

6

Entrepreneurs as Organizational Products Revisited

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Macro studies of entrepreneurship emphasize how environmental conditions—social, economic, and political—facilitate the creation of new organizations. Examples include how periods of political turbulence create favorable conditions for the emergence of new organizations (e.g., Delacroix & Carroll, 1983), how market concentration driven by the movement of generalist organizations favors the emergence of specialist organizations (e.g., Carroll, Dobrev, & Swaminathan, 2002), and how dissolutions of organizations influence the emergence of new ones (e.g., Delacroix & Carroll, 1983). Because individuals rather than local conditions actually create organizations, this perspective is often criticized for lacking a theory of agency (e.g., Shane, Locke, & Collins, 2003; Thornton, 1999). However, in recent years, a strand of macro research has emerged that promises to address, at least in part, this problem and offers stronger links to micro research on entrepreneurship. This body of work focuses on organizations as key components of the environment and proposes that organizations are social contexts within which individuals acquire many of the critical psychological and social resources necessary to create new organizations (e.g. Aldrich & Wiedenmayer, 1993; Freeman, 1986; Romanelli, 1989; Sorenson & Audia, 2000). To use Freeman's (1986) felicitous expression, the key idea underlying this line of work is that *entrepreneurs often are organizational products*.

The origins of this idea can be traced in the organizational literature to Stinchcombe's (1965) seminal piece on social structure and organizations,

Cooper's (1973, 1985) work on high-technology firms, and Brittain and Freeman's (1980, 1986) research on organizational life cycles, and in economics the origins can be traced to Jacobs's (1969) study of the economy of cities and Beesley's (1955) analysis of entrepreneurs in England's West Midlands region. Nonetheless, it is only recently that a body of theoretical and empirical work has begun to accumulate (e.g., Dobrev & Barnett, 2005; Gompers, Lerner, & Scharfstein, 2005; Shane & Kurana, 2003; Sorenson & Audia, 2000). This chapter reviews the progress made in this line of inquiry. We begin by delineating the micro processes linking organizational contexts to individuals' motivations and abilities to create new organizations. We then review empirical evidence supporting the view of entrepreneurs as organizational products. We conclude by identifying gaps between the theory and the empirical evidence and by highlighting directions for future research.

THEORY

The notion of entrepreneurs as organizational products is that, in comparisons between otherwise similar people, those employed by existing organizations are more likely to become entrepreneurs. Organizational contexts increase the probability that individuals may start a new organization in three related ways. First, organizations create opportunities for individuals to build confidence in their ability to create new organizations (Sorenson & Audia, 2000). Second, organizational contexts provide varying access to broad industry knowledge and fine-grained information about entrepreneurial opportunities, neither of which is readily available to outsiders (Freeman, 1986; Romanelli, 1989). Third, organizations help individuals form social networks that facilitate resource mobilization (Freeman, 1986; Aldrich & Zimmer, 1986).

Confidence

Confidence in "judgment and disposition" is essential to performing the entrepreneurial function (Knight, 1964, p. 268). Creating a new organization is a time-consuming, complex process that discourages many individuals from trying and also causes many motivated individuals who do try to give up after they start. New organizations usually start small, and small companies suffer from liabilities of smallness (Freeman, Carroll, & Hannan, 1983) and high rates of abandonment (Aldrich & Auster, 1986). The difficulties inherent in creating a new organization render confidence, one's belief in the ability to perform a task (Bandura, 1986), a critical differentiating factor between persons who start a business and those who do not. The reason is that confidence provides individuals with the psycholog-

ical strength necessary not only to initiate activities preceding organizational creation but also to persist in the face of obstacles and uncertainty. Empirical evidence that confidence is a critical factor in organizational creation comes from several studies. Cooper, Woo, and Dunkelberg (1988) found that 95% of entrepreneurs surveyed perceived their own business's chances of success to be better than or equal to the chances of any similar business. In a laboratory study, Camerer and Lovo (1999) found evidence of excess market entry—entry into crowded markets that offered slim success chances—ostensibly instigated by individuals who held biased (e.g., overconfident) assessments of their competitive abilities. Additionally, Markman, Balkin, and Baron (2001) found confidence to be a strong predictor of whether or not patent holders chose to start a new venture or to license their invention.

How do individuals develop confidence in their ability to create new organizations? Bandura's (1986, 1994) social cognitive theory suggests that the social context plays a critical role in fostering or hindering the development of confidence and implies that organizations may increase individuals' confidence through mastery and vicarious experiences (Sorenson & Audia, 2000). Individuals accumulate *mastery experiences* through success on tasks important to organizational functioning, thereby building coping skills and forming a belief in their abilities to exercise control in the face of potential threats (Bandura, 1994). As individuals achieve success on organizational tasks, especially tasks similar to those performed in the role of entrepreneur, confidence rises. For example, drawing upon past success at Apple, Steve Jobs founded NeXT in 1988 with confidence that the NeXT computer would "change the world of computing" (Barker, 2000). When questioned on the delayed launch date of his product, Jobs is said to have responded, "Late? This computer is five years ahead of its time" (Barker, 2000). Such self-confidence in the face of obstacles like a delayed product launch may be attributed, at least partially, to Jobs's mastery experiences at Apple and Atari.

Vicarious experiences, on the other hand, occur as individuals observe social models that they perceive as similar (i.e., their organizational peers) succeeding through sustained effort (Bandura, 1986). Successful individuals serve as proficient models and transmit knowledge, vicariously, to other employees. Exposure to successful entrepreneurs of similar social and occupational backgrounds may stimulate individuals to entertain notions of also becoming entrepreneurs. For example, Saxenian (1994, p. 19) quotes a founder of a minicomputer firm: "Those guys [entrepreneurs] were just like you and me. There was nothing unique or special about them. I figured if they can do it, why can't I?" In short, the role of organizations in enhancing employees' confidence is critical in preparing individuals for entrepreneurship. These opportunities to build confidence are less available to those not employed by organizations.

Information About Entrepreneurial Opportunities

The motivation to create a new organization is strengthened not only by an individual's confidence in his or her abilities to succeed but also by access to information about entrepreneurial opportunities (Burt, 1992; Kirzner, 1973; Shane, 2000; Stinchcombe, 1965; Venkataraman, 1997). In micro terms, Vroom's (1964) expectancy theory suggests that specific and timely information about entrepreneurial opportunities might increase an individual's expectation that entrepreneurial effort will lead to entrepreneurial rewards, thereby increasing entrepreneurial motivation. Much of this information originates within existing organizations and is not easily available to outsiders (Freeman, 1986; Romanelli, 1989). Consequently, individuals employed by organizations in a particular industry will have greater access to this information than individuals located elsewhere in the social structure. For example, as vice-president of engineering at Grid Systems, Jeff Hawkins met frequently with Grid's customers—vending machine route salespeople—who used Grid's devices to record sales data on-site. These customers expressed an interest in similar devices for personal use (Brush, Greene, & Hart, 2001). Shortly thereafter, Hawkins founded Palm Computing to commercialize just such a device. As Romanelli (1989) notes and as this example illustrates, organizational contexts filter information on markets, technologies, and resources to employees.

Individuals employed by existing organizations enjoy an additional advantage. Recognizing an opportunity requires knowledge of the business, and such knowledge is often acquired through work experience (Venkataraman, 1997) and the repetitive activities of employment. For example, customers may express their frustration regarding the functionality of existing products (e.g., Von Hippel, 1986), but only individuals who have in-depth knowledge of the business may view this information as indicative of an entrepreneurial opportunity. Shane (2000), in a field study of eight business opportunities conceived to exploit a patented MIT invention, found that knowledge of specific businesses gleaned from prior employment and education conditioned individuals' abilities to envision uses for the invention. This is because individuals obtain *blueprints* (Hannan & Freeman, 1977) or *mental models* (Burton, 2001; Schoonhoven & Romanelli, 2001) from their employing organizations related to appropriate and, often, inappropriate ways of organizing and conducting business. Individual career trajectories, then, constrain the activities and processes that compose individuals' body of knowledge (Shane & Khurana, 2003; Sorenson & Audia, 2000). Possession of this knowledge increases individuals' abilities to recognize entrepreneurial opportunities and, as a result, increases the probability that those individuals will create a new organization.

Empirical studies support the contention that knowledge of opportunity is often obtained via employers. A study of 201 firms with at least eight employees found that 58% of the ventures' founders listed the source of their business idea as a "prior job" (Cooper, Woo, & Dunkelberg, 1989). Similarly, a survey of 100 founders of the 1989 *Inc.* 500 fastest growing companies found that 71% of the founders sampled "replicated or modified an idea encountered through previous employment" (Bhide, 1994, 2000). In addition, Klepper and Sleeper's (2000) study of 465 producers in the U.S. commercial laser industry indicates that entrepreneurs in that industry tended to draw on highly specific information from parent organizations. In summary, information about entrepreneurial opportunities strengthens the motivation to create a new organization, and this information is more easily available and more easily recognized by individuals employed by existing organizations.

Social Ties to Resource Providers

Information on entrepreneurial opportunity is typically accessed via social ties formed through employment and is most useful when knowledge of the opportunity is specific and timely (Burt, 1992; Granovetter, 1974). By providing access to information, cohesive social ties are instrumental in providing the psychological resources (i.e., motivation) necessary for new venture creation. However, the creation of a new organization is not conditioned solely by confidence and information about entrepreneurial opportunity; entrepreneurs must also bring their idea to market (Schumpeter, 1934). To that end, entrepreneurs rely on social relationships not only for gaining access to information on entrepreneurial opportunities, but also for mobilizing resources to build new organizations (Aldrich & Zimmer, 1986; Burt 1992; Freeman, 1986). Especially critical are social ties to people who are well connected within the particular industry into which the potential entrepreneur intends to enter. These ties provide access to information that increases the probability of knowing how to pitch the venture in a way that is appealing to potential customers, suppliers, and other resource providers, as well as the probability of identifying the most appealing individuals to pitch. Such ties also provide a basis for referrals to customers, suppliers, and potential employees, who are more likely to back the new organization if the reliability of the potential entrepreneur can be substantiated by trusted informants. Finally, network ties, based on the trust that arises from long-term relationships, can buffer the potential entrepreneur from opportunistic behavior and make it possible for him or her to count on the support of resource providers in challenging situations.

Established organizations provide a social context that allows would-be entrepreneurs to develop the social ties critical to the creation of a new ven-

ture because of the relationship between physical proximity, interaction, and friendship (e.g., Festinger, Schachter, & Back, 1950). Regular interactions with colleagues, customers, and suppliers enable would-be entrepreneurs to develop social relationships in the course of everyday employment. Resource providers are generally reluctant to back strangers. However, the intertwined social and economic aspects of the relationships established during prior employment motivate parties to act fairly, to trust one another, and to respect a general sense of obligation in the exchange (Granovetter, 1985; Gulati, 1995). Other social ties link the potential entrepreneur to key resource providers through third parties who have strong ties to both. These so-called weak ties (Granovetter, 1973) help potential entrepreneurs overcome resource provider reluctance by facilitating the flow of reputational information that mitigates the uncertainty inherent in the new venture.

The empirical evidence supports the importance of social ties in the entrepreneurial process. Ruef, Aldrich, and Carter (2003) analyzed multi-industry data from the Panel Study of Entrepreneurial Dynamics (PSED) and found that trust and familiarity are more critical to founding team composition than are complementary skill sets. The importance of trust, familiarity, and cohesion of founding teams was also noted in a study of semiconductor companies that found that prior joint work experience of top management teams contributes to higher growth in new ventures (Eisenhardt & Schoonhoven, 1990). The empirical evidence shows that, in addition to leveraging networks to attract employees, nascent entrepreneurs rely on network ties to attract financing. For example, venture capitalists rely on information from network contacts in deciding which startup companies to fund and in monitoring pursued investments (Florida & Kenney, 1988; Freeman, 1999). In a sample of 202 seed-stage investors, Shane and Cable (2002) found that both direct and indirect ties between entrepreneurs and investors positively influenced investors' decisions about which ventures to finance. Finding that entrepreneurs' reputations mediate the effects of both types of ties, the authors concluded that network ties function primarily as a mechanism for information transfer. In addition, Sorenson and Stuart's (2001) findings of geographic concentration in venture capital (VC) investing also support the importance of social ties in sourcing and monitoring investments. Organizational contexts, then, provide opportunities for employees to form social ties to the critical resource providers, who enable nascent entrepreneurs to pursue entrepreneurial opportunities.

EMPIRICAL EVIDENCE

Three distinct bodies of work support the notion of entrepreneurs as organizational products: (1) *career history studies* that focus on individuals' expe-

riences prior to entrepreneurship; (2) *spatial distribution studies* that focus on the location of entrepreneurial activity; and (3) *differential fertility studies* that explore whether certain organizations are more conducive to generating new entrepreneurs than others. Next, we review representative studies within each stream of research.

Career History Studies

Career history studies share a focus on the educational and professional experiences of entrepreneurs prior to formation of a new organization. The key finding is that a large proportion of founders of new organizations come from the ranks of preexisting organizations operating in similar businesses. Cooper found that 70% of 890 founders from a cross section of industries started businesses closely related to their prior employment and that 85% of 250 technical entrepreneurs did the same (Cooper, 1970; Cooper & Dunkelberg, 1981). In a subsequent study of 161 new firms, Cooper (1985) found that in most technical industries entrepreneurs started businesses related to their previous employment. For example, 78% of 46 founders of electronics and computer ventures had previous employment in electronics and computer industries.

Other studies examine how organizations promote regional development by expanding the pool of potential entrepreneurs. For example, in a longitudinal study of 73 business and research organizations, Mitton (1990) analyzed the patterns of proliferation and growth in the San Diego area biotech industry. This study found that the founders of 13 spin-off companies were previously employed by Hybritech, while a sizeable number of other companies were created by individuals linked to local research institutions (e.g., Scripps and UCSD) and other local biotech firms. Neck et al. (2004), using surveys and semistructured interviews in a study of the Boulder County, Colorado, region, traced the roots of local high-tech spin-off organizations to seven primary incubator organizations.

Additional career history studies examine the role of prior experience in conditioning an individual's ability to recognize and exploit entrepreneurial opportunities. For example, in a study of all 1,397 U.S. patents assigned to MIT from 1980 to 1996, Shane and Khurana (2003) estimated the effects of inventors' career experiences on the likelihood that an invention would lead to commercialization via the founding of a new organization. For 363 founding events, the authors found that valuable information acquired over the course of one's career influenced the motivations of individuals to found new organizations as well as the motivations of resource providers to support the new organizations. The impact of career histories was found to be substantial even when controlling for factors related to the industry and the technology.

Other career history studies observe the effects of management teams' joint work experience. For example, a study by Eisenhardt and Schoonhoven (1990) examined 102 new entrants in the semiconductor industry between 1978 and 1985 and found that management teams with prior joint work experience achieved greater sales growth. The authors attributed their findings to the notion that these strong teams "appeared to move more quickly, get more done, and make fewer mistakes than other teams" (Eisenhardt & Schoonhoven, 1990, p. 525). Additionally, Higgins and Gulati (2003) analyzed the career histories of over 3,000 top management teams from 1961 to 1994 and found that the executives' prior employment relationships were crucial in gaining the endorsement of the investment banks that underwrite initial public offerings (IPOs). In a separate study, Higgins (2005) found that in 23% of the biotech firms that went public in the period 1979–1996, at least one member of the IPO team had previous employment at Baxter, a prominent biotech firm. In the biotech industry, Baxter gained a prominent reputation for producing entrepreneurs (Higgins, 2005), as former Baxter employees were management team members of 29 venture-backed startups from 1986 to 1999 (Gompers, Lerner, & Scharfstein, 2005). Higgins refers to *career imprinting* as the process by which certain organizations such as Baxter can cultivate employees' capabilities, connections, and confidence to pursue emerging industry opportunities.

Other research in this vein examines the development of industries and market niches. For example, Rindova and Fombrun (2001, pp. 244–245) examined the emergence of the specialty coffee industry and described how the founders of Starbucks Coffee Company, Coffee Connection, and other key firms learned from Alfred Peet (founder of Peet's Coffee and Tea Company) how to select, define, roast, and distinguish specialty coffees from mainstream coffee. Additionally, several studies of the hard-disk-drive industry (e.g., Agarwal et al., 2004; Christensen & Bower, 1996; Franco & Filson, 2000) document the high degree of intraindustry mobility of employees from existing to new firms. This pattern of entry by firms started by ex-employees of preexisting firms was accompanied by repeated introductions of disruptive innovations (Christensen, 1993; Christensen & Bower, 1996) that created new market niches such as the specialty coffee niche documented by Rindova and Fombrun (2001). Career history studies like these, and those discussed earlier, highlight the role that existing organizations play in exposing individuals, via professional experiences, to the confidence-building tasks, information on entrepreneurial opportunities, and social contacts that often lead to the production of entrepreneurs. In the process, industries are shaped and transformed. The available evidence, though, is not limited to studies tracing the work histories of founders. Macro-level studies also provide strong evidence for the role of existing organizations in ongoing entrepreneurial activity.

Spatial Distribution Studies

Spatial distribution studies demonstrate geographical areas that have a greater number of organizations of a certain kind tend to generate a greater number of new firms of that same kind. Researchers explain this spatial relationship by noting that existing organizations expand the pool of potential entrepreneurs available in a locale by employing individuals in organizational roles conducive to acquiring information about entrepreneurial opportunities and to developing the social contacts necessary for resource mobilization. Because entrepreneurs rely on supportive social structures in creating new organizations (Stinchcombe, 1965) and because those individuals tend to develop social networks that are geographically localized (Festinger, Schacter, & Back, 1950), they are more likely to start new organizations in close proximity to their homes and their current organizations of employment (e.g., Cooper & Dunkelberg, 1987; Johnson & Cathcart, 1979; Katona & Morgan, 1952; Mueller & Morgan, 1962). For example, a study of Portuguese manufacturing plants found a significant *home bias*—the tendency to locate new organizations in the founders' region of residence—such that Portuguese entrepreneurs were willing to accept labor costs three times higher than in alternative locations to locate the new businesses in their current geographic areas (Figueiredo, Guimaraes, & Woodward, 2002). This geographical inertia is typically attributed to the presumably high costs, both social and financial, faced by entrepreneurs who relocate in pursuit of entrepreneurial opportunity; such entrepreneurs must simultaneously form new social ties and a new organization. For many organizational researchers, then, the constraints that space poses on individuals' positions within the social structure coupled with the role of existing organizations in preparing individuals for entrepreneurship justify an empirical focus on the role that the spatial distribution of organizations plays in promoting entrepreneurial activity.

Sorenson and Audia (2000) examined the constraints that the existing spatial distribution of production poses on entrepreneurial activity in the U.S. footwear industry from 1940 to 1989. Their analyses of the founding rate of shoe manufacturers by state showed that greater local density (number of plants in the state) substantially increased the rate of founding events. Sorenson and Audia argued that the current geographic distribution of production places important constraints on entrepreneurial activity because nascent entrepreneurs need existing organizations to build confidence, acquire knowledge of the business, and establish social ties. Stuart and Sorenson (2003a) replicated this finding in another industry (biotech) and at a finer geographic unit of analysis (ZIP code). The authors analyzed 644 biotech firm founding events over the period 1978–1995 to investigate potential explanations for spatial heterogeneity in firm founding rates.

Their analyses demonstrate that new biotech firms were more likely to be founded when proximity to other biotech firms, venture capital firms, and research universities was greater.

Cattani, Pennings, and Wenzel (2003) found additional evidence that the local density of organizations increases the emergence of new organizations of the same kind in a study of Dutch accounting firms from 1880 to 1986. They argued that founding rates were spatially constrained by existing subpopulations because new organizations relied on existing organizations (and the knowledge and social ties those organizations offer individuals) for *cognitive legitimacy* (Aldrich & Fiol, 1994), which is the social recognition of the new organizations' existence. However, they also found that interregional movement of individuals provided an important vehicle for the diffusion of organizational forms from one region to another. Collectively, these spatial distribution studies suggest that the creation of new organizations is constrained by the geographic distribution of existing organizations. Given such findings, many researchers find it natural to concentrate their empirical focus on existing organizations as influential in the production of entrepreneurs.

Differential Fertility Studies

Differential fertility studies focus on organizational characteristics to explain employees' motivation to pursue entrepreneurial opportunities. Organizational contexts are treated as fundamentally different in terms of their propensity to produce entrepreneurs. Two findings emerging from this body of work provide indirect evidence regarding the micro-level processes that govern new venture creation. First, technological innovation appears to make organizations more fertile grounds for entrepreneurs. This is consistent with the view that organizations operating at the technological frontier are more likely to provide their employees with greater access to valuable entrepreneurial opportunities. In a study of the semiconductor industry from 1955 to 1981, Brittain and Freeman (1986) found that firms that were the first entrant in a primary product group were more likely to generate spin-offs. Franco and Filson's (2000) study of 192 firms in the rigid-disk-drive industry from 1977 to 1997 found that firms with greater technical know-how (i.e., superior technology) and early-mover know-how (i.e., first to introduce a new product) provided richer training grounds for entrepreneurs. Similarly, Gompers, Lerner, and Scharfstein (2005), in a study of publicly traded firms between 1987 and 1999, found that firms spawned more venture-capital-backed startups if they had higher quality patents. The number of citations received evidenced patent quality.

The second finding emerging from this body of work is that younger and smaller firms are more conducive to the emergence of new entrepreneurs. This evidence too seems consistent with the micro processes discussed ear-

lier. Arguably, employees of small, young firms are more likely to be exposed to entrepreneurial opportunities because they have greater access to information regarding the entire business. They are also more likely to develop strong ties to colleagues in different functional areas, who may join them in the new venture, and to have more opportunities to establish contacts with key resource providers. Finally, they can more easily build confidence in their ability to create a new organization because they fulfill a broader number of roles crucial to the operations of entrepreneurial organizations.

Evidence regarding the greater fertility of young and small organizations comes from Sørensen's (2004) systematic investigation of individual transitions to self-employment (entrepreneurship). Sørensen used data representative of both the population of individuals and the population of employers in the Danish labor market from 1970 to 1997. He found that the rate of entrepreneurship declined with the size of the individual's employer—employees of large firms were less likely to become entrepreneurs. This effect was fairly robust, holding up to alternative explanations when controlling for individual characteristics such as occupational category (i.e., white-collar, blue-collar), educational level and major, and financial status (i.e., income, assets, debt). Sørensen's analysis also indicates that younger firms were more likely to produce entrepreneurs than older firms. Although Sørensen's study is probably the most systematic differential fertility study to date, his results are consistent with at least two additional studies of less representative samples of U.S. organizations. Dobrev and Barnett (2005) used career survey data from 5,283 Stanford MBA graduates to advance a multilevel model of individuals' transitions to entrepreneurship. Analyzing the effects of individual, organizational, and environmental characteristics on entrepreneurial transitions, they found that organizational members were *less* likely to become entrepreneurs as their organizations grew larger and older, although founders were *more* likely to become entrepreneurs as their organizations aged. Gompers, Lerner, and Scharfstein (2005) also found that younger firms were more likely to spawn new firms in their study of venture-capital-backed startups founded by individuals employed by public corporations.

Together, these fertility studies provide fine-grained evidence that links organizational contexts to the emergence of entrepreneurs. Furthermore, by providing evidence linking specific features of the organizational context to members' propensities to create new organizations, these studies help to shed light on the micro-level processes that govern new venture creation.

FUTURE RESEARCH

We can conclude from this review that a large volume of empirical studies supports the notion of entrepreneurs as organizational products. Important gaps, however, remain. Empirical evidence linking the experiences of

employment to the microprocesses highlighted in the theory outlined herein is still limited and often indirect. Studies tracing how work experiences influence the development of the psychological and social resources that facilitate entrepreneurial activity would help provide not only a direct test of the theory but also a better understanding of the conditions under which organizations are more likely to be conducive to generating entrepreneurs. These studies might ask which organizational contexts are more likely to provide the mastery and vicarious experiences that help build confidence in one's ability to create a new organization and, in so doing, might establish a microfoundation for future differential fertility research. For example, Baron and Markman (2000) suggest that many sales and customer relations employees develop social skills, through training programs, that help entrepreneurs persuade financiers, customers, and potential cofounders to support their new ventures. Building on their argument, future research on mastery and vicarious learning experiences might investigate the influences of organizational training programs in producing entrepreneurs.

Much of the recent evidence supporting the notion of entrepreneurs as organizational products concerns the effects of organizational characteristics such as size, age, and technical innovation (i.e., Gompers, Lerner, & Scharfstein, 2005; Sørensen, 2004). In addition, the study of Dobrev and Barnett (2005) emphasizes an individual's organizational role in assessing the likelihood of engaging in entrepreneurial activity. Although this work provides insights to macro researchers regarding research topics such as bureaucracy, generalism versus specialism, technical innovation, and role theory, micro researchers have much to add to this emerging body of evidence. For example, one challenge for investigators in the entrepreneurs-as-organizational-products tradition is accounting for individual self-selection into the types of organizations and organizational roles most conducive to producing entrepreneurs (Sørensen, 2004). By investigating the individual constructs that predict employment with certain types of organizations (i.e., small vs. large, hierarchical vs. flat, young vs. old, product vs. service, etc.) and in certain organizational roles (i.e., externally vs. internally oriented, sales vs. finance vs. engineering, etc.), micro researchers may contribute profoundly to entrepreneurship research by separating organizational characteristics from the effects of self-selection.

Our understanding of entrepreneurial outcomes may be further advanced by identifying the micro-level mediators of entrepreneurial action as it relates to the work settings argued to be so important in providing information and motivation to would-be entrepreneurs. In explaining the relationship between social networks and entrepreneurial activity, Burt (1992, p. 35) argues that structural position is "simultaneously an indicator of entrepreneurial opportunity and of motivation" that both pulls and

pushes individuals to entrepreneurship. Micro-level researchers seem best equipped to untangle the effects of structural position and individual cognitions and motivations. For example, network researchers have investigated the relationship between personality characteristics and network centrality (Klein et al., 2004) as well as the relationship between personality and individuals' perceptions of networks (Casciaro, 1998). Furthermore, studies have found that individuals possessing more accurate cognitions of formal networks tend to be viewed as more powerful by their peers (Krackhardt, 1990). Identifying the network positions most conducive to enabling entrepreneurial behavior as well as the individual-level determinants (i.e., personality traits, cognitive styles, etc.) of attaining such positions seems to be a promising avenue for future micro research. This research strategy might also shed light on the specific aspects of prior experience that condition individual abilities to recognize and exploit entrepreneurial opportunities (i.e., Shane, 2000). At the least, such a multi-level approach suggests new directions for traits-based research.

Another surprising gap in the available literature is the paucity of studies that compare the likelihood of individuals who are employed in established organizations becoming an entrepreneur to the likelihood of individuals who are not. Such studies require drawing samples of individuals from the entire population, which is often difficult for researchers to accomplish. Data limitations may be assuaged by the PSED, a large-scale effort to collect data on nascent entrepreneurs as well as an appropriate comparison set from the general population. The PSED may allow future researchers to examine not only the probability of these two groups of individuals (employed and unemployed) becoming nascent entrepreneurs, but also the impact that work experiences have on different stages of the process leading to the creation of a new organization. For example, the research program on nascent entrepreneurs (e.g., Carter, Gartner, & Reynolds, 1996; Carter et al., 2003; Gartner, 1985) differentiates the stage at which individuals initiate activities aimed at the creation of a new organization and the stage at which a new full-fledged organization becomes operational. Researchers could investigate whether the psychological and social resources that individuals acquire through their work experiences might have varying effects at these different stages. The theory, for example, implies that social ties to industry insiders play a critical role in the transition from being a nascent entrepreneur to creating the new organization. How different types of ties (i.e., direct, indirect) vary in importance as a new venture grows is an open empirical question.

Future researchers might also investigate how the identity and/or reputation of nascent entrepreneurs' prior employers affect resource providers' impressions of entrepreneurs. In a stratified sample of 173 Silicon Valley companies, Burton, Sørensen, and Beckman (2002) argue that entrepre-

neurial networks differentially situate potential entrepreneurs, based on the prominence of their employer, to receive crucial information and valuable reputation benefits. They find that those with prior experience at more prominent employers possess advantages in attracting the social and financial resources necessary for pursuing new ventures. Their measure of employer prominence is endogenous to their data (the number of startups in the data set generated by a focal employer), and their findings, by the authors' own admission, would be strengthened by a better understanding of "the criteria by which members of the entrepreneurial community rank existing firms" (Burton, Sørensen, & Beckman, 2002, p. 254). Therein lies an empirical opportunity for micro researchers: What employer characteristics make resource providers more or less likely to support a new venture? Elaborating the micro foundations of employer prominence would contribute to the theory underlining both career history and differential fertility studies.

Another promising avenue for future research lies in asking under what conditions organizational members prefer to create a new organization as opposed to seeking to create a new division or product group within the existing organization. The potential for innovation need not imply the potential for a spin-off organization (Garvin, 1983). Leaving an existing organization to create a new one requires not only the motivation and the ability to be an entrepreneur but also the motivation to leave one's employer. The existing theory specifies how individuals' work settings enhance the motivation and the ability to create a new organization but says less regarding the organizational factors that influence the motivation to leave. Resource allocation processes and political processes may play an important role. For example, critical moments in the life cycles of parent or incubator organizations (i.e., chief executive officer [CEO] succession, acquisition, or bankruptcy) have been found to give rise to spin-offs (Brittain & Freeman, 1986; Neck et al. 2004; Romanelli & Schoonhoven, 2001; Stuart & Sorenson, 2003b). One possible explanation for these observations is that resource allocation processes have inherent limits for absorption of employee-led initiatives and that critical moments alter the "rules of the game" that govern internal resource allocation. A second possible explanation for these observations is that organizational change creates greater uncertainty and therefore greater politicization of the decision-making processes that govern resource allocations for new initiatives (Cyert & March, 1963; Maritan, 2001).

In conclusion, research on entrepreneurs as organizational products is alive and well. The distinctive contribution of this body of research to the entrepreneurship literature lies in emphasizing the importance of organizations as social contexts conducive to the development of the psychologi-

cal and social resources necessary for entrepreneurial activity and in providing a link between micro and macro explanations of entrepreneurial action. Promising opportunities exist for micro researchers to strengthen the theory that guides this growing body of research.

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