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ENTREPRENEURSHIP

FIFTH EDITION



WILEY

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WILEY

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*To Frederic C. Hamilton and John H. Muller, Jr., pioneers, entrepreneurs,
and benefactors of Babson College.*

PREFACE

The green shoots of entrepreneurship give an economy its vitality. They give rise to new products and services, fresh applications for existing products and services, and new ways of doing business. Entrepreneurship stirs up the existing economic order and prunes out the dead wood. Established companies that fail to adapt to the changes cease to be competitive in the marketplace and go out of business.

Within the broadest definition, entrepreneurs are found throughout the world of business because any firm, big or small, must have its share of entrepreneurial drive if it is to survive and prosper. This textbook focuses on starting and growing independent new ventures. It is based on entrepreneurship courses taught at Babson College and at universities around the world.

One of the most common questions that entrepreneurship educators are asked is, Can entrepreneurship be taught? Our response is that anyone with a desire to become an entrepreneur will be more successful if he or she has taken a course on how to start and grow a new venture. About 30% of the students who have taken the new-venture course at Babson College since 1985 have gone on to start full-time businesses at some time in their careers. Many have started more than one.

Although this textbook empowers would-be entrepreneurs to start and grow their new ventures, it's not only for them. Any student who reads this book will learn about the entrepreneurial process and the role of entrepreneurship in the economy. We believe that all business students, regardless of whether they start a new business, will benefit from learning about entrepreneurship. After all, entrepreneurship and small business create most of the jobs in the U.S. economy and account for almost half the GDP. They are ubiquitous, and so integral to the economy that almost every student will work in one way or another with entrepreneurs and small businesses after graduation. This textbook will stand students in good stead—not only for starting their own firms, but also for dealing with startups as investors, bankers, accountants, lawyers, customers, vendors, employees, landlords, and in any other capacity.

An entrepreneurial revolution has transformed the economy since the mid-1970s. Central to that revolution is information technology, especially personal computers and the Internet. Information technology has profoundly changed the way companies do business, none more so than startup companies. Today's students were born after the personal computer and Internet came into common use. We believe they need an entrepreneurship text in which information technology is completely integrated all the way through.

This book combines concepts and cases to present the latest theory about entrepreneurship and relate actual experiences. The concepts cover what would-be entrepreneurs need to know to start and grow their businesses, and the cases illustrate how real entrepreneurs have gone out and done it. They cover all stages of the entrepreneurial process, from searching for an opportunity to shaping it into a commercially attractive product or service, launching the new venture, building it into a viable business, and eventually harvesting it.

Chapter 1 discusses the role of entrepreneurship in the U.S. economy and looks at the entrepreneurial competitiveness of nations throughout the world. Chapter 2 is an overview of the factors critical for starting a new enterprise and building it into a successful business.

Chapters 3 through 9 look in detail at what budding entrepreneurs need to do before they open their doors for business. The section starts with searching for opportunities and evaluating

them, including through rapid prototyping. It explains how to build a workable business model and covers marketing, strategy, team building, financial projections, and business planning. At the end of this section students know how to write a business plan and how much startup capital they need to start their ventures.

The next section, Chapters 10 through 11, deals with financing businesses. Chapter 10 reviews the sources of financing for starting and growing businesses, including the nuts and bolts of raising money, particularly equity, to start and grow a business. Chapter 11 examines debt and other sources of financing.

Entrepreneurs need to understand the legal and tax issues associated with organizing a new business. They also need to know how to protect their intellectual capital. Chapter 12 explores these topics.

Anyone can start a new venture, but very few new businesses grow into substantial enterprises. Chapter 13 discusses what it takes to grow a business into a healthy company that provides financial rewards for the entrepreneur and good jobs for employees.

Finally, Chapter 14 looks at social entrepreneurship. Today, many students are looking at business ideas that may not only earn a profit, but also address a social concern.

Each chapter is accompanied by a case study of entrepreneurs in action. We chose the cases carefully, using these criteria:

- The entrepreneurs and their companies represent a spectrum of situations and industries that is as broad as we could make it.
- The judgment point in most cases occurs in the last decade— some as recently as 2019.
- All stages of the entrepreneurial process are covered, from pre-startup through harvest.
- Almost all the entrepreneurs in the cases are in their 20s and 30s; some are recent graduates.

There's no substitute for the experience gained from actually starting a business, but we believe that by completing the case studies in this book students will gain wisdom that would take years to pick up by trial and error as entrepreneurs starting and building businesses from scratch.

Each chapter ends with a unique Opportunity Journal. Here students can reflect on the lessons learned and think about how to apply them to their own entrepreneurial ventures or to managing their careers. Finally, a Web exercise builds on key concepts covered in each chapter.

New to this Edition

The fifth edition has been thoroughly updated and enhanced throughout. We have developed a completely new chapter on business models, incorporating the Business Model Wheel. Angelo Santinelli, a former venture capitalist, entrepreneur and currently a startup advisor brings his 30 years of new venture experience and wrote the chapter on a new way to consider business models.

We replaced half of the older cases. We have added cases on MightyWell, a medical apparel company looking to bring fashion to patients (Chapter 1), Vedavoo (Chapter 2) and ISlide (Chapter 3) that tracks product development in the sporting goods space, Gravyty, (Chapters 8 and 9) which shows a business planning process through the lens of artificial intelligence-based firm, Wefunder (Chapter 12) that looks at legal issues confronting crowdfunding, Esporte Interativo (Chapter 13) that illustrates a company striving to continue growth in a competitive industry and InnerCity Weightlifting (Chapter 14) that highlights a social venture changing the lives of young men prone to gang activity.

With these changes, we are confident that the fifth edition of *Entrepreneurship*, not only continues our mission of empowering and enabling young entrepreneurs, but enhances it.

Teaching Supplements

Instructor's Manual The Instructor's Manual has been designed to facilitate convenient lesson planning and includes the following:

- *Sample Syllabi*. Suggestions are given on dividing up the chapter material based on the frequency and duration of your class period.
- *General Chapter Outline*. The main headers provide a quick snapshot of all the chapter content.
- *Case Teaching Notes*. Detailed teaching notes go into depth on the material covered in each chapter's accompanying case. They include discussion questions, classroom activities, and additional information on the businesses and entrepreneurs from the cases.

This comprehensive resource can be found on the Instructor Companion Site at www.wiley.com/college/bygrave.

Test Bank With 60 questions per chapter, the test bank consists of multiple-choice, true/false, and short answer questions of varying difficulty. A computerized version of this test bank is also available on the Instructor Companion Site so that you can customize your quizzes and exams. Access these resources on the Instructor Companion Site.

Additional Cases In addition to the 14 cases included in the book, additional cases, available on the book's companion site, give instructors more choices and give students more real-life examples. Cases available online include the following:

- *Adam Air*
- *Andres Galindo*
- *Ajay Bam*
- *Alexander Norman and Toni Randolph-Norman*
- *BladeLogic*
- *ClearVue*
- *College Coach*
- *Matt Grant*
- *Enox*
- *CardSmith*
- *Makers Mark*
- *Vayusa* (the *Ajay Bam* second case)
- *Beautiful Legs by Post*
- *Living Patio Rooms*
- *Malincho*
- *Neverfail*
- *Matt Coffin*

- *Jon Hirschtick*
- *SolidWorks* (the *Jon Hirschtick* second case)
- *David Pearlman*
- *StudentCity.Com*
- *Nancy's Coffee*
- *Earth Watch*
- *Zeo, Inc.*
- *Eu Yang Sang*
- Jim Poss
- Alison Barnard
- Vera Bradley
- P'kolino
- Crowdfunding: A tale of two campaigns
- Tessera
- LazyBones
- Earthwatch

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A comprehensive textbook on entrepreneurship covers a very wide range of disciplines that require specialized knowledge, so we invited leading experts to write some of the chapters.

- Erik Noyes wrote Chapter 4 on Prototyping.
- As noted above, Angelo Santinelli wrote a new chapter on business models (Chapter 5)
- Entrepreneurial marketing was written by two leading experts: Abdul Ali at Babson College and Kathleen Seiders at Boston College, who wrote Chapter 6, “Entrepreneurial Marketing.”
- Joel Shulman, Babson College, who specializes in entrepreneurial finance, contributed Chapter 11, “Debt and Other Forms of Financing.”
- Legal, tax issues and intellectual property go hand in hand when setting up a new business; Richard Mandel, who is a Babson professor and a partner with the law firm Bowditch and Dewey that specializes in small business, wrote Chapter 12 along with Joseph Iandorio and Kirk Teska, who are patent attorneys in the firm that bears their names.
- Babson professors Donna Kelley and Edward Marram wrote Chapter 13, “Entrepreneurial Growth.” Kelley is an expert on innovation, and Marram specializes in growing businesses.
- Professors Brad George and Candida Brush of Babson College wrote Chapter 14.

We thank all the contributing authors for their commitment and dedication to making this book as valuable as it can be for students.

We are forever indebted to everyone involved in the entrepreneurial process who has shared experience and wisdom with us. They include entrepreneurs from novices to old hands, informal investors, business angels, venture capitalists, bankers, lawyers, and landlords—indeed, anyone

involved with entrepreneurs. We have learned so much from them. We're especially thankful for all the students and alumni we have worked with over the years. Their feedback has helped us shape what we teach and how we teach it.

We believe that entrepreneurs who successfully build businesses are inherently good coaches and teachers; they have to be if they are to develop and encourage employees. This generosity is borne out by their willingness to share their know-how with budding entrepreneurs. One important way in which entrepreneurs have done that is by allowing us to write cases about them and their companies, and then by coming to class when the cases are discussed. We thank all the case writers who researched and wrote the cases in this book and on its companion website. We'd also like to thank our student research assistants, who helped track down relevant examples in the popular press, acted as our first-draft readers, and worked hard on the instructional support materials. They are current and former Babson MBA students Alexey Amerikov, Eric Berglind, Mia Di Stefano, Rich Enos, Don Gourley, Sara Gragnolati, Andres Hinojosa, Mark Itkovitz, Kushal Manek, Mahmoud Mattan, Henry McGovern, Rich Palmer, Gabriel Quintana, Richard Raeke, Tommy Ripke, Ge Song, Steve Shafran, and Brian Zinn.

It is a pleasure to be members of the Arthur M. Blank Center for Entrepreneurship at Babson College. Our Babson colleagues are an inspiration. They are pioneers of entrepreneurship education who are continually coming up with new ways of teaching. The Babson faculty comprises a marvelous mix of academics and what we call "pracademics"—practicing academics—who are entrepreneurs, venture capitalists, angel investors, lawyers, and others associated day-to-day with starting and running businesses. Candida Brush, Provost of Entrepreneurship, has been highly supportive. We have benefited from discussions with Brian Abraham, Rob Adler, Matt Allen, Fred Alper, Lakshmi Balachandra, Craig Benson, Jean-Luc Boulnois, Dennis Ceru, Les Charm, Alan Cohen, Lily Crosina, Caroline Daniels, Mary Gale, Brad George, Len Green, Patricia Greene, Mike Gordon, Howard Gross, Tim Habbershon, John Halal, Neal Harris, Alisa Jno-Charles, Bill Johnston, Donna Kelley, Phil Kim, Julian Lange, Nan Langowitz, Bill LaPoint, Ray Marcinowski, Tim Marken, Ed Marram, Maria Minniti, Christopher Mirabile, Diane Mulcahy, Kevin Mulcahy, Kevin Mulvaney, Heidi Neck, Eric Noyes, Ernie Parizeau, Elizabeth Angela Randolph, Elizabeth Riley, Angelo Santinelli, Joel Shulman, Sid Vedula, and Yasu Yamakawa, all of whom teach at Babson College. We'd also like to acknowledge four of our biggest supporters and mentors who passed away since the earlier editions were published, Abdul Ali, Glenn Kaplus, Jeffry Timmons, and Natalie Taylor. Their long-time influence and contributions to Babson College was invaluable. We miss them.

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The Power of Entrepreneurship

1



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The founders of Airbnb; Nathan Blecharczyk, Brian Chesky, and Joe Gebbia

This is the entrepreneurial age. Each day across the globe, thousands of people embrace the power and liberation of entrepreneurship by pursuing their new business. The 2018/19 Global Entrepreneurship Monitor (GEM) reports that across the 49 countries investigated 12.6% of adults were in the process of working to start a new business or were running one they recently

This chapter was originally written by William D. Bygrave.

started. Hundreds of new businesses are born every hour of every working day in the United States.¹ Entrepreneurs are driving a revolution that is transforming and renewing economies worldwide. Entrepreneurship is the essence of free enterprise because the birth of new businesses gives a market economy its vitality. New and emerging businesses create a very large proportion of the innovative products and services that transform the way we work and live as they take advantage of tech opportunities within social media, virtual reality, and the Internet of Things or by creating new business models to transform “traditional industries” (e.g., Airbnb or Uber). Similarly, these same businesses created half of the new private-sector jobs in the United States in 2018.² As a backbone of the economy, entrepreneurs and small businesses played a leading role in helping the economy rebound from the recession of 2008. A 2015 report from the Small Business Association shows that entrepreneurs created 7 of 11 million new jobs since the 2008 recession.³ Data suggest the same phenomenon is happening worldwide.⁴

There has never been a better time to practice the art and science of entrepreneurship. But what is entrepreneurship? Early in the 20th century, Joseph Schumpeter, the Moravian-born economist writing in Vienna, gave us the modern definition of an entrepreneur: “a person who destroys the existing economic order by introducing new products and services, by introducing new methods of production, by creating new forms of organization, or by exploiting new raw materials.” According to Schumpeter, that person is most likely to accomplish this destruction by founding a new business but may also do it within an existing one.

Schumpeter explained how entrepreneurs had suddenly increased the standard of living of a few industrialized nations.⁵ When the Industrial Revolution began in England around 1760, no nation had enjoyed a standard of living equal to that of Imperial Rome 2,000 years earlier. But from 1870 to 1979, for example, the standard of living of 16 nations jumped by sevenfold on average.⁶

Very few new businesses have the potential to initiate a Schumpeterian “gale” of creative destruction, as Airbnb is doing in hospitality and Uber is doing in the taxi industry. The vast majority enter existing markets. So, in this textbook, we adopt a broader definition of entrepreneurship than Schumpeter’s. Ours encompasses everyone who starts a new business. Our

The Changing Economy

General Electric (GE), a once shining beacon of the power of a global conglomerate, exemplifies today what can happen to firms caught up in the destructive forces and aftermath of “Schumpeter’s entrepreneurs.” GE, founded in Schenectady, New York, in 1892, thrived in a number of industries and sectors including aircraft engines, locomotives, oil and gas, electrical distribution, health care, finance, and more. As late as 2018, GE was the 18th largest firm by gross revenue in the United States according to *Fortune* and was the 14th most profitable company and the 4th largest just a few short years ago. From the late 1990s through mid-2017, GE stock traded somewhere between \$20 and \$30. By the end of 2017, it was at \$17 and at the start of 2019, GE stock was trading below \$9 a share. What happened? Market shifts, bad investments, and direct competition to be sure, but also entrepreneurs and entrepreneurial firms creating Schumpeter’s “gales of destruction” that upset the industries and markets where GE competes.

Companies have to react to the moves of a new market entrant and the combined changes over time by many different forces. Walmart and Amazon are currently in a fevered battle for the grocery store dollars of every American. Founded in 1962 by Sam Walton, Walmart was once a small startup retailer who became the world’s largest retailer. Today as the company’s sales move near \$500 billion, they compete fiercely as a relative newbie in the world of e-commerce. Their primary competition? An online bookseller who just a few short years ago was not in the grocery business. However, with their 2017 acquisition of Whole Foods Market, Amazon is now the market leader in the online grocery business according to Forbes.

Sources: <http://fortune.com/2018/05/22/fortune-500-companies-list-berkshire-hathaway>; https://money.cnn.com/galleries/2011/fortune/1104/gallery.fortune500_most_profitable.fortune/14.html

entrepreneur is the person who perceives an opportunity and creates an organization to pursue it. And the entrepreneurial process includes all the functions, activities, and actions associated with perceiving opportunities and creating organizations to pursue them. Our entrepreneur's new business may, in a few rare instances, be the revolutionary sort that rearranges the global economic order, as Walmart, FedEx, Apple, Microsoft, Google, eBay, and Amazon have done and social networking companies such as Facebook and Twitter are now doing. But it is much more likely to be of the incremental kind that enters an existing market.

In this chapter, we next look at the importance of entrepreneurship and small business to the United States and the global economies. We then provide a foundation for today's entrepreneurial world by looking at some of the major historical markers that brought us to this point: we describe the entrepreneurial revolution, present a conceptual model for the entrepreneurial sector of the economy, and use it to explain major factors in the revolution. Finally, using data from the GEM, we will compare and contrast entrepreneurial activity among regions and different economies across the globe within the context of the conceptual model.

Entrepreneurship and Small Business in the United States

According to the U.S. Small Business Administration (SBA), there are 30.2 million small businesses in the United States today, which represents 99.9% of all businesses in the country.⁷ In general, businesses with 500 or fewer employees are classified as small.⁸ They account for half the private-sector workers and 47.5% of the private payroll, and they generate approximately half the nonfarm private GDP. The latest report from the U.S. Small Business Administration shows that these small businesses make a large impact not just in the United States but also across the globe as they generate a third of the United States \$1.3 trillion in total exports.

Startups and small businesses are also an important driver of job growth. Since the turn of the century through 2017, small businesses created nearly twice as many jobs in the United States as large businesses: 8.4 million to 4.4 million, respectively. This growth comes in industries that are important to the future. In the latest three-year reporting window (2015–2017), small businesses outpaced large businesses in job growth and percentage increase in high-tech firms, software, pharmaceutical, scientific research & development, and computer systems design industries.⁹ Not only are small businesses the engine for job creation, but they are also a powerful force for innovation. They hire 43% of all high-tech workers and produce approximately 16 times more patents per employee than large firms; those patents are twice as likely as large firm patents to be among the 1% most cited.¹⁰

Demonstrating a trend that can be seen in developed economies all over the world, more than a third of the 30 million small businesses in the United States come from the professional, technical, and other related services industries. The majority of businesses are non-employer firms run entirely by a single proprietor and approximately 17% of all firms have between 1 and 20 employees. Over a half million firms employ between 20 and 499 people. Health care, hospitality and food services, along with the retail sector, are leading small business employers.

At any one time, approximately 14% of all adults of working age in the United States can be classified as *nascent entrepreneurs*, that is they are trying to create a new business; they have conceived an idea for a new venture and have taken at least one step toward implementing their idea.¹¹ Many of them abandon their ventures during the gestation period and never actually open their businesses; nonetheless, each year at least 3 million new ventures are born, of which about 75% start from scratch. Most of the others are purchases of existing businesses.¹² Two in every three businesses are started in the owner's home. Most remain tiny because they are part-time businesses, but around 600,000 have at least one full-time employee.

Survival rates for new businesses have been the focus of several different studies.¹³ One of the most thorough was done at the U.S. Census Bureau by Alfred Nucci, who calculated the 10-year survival rates of business establishments.¹⁴ He found that 81% survive for at least one year, 65% for two years, 40% for five years, and 25% for ten years. The survival rate for independent start-ups was slightly lower. For example, the one-year rate was 79% instead of 81%. The chance of survival increased with age and size. Survival rates also varied somewhat with industry but not as strongly as with age and size.

Of course, survival does not necessarily spell success. In general, the median income of small business owners is almost the same as that of wage and salary earners. However, the income distribution is much broader for small business owners, which means that they are more likely to have significantly less income or significantly more income than wage and salaried workers.¹⁵ But small business owners are also building equity in their companies as well as taking income from them, so it is possible that small business owners are better off overall than their wage-earning cohorts. However, a study of business owners disposing of their businesses through sale, closure, passing it on, and other methods found that comparatively few saw their standard of living changed by their business. Only 17% reported that their business had raised their standard of living, whereas 6% reported the opposite.¹⁶ All these numbers aside, it is interesting to note that entrepreneurs and small business owners tend to be happier than others. On the whole, those who chose a path of entrepreneurship end up more satisfied with their life and see their life as being “excellent” and “close to ideal” compared to those who do not become entrepreneurs.¹⁷

Looking back at the new business formation index, we can see that it was stable through the 1950s and most of the 1960s; there was virtually no growth. By 1970, net new business formation was growing, and the growth continued through the 1970s and 1980s and into the 1990s.¹⁸ No one noticed the change at the time. One of the first documented references to what was taking place was a December 1976 article in *The Economist* called “The Coming Entrepreneurial Revolution.”¹⁹ In this article, Norman Macrae argued that the era of big business was drawing to an

end and that future increases in employment would come mainly from either smaller firms or small units of big firms. In 1978, David Birch published his book, *Job Creation in America: How Our Smallest Companies Put the Most People to Work*.²⁰ The title says it all. It captures the important finding from Birch’s comprehensive study of business establishments.

No issue gets the attention of politicians more than job creation. Birch’s findings and the stream of research that ensued forever changed the attitude of policy makers toward small business.²¹ Until then, most of their focus had been on big business. After all, in 1953 Charles Erwin Wilson, then GM president, is reported to have said during the hearings before the Senate Armed Services Committee, “What’s good for General Motors is good for the country.” At the time, GM was one of the largest employers in the world—only Soviet state industries employed more people.²² Today, in another example of Schumpeter’s effect of entrepreneurship and its accompanying gales of creative destruction, GM employs less than 200,000 people down from its high of over 600,000 in the 1970s.

A recent study reported in MarketWatch showed that many Americans sit in their offices and dream of becoming their own boss. According to the survey

- 39% of employees hope to own their own business someday.
- More than 50% of respondents in their 20s who don’t currently own their business aspire to do so.
- 50% of those in their 30s want to leave their job and start a business; the number is 35% for those in their 40s.

Source: <http://www.marketwatch.com/story/40-of-employees-want-to-start-their-own-business-2014-08-05>

Entrepreneurial Revolution

On November 1, 1999, Chevron, Goodyear Tire & Rubber Company, Sears Roebuck, and Union Carbide were removed from the Dow Jones Industrial Average (DJIA) and replaced by Intel, Microsoft, Home Depot, and SBC Communications. Intel and Microsoft became the first two companies traded on the NASDAQ exchange to be listed in the DJIA.

This event symbolized what is now called the *entrepreneurship revolution* that transformed the U.S. economy in the last quarter of the 20th century. Intel and Microsoft are the two major entrepreneurial driving forces in the information technology revolution that has fundamentally changed the way in which we live, work, and play. SBC (formerly Southwestern Bell Corporation) was one of the original “Baby Bells” formed after the U.S. Department of Justice antitrust action resulted in the breakup of AT&T. It is an excellent example of how breaking up a monopoly leads to entrepreneurial opportunities. And Home Depot exemplifies the big-box stores that have transformed much of the retail industry. In the continuing example of ongoing creative destruction, SBC has long since left the DJIA but today Intel, Microsoft, and Home Depot still remain and Chevron has returned!

Companies like Intel, Microsoft, and Home Depot best exemplify the foundation of the entrepreneurial revolution. Intel was founded in Silicon Valley by Gordon Moore and Robert Noyce and funded by Arthur Rock, the legendary venture capitalist. Gordon Moore, the inventor of Moore’s Law,²³ and Robert Noyce, one of the two inventors of the integrated circuit,²⁴ had been at the birth of Silicon Valley with William Shockley, the co-inventor of the transistor, when Shockley Semiconductor Laboratory was founded in Mountain View in 1956. They left Shockley in 1957 to found Fairchild Semiconductor, which in 1961 introduced the first commercial integrated circuit. In 1968, they left Fairchild to start Intel.

Ted Hoff, employee number 12 at Intel, invented the microprocessor in 1968. In 1971, Intel launched the first commercial microprocessor, heralding a new era in integrated electronics. Then, in 1974, it launched the first general-purpose microprocessor, the Intel 8080, which was the brain of the first personal computer,²⁵ the Altair 8800—a \$439 hobbyist’s kit—announced by MITS (Micro Instrumentation and Telemetry Systems of Albuquerque) on the front cover of the January 1, 1975, edition of *Popular Electronics*.

According to personal computer folklore, Paul Allen, then working at the minicomputer division of Honeywell in Massachusetts, hurried to his childhood friend and fellow computer enthusiast, Bill Gates, who was a Harvard sophomore, and waving *Popular Electronics* with a mock-up of the Altair 8800 on its front cover, exclaimed, “This is it! It’s about to begin!” Within a month or so, Gates had a version of BASIC to run on the Altair. He and Allen joined together in an informal partnership called Microsoft and moved to Albuquerque.

Microsoft grew steadily by developing software for personal computers. By 1979, it had moved to Bellevue, Washington, near Seattle, where Gates and Allen had grown up. It then had revenue of more than \$2 million and 28 employees. It got its big break in 1980–1981 when, building on the core of a product acquired from Seattle Computer Products, Microsoft introduced MS-DOS for IBM’s first PC. Fourteen years later, when Microsoft released Windows 95 in 1995, it sold 4 million copies in four days. Its success helped to move the personal computer into 250 million homes, businesses, and schools worldwide. In the early 1990s, Microsoft committed itself to adding Internet capabilities to its

“When I was 19, I caught sight of the future and based my career on what I saw. I turned out to have been right.”

—Bill Gates



Photo Credit: © Rob Kimmonth/The LIFE Images/Getty Images

Bernard Marcus and Arthur Blank, founders of Home Depot

products. When Microsoft joined the DJIA in 1999, there were more than 200 million Internet users, up from 3 million just five years earlier.

Home Depot was founded in 1979 by Bernie Marcus and Arthur Blank. The chain of hardware and do-it-yourself (DIY) stores holds the record for the fastest time for a retailer to pass the \$30 billion, \$40 billion, \$50 billion, \$60 billion, and \$70 billion annual revenue milestones. It is the fifth-largest retailer in the United States. And it almost set the record for the fastest time from starting up to joining the DJIA when it was only 20 years old. By comparison, Walmart was 35 years old when it displaced F. W. Woolworth in the DJIA. Along with Walmart, Home Depot has set the pace for the retail industry in the last three decades. Together, the two account for 2.7 million jobs.

At the turn of the 20th century, about 50% of U.S. workers were employed in agriculture and domestic service. Less than 100 years later, the number was about 4%. Much of this transformation came about because innovations, many of them introduced by entrepreneurs, made agriculture a shining example of increasing productivity, and labor-saving products such as the vacuum cleaner, gas and electric ranges, washing machines and clothes dryers, dishwashers, automobiles, lawnmowers, floor polishers, processed foods, microwave ovens, and services increased the productivity of household labor. The proportion of the workforce in manufacturing grew from 19% in 1900 to 27% in 1950, thereby providing alternative

employment opportunities for farm laborers and domestic workers.

Today, only about 12% of U.S. jobs are in the goods-producing sector, and 80% are in the service-providing sector; the proportion of knowledge-based jobs is estimated to be more than 50%. The DJIA reflects the changing face of the U.S. economy: In 1896, the 12 companies that made up the DJIA reflected the dominance of agriculture and basic commodities; in 1928—the first time the DJIA comprised 30 companies—the members reflected the importance of manufacturing, retailing, and the emerging radio industry; and in 2019, the shift is toward knowledge-based industries, communications industries, and financial services.

Of course, only a few of the entrepreneurial giants ever get into the DJIA, which is composed of only 30 of the most widely held stocks. The following are some of the other legendary entrepreneurs and their companies that played important roles in the entrepreneurship revolution of the last 40 years.

Perhaps one of the most revolutionary entrepreneurial ideas outside of high-tech industries was Fred Smith's notion to deliver packages overnight anywhere in the United States.

Smith identified a need for shippers to have a system designed specifically for airfreight that could accommodate time-sensitive shipments such as medicines, computer parts, and electronics in a term paper that he wrote as a Yale undergraduate. Smith's professor did not think much of the idea and gave it a C. After tours of duty in Vietnam, Smith founded his company, Federal Express (FedEx) in 1971, and it began operating in 1973 out of Memphis International Airport. In the mid-1970s, Federal Express had taken a leading role in lobbying for air cargo deregulation, which finally came in 1977. These changes allowed Federal Express to use larger aircraft and spurred the company's rapid growth. Today FedEx ships 15 million packages a day on average and connects over 99% of the world's GDP by covering more than 220 countries and territories across the globe.²⁶

In 1971, when Southwest Airlines began operations, *interstate* airline travel was highly regulated by the federal government, which had set up the Civil Aeronautics Board (CAB) in 1938 to regulate all domestic air transport as a public utility, setting fares, routes, and schedules. The CAB was required to ensure that the airlines had a reasonable rate of return. Most of the major airlines, whose profits were virtually guaranteed, favored the system. Not surprisingly, competition was

Dow Jones Industrial Average (DJIA) Companies

1896	1928	2019
American Cotton Oil	Allied Can	3M
American Sugar	Allied Chemical	American Express
American Tobacco	American Smelting & Refining	Apple
Chicago Gas	American Sugar	Boeing
Distilling & Cattle Feeding	American Tobacco	Caterpillar
General Electric	Atlantic Refining	Chevron
Laclede Gas Light	Bethlehem Steel	Cisco Systems
National Lead	Chrysler	Coca-Cola
North American	General Electric	Disney
Tennessee Coal, Iron & Railroad	General Motors	DuPont
U.S. Leather	General Railway	Exxon Mobil
U.S. Rubber	Goodrich	Goldman Sachs
	International Harvester	Home Depot
	International Nickel	Intel
	Mack Trucks	IBM
	Nash Motors	Johnson & Johnson
	North American	JPMorgan Chase
	Paramount Publix	McDonald's
	Postum	Merck
	Radio Corporation	Microsoft
	Sears, Roebuck	Nike
	Standard Oil (NJ)	Pfizer
	Texas Corporation	Procter & Gamble
	Texas Gulf Sulphur	Travelers
	Union Carbide	United Technologies
	U.S. Steel	United Health
	Victor Talking Machines	Verizon
	Westinghouse	Visa
	Woolworth	Walmart
		Walgreens

stified, and almost no new airlines attempted to enter the market. However, *intrastate* passenger travel was not regulated by the CAB, so Southwest, following the pioneering path of Pacific Southwest Airline's (PSA) service within California, initiated passenger service within Texas. The success of PSA and Southwest in providing cheap airline travel within California and Texas provided powerful ammunition for the deregulation of *interstate* travel, which came about in 1981 as a consequence of the Airline Deregulation Act of 1978.²⁷ Since deregulation, more than 100 startup airlines have inaugurated interstate scheduled passenger service with jet aircraft.²⁸ Herb Kelleher, the charismatic cofounder of Southwest Airlines, is often credited with triggering airline deregulation by persevering with his legal battle to get Southwest airborne in the face of fierce legal opposition from Braniff, Trans-Texas, and Continental Airlines. Two of those airlines took their legal battle all the way to the U.S. Supreme Court, which ruled in Southwest's favor at the end of 1970.²⁹

Robert Swanson was 27 when he hit on the idea that a company could be formed to commercialize biotechnology. At that time, he knew almost nothing about the field. By reading the scientific literature, Swanson identified the leading biotechnology scientists and contacted them. “Everybody said I was too early—it would take 10 years to turn out the first microorganism from a human hormone or maybe 20 years to have a commercial product—everybody except Herb Boyer.”³⁰ Swanson was referring to Professor Herbert Boyer at the University of California at San Francisco, co-inventor of the patents that, according to some observers, now form the basis of the biotechnology industry. When Swanson and Boyer met in early 1976, they almost immediately agreed to become partners in an endeavor to explore the commercial possibilities of recombinant DNA. Boyer named their venture Genentech, an acronym for genetic engineering technology. Just seven months later, Genentech announced its first success, a genetically engineered human brain hormone, somatostatin. According to Swanson, they accomplished 10 years of development in seven months. Most observers say it was Swanson’s entrepreneurial vision that brought about the founding of the biotech industry. Today there are over 20,000 biotech companies in the world with revenues of nearly \$140 billion from the 700 hundred publicly traded U.S.-based firms alone.³¹ At almost the same time that Swanson was starting Genentech in southern San Francisco, not many miles away Steve Jobs and Stephen Wozniak were starting Apple Computer in Silicon Valley. Their computer, the Apple I in kit form, was an instant hit with hobbyists. The Byte Shop—the first full-time computer store anywhere in the world, which opened in Silicon Valley in December 1975—ordered 25 of them in June 1976. The owner of The Byte Shop asked Jobs to put the Apple I computer board in a case because his customers were asking for complete units, not just kits. When they did so, both Apple and The Byte Shop had a hot product on their hands. The Byte Shop grew to a chain of 75 stores. “Without intending to do so, Wozniak and Jobs had launched the microcomputer by responding to consumer demand.”³²

Genentech’s initial public offering (IPO) in October 1980, followed by Apple’s IPO only two months later, signaled that something magical was stirring in the biotech and personal computer industries. It triggered a wave of venture capital investment and IPOs in both industries.

A tipping point in the infant personal computer industry was the introduction of the VisiCalc spreadsheet. Dan Bricklin conceived it when he was sitting in an MBA class at Harvard in 1978, daydreaming about how he could make it easier to do repetitive calculations. Bricklin designed the prototype software to run on an Apple II. Together with Bob Frankston, he formed a company, Software Arts, to develop the VisiCalc spreadsheet. When they introduced their first version in May 1979, it turbocharged the sale of Apple computers. Subsequently, sales of IBM PCs were rocketed into the stratosphere by Mitch Kapor’s Lotus 1-2-3 worksheet.

The late 1970s and the early 1980s were miraculous years for entrepreneurial ventures in the computer industry. Miniaturization of hard-disk drives, a vital component in the information technology revolution, was pioneered by Al Shugart, first at Shugart Associates, then at Seagate Technology. Dick Eagan and Roger Marino started EMC Corporation in 1979, initially selling computer furniture, and with the seed money from that, they launched into selling Intel-compatible memory. From that beginning, Eagan and Marino built EMC into a company that during the 1990s achieved the highest single-decade performance of any listed stock in the history of the New York Stock Exchange. Today, after a merger that created Dell-EMC, it continues to redefine itself as the data storage industry evolves to a cloud-based industry.

Of course, Dell began in the 1980s as well. Michael Dell, while still a student at the University of Texas, Austin, in 1984, began selling IBM-compatible computers built from stock components that he marketed directly to customers. By concentrating on direct sales of customized products, Dell became the largest manufacturer of personal computers in the world, and Michael Dell was CEO longer than any other executive in the PC hardware industry.

Entrepreneurs were at the conception and birth of new products and services that have transformed the global economy in the last 50 years. However, what is turning out to be the biggest