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Silicon Valley started with a garage (or so the story goes). In a small garage in Palo Alto, California, in 1938-1939, William Hewlett and David Packard experimented with numerous electronic devices, including a prototype for an audio oscillator. That oscillator eventually enabled the pair of entrepreneurs to launch Hewlett-Packard (HP), one of the largest high-tech companies in the world today. Over the next 50 years, numerous technology companies—including Apple, Cisco, and Intel—would be founded in Silicon Valley, the world's foremost high-tech region. In 1989, the garage at 367 Addison Avenue was designated California Historic Landmark Number 976 and a plaque declaring "Birthplace of Silicon Valley" was placed at the front of the garage.

The HP garage is the most celebrated example of a popular belief in the United States—that it is common for entrepreneurs to start companies in garages (hereafter, "the garage belief"). Indeed, U.S. business history offers numerous stories of successful entrepreneurs (e.g., Walt Disney, Steve Jobs) whose garages served as early workshops for the products and services that eventually launched prominent U.S. businesses. However, the garage signifies more than just a commonly perceived locus of entrepreneurship. Rather it is a symbol that conjures up some common images of entrepreneurship, including the inspirational generation of innovative ideas, old-fashioned hard work and American ingenuity, bootstrapping resources to chase a dream, a rejection of the status quo, and the freedom of working for oneself.

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This article explores the realities of the entrepreneurial garage by addressing three main questions. First, how popular is the garage belief? Second, how accurate is the garage belief (and what other stories might be more accurate than the garage)? Third, why is the garage belief popular and why does it persist?

For many "garage entrepreneurs," the garage (or basement or dorm room or kitchen) is primarily a temporary logistical arrangement and not a prerequisite for entrepreneurship. Moreover, the garage is not nearly as common to entrepreneurship as is commonly believed. The garage entrepreneur is a contemporary legend that obtains its staying power not from its accuracy but, rather, from its ability to tap common emotions in the portion of the American public that is interested in entrepreneurship (i.e., entrepreneurs, the business press, venture capitalists, and business school students and faculty). The legend of the garage entrepreneur obscures a more central reality of entrepreneurship research. Many entrepreneurs acquire the psychological and social resources necessary to form new companies through prior experiences at existing organizations in related industries. Although some individuals become successful entrepreneurs without related prior experience, they are the exception, not the rule. Entrepreneurs are often organizational products.[1] The legend of the garage entrepreneur is misleading because it implicitly teaches the wrong lessons about what it takes to become a successful entrepreneur. While the legend of the garage entrepreneur evokes the image of the lone individual who relies primarily on his or her extraordinary efforts and talent to overcome the difficulties inherent in creating a new business, the process of creating a new company is eminently social. By misrepresenting the process by which many individuals become entrepreneurs, the garage belief may lead to seriously misinformed employment choices by individuals, ill-advised resource allocation decisions by companies, unsuccessful course offerings by business schools, and/or ineffective program offerings by governments.

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How Popular Is the Garage Belief?

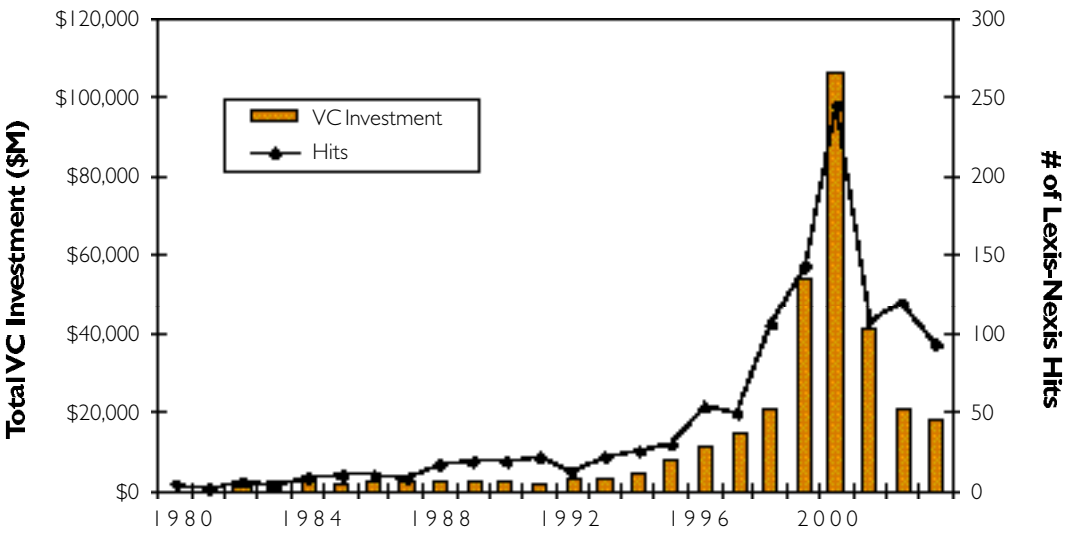
In addition to its association with HP and Silicon Valley, the garage owes much of its prominence to its association with the founding stories of several successful companies. For example, the Walt Disney Company's story includes at least two different garages (one in Kansas City and one in California) that Walt Disney used as animation workshops prior to founding his company. In addition, the history of Apple Computer includes tales of Steve Jobs and Steve Wozniak and Apple's early days in Jobs' parents' garage. Furthermore, the founding stories of toy companies Mattel (the Los Angeles garage of founders Elliott and Ruth Handler) and Wham-O (a Pasadena garage) also feature garages in prominent roles.[2] These examples are a few of many such stories.

At some point, the entrepreneur's garage began to symbolize the prototypical early, formative phase of a startup company. For example, a prominent Silicon Valley venture capital firm bears the name Garage Technology Ventures. Co-founder Guy Kawasaki explains his firm's name by stating that "'Garage' is a state of mind. It's a rejection of the status quo. It's 'I don't need dozens of engineers and marketers with MBAs to clean the competition's clock.'"[3] Garage Technology Ventures is no bit player in Silicon Valley—the biggest investor in the firm's $20 million Garage California Entrepreneurs Fund is the California Public Employees Retirement System,[4] the largest public pension fund in the United States. In 2004, Kawasaki published a best-selling book, *The Art of the Start*, that offered strategies and tactics for nascent entrepreneurs. Summarizing the book's contribution to entrepreneurs, Michael Moritz, a partner at Sequoia Capital, remarked: "A successful entrepreneur requires three things: a garage, an idea, and this book."[5]

Now, is the garage belief primarily a Silicon Valley or even a California phenomenon? The U.S. National Commission on Entrepreneurship funded a study by two Harvard Business School researchers that investigated the founding histories of the 1997 *Fortune 200*. The product of this study was a report titled "From the Garage to the Boardroom: The Entrepreneurial Roots of America's Largest Corporations."[6] Clearly, the garage belief has national prominence. Moreover, references to the garage belief have surfaced outside of North America. For example, in discussing the promotion of Bruce Chizen to CEO of Adobe Systems, an article in *The Economist* suggested that the company's founders realized that "Adobe had to outgrow its 'garage' culture."[7] This is a rather peculiar choice of words given that Adobe was founded in December of 1982 by John Warnock and Charles Geschke on the basis of the PostScript language the two developed at Xerox PARC.

The garage is a symbol of entrepreneurship that elicits common understandings among business professionals. This belief is supported with more than just anecdotal observations. We conducted a survey of business school students to gauge their familiarity with the idea of the garage entrepreneur. While the garage appears to be the most prominent reference for entrepreneurial workshops, other stories of successful entrepreneurs include the basement (Jim Casey and Claude Ryan and the American Messenger Company—now UPS), the dorm room (Michael Dell and Dell Computer), and the kitchen (catalog entrepreneur Lillian Vernon).[8] We included these alternative workshops in our survey. Respondents (N = 204) reported familiarity with the notion that entrepreneurs often start businesses in garages, basements, dorm rooms, or kitchens (mean = 4.1 on a 1-5 scale of increasing familiarity). In addition, 89% of respondents were able to name at least one company started in such locations. Furthermore, respondents estimated, on average, that 48% of entrepreneurs start businesses in this way. To check the popularity of the garage entrepreneur belief outside of business schools, we conducted a random telephone survey in the 510 area code, with respondents (N = 79) representing a broad range of occupations (e.g., architects, painters, business owners, lawyers, consultants, full-time mothers)

FIGURE 1. Venture Capital Investment and Media References to "Entrepreneurs" and "Garages, Basements, Dorms or Kitchens," 1980-2003



and age groups (range: 20 to 85). They also reported familiarity with the notion of the garage entrepreneur (mean = 3.5 on a 1-5 scale of increasing familiarity). Furthermore, 87% of the respondents named at least one company started in a garage, basement, dorm room, or kitchen. Apple and HP were the most common examples. On average, these respondents estimated that 30% of entrepreneurs started businesses in such locations.

We also conducted an archival study to estimate the popularity of the garage belief in the U.S. business and finance press as compared to a common indicator of entrepreneurial activity, annual venture capital investment (in millions of dollars). We conducted searches on the Lexis-Nexis™ Academic search engine from 1980 to 2003 to measure the number of business and finance news articles that included the term "entrepreneur" and "garage, basement, dorm, or kitchen." Then, each article returned by the search was counted as a "hit." The annual hit counts ranged from two in 1981 to 245 in 2000. Next, we plotted the time series of hit counts along with the annual total dollar amount of venture capital invested in early- and expansion-stage companies from 1980 to 2003.[9] The raw data from this analysis is represented in Figure 1. The general trend is a steady rise in the number of hits until the mid-1990s when the hit counts increased substantially, coinciding with the dot-com era. The relationship in Figure 1 is remarkably clear. References to the garage rise with increases in entrepreneurial activity (as measured by venture capital investment); the correlation between the two time series is 0.95. Notably, the hit counts peak in the same year in which venture capital investment peaks—at the height of the Internet bubble in 2000. We can infer from this that the garage has gained in

popularity over time and, furthermore, that the garage's popularity is promoted by the business press.

How Accurate Is the Garage Belief?

While this quantitative evidence supports the garage's popular status as a startup icon, how accurate is the belief that garages and alternative workshops are common to entrepreneurship? We conducted a random survey of actual startup companies to gauge the prominence of the garage in the emergence of new firms and, by extrapolation, the accuracy of the garage belief. We sampled young companies in the hopes that the founders would still be working at the company and, if the founders were unavailable, that other employees would be familiar with the company's recent history and able to answer our questions. The sampling frame was all U.S. startup companies receiving venture capital financing in the second half of 2004.[10] From this list, we randomly selected 90 startup companies in a variety of industries, including biotechnology, construction, digital media, food distribution, software, and telecommunications. We were able to discuss the company's founding story with 32 of the startups.[11]

This study revealed that some companies are indeed started in such places as garages, basements, dorm rooms, and kitchens. Representatives of eight (25%) of the 32 companies whose representatives we interviewed reported starting in a garage, basement, dorm room, or a room in one of the founders' residences.[12] That is approximately half of the average estimate that business school respondents provided in our first survey and is only slightly below the average estimate of the respondents of the random phone survey. However, in each case, the arrangement was temporary, lasting only until the company found a suitable office space. In addition, of the 32 companies in our sample, 29 companies were operating businesses (91%) that were in some way related to the founders' prior experience (e.g., same industry, idea developed at a previous employer, founder is a serial entrepreneur). Moreover, 16 of the 32 companies (50%) were founded by individuals who had previously worked together, and another five companies (16%) were started by close friends or family members. So, nearly 66% (21 of 32) of the companies in our random sample were founded by people with strong prior social ties.

Not surprisingly, the findings of our survey are consistent with an emerging literature in entrepreneurship research. A key idea emerging from this literature is that organizations are social contexts within which individuals acquire many of the psychological and social resources necessary to create new organizations.[13] To use Freeman's felicitous expression, this body of work suggests that *entrepreneurs often are organizational products*.[14]

Entrepreneurs as Organizational Products

The notion of entrepreneurs as organizational products suggests that, in comparisons between otherwise similar people, those employed by existing

organizations[15] are more likely to start a new company in the same or a related industry. There are three reasons why organizational experience increases the probability that an individual may start a new company. First, organizations create opportunities for individuals to build confidence in their abilities to create and run a new company.[16] Second, organizations provide access to broad industry knowledge and fine-grained information about entrepreneurial opportunities, neither of which are readily available to outsiders.[17] Third, organizations help individuals form social networks that facilitate the mobilization of resources necessary to form a new company.[18]

Confidence in one's "judgment and disposition" is essential to entrepreneurship.[19] Starting a company is a time-consuming challenge that discourages many individuals from trying and also causes many who do try to give up.[20] Confidence, a belief in one's ability to perform a task,[21] is a critical differentiating factor between those who start a business and those who do not. For example, Cooper, Woo, and Dunkelberg found that 95% of entrepreneurs surveyed perceived their business's chances of success to be better than or equal to the chances of any similar business.[22] In a laboratory study, Camerer and Lovallo found evidence of excess market entry—entry into crowded markets that offered slim success chances—ostensibly instigated by individuals who held biased (i.e., overconfident) assessments of their competitive abilities.[23]

How do organizations provide employees with confidence? While employed, individuals accumulate *mastery experiences* through success on tasks important to organizational functioning,[24] especially tasks similar to those performed in the role of entrepreneur. In addition, *vicarious experiences* expose employees to peers succeeding through sustained effort who then become social models.[25] These entrepreneurs transmit knowledge, vicariously, to other employees that may stimulate employees to entertain notions of becoming entrepreneurs. For example, Saxenian 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?"[26] In this way, organizations are instrumental in enhancing employees' confidence in their entrepreneurial abilities and these opportunities to build confidence are less available to those outside the organization.

In addition, the motivation to create a new organization is strengthened by an individual's access to information about entrepreneurial opportunities.[27] Individuals employed by organizations in a particular industry generally enjoy greater access to this information than individuals employed elsewhere. 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 and expressed an interest in similar devices for personal use.[28] Shortly thereafter, Hawkins founded Palm Computing to commercialize just such a device. In this way, organizational contexts filter information on markets, technologies, and resources to employees.[29]

Furthermore, employees obtain *blueprints*[30] from their employers related to appropriate and, often, inappropriate ways of organizing a company and

conducting business. Individual career trajectories shape the activities and processes that compose an individual's body of knowledge.[31] Possession of this knowledge increases these individuals' abilities to recognize entrepreneurial opportunities and, as a result, increases the probability that those individuals will start a new company. For example, 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."[32] 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."[33] In this way, possession of information about entrepreneurial opportunities and knowledge of the business is more likely to be held by individuals employed by existing organizations than those that are not.

Moreover, entrepreneurs typically rely upon social relationships for mobilizing resources to build new companies.[34] Especially critical are social ties to people who are well-connected within the industry in which the entrepreneur hopes to start a company. Such ties provide a basis for referrals to customers, suppliers, and potential employees who are more likely to support the new company if the reliability of the potential entrepreneur is substantiated by trusted parties. Social ties may also provide information that helps entrepreneurs pitch the new company in a way that appeals to potential customers, suppliers and resource providers. Consider the case of Ross Perot. After leaving a sales job at IBM, Perot started Electronic Data Systems (EDS) and also worked part-time as a consultant for Texas Blue Cross. In 1965, Perot secured data-processing contracts with Blue Cross/Blue Shield Medicare and Medicaid programs in 11 states. Tapping this emerging market for data processing enabled EDS to achieve profits of $2.4 million just six years after Perot left IBM, in large part because of exposure to not only specific and timely information, but also to key decision makers at Blue Cross/Blue Shield.[35]

Social ties also aid entrepreneurs in forming a management team and attracting financing for a new company. For example, Ruef, Aldrich, and Carter analyzed multi-industry data from the Panel Study of Entrepreneurial Dynamics and found that the trust and familiarity of strong social ties are more critical to founding team composition than are complementary skills.[36] Other social ties link the potential entrepreneur to key resource providers through third parties, facilitating the flow of reputational information that mitigates the uncertainty inherent in the new company. For example, a study of 202 seed-stage investors found that both direct and indirect ties between entrepreneurs and investors positively influenced investors' decisions about which ventures to finance and concluded that network ties are mechanisms for information transfer.[37] In short, organizations provide opportunities for employees to form social ties to the critical resource providers who enable the pursuit of entrepreneurial opportunities.

Key Findings of Academic Research

Entrepreneurs typically come from within the industry because not everyone has access to the resources (i.e., confidence, information, knowledge,

and social ties) so critical to entrepreneurship. As Freeman states, "The capital required [for entrepreneurship], human resources, space, information, permits and licenses are all provided, perhaps grudgingly, by existing organizations."[38] Therefore, not everyone with a garage is equally likely to become an entrepreneur and becoming an entrepreneur is not merely a function of effort or planning. Two particular bodies of academic research strongly support the notion of entrepreneurs as organizational products: *career history studies* focus on individuals' experiences prior to entrepreneurship; and *spatial distribution studies* focus on geographic variation in entrepreneurial activity.

First, *career history studies* demonstrate that a large proportion of founders of new organizations come from the ranks of pre-existing organizations in similar industries. For example, 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.[39] In a subsequent study of 161 new firms, Cooper found that in most technical industries entrepreneurs started businesses related to their previous employment.[40] For example, 78% of 46 founders of electronics and computer companies were previously employed in those industries. In addition, many innovative new products are introduced by entrepreneurs with prior industry experience. For example, several studies of the hard-disk-drive industry document the high degree of intra-industry mobility of employees from existing to new companies.[41] Entry by new companies started by ex-employees of pre-existing companies was often accompanied by repeated introductions of disruptive innovations.[42]

Certain organizations develop reputations for preparing employees for entrepreneurship. For example, Higgins found that for 23% of the biotech companies that went public in the period 1979-1996, at least one member of the IPO team had previous employment at Baxter, a prominent biotech company.[43] Baxter gained a prominent reputation in the biotech industry for producing entrepreneurs[44] as former Baxter employees were management team members of 29 venture-backed startups from 1986-1999.[45] Career history studies like these highlight the role that existing organizations play in exposing employees to the confidence-building tasks, information on entrepreneurial opportunities, and social contacts that often lead to the production of entrepreneurs.

Second, *spatial distribution studies* demonstrate that geographic areas that have a greater number of organizations of a certain kind tend to generate a greater number of new organizations of that same kind. For example, Sorenson and Audia's study of the U.S. footwear industry demonstrates that states populated with a greater number of footwear plants tend to generate a greater number of new footwear plants than do less-populated states.[46] The founding rates of Dutch accounting firms from 1880 to 1986 also exhibit this pattern[47] and similar results are obtained in studies of U.S. biotechnology firms,[48] the U.S. computer workstation industry,[49] and the British motorcycle industry.[50] Existing organizations expand the pool of potential entrepreneurs available in a locale by employing individuals in roles conducive to acquiring information about

entrepreneurial opportunities and to developing the social ties necessary for resource mobilization.

Because entrepreneurs tend to rely upon supportive social ties that are geographically localized,[51] they are likely to start new companies in close proximity to their homes and to their current employers.[52] For example, a study of Portuguese manufacturing plants found that Portuguese entrepreneurs were willing to accept labor costs three times higher than in alternative locations to locate the new business in their current geographic area.[53] Spatial distribution studies, then, demonstrate that the companies that are likely to be founded in a given community are largely dependent upon the organizations that are already located in the community.

Revisiting the Most Famous Garages

The notion of entrepreneurs as organizational products implies that entrepreneurs typically come from within the industry (or from related industries) and acquire confidence, information, knowledge, and social connections at local organizations. If this notion is accurate, then one should expect to find some correspondence with the entrepreneurs-as-organizational products story and the stories of famous entrepreneurs. Therefore, we reexamine the two most prominent entrepreneurial garage stories: the HP garage in Palo Alto (the "birthplace of Silicon Valley") and the Jobs' family garage in Cupertino. We rely primarily upon two texts that detail the companies' respective histories: *The HP Way* and *Apple Confidential 2.0*.[54]

The Hewlett-Packard Story

In 1930, HP co-founders William Hewlett and David Packard met as freshman at Stanford University. While at Stanford, Hewlett and Packard took Frederick Terman's graduate course in radio engineering. Although the two discussed the possibility of starting a company, this was the era of the Great Depression and after graduation Terman encouraged Hewlett to continue with graduate coursework and Packard to accept a job offer from General Electric (GE). In 1935, Packard started work at GE in Schenectady, New York, and Hewlett enrolled in a graduate program at the Massachusetts Institute of Technology (MIT). Of his time at GE, Packard writes, "I was able to learn many things that later proved helpful when we started our own business, and I also developed close friendships with some individuals who would later make their own mark in electronics."[55] Those GE friends included John Cage who would later, as a professor at Purdue University, refer promising graduates to HP for jobs and would, in 1956, organize and manage Hewlett-Packard Ltd., HP's British subsidiary.[56] In 1937, Hewlett and Packard met in Palo Alto to discuss "tentative organization plans and a tentative work program for a proposed business venture."[57]

Then, in the summer of 1938, Terman arranged a Stanford fellowship for Packard, enabling Packard to take a one-year leave of absence from GE and to

move back to Palo Alto. Terman had previously arranged for Hewlett to move back to Palo Alto from Cambridge, Massachusetts, to work with a San Francisco doctor on the development of some medical equipment. As part of the fellowship, Packard worked with Stanford inventor Russ Varian on the modification of vacuum tubes to operate at higher frequencies. The two worked primarily at Charlie Litton's Litton Engineering Laboratories in Redwood City, California. In September of 1938, Hewlett and Packard began working in the garage at 367 Addison Avenue in Palo Alto, building custom devices for local customers. It is true that much of the pair's work was done in the garage during this time. As Terman states, "I knew that if Packard's car was in the garage, it meant they had no orders."[58] However, many of these early devices were built in Litton's foundry because the garage lacked the necessary space and equipment. As Packard writes, "having Charlie Litton and his equipment there made an important difference during a period when time and money were very tight" and "I learned a lot about running a business from those conversations [with Litton and others at Litton Engineering Laboratories]."[59] In addition, Packard took business law and management accounting classes at Stanford during this time. Of these two courses, Packard writes "the first taught me enough about partnerships, contracts, and incorporation so that for the next few years we rarely required the services of lawyers; and the second helped me set up the books."[60]

HP's first real product was the Model 200A audio oscillator. Hewlett developed the first version of this oscillator in Terman's lab in the spring of 1938 and presented an early version at an Institute of Radio Engineers conference in Portland, Oregon, in November of 1938. At this conference, Bud Hawkins, chief sound engineer at The Walt Disney Company, saw Hewlett's presentation of the oscillator. Disney ordered eight Model 200B oscillators from Hewlett and Packard. Additional orders followed. On January 1, 1939, Hewlett-Packard was formed with a formal partnership agreement between the two co-founders. By the fall of 1939, HP outgrew the Addison Avenue garage and moved to an office in Palo Alto. The garage served as Hewlett and Packard's workshop for approximately one year.

The HP founding story confirms that much of the founders' early business was indeed conducted in the garage. However, it appears that Litton Engineering Laboratories and Terman's lab were also important workshops for the co-founders. Furthermore, the story also supports several important elements of the "entrepreneurs as organizational products" story. Consider the evidence demonstrating the role of prior organizations in providing Hewlett and Packard with confidence, exposure to information, knowledge of the business, and access to key social contacts. Packard gained confidence in his ability to handle the legal and business matters of the young company from his courses at Stanford and his mastery experiences at GE. Hewlett developed the company's first product based on specific information acquired while working in Terman's lab. From Litton and GE, Packard gained knowledge of how to run a business. Last, but certainly not least, consider the important social ties formed during the pair's employment experiences at Stanford, GE, and MIT. The two met and first

discussed the idea of starting a company at Stanford. Terman was instrumental in introducing the two to potential customers and suppliers and in arranging for fellowships and jobs to pay for the co-founders' living expenses. Litton provided space and equipment for the production of many of Hewlett and Packard's early orders. Almost 20 years after he left GE, Packard called upon former GE colleague Cage to run HP's British subsidiary. While there are several organizations that can reasonably lay a partial claim to "producing" these two entrepreneurs, Hewlett and Packard clearly acquired resources critical to their entrepreneurial success from exposure to pre-existing organizations. Therefore, the "Birthplace of Silicon Valley" seems a rather overstated moniker for the garage at 367 Addison Avenue.

The Apple Computer Story

In 1967, a twelve-year-old student working on a class project called Bill Hewlett at home and asked for some parts to build a frequency counter. That twelve-year old was Steve Jobs and Hewlett was so impressed that he gave Jobs a summer job at HP assembling frequency counters. Of that experience, Jobs remarked "What I learned there [HP] was the blueprint we used for Apple."[61] Jobs was introduced to Steve Wozniak by a mutual friend in the summer of 1971. By that fall, the two started their first commercial venture selling illegal "blue boxes" that enabled phone calls to be made free of charge by emulating signals used by the phone company. In 1973, Wozniak took a job with HP's Advanced Products Division and Jobs became Employee Number 40 at Atari, which had been founded in 1972. While working the night shift at Atari, Jobs would let Wozniak into the building to play free video games and help Jobs solve technical problems. At some point, Atari founder Nolan Bushnell offered Jobs $700 if Jobs could design the Atari video game *Breakout* using less than 50 chips and $1,000 if Jobs used less than 40 chips. Jobs recruited Wozniak to help and, after four all-nighters in a row, the pair produced the game using 42 chips. Wozniak stated, "I was so proud of designing a product like that."[62]

In 1975, Wozniak and Jobs started attending meetings of the Homebrew Computer Club in Gordon French's Menlo Park, California, garage (meetings were moved to the Stanford Linear Accelerator Center as the group quickly grew from a few dozen to a several hundred). Wozniak introduced his computer (what would later become the Apple I), whose interpreter was tested on a computer at HP, to the Homebrew Computer Club in March of 1976. Wozniak approached his bosses at HP and Jobs did the same at Atari, but neither company was interested in producing microcomputers at that point in time. Of the rejection, Wozniak inferred that "it was obvious it [the computer] didn't have a place at HP."[63] Denied, Jobs recruited Atari colleague Ronald Wayne and with Wozniak the three co-founded Apple Computer in April of 1976. Both Wozniak and Wayne kept their day jobs at HP and Atari, respectively.[64] In May of 1976, Wozniak was granted a legal release from HP to produce the Apple I.

The first order for Apple came from Paul Jay Terrell, operator of retail computer store chain The ByteShop, whom Jobs met at a Homebrew Computer

Club meeting. Terrell wanted 50 assembled computers. So, Jobs recruited his sister Patti and a college friend to assemble the computers in a bedroom of the Jobs' house in Los Altos, California. The computers were delivered on time and Apple made $8,000 in profit. Of these early days, Jobs states, "We were real small-time operators, kind of like somebody who sold arts and crafts on the side."[65] When the bedroom became too crowded, the operation moved to the garage, then out of the garage and into a Cupertino office building by the end of 1977.

After the profitable ByteShop deal, Jobs began trying to raise money to expand the business. Bushnell introduced Jobs to Sequoia Capital's Don Valentine. Valentine was not interested but did refer Jobs to Mike Markkula, who had worked for Valentine at Fairchild Semiconductor before retiring in his early 30s. By the fall of 1976, Wozniak was designing the Apple II while Jobs was in discussions to sell the company to Commodore Business Machines. However, Commodore founder Jack Tramiel "thought it was ridiculous to acquire two guys working out of a garage."[66] That month, Wozniak quit his job at HP to work full-time with Apple. Then, in November of 1976, Markkula came out of retirement to help Jobs and Wozniak write the Apple business plan, contributing $92,000 in working capital and securing a $250,000 line of credit at Bank of America. The three incorporated Apple Computer in January of 1977. In February, Markkulla recruited a former co-worker from his Fairchild Semiconductor days, Michael Scott, to be Apple's first President. The Apple II was introduced in April of 1977 and Apple was cash flow positive by August of that year.

Similar to HP, the Apple founding story confirms that the garage was an important part of the story, but that the history of Apple also supports the "entrepreneurs as organizational products" story. First, the co-founders had previously existing, strong social ties. Jobs and Wozniak met approximately five years prior to Apple's first order and even ran a business (the illegal "blue boxes") together prior to starting Apple. Second, the entrepreneurs worked in related industries prior to founding Apple, Wozniak at HP and Jobs at Atari (and at HP as a 12-year-old kid). Third, local organizations such as HP, Atari, and the Homebrew Computer Club could all reasonably claim to have been strong influences on the Apple founders.

Again, consider the role of prior organizations in providing Jobs and Wozniak with confidence, exposure to fine-grained information, knowledge of the business, and access to key social ties. Jobs has a reputation as a highly confident man. For example, Jobs founded NeXT in 1988 expecting to "change the world of computing."[67] When questioned on the delayed launch date of the company's primary product, Jobs responded, "Late? This computer is five years ahead of its time."[68] Such confidence may be attributed, at least partially, to Jobs' mastery experiences at Apple and Atari. Moreover, being Employee Number 40 at Atari and working closely with founder Nolan Bushnell is a prime example of vicariously learning how to become an entrepreneur. From the Homebrew Computer Club, the two gained fine-grained information on the computer preferences of the hobbyists who would be Apple's first customers. Selling the "blue boxes"

helped Jobs hone his salesmanship. Work experiences at HP and Atari provided Wozniak and Jobs with extensive knowledge of the business—Jobs even described his experience at HP as a 12-year-old as "the blueprint" for Apple.[69] The social ties formed during prior experiences were instrumental in Apple's success. Through Bushnell's contacts, Jobs met Markkula, who designed the business plan, provided the capital to produce the Apple II, and recruited Apple's first President (Scott). Through the Homebrew Computer Club Jobs and Wozniak met their first customer (Terrell). While there are several organizations (i.e., HP, Atari, and the Homebrew Computer Club) that can reasonably lay a partial claim to these two entrepreneurs, Jobs and Wozniak are also organizational products. In light of this realization, the Apple garage does not seem nearly as central to the story. Based on a reexamination of the founding stories of HP and Apple, it seems the garages are not nearly as central to the story as the famous anecdotes suggest.

Why Is the Garage so Popular? Why Does It Persist?

What is so appealing about the garage entrepreneur? Why does the belief persist despite the substantial evidence that the entrepreneurs as organizational products story is more accurate than tales of the entrepreneurial garage? Apparently the garage has reached the status of a *contemporary legend,* a story told as true by people in modern society.[70] As the legend goes, it is quite common for entrepreneurs to start companies in garages, basements, dorm rooms, and kitchens; but, careful examination of the available evidence contradicts the legend. A legend may persist despite inaccuracies if it evokes common emotions in people and causes those people to share the legend with others. In this case, the garage evokes common, positive images of entrepreneurship—hard work, ingenuity, independence, and innovation—that appeal to many people, especially Americans.

A recent article in *Fortune Small Business* begins, "For as long as the California garage has housed convertibles, is has also fostered a different type of vehicle: innovation."[71] According to Guy Kawasaki, the garage "is a state of mind" and "a rejection of the status quo."[72] Steve Jobs describes Apple's early days as "kind of like somebody who sold arts and crafts on the side."[73] In his book, Michael Dell details his father's efforts to get him to "get his priorities straight" (focus on his courses instead of selling computers from his dorm room) and Dell's response that he did not want to attend classes as much as he wanted "to compete with IBM."[74] An article in a magazine for entrepreneurs begins with, "For many entrepreneurs, working out of a garage allows them to save money as they follow their dreams."[75] The corporate web site of UPS describes the first basement location of founders Jim Casey and Claude Ryan as "a humble office located under the sidewalk."[76] In these quotes, one discerns the positive emotional elements associated with entrepreneurship: big dreams and humble beginnings, hard work, creativity, rags-to-riches success, a rejection of the status

quo, success in the face of doubters, and freedom from the bureaucratic constraints of employers.

In the contemporary legend of the garage, one senses the enduring appeal of *the American Dream*, the idea that "through hard work, courage, and determination one can achieve prosperity."[77] The American Dream is implicitly about the opportunities for upward social mobility and great fortune that may be afforded to individuals who exert persistent effort. In the U.S., rewards are expected to come to those who "keep their nose to the grindstone." Offering a vision of the "new" American Dream, Florida argues that the American Dream is no longer about better pay, a nicer house, or a higher standard of living.[78] Rather, Florida suggests that the "new American Dream is to maintain a reasonable living standard while doing work that we enjoy doing" and that "creativity—the ability to come up with and implement a new idea" is central to the new American Dream. In our view, both the traditional (hard work and material rewards) and new (creativity and intrinsic rewards) conceptions of the American Dream are consistent with the emotional appeal of the garage.

This legend resonates with many Americans because of the garage's association with ideas of the U.S. as the land of opportunity, a meritocracy where people get their due, and as a place where all are created equal. These associations enable the legend to persist, absent extensive scrutiny of the details underlying the stories that contribute most to the legend (i.e., HP and Apple). Recall the success of the best-selling book *The Millionaire Next Door*, which offered seven simple rules to follow in order to become a millionaire.[79] This book's success is based on many of the same reasons that the garage legend persists. Both the book and the garage promote the notion that anyone in the U.S. can become rich through hard work, sound decision making, and persistence.

Implications

By providing an inaccurate portrayal of the process by which many individuals become entrepreneurs, the legend of the garage entrepreneur offers the wrong lessons. Perhaps the greatest danger is that the legend inculcates an undersocialized view of the entrepreneurial process. The legend of the entrepreneur's garage evokes the image of the lone individual who relies primarily on his/her extraordinary efforts and talent to overcome the difficulties inherent in creating a new organization. In contrast, the process of creating new organizations is eminently social. Social relations help would-be entrepreneurs not only to garner the support needed to form the new business, but also to identify the entrepreneurial opportunities on which new businesses can be built.

Individuals, companies, policy makers, and business schools might derive more useful implications from research that portrays entrepreneurs as organizational products than from the notion of the garage entrepreneur. First, some organizations are more conducive than others to preparing employees for entrepreneurship, as evidenced by the rate at which employees leave the organization to form new companies.[80] A key question, then, for would-be entrepreneurs is:

"What kinds of organizations and what kinds of positions within organizations tend to provide the best access to the resources that entrepreneurs need?" The literature on entrepreneurs as organizational products suggests that four conditions of employment are conducive to launching an entrepreneurial career:

- Employees are exposed to information that may signal the existence of entrepreneurial opportunities (e.g., new technologies, unmet customer needs) around which a new organization may be built;
- employees have opportunities to fulfill a broad number of roles crucial to the operations of entrepreneurial organizations so that they can build confidence in their ability to create a new organization;
- employees have opportunities for close contact with colleagues in other functional areas with whom they might form founding teams; and
- employees have direct access to key resource providers such as suppliers, customers, or investors who might be willing to support the new venture.

Organizational research suggests that small and young firms are more likely than old and large organizations to offer jobs that meet these four conditions. However, what is most crucial to an individual's ability to acquire the resources needed to become an entrepreneur is not the organization as a whole but, rather, the individual's position within the organization.[81] Individuals would be wise to consider not only a potential employing organization's track history of producing entrepreneurs, but also which particular groups, offices, or positions have produced entrepreneurs in the past.

Second, the implication for established companies is that, willingly or unwillingly, they are natural incubators for the entrepreneurial ideas of employees. Rather than passively witnessing employee departures and the subsequent foundings of spin-off firms that appropriate some of the company's less-tangible assets (i.e., market knowledge), companies can take specific actions to benefit from their natural incubator tendencies. By many accounts, the typical company does not face a dearth of innovative ideas. For example, Intel's Gordon Moore states, "We have too many ideas."[82] Further, an R&D Manager at HP states, "All of the time, we have more ideas than we can use."[83] While some organizations are particularly adept at encouraging and absorbing ideas, organizational practices vary widely. Companies might reconsider the criteria by which they assess these ideas and try to support the most promising entrepreneurial ideas of employees. This entails nurturing individuals that identify possible entrepreneurial opportunities (i.e., offering these individuals time to pursue nascent ideas) because the degree to which these individuals are frustrated with the company's lack of support for new ideas is often a key factor in the decision to leave. Rather than bemoaning the loss of good people that pursue entrepreneurial ideas that lie outside their core lines of business, companies should capitalize on their incubator role by sponsoring, either internally or externally, the most promising new venture ideas. If the parent company serves as a source of startup capital or simply as an endorser with key resource providers, the new firm might be brought smoothly into being and the parent firm might benefit (i.e., return on an equity investment, preferred pricing in future transactions). In the long-term,

a company that takes an active role in supporting new ventures benefits from attracting individuals with entrepreneurial ambitions.

Third, deemphasizing the legend of the entrepreneurial garage and embracing the notion of entrepreneurs as organizational products may provide valuable insights for policy makers, too. Because entrepreneurs gain many of the resources necessary for entrepreneurship from existing organizations and because entrepreneurs' networks geographically constrain their options for starting new companies, the companies already doing business within a given community are likely the best source of new entrepreneurs and, by extension, new companies. Many community development efforts focus on building research parks, funding incubators, or providing local investment incentives to generate local entrepreneurial activity. Such efforts tend to produce mixed results. Focusing on existing organizations as sources of entrepreneurial opportunities may offer a more promising avenue for promoting local entrepreneurship. With so many good ideas falling prey to the inherent limitations of corporate resource allocation processes and organizational politics, surely there exists an opportunity for communities to capitalize on some of the ideas that slip through the cracks.

Fourth, the notion of entrepreneurs as organizational products suggests that business schools should give, at the least, equal emphasis to prior work experience in the entrepreneurial process as is currently given to analytical skills. Nearly every top U.S. business school offers at least one course focused solely on developing a business plan for a new company. Implicit in these courses is the idea that entrepreneurship can be fostered with training in particular analytical skills (i.e., cash flow modeling, market research) and seed funding. Moreover, business plan competitions are becoming increasingly popular ways for business schools to bring entrepreneurs, university scientists, engineers, and venture capitalists together. Most of these business plan competitions offer some prize money and several offer fairly large sums. For example, the MOOT CORP Competition[84] at the University of Texas at Austin awards equity funding of up to $100,000 and offers other prizes totaling over $180,000. The competition at MIT—"designed to encourage students and researchers in the MIT community to act on their talent, ideas, and energy to produce tomorrow's leading firms"[85]—offers $30,000 to the top team and $10,000 each to the top two runners-up. Many students find these competitions to be valuable experiences and some competitions have launched successful startup companies.[86] However, one inherent risk in these competitions is that the focus on planning understates the importance of prior experience and social connections in the entrepreneurial process.

Conclusion

Although the garage legend contributes to the preservation of the American ideals of opportunity and upward social mobility, this belief offers misleading insights to would-be entrepreneurs because it suggests an undersocialized view

of the entrepreneurial process. Individuals, company employees, policy makers, and business school administrators will benefit from recasting the garage belief as a contemporary legend and, in turn, focusing instead on the implications of the growing body of academic research on entrepreneurs as organizational products.

APPENDIX
Key Dates in the Legend of the Entrepreneur's Garage (*timeline*)

October 1923: Walt and Roy Disney rent a Hollywood, CA garage to use as an office in which the two produce animated cartoons. Shortly thereafter, the brothers moved into an office.

1930: Stanford University freshmen William Hewlett and David Packard meet.

Spring 1933: Frederick Terman invites Stanford undergraduate Packard to enroll in Terman's graduate course in radio engineering. Hewlett is also enrolled in the class.

1933-1934: Hewlett, Packard, Ed Porter, and Barney Oliver discuss the possibility of starting a company after graduation from Stanford.

Spring 1934: In the midst of the Great Depression, Terman encourages Packard to accept a job offer from General Electric and Hewlett to take graduate courses.

February 1935: Packard starts work at General Electric in Schenectady, NY.

1935-1936: Hewlett receives a Master's degree from MIT. Terman arranges a job for Hewlett back in California.

August 1937: Hewlett and Packard meet in Palo Alto to discuss "tentative organization plans and a tentative work program for a proposed business venture."

Spring 1938: Hewlett develops a resistance-stabilized audio oscillator while working with a group of students in Terman's laboratory.

Summer 1938: Frederick Terman arranges a Stanford fellowship for Packard.

September 1938: Hewlett and Packard begin work in the garage at 367 Addison in Palo Alto.

November 1938: Bud Hawkins, chief sound engineer at The Walt Disney Company, sees Hewlett present the oscillator at a conference in Portland, OR. Soon thereafter, Disney orders eight Model 200B oscillators from Hewlett and Packard.

January 1, 1939: Hewlett-Packard (HP) is officially formed. Charlie Litton provides HP access to his foundry so HP can produce oscillators, which could not be produced in the garage, for customer orders.

Fall 1939: HP outgrows the garage and rents a building for the business.

1945: Elliott and Ruth Handler and Harold Matson launch toy company Mattel from a garage workshop in Los Angeles, California.

1948: Richard Knerr and Arthur Melin, the founders of toy company Wham-O, begin working on a slingshot in a Pasadena, CA garage. The company would later invent the Hula Hoop, the Frisbee, and the hacky sack.

1948: Mattel is incorporated with headquarters in Hawthorne, California.

1957: Wham-O introduces the Hula Hoop and makes $45 million in profits over the next 2 years on the product.

November 1957: HP's IPO

1959: Mattel introduces the Barbie doll to the world.

Summer 1971: Steve Jobs and Steve Wozniak meet.

Fall 1971: Jobs and Wozniak sell illegal "blue boxes" that enabled free phone calls to be made by emulating signals used by the phone company.

February 1973: Wozniak starts work in HP's Advanced Products Division.

1973: Jobs starts work at Atari. Wozniak helps Jobs design the game Breakout during Jobs' night shifts.

March 1975: The first meeting of the Amateur Computer Users Group (Homebrew Computer Club) is held in a Menlo Park garage (meetings were quickly moved to the Stanford Linear Accelerator Center when the group became too large for the garage).

July 1975: Bill Gates and Paul Allen found Microsoft in Albuquerque, NM.

March 1976: Wozniak builds the Apple I, a computer that uses a keyboard and can connect to a television. Wozniak pitches his bosses at HP about making microcomputers; Jobs pitches his bosses at Atari. Both are denied.

April 1976: Jobs recruits his Atari co-worker, Ronald Wayne, and Jobs, Wayne and Wozniak found Apple Computer. Wayne keeps his day job at Atari and Wozniak continues to work at HP.

	Wayne sells his 10% share in Apple less than two weeks later for $800.
May 1976:	Wozniak is granted a release by HP to produce the Apple I. Production begins in a bedroom in Jobs' parents Los Altos, CA home. Eventually, production moves to the garage.
October 1976:	Commodore considers but declines buying a company that operates out of a garage. Wozniak quits his job at HP, at Jobs' insistence.
January 1977:	Apple Computer is incorporated.
January 1978:	Apple moves to an office building in Cupertino, CA.
December 1980:	Apple's IPO
Fall 1983:	Michael Dell starts selling upgraded PCs and add-on components from his University of Texas dorm room.
January 1984:	Dell registers PC's Limited with the State of Texas and, shortly thereafter, moves his business to a two-bedroom apartment.
May 1984:	Dell leaves the University of Texas, registers his business as Dell Computer Corporation, and moves the company to a small business office in North Austin.
February 1985:	Wozniak and Jobs receive the National Technology Medal from President Reagan at the White House.
1985:	The HP garage is named a Category I City landmark by the Palo Alto Historic Resources Board.
March 1986:	Microsoft's IPO
June 1988:	Dell's IPO
1989:	The HP garage is officially dedicated as California Historic landmark No. 976 with a plaque "Birthplace of Silicon Valley."
October 1997:	Garage.com (now Garage Technology Ventures) is started in San Francisco, CA.

Notes

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8. Throughout this article, we refer to "the garage" and acknowledge that basements, dorm rooms, and kitchens may easily substitute for "garage" in our arguments.
9. The venture capital investment data was obtained from the MoneyTree Survey, a quarterly data source jointly published by PriceWaterhouseCoopers, Thompson Venture Economics, and the National Venture Capital Association, and from Gompers and Lerner, who compiled data from various issues of the *Venture Capital Journal*. P. Gompers and J. Lerner, "The Venture Capital Revolution," *Journal of Economic Perspectives*, 15/2 (Spring 2001): 145-168.
10. The data source was Thompson Venture Economics VentureXpert database which, in cooperation with U.S. venture capital firms, tracks U.S. venture capital investment activity. Each company was contacted by phone and then by e-mail if the phone attempt was unsuccessful. Research assistants explained that they were students conducting research on entrepreneurship in the U.S. and then asked to speak to an employee familiar with the company's history (i.e., the founder or a public relations or marketing employee). If no one was available to field the call, the research assistants asked the person who answered the phone if they were familiar with the company's history. Once someone with the company's history was on the phone, research assistants asked: where the founders got the idea for the business; how the founders knew each other; if the startup was related to the founders' previous employment; and if the company started in a garage, basement, or dorm room.
11. For the remaining companies, we were unable to discuss the founding story for a variety of reasons, including dissolved businesses, disconnected phone numbers, a lack of knowledgeable employees to answer our questions, and an unwillingness of employees to answer our questions. Although the response rate is lower than we would like (39%), we did speak to a fairly large number of young startup companies about their founding story and it is unlikely that companies that did or did not start in a garage were more or less likely to discuss the company's history with us. Therefore, the sample is sufficiently large and representative for our research questions.
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15. We use the general term "organizations" here rather than "companies" because many entrepreneurs (including those in our random sample) start companies based upon prior experiences in organizations like research labs, educational institutions, and non-profit organizations. These experiences are often just as important to entrepreneurs as company experiences are.
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