860–1985. Similarly, size in 1878/79 was also used as a time constant variable in analyses of the death rates of brewing firms (see Hannan and Carroll, 1992: 129–131).

× startup status was not significant. Thus, there was no support for the prediction that victories are likely to dampen the exits of startup organizations more than lateral entries. This finding indicates that certification contests do not disproportionately benefit startup organizations at the expense of lateral entries who have a pre-existing organizational identity.

The limitations of this study suggest some directions for future research. As noted earlier, the results obtained from this study need to be interpreted with caution because of the lack of size data on all firms. Moreover, this study focused on a precondition of performance—the exit rate—rather than financial performance *per se*. Although the exit rate is an unambiguous precondition of performance (Hannan and Freeman, 1989), future research needs to test whether legitimacy enhances the profitability of organizations. Furthermore, this study presumed that reputation of individual organizations increases survival at a decreasing rate and therefore used the natural logarithm of accumulated victories as the independent variable. But the relationship between reputation and survival and/or financial performance may conform to a Gompertz or a logistic model: additional research is necessary to analyze these competing formulations. This study also treated all contests as exerting equal effects on the reputation of organizations and overlooked prestige variations among contests. Proxies of prestige could not be computed because detailed data on the number of entrants or the extent of press coverage were not available for all contests. Future research needs to more explicitly account for variations in the prestige of competitions for a better understanding of the production of legitimacy.

Another limitation of this study is that it examined the automobile industry in its early history during 1895–1912. Although the early automobile industry parallels more recent embryonic industries such as the early personal computer industry, especially in the number of firms, product rankings and the degree of technological change, some notable differences exist. For one, certification contests in the early automobile industry occurred in a period when trade associations, governmental organizations, and professional societies were weak (Flink, 1970; Thomas, 1977). Future research needs to explore how certification contests influence the fortunes of organizations in industries characterized by influential trade associations, professional societies, and governmental organizations. For instance, researchers might wish to study the effects of 'severity ratings' on the performance of hospitals and media rankings on the performance of professional schools. Another limitation of this study is that it focused on certification contests that were specific to one industry. But certification contests may span diverse organizational populations: an obvious example is the Baldrige Quality Award. Research on the effects of competitions spanning multiple industries is also essential to generalize the results obtained in this study.

Despite these limitations, the evidence that winning contests enhanced survival sheds light on the acquisition of capabilities by organizations. Resource-based researchers define capabilities as consisting of master routines that coordinate the use of resources and suggest that they are encoded in the formal and informal structure of organizations (Teece *et al.*, 1992). However, the resource-based literature is reticent about the processes by which organizations acquire capabilities (Zajac, 1992). Some researchers ascribe capabilities to luck (Barney, 1986) whereas other analysts trace capabilities to experiential learning by organizations (Nelson and Winter, 1982; Singh and Chang, 1993), and the more managerially inclined emphasize the role played by sagacious leaders of organizations (Prahlad and Hamel, 1990). By contrast, this study directs attention to legitimation as a mechanism that straddles the swollen middle between the extremes of luck and foresight. It suggests that capabilities become *social facts* when organizations receive endorsement from credentialing mechanisms (such as certification contests) that embody institutionalized rules. Credentials symbolize the capabilities of organizations, situate them in social fields, and establish their institutional standing.

Research on how capabilities rest on processes of legitimation not only can broaden the resource-based view of the firm but also reconnect it with its sociological roots. To date, the resource-based perspective has been shaped by a dialog between economists and strategy researchers (Rumelt, 1984; Nelson, 1991; Conner, 1991) and has consequently emphasized *technical* issues such as efficiency, types of rents, and isolating

mechanisms, and traced capabilities to luck and organizational learning. However, the resource-based perspective also has *institutional* foundations to the extent that notions of distinctive competence are ascribed to Selznick (1957) but there has been little contact between resource-based researchers and neo-institutionalists (Meyer and Rowan, 1977; DiMaggio, 1983; Scott, 1987) who have extended Selznick's research agenda. As a result, the resource-based perspective has overlooked the *institutional* process of legitimation.

Although it is appealing to think of technical and institutional pressures as contradictory influences, recent work suggests that they exert cospecialized effects on organizations (Powell, 1989, 1991). For instance, evolutionary analyses of technological change insist that technical criteria themselves are the outcomes of institutional considerations (see Anderson and Tushman, 1990 for a summary). Similarly, students of the resource-based perspective can also illuminate how institutional dynamics underlie the creation of technical criteria and thereby drive the formation and extinction of capabilities.

But a commonplace conception is that resource-based perspective and institutional theory tug in incompatible intellectual directions. In this view, strategic management theory in general and the resouce-based perspective in particular emphasize rational design by leaders and a 'bottom up' approach to organizational structure, whereas institutionalists accentuate preconscious acceptance of established cultural models and a 'top down' approach to organizational structure. However, the tension between strategic management theory and institutional theory is not the outcome of incommensurable paradigms but reflects the juxtaposition of agency and structure.

Considerable progress has been made in bringing strategic management theory and institutional theory closer together. Strategic management research also has begun to shed light on how cultural models and cognitive maps of managers drive the choices of firms and the boundaries of industries (Porac and Thomas, 1992). Moreover, institutionalists also acknowledge that actors may have rational interests but suggest that these interests are defined by institutional frameworks (Friedland and Alford, 1991). When juxtaposed together, strategic management theory and institutional theory reframe our conceptions of culture and organization builders. Culture becomes a tool kit or a menu from which actors choose options rather than a unified whole which pushes actors in prespecified directions and entrepreneurs become skilled users of cultural tool kits rather than cultural dopes (Swidler, 1986).

A dialogue between strategic management researchers and institutional analysts would be of mutual benefit to both. A common complaint leveled against neoinstitutional theory is that it has emphasized the diffusion of social practices at the expense of studying the creation of institutional arrangements (DiMaggio, 1991). Although institutionalists assert that institutional entrepreneurs play a crucial role in developing a new institutional arrangement, there has been little research on how institutional entrepreneurs define, legitimate, combat or coopt rivals, and succeed in their institutional projects (Scott, 1994). Since institutional entrepreneurship lies at the heart of leadership in administration (Selznick, 1957), students of strategic management can shed light on how entrepreneurs skillfully use culture to legitimate their organizational innovations.

Similarly, institutional analysis can elaborate the resource-based perspective by showing how the creation of capabilities, in some circumstances, relies on legitimation processes. One lament expressed about the resource-based perspective is that it has treated the creation of capabilities as an intra-organizational process and neglected to specify relevant interorganizational ramifications. Institutional analysis can demonstrate how skillful cultural operatives or influential third parties validate and justify the development of new capabilities. It can also show how the creation of capabilities also entails the social construction of interorganizational career tracks and identifies the circumstances under which capabilities diffuse across social fields.

Together then, institutional analysts and strategic management researchers can enrich organizationally based models of competitive advantage. A starting point is to extend the general argument put forth by Leblebici *et al.* (1991) and show how the successful institutionalization of capabilities contains the seeds for creation of new capabilities. As new institutional entrepreneurs legitimate their innovations and succeed in gaining competitive advantage, their success may induce more

centrally located dominant incumbents vying for resources to adopt these successful practices and thereby restructure the pattern of transactions among players in the industry. The process restarts when new institutional entrepreneurs arrive at the periphery and strive to outcompete incumbents. Thus, the cycle of institutional entrepreneurship, adoption, and transformation is the mechanism by which capabilities transform interorganizational relationships in industry systems.

ACKNOWLEDGEMENTS

This paper has benefited from the insightful suggestions made by Howard Aldrich, Bill Barnett, John Boli, Bob Drazin, Marshall Meyer, Jitendra Singh, David Teece, Gordon Walker, and Lynne Zucker. The special issue editors, Jay Barney and Ed Zajac, provided helpful comments. This research was partially supported by a grant from the University Research Committee, Emory University.

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