Introduction

> Innovation is a primary engine of economic growth … The innovation process involves the invention, commercialization, and diffusion of new ideas. At each of these stages, people are spurred to action by the prospect of reaping rewards from their investment. In a free market, innovators vie to lower the cost of goods and services, to improve their quality and usefulness, and – most importantly – to develop new goods and services that promise benefits to customers … Successful innovations blossom, attracting capital and diffusing rapidly through the market, while unsuccessful innovations can wither just as quickly. In this way, markets allow capital to flow to its highest-valued uses.[1]

President Bush's 2005 report on the economy (quoted above) identifies innovation as the prime driver of economic development. And while Democrats and Republicans might disagree on how to promote it, innovation is officially a bipartisan cause. The Obama administration trumpets the need to foster innovation if America is to maintain its leading position among the world's economies.

Joseph Alois Schumpeter would be gratified. The great twentieth-century Austrian-American economist was the foremost theorist of innovation as the source for economic growth in the industrial world. Schumpeter knew that all technologies eventually became obsolete, and according to his theory this presented an opportunity for change and growth that could only be realized with innovation. In his view the decline of older technologies makes room for new ones. Through a process he called "creative destruction," innovation enables vibrant new enterprises to replace obsolete industries.

As the creator of new companies, the entrepreneur is innovation's true agent of change. By "entrepreneur" we do not mean the many founders of small businesses with modest ambitions. Such

[1] *Economic report of the President* (Washington, DC: United States Government Printing Office, February 2005), p. 135.

entrepreneurs undoubtedly create many valuable jobs, but they do not *individually* generate enough industrial growth to be meaningful in a modern economy.

In Schumpeter's vision, true entrepreneurs are the rare leaders capable of building revolutionary enterprises and new industries on the basis of technological innovation.

> Schumpeter's hero … is the creative daring entrepreneur, the captain of industry who makes the innovations that introduce new products, embody resource discoveries and technological improvements, and open new markets, and in the process, build new industrial empires … The dynamic innovations of the entrepreneurial class constitute a powerful competitive force in economic development.[2]

Every new wave of technology has seen entrepreneurs build great companies. In the US, in the second half of the twentieth century, many of the entrepreneurs who helped lay the foundations for the new digital age have been venture capital funded. Venture capital has played a central role in the growth of such trillion-dollar industries as computers, telecommunications, software, and Internet-based businesses, which lie at the heart of modern commerce. This wave of innovative entrepreneurship occurred in a period of dramatically increasing world trade that opened new markets for companies created in the developed countries, including the US, industrialized Europe, and later, Japan.

That now feels like ancient history. The world economic order has shifted since the beginning of the twenty-first century. With the rapid industrialization of the Asian economies outside of Japan, a massive amount of industrial diffusion has occurred, and developing countries are assuming leadership roles.

[2] J. E. Elliott in J. A. Schumpeter, *The theory of economic development* (New Brunswick, NJ: Transaction, 1983), pp. xxxvi–xxxvii.

Whereas once the US, the EU, and Japan were practically the only highly industrialized countries, new Asian competitors, notably China, South Korea, and Taiwan, have joined the club. As a consequence the highly successful industrial model of the US, which encourages open markets and individual entrepreneurship, finds itself challenged by economic models where the state has a much stronger influence on industrial development. To varying degrees these emerging countries practice various forms of mercantilism, a policy that favors the development of their local industries. At the same time, the developed countries have policies for protecting their industries as they are increasingly concerned about their health. So every country works to promote or protect its own industries in various manners, which makes for a world with increasing trade restrictions.

The degree of state intervention in national economies varies widely from one country to another, and businesses must learn to deal with it in each country where they operate. They have little choice, because the biggest growth markets are global. They must establish international operations in order to grow and stay competitive. What this means is that entrepreneurs with global ambitions face additional challenges when they start companies. Government favoritism has a marked effect on all aspects of commerce, and strongly influences the creation of businesses and the ability of foreign companies to operate in local markets. Today's entrepreneur must think globally and learn to master new relationships in order to build a big business. In this book we will see how modern innovators and entrepreneurs have built important new businesses in this new world economic order.

Many factors have contributed to the alteration of the global economic landscape: the fluidity of industrial "know-how," the worldwide easing of the movement of capital, and the widespread industrialization of countries with economic models dominated by the state. All of them make the task of the ambitious entrepreneur, in Schumpeter's sense, harder.

How has the world been transformed so quickly? There are a number of causes, but the rapid development of technology lies at the heart of the revolutionary changes this age has witnessed. Once upon a time industries were protected by proprietary knowledge in the hands (and heads) of craftsmen. Today this knowledge is most often embedded in computer software that travels at the speed of light. That makes it easier and faster to move jobs than it was in the days when relocating factories also meant relocating workers.

So the industrialized countries that emerged as economic leaders in the nineteenth and twentieth centuries are watching their mature, established industries and associated manufacturing migrate to China and other developing countries. By sending work overseas, companies get the advantages of lower costs and plentiful capital for easing industrial relocation. But such relocations leave behind unemployed citizens who clamor for new jobs. It takes innovative new industries to generate such jobs, because the old industries will not come back.

To put this in a larger perspective, a half-century of ceaseless innovation and global industrial development and diffusion has irrevocably altered the world's economic landscape, lifting billions of people out of poverty and conferring on them the benefits of a modern society. It has also put the developed world in the uncomfortable position of watching former client nations turn into competitors. Developed countries must rely on innovation to create new industries, while older, commoditized technology migrates to countries with lower wages and costs.

One can't blame developing countries for wanting to benefit from the outsourcing of jobs. These nations have turned to rapid industrialization as the surest way to foster economic growth and provide for the wellbeing of their citizens. They are now competing for the factories that drive jobs and exports. They also want to move to the forefront of industrial innovation, recognizing that this is essential for maintaining their competitive position. Having joined the industrialized world, developing economies realize that they must support innovation to create the industries of the future, or risk falling behind. The result: a race among practically all industrialized countries, developed and developing, to encourage innovative entrepreneurship with varying degrees of state support.

This drive for innovation is especially urgent for the developed world. It would be comforting to think that innovative entrepreneurship will quickly fill the industrial void in those countries, but skeptics say this will not happen fast enough.

> "There's been this assumption that there's a global hierarchy of work, that all the high-end service work, knowledge work, R&D work would stay in the US, and that all the lower-end work would be transferred to emerging markets," said Hal Salzman, a public policy professor at Rutgers and a senior faculty fellow at Heidrich Center for Workforce Development. "That hierarchy has been upset, to say the least," he said. "More and more innovation is coming out of the emerging markets, as part of this bottom-up push."[3]

With the focus on sustaining economic growth, there are two diametrically opposed approaches. At one extreme we have pure "state capitalism," where the state is the source of capital and provides competitive protection to major new enterprises. On the other extreme we have "pure" free-market capitalism, where private capital finances enterprises and they compete in an unregulated market.

Free-market theorists, such as the people who wrote the report for President Bush quoted at the start of this Introduction, would say that the government should not intervene in the market in any way at all. They would point to incentives from developing nations to attract factories, for example, as an unfair practice.

[3] C. Rampell, "Once a dynamo, the tech sector is slow to hire," *The New York Times,* September 6, 2010, p. 1.

However, their call for no government "interference" in the market is misguided. In fact most countries exercise varying levels of control over the environment in which important businesses operate. Entrepreneurs need access to resources and markets to succeed, and this is where national policies play a vital role.

Proponents of the other extreme often base their argument on China's policy for most industries, which is the closest approach we have to "state capitalism." Since China has demonstrated remarkable success in rapid industrialization, moving from an agrarian nation to the world's second largest economy in less than four decades, its economic model has a profound influence in shaping industrial policies around the world. Other fast-growing Asian economies have largely adopted a model of strong state control, quite contrary to the pure free-market economic theory beloved of economists.

But China's leaders seem to understand that ideological purity never jump-started the creation of a successful national economy. Although they have adopted the model of state capitalism, they also encourage entrepreneurs in selected sectors of the economy.

All of this creates a dilemma for developed economies. They are losing industries to the developing world, and need dynamic new businesses that can compete in international markets. Unfortunately, the newcomers are racing to develop the same kind of businesses. Developed countries have to get there first if they are to maintain their prosperity.

How can developed countries promote the creation of innovative companies charting new markets? That is the question with which their leaders are grappling. Politicians and financiers would love to discover a magic formula that would enable Schumpeter's kind of entrepreneurs to appear and create new industries faster than the old ones can migrate overseas.

Entrepreneurship is essential to a growing economy in large part because its innovations create demand for new products and services that were not previously available. People only know they want a specific product when someone shows it to them.

> Many economists argue as if the only thing that matters for a buoyant economy is rising demand from the great mass of consumers. Nothing can happen until demand increases, we are told. Well, demand is crucial. But to look only at one side of the ledger is disturbing. Demand side economists fail to recognize that supply is critical in the creation of demand. That's why restaurants, for example, offer new supply in the form of updated menus and new dishes and why businesses of all kinds constantly offer products "new and improved." What was the market for an iPad in 1985? Zero: the product didn't exist. Demand cannot exist until the supply is brought to market, which is why incentives to undertake risk are so important … The main goal should be to create wealth. We're better off if entrepreneurial risk is richly rewarded. Every private sector job depended at one time or another on someone willing to take a risk.[4]

Promoting entrepreneurship and seeing it succeed are not the same thing. There are no sure-fire recipes for entrepreneurial success in a world where increasing government interference is to be expected as nations struggle to maximize their economic performance – more often than not at the expense of other nations. But there is much to be learned from the example of successful innovators in key industries. That is what we provide in this book. In our exploration of their achievements we will focus on the motivations of ambitious entrepreneurs, factors that have an impact on their behavior, and the national and international conditions that can affect their success, including the role of government and the availability of capital.

We will also discuss how governments affect entrepreneurship. This is an important topic, because the success of China, a huge country under tight economic control, is forcing other countries to

[4] E. T. McClanahan, "Americans are better off when risk is richly rewarded," *Austin American-Statesman*, August 24, 2011, p. A9.

take a much stronger stance on government's role in their economy as a defensive move, if nothing else.

This book approaches these complex issues in three sections. In the first part (Chapters 1 and 2) we set the stage for the exploration of entrepreneurship in the global economy. We discuss the effects of national policies and international conditions on industrial development, and look at some factors that promote entrepreneurship. We also discuss regional innovation clusters and the nature of the Silicon Valley model in promoting entrepreneurial success.

In the second part of the book (Chapters 3 to 9) we present the stories of entrepreneurs who successfully mastered the complexities of international operations. We draw our examples from various industries, and cover businesses created both in the US and in other countries, including successful startups in China founded by US-trained entrepreneurs and a startup in Israel. Some are based on innovative technologies while others involve bringing new services, enabled by new technologies, to the market. Each of these companies provides lessons that bear on the success of new companies in the global market. At the end of each chapter, we offer comments on the key success factors of the company or companies involved. We hope these analyses will be helpful to other ambitious entrepreneurs.

Each of the companies we discuss exemplifies Schumpeter's definition of the entrepreneur in that it opened a new market. Of course, the scale and impact of these businesses varied greatly. Some companies, such as SanDisk and Transammonia, became multibillion-dollar enterprises; others had smaller revenues. However, all represented businesses that changed the landscape in their market sector.

We begin with David Sarnoff, an entrepreneur of an earlier generation who ranks among the first of the great entrepreneurs of the electronic age. In Chapter 3 we describe how he built RCA into a dominant electronics company, and created the radio and television broadcast industry. He also set the pace for managing intellectual property as a key foundation for corporate success in the electronic age.

In Chapter 4 we discuss Ron Stanton and the founding of Transammonia, a leading international commodity trading company. He built a big global company on the basis of an innovative business model rather than a novel technology.

Chapter 5 focuses on RMI, a Silicon Valley startup that pioneered a new family of computing processing chips to greatly improve the data capacity of communication networks. Its initial success came from developing the market in Asia. This example of entrepreneurship evolved over two generations of CEOs, starting with a visionary founder, Atiq Raza, followed by Behrooz Abdi, an outstanding executive who possessed a remarkable combination of technological and managerial skills.

The story of SanDisk and its founder Eli Harari, told in Chapter 6, demonstrates how an outstanding entrepreneur can adapt truly innovative technology to create a whole new industry segment. The Silicon Valley company is a world leader in flash memories. It is equally notable for the exceptional skill with which it developed and managed intellectual property, and for how it addressed the problem of low-cost manufacturing in a highly capital-intensive industry by partnering with Toshiba, a Japanese company.

Chapter 7 discusses Ness Technologies, an information technology services company that was started up in Israel and became a successful global provider. It was selected for discussion because it illustrates the importance of building an international corporate culture. Raviv Zoller, the entrepreneur who launched the company, built an organization that was able to operate in many countries, and could leverage resources from Israel and elsewhere to deliver an outstanding level of service in all geographies.

By covering three China-based startups, Chapter 8 demonstrates that there is a role for venture-capital-backed entrepreneurship, even in a huge state-controlled economy. It also shows that there are ground rules for operating companies in this environment that entrepreneurs must learn if they are to be successful. Two of these startups prospered as independent companies and became publicly traded on NASDAQ. The third was acquired by a local company.

Chapter 9 discusses Aicent, a Silicon Valley company founded by Lynn Liu, an entrepreneur born in Taiwan and educated in the US. This company's success was not built on inventing technology but on providing a mission-critical service to the global wireless telecommunications industry. Aicent also serves as a model for companies with their origins in the US, but destined from the start to go global. It was focused on Asia, where it became a dominant player in its niche market.

As we discuss what it takes for entrepreneurs with global ambitions to succeed in the current economic and political environment, it becomes evident that the hurdles they face are higher than ever. This translates into the requirement for more capital to build valuable businesses and perhaps lower chances for building big businesses with private capital. The companies that we selected made it, but how often will others follow? A fair question is whether privately funded entrepreneurship can be counted on in the future as an important engine for growth based on innovations. This would leave governments as the most important patrons for building innovative new industries.

This is the subject of our concluding Chapter 10. We believe that the answer lies in between the views propounded by pure free-market advocates on one extreme, and by proponents of state control on the other. History has shown that, while governments are not equipped to drive innovation into the market, neither can entrepreneurs operate in a state-free vacuum. Or, to put it in positive terms, governments play an important role in industrial development, but they are no substitute for the ambitious entrepreneur provided with the right level of resources and a dependable legal environment.