NATIONAL COMMISSION ON ENTREPRENEURSHIP

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FROM THE GARAGE TO THE BOARDROOM:

The Entrepreneurial Roots of America's Largest Corporations

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Report Submitted by Courtney A. Purrington, Ph.D., and Kim Eric Bettcher, Harvard Business School, to the National Commission on Entrepreneurship

The National Commission on Entrepreneurship, *funded by the Kauffman Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation, was established to provide local, state, and national leaders with a roadmap for sustaining and expanding a flourishing entrepreneurial economy. Entrepreneurship is the critical force behind innovation and new wealth creation—the key drivers of our country's economic growth. Through research, publishing, conferences and other events, the Commission promotes an agenda that helps grow a successful entrepreneurial economy into the 21st Century.*

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Executive Summary

Entrepreneurs and entrepreneurship are now in fashion. You cannot listen to TV or radio without hearing about entrepreneurial companies – either because they are growing or shrinking at dizzying speeds. And if you read a catalogue for a university or community college, you can't help but note the myriad courses and programs devoted to entrepreneurship.

Even though now in fashion, entrepreneurship is not new in the United States. In fact, it lies at the very heart of our business structure. An in-depth look at the *Fortune* 200, America's largest corporations, reveals that individual entrepreneurs started nearly all of them. In other words, the General Electrics and Fords of the world didn't just arise out of thin air. They were started by entrepreneurs who looked a lot like young people today who toil to build a company in their garage or spare bedroom.

The National Commission on Entrepreneurship contracted with Harvard Business School researchers to dig back to the entrepreneurial roots of the nation's largest corporations. This research provides a perspective through which we view today's entrepreneurs.

This study addresses this entrepreneurial history in two ways. It assesses and compares the role that entrepreneurship played among chief executives when sparking the growth of the 200 largest American corporations in 1917 and 1997. It also examines the personal histories of those entrepreneurs who founded and ran those companies, and assesses whether the background and training of successful entrepreneurs has changed over the course of the twentieth century.

Entrepreneurial Roots of the Fortune 200

Looking back at the histories of the largest corporations in 1917 and 1997 and the entrepreneurs who led them, one gains a valuable perspective on the place of entrepreneurs in the corporate world today. These companies have stood the test of time; in many ways, their stories tell more about the ingredients for long-term success than do the experiences of recent startups.

Of the 1997 *Fortune* 200 companies, 197 of them were traced back to one or more entrepreneurial founders. Many of the 1997 *Fortune* 200 were also among the largest corporations in 1917. As of 1997, the largest ten such corporations accounted for 1.3 million jobs and well over $400 billion in revenues. These statistics show the lasting impact of some of the entrepreneurial activity that took place in the nineteenth and early twentieth centuries.

Characteristics of Entrepreneurial Founders and CEOs

The study also uncovers certain commonalities in the personal characteristics, social background, and the experience and resources of the executives who founded and ran these top companies. It also describes some of the differences between entrepreneurial and non-entrepreneurial chief executives. The study finds interesting differences between the entrepreneurial founders and CEOs at the helm of the companies in 1917 versus those in charge in 1997, including differences in education, father's occupation, age of the CEO, previous entrepreneurial experience, and religion.

Key Findings

- ❖ The origins of most large companies can be traced, directly or indirectly, to one or more entrepreneurial founders.
- ❖ It has become more difficult for an entrepreneur to lead a new company into the *Fortune* 200.
- ❖ Successful entrepreneurs, like other executives, were more educated than the average person in 1917 and 1997.
- ❖ Most successful entrepreneurs in 1917 had both significant experience in the same industry as their start-up, and an important innovation that propelled the growth of their company. The correlation is less clear for 1997 entrepreneurs.
- ❖ In 1917, entrepreneurs tended to be those who were denied other avenues to success. In 1997, successful entrepreneurs tended to be those who had other avenues open to them, but who were able to take on higher-risk opportunities. The value of previous business experience appears to have diminished.

Introduction

Modern economies are dominated by corporations, yet the form and nature of corporations owe a great deal to individual entrepreneurs. Indeed, as Harold Livesay pointed out, "The American business landscape is dotted with firms that, while highly bureaucratized in structure, emerged as the institutional instrument of some determined men."[1]

Large corporations carry the imprint of entrepreneurship in a variety of ways. For example, the identities of many corporations were established early in their histories by the individuals who not only founded them, but oversaw their initial rapid growth and their consolidation as modern institutions.[2] Even after a corporation's founders have passed on, the top executives in the corporation frequently have entrepreneurial talents, which they developed in previous business ventures. A pool of entrepreneurial talent among a firm's executives can endow it with the ability to innovate in the face of a changing competitive environment.

This study assesses and compares the importance of entrepreneurship among chief executives of the 200 largest American corporations in 1917 and 1997. Looking back at the histories of these corporations and the entrepreneurs who have led them, one gains a valuable perspective on the place of entrepreneurs in the corporate world today. These companies have stood the test of time; their stories tell more about the ingredients for long-term success than do the experiences of recent startups. Moreover, comparisons across a broad span of time indicate which features of entrepreneurial success are possible constants, and which may be specific to a particular time, industry, or phase of industrial development. More importantly, understanding the evolution of yesterday's *Fortune* 200 can offer insights into understanding which of today's emerging firms may thrive to become tomorrow's General Electric or Microsoft and employ our children and grandchildren.

This study contains two major parts. First, it traces the origins of the 1997 *Fortune* 200 in order to determine how recently and in what ways these companies were built by entrepreneurs. Second, it compares the backgrounds of those entrepreneurs who founded and managed companies that were among the 200 largest American corporations in both 1917 and 1997. We uncover a number of commonalities, as well as some interesting differences, in the personal characteristics and social background of these executives. Not surprisingly, entrepreneurs and executives in both eras tend to more educated than average citizens. Yet at the same time, we find that, when compared to other senior executives, entrepreneurs in 1997 come from more privileged backgrounds than their 1917 predecessors. These comparisons offer some useful insights about the career patterns of successful entrepreneurs and the factors that account for success in both starting and growing a new business.

Having surveyed and compared the origins of large American corporations, as well as the characteristics and experiences of entrepreneurial CEOs, the following observations stand out:

- ❖ The origins of most large companies can be traced, directly or indirectly, to one or more entrepreneurial founders.
- ❖ It has become more difficult for an entrepreneur to lead a new company into the *Fortune* 200.
- ❖ Entrepreneurs are an important source of executive talent. Those who succeed as executives in large corporations share many of the characteristics of other executives.
- ❖ Successful entrepreneurs, like other executives, were more educated than the average person in 1917 and 1997. Although entrepreneurs, like the population, were more educated in 1997 than in 1917, fewer of them had college degrees than other executives. A remarkable number of entrepreneurs in the 1997 group had attended élite schools.
- ❖ Successful entrepreneurs, like other executives, came from relatively privileged backgrounds in 1917 and 1997. In 1917, however, they tended to be less privileged than other executives, whereas in 1997 they tended to be more privileged than other executives.
- ❖ Most successful entrepreneurs in 1917 had both significant experience in the same industry as their start-up, and an important innovation that propelled the growth of their company.
- ❖ In 1917, entrepreneurs tended to be those who were denied other avenues to success. In 1997, successful entrepreneurs tended to be those who could afford to take on risk. The value of prior experience appears to have diminished.

PART ONE:

Origins of the 200 Largest Corporations in 1997

The origins of the 1997 *Fortune* 200 list of corporations were traced in order to answer two questions: (1) How many of the two hundred largest companies were founded as entrepreneurial ventures? For this paper we are using entrepreneurial venture to describe a company started by one or more individuals that grew relatively rapidly by using some kind of technical, scientific, process or marketing innovation. (2) How many of these companies were formed through the acquisition or merger of predecessor companies that themselves can be traced back to entrepreneurial founders?

We began by identifying the circumstances surrounding the formation of each company. For each company, we determined its date of formation, the location of its headquarters at this date, and the person(s) or organization(s) responsible for the formation of the new company. We assigned each company to a category. The origin of each company was classified according to one of six types:[3]

1. *Entrepreneurial:* A company founded by one or more entrepreneurs that did not enter into any "significant" mergers during its history.[4] Examples of "entrepreneurial" companies include Eastman Kodak, Ford, Home Depot, and Microsoft.

2. *Company-founded:* A company founded by another company. Examples of "company-founded" corporations include AllState, which was founded and later spun off from Sears Roebuck, and TIAA CREF, which was founded by the nonprofit Carnegie Corp.

3. *Company spin-off:* A company spun off from another company. This was often the result of a government antitrust action. Examples include the breakup of AT&T and the Standard Oil Trust. Companies that resulted from these breakups include BellSouth and Mobil. Examples of a voluntary spin-off are AmeriSource Health, which was spun off from Alco Standard, and Lucent Technologies, which was spun off from AT&T.

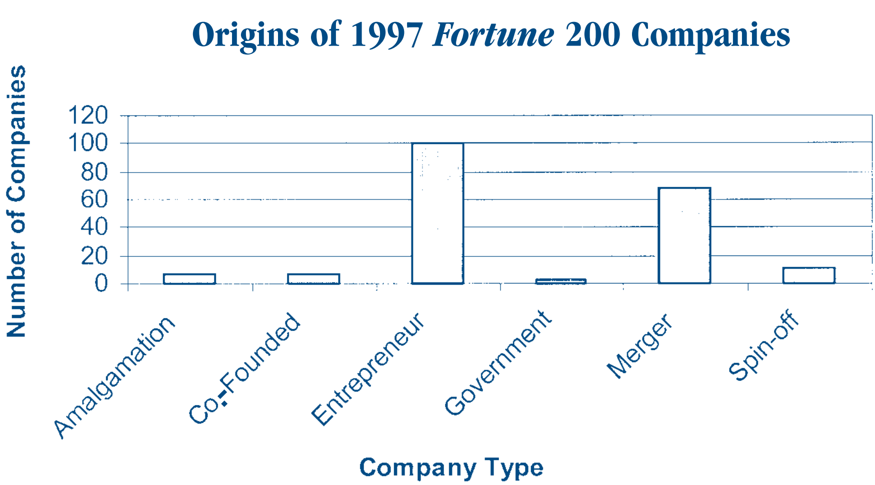
4. *Government-founded:* A company essentially founded by the government. Examples of "government-founded" companies include Fannie Mae, Freddie Mac, and Union Pacific. The latter traces its origins to the 1862 Union Pacific Railroad Bill that provided critical government loans and land grants to start the railroad. Some companies in U.S. history were also founded by state legislatures.

5. *Merger:* A company created as a result of the merger of two companies. A company was categorized as the result of a merger if a merger/acquisition in its history involved the joining of two companies nearly equal in size (measured by revenues), or if a small company acquired control of a much larger company. In some instances, the latter type of acquisition was a "body snatcher" type, in which a smaller company also took over a much larger company's name. Examples include Foremost Dairy's acquisition of McKesson and Primerica's acquisition of Travelers.

6. Amalgamation: A company founded through the merger of multiple predecessor companies in a very short period of time. This was more commonplace during the so-called "great merger movement" of the late nineteenth century and early twentieth century. An example of an amalgamation is the airline and airplane manufacturing company that resulted from the consolidation activities of Bill Boeing, Frederick Rentschler, and others in the late 1920s. This company was eventually split up into three parts: manufacturing operations west of the Mississippi became Boeing, manufacturing operations east of the Mississippi became Pratt & Whitney, and airline operations became United Airlines. The US Steel portion of USX Marathon also traces its origins to the amalgamation of a large number of steel companies at the turn of the century, including Carnegie Steel.

Even with such strict categorizing decisions, which would tend to bias results in favor of a classification of merged companies, 50.5 percent of the 1997 *Fortune* 200 companies could still be directly classified as "entrepreneurial" in origin (Figure 1). In contrast, companies that resulted from a significant merger/acquisition accounted for 34.5 percent. The remaining classifications accounted for only 15 percent combined.

FIGURE 1



For those *Fortune* 200 companies that were not classified as entrepreneurial in origin, a second level of analysis was conducted to determine the origins of their major constituent parts. The origins of these constituent companies were traced back through multiple levels of mergers and reorganizations in order to discover their entrepreneurial ancestry. Wherever possible, representative entrepreneurs associated with the beginnings of these earliest constituent parts were also identified (see Appendix for a simplified representation of this effort).

With the exception of a handful of government and company-founded corporations, nearly all the remaining companies not originally classified as "entrepreneurial" in origin could be traced at least in part to the activities of one or more entrepreneurs.[5] In other words, fully 197 (97.5 percent) companies found in the 1997 *Fortune* 200 were ultimately traced back to one or more entrepreneurial founders.

Many of the 1997 *Fortune* 200 companies were also among the largest corporations in 1917. This points to the remarkable durability of many large corporations, which in some cases were founded more than a century ago (see Figure 2).[6] Indeed, 38 of the 101 entrepreneurial companies in the 1997 *Fortune* 200 that can directly trace their origins to one or more entrepreneurs were founded in the nineteenth century (Figure 3). Twenty additional entrepreneurial companies were founded between 1900 and 1919. "Entrepreneurial" corporations founded before 1917 include Alcoa, Anheuser-Busch, Campbell Soup, Coca-Cola, Eastman Kodak, Ford, Gillette, Goodyear, H.J. Heinz, Johnson & Johnson, MetLife, 3M, Pfizer, Procter & Gamble, and Sears Roebuck. These examples show the lasting impact of entrepreneurship that took place in the nineteenth and early twentieth centuries. As of 1997, the largest ten such corporations accounted for 1.3 million jobs and well over $400 billion in revenues.[7]

FIGURE 2

Decades in Which *Fortune* 200 Companies Were Formed

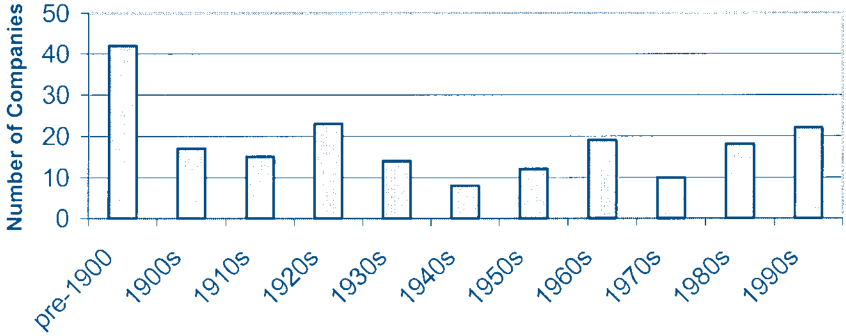
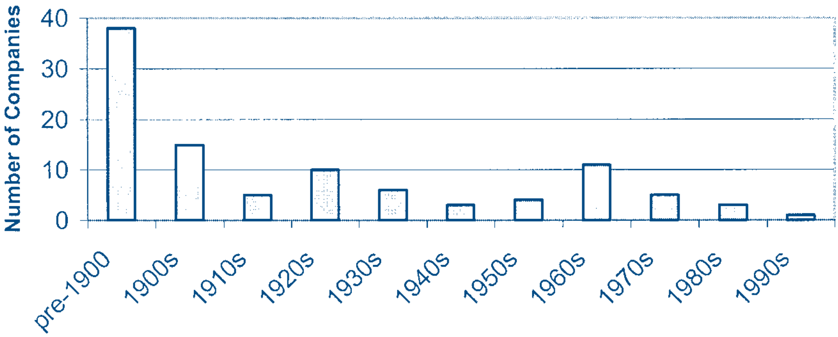


FIGURE 3

Decades in Which 101 "Entrepreneurial" Companies were Formed



The geographic origins of the 1997 *Fortune* 200 are also striking (see Figure 4). Given New York City's historical importance as a finance center, it is not surprising to find that 34 companies were created in New York state and 10 companies were created in New Jersey. Indeed, many companies created in New York and New Jersey during the great merger movement of the late nineteenth century (e.g., Standard Oil, US Steel, and Nabisco) had significant constituent parts that were originally formed in the Midwest and other regions of the United States. The relative absence of companies founded in the South (excluding Texas) is also noteworthy.

When only the origins of "entrepreneurial" companies are considered, a different picture emerges outside the South (see Figure 5). The South, outside Georgia, is notable for its conspicuous absence of "entrepreneurial" companies. In particular, California, Texas, Illinois, and Massachusetts stand out as centers for the creation of new companies that ultimately became part of the *Fortune* 200.

Although California and Texas today rank as the two most populous states, both were much less populous than many other states in the pre-World War II era when many *Fortune* 200 companies were formed. Both states were also less populous than New York until recent decades. When population is taken into account, relatively few entrepreneurial companies found in the *Fortune* 200 are found in states with large populations like New York, Michigan, and Pennsylvania. There could be any number of reasons for this. Could it stem from the dominance of the manufacturing base? Or do these other areas have education institutions or access to capital networks that are reflective of openness to change? One speculation is that very high concentrations of population and economic activity tend to lower productivity. "Congestion, bottlenecks, and inflexibility lead to high administrative costs and major inefficiencies…."[8] By contrast, dispersed and specialized clusters of companies are conducive to innovation and new business formation.[9]

FIGURE 4

Where *Fortune* 200 Companies Were Created

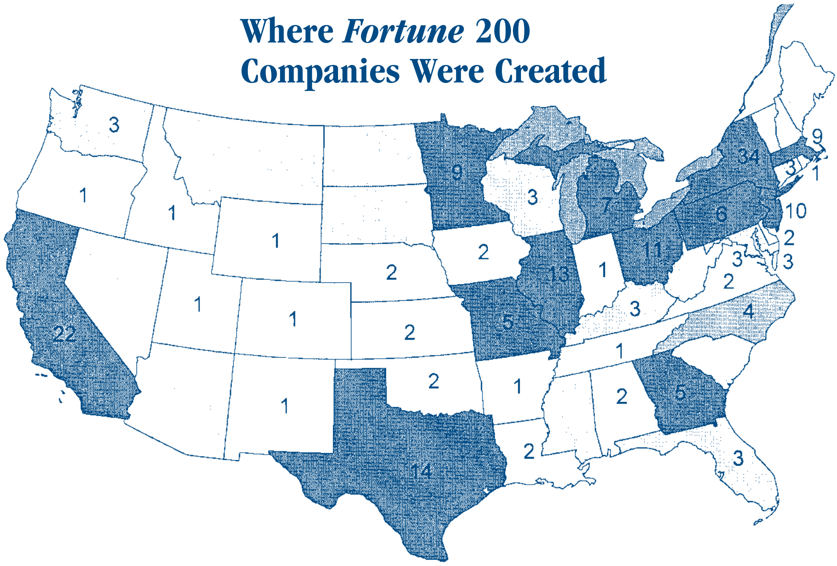
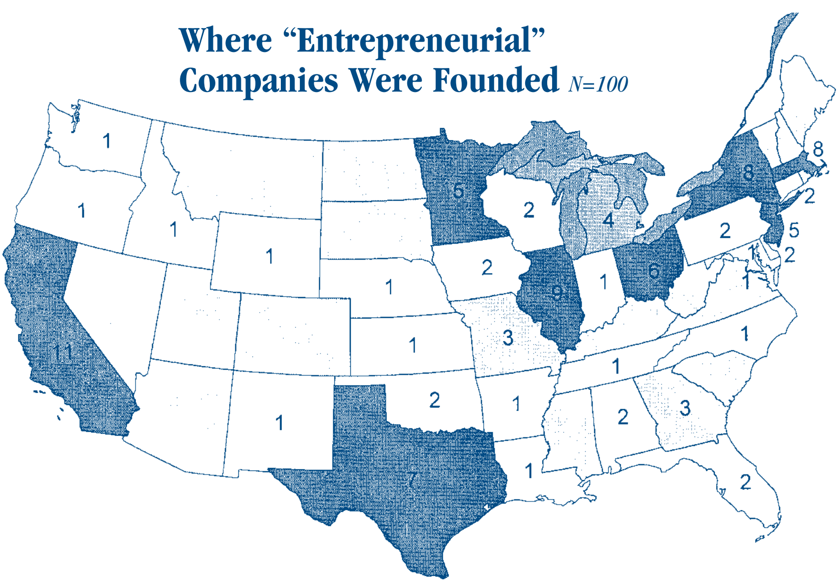


FIGURE 5

Where "Entrepreneurial" Companies Were Founded *N=100*



PART TWO:

A Comparison of the Chief Executive Entrepreneurs of America's Largest Corporations in 1917 & 1997

Entrepreneurs who built and led some of the largest corporations in the United States in 1917 and 1997 deserve to be studied for several reasons. First, they directed companies with spectacular records of growth that helped fuel the economic development of the United States. In this respect, they represent the ultimate entrepreneurial success stories. At some of the most successful companies, a corporate identity and culture were established by the entrepreneur(s) who founded them and oversaw their initial rapid growth and consolidation as modern institutions. For example, many of Hewlett Packard's current management and employment practices date back to the original "H-P Way" pioneered by founders William Hewlett and David Packard.

Second, these entrepreneurs held the levers of power at some of the largest companies in the United States. The resources at their disposal were in many cases enormous and the decisions reached by them often had important consequences.

Third, these entrepreneurs are interesting because they were not only successful in creating a company, but were also sometimes successful as chief executives running a company. Entrepreneurs, such as Bill Gates and Sam Walton, who can succeed in both starting a new venture and running a major corporation, are a rare breed. This class of chief executives therefore can offer insights into the commonalities of entrepreneurial and managerial success.

Finally, an examination of the family backgrounds of this class of individuals yields insights into what extent equality of opportunity exists in the United States and how this condition has changed between 1917 and 1997. While not all entrepreneurs can realistically hope to become CEOs of *Fortune* 200 corporations, they can benefit from knowledge of the opportunities and barriers in the career paths of successful entrepreneurs who preceded them.

Methodology

This study used two lists to discover which entrepreneurs were leading America's largest corporations in 1917 and 1997. The first list was comprised of the two-hundred largest industrial corporations selected on the basis of their assets in 1917.[10] The second list was comprised of the top two-hundred corporations on the *Fortune* 500 list from 1997.[11]

From these two lists we extracted for study the subset of CEOs active in 1917 or 1997 who had founded the company they headed. This yielded 27 entrepreneurs who were still at the head of their corporation in 1917, and 10 entrepreneurs in 1997 (see Tables 1 & 2). Rounding out the 200 executives on each list were CEOs who had attained their positions by rising through company ranks, being recruited from management in another company, acquiring or merging companies, or practicing as professionals.[12]

Entrepreneurs from 1917 through 1997

By the early twentieth century, many of the entrepreneurial giants of American business were no longer active in business. Men like Phillip D. Armour, Andrew Carnegie, Henry C. Frick, E. H. Harriman, James J. Hill, and John D. Rockefeller had either died or retired. In some cases their relatives, trained as professional managers, took over the corporations they had founded. More often their successors were "organization men," executives who climbed the corporate ladder in increasingly departmentalized, integrated enterprises as bureaucrats often well-versed in various corporate functions, or as trained professionals (lawyers, engineers, etc.).

TABLE 1

1917 Entrepreneurs

Name	Company	Industry Type
George Matthew Verity	American Rolling Mill	Primary Metal Industries
Joseph Boyer	Burroughs Adding Machine	Industrial Machinery & Equipment
William Crapo Durant	Chevrolet/GM	Transportation Equipment
Joshua S. Cosden	Cosden	Petroleum & Coal Products
Cyrus H. K. Curtis	Curtis Publishing	Printing & Publishing
John Francis Dodge, Sr.	Dodge Brothers	Transportation Equipment
George Eastman	Eastman Kodak	Instruments & Related Products
Harvey Samuel Firestone	Firestone	Rubber Products
Harry Thatcher Dunn	Fisk Rubber	Rubber Products
Henry Ford	Ford	Transportation Equipment
John Barneson	General Petroleum	Petroleum & Coal Products
Frank Augustus Seiberling	Goodyear	Rubber Products
Garret Schenck	Great Northern Paper	Paper & Allied Products
Henry John Heinz	H. J. Heinz	Food & Kindred Products
Harry Hart	Hart, Schaffner & Marx	Apparel & Other Textile
Harry Clay Trexler	Lehigh Portland Cement	Stone, Clay, & Glass Products
Robert Alexander Long	Long-Bell Lumber	Lumber & Wood Products
Edward Laurence Doheny	Pan American Petroleum	Petroleum & Coal Products
Wallace Hurtte Rowe	Pittsburgh Steel	Primary Metal Industries
Harry Ford Sinclair	Sinclair Oil	Petroleum & Coal Products
Christian Girl	Standard Parts	Transportation Equipment
John Morrison Hansen	Standard Steel Car	Transportation Equipment
Jonathan Warner	Trumbull Steel	Primary Metal Industries
Louis Kroh Liggett	United Drug	Chemicals & Allied Products
Eldridge Reeves Johnson	Victor Talking Machine	Electronic & Other Electric Equipment
John Guthrie Luke	West Virginia Pulp & Paper	Paper & Allied Products
James Anson Campbell	Youngstown Sheet & Tube	Primary Metal Industries

TABLE 2

1997 Entrepreneurs

Name	Company	Industry Type
Richard M. Schulze	Best Buy	Furniture & Homefurnishings Stores
Michael S. Dell	Dell Computer	Industrial Machinery & Equipment
Frederick W. Smith	Federal Express	Transportation Company
Arthur M. Blank	Home Depot	Building Materials & Garden Supplies
Leslie H. Wexner	The Limited	Apparel & Accessory Stores
Laurence A. Tisch	Loews	Hotels
William H. Gates, III	Microsoft	Business Services
Philip H. Knight	Nike	Leather & Leather Products
Alan F. Shugart	Seagate Technology	Industrial Machinery & Equipment
Scott G. McNealy	Sun Microsystems	Industrial Machinery & Equipment

TABLE 3

1997 CEOs With Previous Entrepreneurial Experience

Name	Company	Industry Type
Donald R. Roden	Bergen Brunswig	Wholesale Trade Nondurable Goods
Robert D. Walter	Cardinal Health	Wholesale Trade Nondurable Goods
David A. Arledge	Coastal	Petroleum & Coal Products
Thomas F. Frist, Jr.	Columbia/HCA Healthcare	Health Services
James D. Sinegal	Costco	Wholesale Trade Nondurable Goods
Stanley P. Goldstein	CVS	Miscellaneous Retail
Robert P. Palmer	Digital Equipment	Industrial Machinery & Equipment
James A. Johnson	Fannie Mae	Nondepository Institutions
Anthony J. F. O'Reilly	H. J. Heinz	Food & Kindred Products
Robert L. Peterson	IBP	Food & Kindred Products
Floyd Hall	Kmart	General Merchandise Stores
H. Wayne Huizenga	Republic Industries	Auto Repair, Services, & Parking
Steve A. Burd	Safeway	Food Stores
Sanford I. Weill	Travelers	Insurance Carriers

Entrepreneurial founders still headed a considerable number of America's 200 largest corporations in 1917. Entrepreneurs like Andrew Carnegie and John D. Rockefeller are still well-known today. Others remain recognized because a brand or corporate name is based on the family name. Henry Ford, John Francis Dodge, George Eastman, Henry John Heinz, and Harvey Samuel Firestone fall in this latter category.

Nonetheless, most of this group are comparatively unknown today even though they played a critical role in many emerging industries like automotive, chemicals, electrical machinery, photographic instruments, and rubber manufacturing. Lesser-known entrepreneurs who helped transform their industries included: Cyrus Curtis, the founder of *Ladies Home Journal* and several other large-circulation magazines; Eldridge Reeves Johnson, the founder of Victor Talking Machine Company; Frank A. Seiberling, the founder of Goodyear; and William C. Durant, entrepreneurial founder of Chevrolet and later the organizer of General Motors.

Other chief executives of large corporations in 1917 gained vital experience as entrepreneurial founders of small companies, which were later consolidated with other companies in the “great merger movement” at the turn of the century. Examples of these chief executives who enjoyed managerial success in a small company before running a large corporation include: Daniel Guggenheim (American Smelting and Refining), Albert Erskine (Studebaker), Julius Kessler (Distillers Securities), and William A. Thomas (Brier Hill Steel). The role of entrepreneurial start-ups in providing important human capital for large corporations in the early twentieth century was therefore vital.

As American industry matured, the backgrounds of senior corporate managers also evolved. During the 1950s and 1960s, America’s largest industrial organizations were typically run by “company men” who had spent their entire career at the same company. At the same time, new industries developed during World War II, such as jet engines and electronics, were being created and helped to transform mature sectors. These new technologies had an immediate and profound impact on transportation and telecommunications. Many established firms, such as IBM, Honeywell, and Sperry Rand were successful exploiters of these new technologies. But, these innovations also opened up the marketplace for entrepreneurs, such as Hewlett and Packard, who were able to capitalize on this revolution in electronics.

The wave of innovation characterized by Hewlett and Packard transformed the *Fortune* 200 by 1973. At that time, the list included many new entrepreneurial companies in the electronics and information processing industries. These entrepreneurial start-ups included Emerson Electric, Control Data, Raytheon, Texas Instruments, and Xerox. Other entrepreneurs, like Sam Walton (Wal-Mart), exploited specialized opportunities in marketing, distribution, or logistics created in part by these new technologies. Moreover, a large number of other start-ups stimulated the economy, but were acquired by large conglomerates seeking to diversify into unrelated industries in response to increasing domestic and international competition.

By 1997, most of the entrepreneurial founders of the 200 largest U.S. corporations with post-war origins had retired or died. Yet, most of these firms remain as big players in the U.S. corporate circles. Meanwhile biotechnology, microprocessors, and the Internet had emerged as the consensus choices for “industries of the future.” Yet, in 1997, the *Fortune* 200, contains few ventures in these sectors. Microsoft, Dell Computer, and Sun Microsystems are the only such corporations found on the list. This finding certainly does not imply that entrepreneurs are no longer influential at the apex of large corporations. Entrepreneurship continues to thrive in these sectors, and in other industries that are often overlooked. Examples found in the *Fortune* 200 include: Fred Smith, founder of Federal Express; Laurence Tisch, founder of Loews hotels and theaters; and Arthur Blank, co-founder of Home Depot. In addition, a number of successful entrepreneurs have gone on to lead different companies in the top 200. Examples include Stanley Goldstein, co-founder of CVS and then CEO of the company renamed CVS (formerly Melville), which acquired the original CVS; and Wayne Huizenga, who built up Waste Management and Blockbuster Video, before becoming CEO of Republic Industries.

The greater size of the largest corporations of 1997 compared against the largest corporations of 1917 (greater even as measured in 1917 dollars) raises the threshold for entry by entrepreneurial newcomers to this elite group. The successes of the few who have gained entry are therefore all the more spectacular. This study focuses on the experiences of this relatively small group of companies with two views in mind: first to see whether their founders resemble the CEOs of other large corporations, and second, to identify any patterns in their entrepreneurship that might be relevant to founders of smaller, growing companies.

Comparison of 1917 and 1997 Entrepreneur CEOs of Major Corporations

Comparisons are made between two sets of executives for each year, as well as between 1917 and 1997. The subset of CEOs in office during the selected years who had founded the large corporations they headed ("entrepreneur CEOs" or "entrepreneurs" for short) is compared against the set of all CEOs in office at the 200 largest corporations ("CEOs"), including the entrepreneurs. For some variables, the 1997 group of entrepreneurs (Table 2) has been expanded to include the other 14 CEOs ("ex-entrepreneurs," listed in Table 3) who had significant entrepreneurial experience in another company (not a *Fortune* 200 company).

This section addresses two sets of questions: What are the personal characteristics of entrepreneurial CEOs with regard to their geographic origin, age, education, religion, political identity, family background, and military experience? What are the patterns in the experiences and resources critical to starting the company? The variables were selected partly by the availability of information in corporate and personal histories, but also because these types of variables have been employed in major previous studies of executives.[13] Gender and race are excluded—no women and no blacks were among the CEOs of either top 200 list. The approach is inductive—not all variables turned out to be significant, and some variables appeared to have interrelated effects. The key question is how entrepreneurial CEOs compare to other CEOs.

Birthplace. The birthplaces of entrepreneur CEOs (and ex-entrepreneurs) are listed by region in Tables 4 & 5. It is not surprising that of the 1917 group no entrepreneur was born in the West, because the area was scarcely populated at the time of their birth. Of some interest, however, is the fact that more were born in the Midwest than in the Northeast. According to the 1860 census, the population of the Northeast, (10,594,000), slightly exceeded the population of the Midwest (9,097,000). Of note is that 92 of the 1917 group of 200 CEOs were born in the Northeast (mostly from New York, Pennsylvania, and Massachusetts), compared to only 59 from the Midwest (mostly from Ohio, Illinois, Wisconsin, and Michigan). The late 19th century boom in the Midwest economy, and the rise of new regional industry centers (such as automobiles and meat packing) may help explain this result. Of the 11 entrepreneurs from the Midwest, five were involved in the automobile or related industries and five in the steel industry. Meanwhile, none of the 17 CEOs born in the New York City area was an entrepreneur. Overall, very few CEOs originated in the South, in spite of its substantial population. (Three of the entrepreneurs from the "South" were from Mid-Atlantic states.) Three entrepreneurs were immigrants (from Canada, Scotland, and Germany), which is in line with what would be expected from the overall group, which had 18 immigrants.

TABLE 4

BIRTHPLACE, 1917

	Entrepreneurs	*CEOs*[14]
Northeast	9	93
Midwest	11	58
South	4	27
West	0	4
Foreign	3	18

Table 5, for 1997, shows a shift in entrepreneurs' birthplaces to the South and West, which paralleled general population movements. Birthplaces of the group of 200 CEOs shifted similarly. Two of the three entrepreneurs born in the West were involved in the computer industry, but no general patterns emerge in the distribution of birthplaces for this year. It appears that successful entrepreneurs could arise from any region and in a variety of industries. By 1997, birthplace had become less of a factor in the rise of highly successful entrepreneurs.

TABLE 5

BIRTHPLACE, 1997

	Entrepreneurs	*Ex-entrepreneurs*	*CEOs*[15]
Northeast	2	3	68
Midwest	3	5	58
South	2	5	33
West	3	0	19
Foreign	0	1	12

Education. The entrepreneurs of 1997 were far more educated than the entrepreneurs of 1917, as seen in Tables 6 & 7. Yet although most CEOs in 1917 were not highly educated by today's standards, they had disproportionately high levels of education compared to the population of that time. The 1917 entrepreneurs had similarly high levels of education. However, none attended élite, Ivy League schools and none did postgraduate study (compared to 9% of CEOs overall).

TABLE 6

HIGHEST LEVEL OF EDUCATION, 1917

	Entrepreneurs	*CEOs*[16]
No High School	2	9
High School	14	89
Attended College	10	67
Post Graduate Study	0	17

Education levels of the 1997 entrepreneurs were similar to those of 1997 CEOs overall, with the following exceptions. Fewer entrepreneurs and ex-entrepreneurs had at least a college degree: about 75% (counted together) versus 95% of all CEOs. A disproportionate number of entrepreneurs attended Ivy schools: two from Harvard, one Yale, one U. Penn, and one Cornell. A lower number attended graduate school, 4 out of 10 versus 62%, and in particular fewer of them received MBAs. Knight of Nike and McNealy of Sun Microsystems both earned Stanford MBAs, and Walter of Cardinal Health (an ex-entrepreneur) earned a Harvard MBA. The least educated 1997 entrepreneur was Schulze of Best Buy, who was a high school graduate who did not attend college, the only one out of 200 CEOs. Dell and Gates both dropped out of college, as did three of the ex-entrepreneurs.

TABLE 7

HIGHEST LEVEL OF EDUCATION, 1997

	Entrepreneurs	*Ex-entrepreneurs*	*CEOs*[17]
No High School	0	0	0
High School	1	0	1
Some College	2	3	10
College Degree	4	3	68
Graduate Degree	3	8	121

Background. The 1917 entrepreneurs had fathers with diverse occupations, but were less privileged than the overall group (Table 8).[18] For example, only three had fathers who were company executives (11%), versus nearly 40% of all CEOs' fathers. Also, 39% of the entrepreneurs were sons of farmers or workers, versus 23% of all CEOs. In that era, many career paths were closed off. For example, Campbell of Youngstown Sheet & Tube, was admitted to West Point, but his family could not afford the education. Ten entrepreneurs had experience working in a family business or at the same company where the father worked, which was fairly typical of the pattern among CEOs of that time overall.

TABLE 8

FATHER'S OCCUPATION, 1917

	Entrepreneurs	*CEOs*[19]
Executive	3	55
Farmer	6	20
Finance	2	3
Government	0	2
Manager	1	5
Professional	3	20
Small Businessman	5	21
Worker	3	11

The 1997 entrepreneurs and ex-entrepreneurs also had fathers with diverse occupations, but appear to have come disproportionately from privileged backgrounds (Table 9). One-third had fathers who were company executives, versus 22% of all CEOs' fathers. No entrepreneur, and only one ex-entrepreneur, was a son of a worker or farmer, whereas 24% of all CEOs were sons of workers or farmers. Tisch of Loews and his brother got their start in business by buying a hotel with the assistance of their parents. Federal Express founder Fred Smith's father was a millionnaire owner of Greyhound buses. McNealy's father was vice chairman of American Motors. Dell's father was a well-off orthodontist and his mother a stockbroker. Gates's father was an attorney. Wexner's father owned a women's clothing store and loaned his son money to start another store, which developed into the Limited. Only Wexner, Schulze, and two ex-entrepreneurs worked for a family business, but by 1997 few CEOs had that experience.

TABLE 9

FATHER'S OCCUPATION, 1997

	Entrepreneurs	*Ex-entrepreneurs*	*CEOs*[20]
Executive	4	2	23
Farmer	0	0	8
Finance	0	0	6
Government	0	2	14
Manager	0	0	7
Professional	2	0	11
Small Businessman	3	4	18
Worker	0	1	17

The occupational experiences of the 1917 entrepreneurs prior to starting their own company were very diverse, and many had experience in multiple functional areas. Allowing for double counting, at least 17 had experience in production, 8 in sales, 5 in accounting, 4 in finance, 4 in machine work, 3 as clerks, and 2 as engineers. Many entrepreneurs had to manage all aspects of a business from early on and therefore acquired first-hand experience in most functional areas. Eight had previously been the CEO of another company.

Among the 1997 entrepreneurs, too, diverse functional areas were represented, including technology and operations management, sales and marketing, accounting, and finance. Only one out of the ten entrepreneurs, Tisch, was previously a CEO of another company, before heading the company in the study.

How can we explain the increasingly privileged background of entrepreneurs in 1997 relative to 1917? At least two factors account for these changes. First, large family-run firms, which were not uncommon in 1917, had become rare by 1997. Thus, children from executive families could no longer expect to inherit an executive position in a major corporation—27% of the 1917 CEOs had "inherited" large corporations from relatives, while only 7% of the 1997 CEOs had done so. Men from executive families had to seek new avenues to achieve corporate prominence. Second, the dramatic expansion of education in the latter half of the twentieth century created new opportunities for advancement in business. Government scholarships, especially the GI bill, opened up the corporate élite to candidates from less privileged backgrounds.[21] Whereas formerly the less privileged, who were denied admission to the business establishment, might assume the risk of entrepreneurship as their only hope of success, later on they could pursue careers in big corporations on the basis of their educational credentials. Entrepreneurship then became a relatively riskier option for the less privileged, who had loans to repay and promising careers they did not want to abandon.

Age. The median age in 1917 of entrepreneurs who were CEOs of top-200 corporations was 56 years; thus, the "typical" entrepreneur was born in 1861. The median age of all CEOs was 54 years. The median age at which entrepreneurs became CEOs of companies that would enter the top 200 was 40 years. The youngest to become CEO was Long of Long-Bell Lumber, at age 25, followed by George Eastman at age 26. The oldest was Boyer of Burroughs Adding Machine at age 57.

The median age in 1997 of entrepreneurs who were CEOs of top-200 corporations was 55.5 years; thus, the "typical" entrepreneur was born around 1942. The median age of all CEOs was 57 years. The median age at which entrepreneurs became CEOs of companies that would enter the top 200 was 26.5 years. The youngest to become CEO was Dell, at age 19, followed by Gates at age 20. The oldest was Blank of Home Depot, at age 55, although he was with the company for many years before he succeeded co-founder Bernard Marcus. In general, it appears many more young people were becoming entrepreneurs by the 1990s.[22]

To explain why the age of highly successful entrepreneurs has dropped, three factors are particularly relevant. The first is experience: it takes time to accumulate experience, and with it knowledge of an industry, a reputation, and connections within the business and financial worlds.[23] Second, if one does not inherit wealth and connections, it can take years to accumulate enough savings to obtain financing for a start-up. Third, in industries with high start up costs, financial backing and industry experience become more critical.

In 1917, many of the largest corporations were in industries, such as steel, railroad cars, and automobiles, with high start-up costs. These industries required large capital investments to exploit economies of scale and scope. First mover advantages meant that latecomers had to invest even greater amounts.[24] Accordingly, many entrepreneurs in these areas had acquired extensive experience and capital before launching a successful venture. William C. Durant, who founded General Motors in 1908, started on a small scale. He co-founded the Durant-Dort Carriage Co. in 1886, and organized Buick much later, in 1905. He thus gained valuable industry experience, plus the impressive financial connections required for a large-scale venture like GM.

By the late 1970s, new industries such as microcomputers faced lower start-up costs and without economies of scale.[25] In these fragmented markets, youngsters like Bill Gates and Michael Dell could thrive. They could apply their talents on a small scale in the emerging industry, without ever having been employees of computer manufacturers. Moreover, the newness of the industry and the high pace of technological change in this era diminished the value of industry experience. By contrast, Home Depot spent enormous sums initially on inventory and its first stores. Its founders, Marcus and Blank, were both seasoned retail executives, able to secure the venture capital they needed. Fred Smith, who had to buy aircraft and set up expensive national networks to start Federal Express, had the advantage of coming from a very wealthy family, but also enjoyed first-mover advantages in his industry.

Despite the growing importance of information technology, the "new economy" has probably not changed start-up costs and entrepreneurial demographics once and for all. Industrial evolution tends to follow cyclical paths, in which emerging industries are first characterized by fragmented competition and low barriers to entry, but later become capital-intensive and more highly concentrated.[26] When this shift occurs in an industry(ies), its group of leading entrepreneurs might be expected to possess greater experience and resources, in addition to good ideas.

Entrepreneurial Experiences. A strong pattern that emerges from the 1917 data is that, with only two exceptions, the entrepreneurs all had previous experience or extensive knowledge in the same or related industry. For instance, Verity was a manager for a steel roofing company, Curtis was a publisher, Eastman was a serious amateur photographer, Harry Hart and his brother Max had two retail stores, and Luke of West Virginia Pulp & Paper had worked for his family's pulp mill. Boyer ran a small machine shop for three decades before he founded Burroughs Adding Machine.

In a number of cases, the entrepreneurs had previously started other ventures. Doheny's record was remarkable. He capitalized early on several mineral booms, and was the first to strike and sell oil in Los Angeles and again later, once he had lost this fortune, in Mexico. The only exceptions to this pattern were Long, who benefited from good location and timing, and Trexler, who already had a thriving lumber business before he started a number of unrelated companies, including Lehigh Portland Cement.

In 1997 the pattern of experience is less clear. Blank was a successful hardware chain executive, Smith was in aviation, McNealy had production experience, and Schulze worked as a manufacturer's representative before going into retail on his own. Shugart was an engineer with IBM and Memorex, then started Shugart Associates, famous for making floppy-disk drives. After being forced out, he took a five-year hiatus living in a beach house, before founding Seagate Technology, manufacturer of hard drives for PCs. Gates and Dell developed their talents for computers as teenagers, but were never employees of computer companies and were successful with their first serious ventures started in college. Thus, they had considerable knowledge of personal computers, but not much industry experience. Tisch, Wexner, and Knight started on a small scale and built up experience along with their ventures (although Knight was a runner and Wexner the son of retailers).

Once founded, the 1917 and 1997 entrepreneurs' companies enjoyed fairly steady and rapid growth and prosperity. The challenges they faced are only apparent in the failed ventures in which some of them previously engaged. However, several of these faced difficult patent suits. For example, Firestone, Ford, and Goodyear all had to defend their technologies in their early development.

Politics. Eighteen of the 1917 entrepreneurs are known to have been Republican, versus two Democrats. The overall group was 86% Republican and 12% Democratic. One of the 1997 entrepreneurs (and five of the ex-entrepreneurs) is known to have been Republican, while three of the entrepreneurs (and two of the ex-entrepreneurs) are known to have been Democrats. The overall group was 81% Republican and 18% Democratic.

Religion. Eight of the 1917 entrepreneurs were Presbyterian, seven Episcopalian, two Congregationalist, two Roman Catholic, and one each Lutheran, Jewish, and Campbellite. This distribution is roughly similar to the overall group's religious affiliations, which were also dominated by Episcopalians and Presbyterians. The distribution does not match that of the general population.

Religious affiliation, if any, is much harder to determine for the 1997 entrepreneurs, but in striking contrast with 1917 and with the overall group of CEOs, four out of ten were Jewish

Military Experience. There was no evident difference between the overall class of chief executives and entrepreneurial chief executives. Of the 1917 entrepreneurs, three served in the military, which is roughly proportional to the overall class of chief executives. For 1997, three of the entrepreneurs and three of the ex-entrepreneurs had military experience, which is also roughly proportional to the overall group.

Innovation. The majority of entrepreneurs were associated with important innovations, often unique, that propelled their companies to success in their formative years. The more famous of these are listed in Tables 10 & 11. In some cases, the company offered a new or better product, such as the adding machine, Eastman's camera, or the hard drive for PCs. In other cases the company found a more efficient or effective way of producing, distributing, or marketing the product. Verity of American Rolling Mill and Sinclair of Sinclair Oil realized that through integrated production they could achieve economies of scale and increase their control over supply. Dell of Dell Computer cut out the middle man and sold directly to customers, while Smith of Federal Express created a centralized national network for distribution, at the same time virtually creating the express delivery industry. Heinz displayed the superior quality of his products with clear bottles, while Knight of Nike got famous athletes to endorse his shoes.

Some of these innovations were based on new technologies or creative use of new technologies. Others were based on very simple concepts. The publisher Cyrus Curtis discovered by chance the tremendous popularity of a magazine tailored for women, such as *Ladies' Home Journal*. Wexner of the Limited found a niche by selling selected women's sportswear. In most cases, innovation appears to have provided a great advantage, even if it alone did not guarantee business success.

TABLE 10

INNOVATIONS THAT HELPED LAUNCH 1917 COMPANIES

COMPANY	*INNOVATION*
American Rolling Mill	Integrated steel plant
Burroughs Adding Machine	Adding machine
Chevrolet/GM	Variety of car models
Curtis Publishing	Women's magazine
Dodge Brothers	Car design innovations
Eastman Kodak	Simplified camera, mass marketing
Firestone	Tire-fastening device
Ford	Low-cost car
General Petroleum	Pipeline
Goodyear	Straight side tire, tire-making machine
Great Northern Paper	Largest mill, sulphite pulp
H. J. Heinz	Packaging, higher crop yield
Hart, Schaffner & Marx	Selling from swatches, advertising
Sinclair Oil	Integrated oil company
Standard Steel Car	Steel railway car
United Drug	Drug store chain
Victor Talking Machine	Improved gramophone
West Virginia Pulp & Paper	Sulphite pulp

TABLE 11

INNOVATIONS THAT HELPED LAUNCH 1997 COMPANIES

COMPANY	*INNOVATION*
Dell Computer	Direct selling to end-users
Federal Express	Spoke & hub distribution system
Home Depot	Wide assortment, low prices, knowledgeable staff
The Limited	Limited line of women's sportswear
Microsoft	Operating system for PCs
Nike	High-quality, low-cost shoes; marketing
Seagate Technology	Hard drive for PCs
Sun Microsystems	Low-cost computer workstations

Resources. The resources required by entrepreneurs in different industries and situations varied significantly, as did the ways in which entrepreneurs managed to secure resources. Nearly all had to solve the problem of acquiring financing to meet start-up costs or to enable growth necessary to sustain competitiveness. Sources of financing in both cohorts included equity capital, stock issues, personal funds, and loans from family or friends.

The experiences differed depending on the size of the new venture, the entrepreneur's personal wealth, and the entrepreneur's connections in financial circles. Very simply, most entrepreneurs had to draw on "human capital," too, in some way or another. Very few seem to have succeeded without substantial assistance from one or two closely involved individuals. In some cases the assisting individual was a dependable investor. Eastman was supported financially by Henry A. Strong, a buggy whip manufacturer; Ford by Alexander Y. Malcomson, a coal dealer. Often a business partner played a vital role, such as C. A. Canfield, who accompanied Doheny of Pan American on several prospecting expeditions; Paul Allen, who as a teenager started programming with Gates; or Vinod Khosla, who led the creation of Sun Microsystems and enlisted McNealy to manufacture the workstations. Knight even enlisted his well-known university running coach, Bill Bowerman, to help make and sell shoes. Family members can be partners, as with the Dodge brothers; Cyrus Curtis's wife Louisa Knapp Curtis, who edited the *Ladies' Home Journal*; or the Tisch brothers. They can also provide start-up capital, as they did for Tisch, Dell, Wexner, and Knight. Finally, there may be an inventor who provides the product, such as William S. Burroughs, who invented the adding machine, or James A. Sweinhart, who invented the tire that Firestone sold.

From historical accounts, in very few cases did the government seem to provide direct assistance or a direct barrier to entrepreneurship, although government policies often set the entrepreneurial framework. The 1876 repeal of the Southern Homestead Act opened up vast timberland in the South, which Long-Bell Lumber was able to buy at bargain prices. Liberty Mutual, originally called the Massachusetts Employees Insurance Association, was founded in 1912 in response to the enactment of the Massachusetts Workmen's Compensation Law. Fred Smith's initial vision for Federal Express involved speed delivery of checks between Federal Reserve banks. This idea fell through when the Federal Reserve turned him down. His revised vision was limited for years by federal cargo regulations on the size of aircraft. The company's fortunes did not surge until the passage of airline deregulation in 1977.

Conclusion

Throughout America's history, in times of boom and bust, entrepreneurs and entrepreneurship have played a critical role in the economy. Even in the darkest days of the great depression, entrepreneurs started companies that became the economic powerhouses of today. To understand today's economic landscape, it is important to reflect on the role that entrepreneurs have played—and continue to play—in building companies and creating jobs.

ENDNOTES

1 Harold C. Livesay, "Entrepreneurial Persistence through the Bureaucratic Age," *Business History Review* 51, no. 4 (1977): 419.

2 See James C. Collins and Jerry I. Porras, *Built to Last: Successful Habits of Visionary Companies* (New York: HarperBusiness, 1994).

3 One caveat is necessary. Some companies are ultimately the product of several of these organizational types. For example, Morgan Stanley Dean Witter can be seen as resulting from a 1990s merger of two companies: Morgan Stanley and Dean Witter Discover. But Dean Witter Discover was itself a spin-off from Sears. Morgan Stanley was a spin-off that resulted from government legal actions that forced the House of Morgan to separate its investment banking and trust operations during the 1930s. One can also trace the origins of the House of Morgan and the origins of Dean Witter to an entrepreneurial founder. Part of the company was even "company founded" (i.e., the Discover card part of the business). We have classified each company according to the last significant event that took place in its history before the end of 1997. For this reason, Morgan Stanley Dean Witter was classified as a merger.

4 A "60–40" rule was followed in order to determine the "significance" of a merger. If a merged/acquired company accounted for more than 40 percent of combined revenues of the companies involved in the merger, the resulting company was not considered "entrepreneurial." When a company grew by acquiring companies that were much smaller than itself, however, it was considered to be a continuation of the same company.

5 In the case of spin-offs, the founder of the parent company was credited as the entrepreneurial founder (e.g., Alexander Bell, et al., are credited with the origins of Lucent Technologies and Baby Bells).

6 There also seems to be a correlation between company formation and prolonged periods of high economic activity.

7 "Historical Financials and Employees" for each company. Available from Hoover's Online. <http://www.hoovers.com/premium/fin_tables> (14 February 2001). The companies are: Ford Motor, AT&T, Texaco, State Farm Insurance, E.I. du Pont, Sears Roebuck, Prudential Insurance, Chevron, Procter & Gamble, and Citicorp.

8 Michael E. Porter, "Clusters and the New Economics of Competition," *Harvard Business Review* (November–December 1998): 86.

9 Ibid., 83–84, 86.

10 This list of companies is essentially drawn from a list created by Thomas Navin. It was later modified by Alfred Chandler in his pioneering studies. The current study made several modifications in the list because of several problems with the Navin and Chandler lists. See Thomas R. Navin, "The 500 Largest American Industrials in 1917," *Business History Review,* Vol. 44, no. 3 (Autumn 1970): 360–386. For Chandler's use of and comments on this list, see *Visible Hand,* p. 569, n. 1, and pp. 503–513.

11 The *Fortune* list draws on a wider base of companies than industrials. It also includes utilities, transportation companies, and financial firms. The *Fortune* ranking is also done on the basis of revenues and not assets.

12 Much of the groundwork for this study on U.S. entrepreneurs was completed as part of a study on chief executives of America's two hundred largest corporations, supported and funded by the Harvard Business School. The larger project was originally conceptualized by Richard S. Tedlow, MBA Class of 1957 Professor of Business Administration, Harvard Business School. Sources consulted on the CEOs include biographies obtained from biographical dictionaries, obituaries, newspaper articles, books, and from the companies themselves. Information on the companies comes from *Moody's Manual,* books, business periodicals, trade journals, and corporate histories.

13 See, for example, Mabel Newcomer, *The Big Business Executive: The Factors That Made Him, 1900–1950* (New York: Columbia University Press, 1955).

14 These data were supplied by Professor Richard S. Tedlow and may not be reproduced without his written permission.

15 Ibid.

16 Ibid.

17 Ibid.

18 See also Orvis Collins and David G. Moore, *The Organization Makers: A Behavioral Study of Independent Entrepreneurs* (New York: Appleton-Century-Crofts, 1970) for a similar set of findings in the 1950s.

19 These data were supplied by Professor Richard S. Tedlow and may not be reproduced without his written permission.

20 Ibid.

21 Keith W. Olson, "The G. I. Bill and Higher Education: Success and Surprise," *American Quarterly* 25, no. 5. (1973): 596-610.

22 Mark Robichaux, "Teens in Enterprise Discover Credibility is Hard to Earn," *Wall Street Journal,* 9 June 1989.

23 Collins and Moore, *Organization Makers,* pp. 63–84.

24 Alfred D. Chandler, Jr., *Scale and Scope: The Dynamics of Industrial Capitalism* (Cambridge, Massachusetts: Belknap Press, 1990), pp. 26–27, 34–36.

25 John Steffens, *Newgames: Strategic Competition in the PC Revolution* (Oxford: Pergamon Press, 1994), p. 89.

26 William J. Abernathy, Kim B. Clark, and Alan M. Kantrow, *Industrial Renaissance: Producing a Competitive Future for America* (New York: Basic Books, 1983), p. 131.

NATIONAL COMMISSION ON ENTREPRENEURSHIP
444 N. Capitol Street | Suite 399 | Washington, DC 20001
tel: 202/434–8060 | fax: 202/434–8065 | Web Page: www.ncoe.org