



Have we oversold the Silicon Valley model of entrepreneurship?

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Abstract The Silicon Valley model of entrepreneurship has captured the imagination of the public, the attention of the public policy community throughout the world who want to emulate it, and the focus of scholars seeking to understand it. Entrepreneurship has enabled the Silicon Valley region to harness the opportunities afforded by globalization rather than succumbing as a victim. The purpose of this paper is to suggest that there are limits to the Silicon Valley model of entrepreneurship in addressing the most compelling contemporary economic and social problems and that a broader, more inclusive understanding of and approach to entrepreneurship might be more useful.

Keywords Entrepreneurship · Silicon Valley · Globalization · Public policy · Innovation

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1 Introduction

The Silicon Valley model of entrepreneurship (Pahnke and Welter 2019; and Herrmann 2019) has captured the imagination of the world. The public is mesmerized by it, the public policy community strives to emulate it, and scholars seek to understand it. Entrepreneurship has enabled the Silicon Valley region to harness the opportunities afforded by globalization rather than succumbing as a victim. As the *MIT Technology Review* observes, “Every region dreams of becoming the next center for technology and the cradle of tomorrow’s startups.”¹ Both the OECD and the World Bank have focused policy on innovative and high-growth entrepreneurship as a way of enhancing economic performance (OECD 2010; and Goswami et al. 2019). While the concept of entrepreneurship clearly spans a broad spectrum of organizations and behavior, the Silicon Valley model of entrepreneurship by contrast has a singular focus on performance, and in particular growth and innovation (Audretsch et al. 2015; and Pahnke and Welter 2019).

The Silicon Valley model of entrepreneurship is particularly compelling because it seems to address the economic and social woes triggered by globalization—the twin symptoms of economic stagnation and high unemployment caused by a loss of competitiveness. The Silicon Valley model of entrepreneurship has generated a strong and sustained economic performance across all of the most salient units of analysis, ranging from individual entrepreneurs and their employees, to firms and industries, and finally to cities, regions, states, and even countries. Those individuals, firms, industries,

and regions that have been able to harness or participate in the Silicon Valley model of entrepreneurship have generally thrived. By contrast, where the Silicon Valley model of entrepreneurship remains elusive generally exhibits a weaker economic performance.

The purpose of this paper is to suggest that there are limits to the Silicon Valley model of entrepreneurship in addressing the most compelling contemporary economic and social problems and that a broader, more inclusive understanding of and approach to entrepreneurship might be more useful. The second section of this paper explains what exactly constitutes the Silicon Valley model of entrepreneurship along with how and why it emerged. The third section explains why the Silicon Valley model of entrepreneurship may be limited in providing solutions to some of the most urgent contemporary social and economic problems. The fourth section of the paper suggests rethinking entrepreneurship into a broader, more context sensitive view of what actually constitutes entrepreneurship. In the last section, a summary and conclusions are provided. In particular, this paper suggests that in such a broader, more context-dependent view of entrepreneurship, the Silicon Valley model of entrepreneurship becomes just one, albeit highly compelling and important, particular type of entrepreneurship.

2 The Silicon Valley model of entrepreneurship

The 1970s were a shock to the American psyche. Since the close of the Second World War, economic growth was remarkably robust, resulting in unemployment rates that were negligible in the 1960s and a rise in the standard of living that was seemingly guaranteed. That all changed with a jolt. Not only did economic growth stall, but unemployment reached post-world war highs, rising above 10% by 1982. Inflation spiked, exceeding 12% in 1975 and 14% in 1980.

The great stalwart industries driving American economic prosperity in the post-war era, such as automobile and steel manufacturing, were under siege. Imports flooded in from Japan and Europe. The great manufacturing industries that had provided the backbone of prosperity in the United States were no longer competitive. America was no longer competitive. Thurow (1985, p. 23) pointed out, “Today it’s very hard to find an industrial corporation in America that isn’t in really serious trouble basically because

of trade problems...The systematic erosion of our competitiveness comes from having lower rates of growth of manufacturing productivity year after year, as compared with the rest of the world.”

According to Abernathy et al. (2013, p. 9), “The happy illusion lies shattered. Like a rich child away at school whose allowance – received weekly in the mail – has suddenly and mysteriously been cut off, all those who believed in the unquestioned primacy of American Manufacturing now find themselves abandoned by events. The harsh truth is that the industrial landscape in America is already littered with the remains of once-successful companies that could not adapt their strategic vision to altered conditions of competition.”

In 1987, *Business Week* devoted an entire issue to the perplexing concern, “Can America Compete?”² Emerging from the Second World War as a victor, “The U.S. was virtually unchallenged as industrial leader. Americans could make anything, and because their products were the best, they could sell whatever they made, both at home and abroad. But somewhere around 1973, the gravy train was derailed – and it has never really gotten back on track. It may have been a combination of things: Vietnam, the OPEC price shock, the inflation spiral. U.S. producers met fierce competition from foreign industries that churned out high-quality goods made by low-wage workers.”³

Just two years later, an influential study, *Made in America*, was published by the Massachusetts Institute of Technology (MIT) Commission on Industrial Productivity, providing a road map for restoring American prosperity and competitiveness through a renaissance in manufacturing (Derouzos et al. 1989). In fact, economic growth and prosperity were reignited in what Stiglitz (2004) termed as “the world’s most prosperous decade” of “the roaring nineties” in the United States.

The renaissance of the American economy did not stem from a resurgence of manufacturing in the traditional industries. Rather, bold entrepreneurs like Steve Jobs, Bill Gates, and Mark Zuckerberg founding the new startups of Apple Computer, Microsoft, and Facebook, and ultimately entirely new industries, such as personal computers, software, and social networks ignited economic growth and prosperity (Audretsch 2007). The Silicon Valley model of entrepreneurship revolves around high technology firms that are launched on the basis of a potential innovation that is more radical than incremental in nature. The opportunities to start the new firm emanate from research and development, or

more generally ideas, created in the organizational context of an incumbent firm or organization, such as a university. An abundance of new ideas drives a flourishing startup environment or ecosystem. However, only a subset of entrepreneurial ventures survives by actualizing innovative activity and generating vigorous growth rates, while the remainder stagnate and ultimately exit from the industry. Audretsch (1995) characterizes the industry structure in an entrepreneurial industry as a conical revolving door, where the base of the cone is driven by a high rate of startups that come and go with rapidity, while displacement at the higher end of the firm-size distribution is less frequent. Finance is typically from risk-capital sources, such as venture capital and angel capital (Lerner et al. 2012). Employees as well as employers expect short-term employment contracts, so that mobility and fluidity are more the rule than the exception (Audretsch 1995). As the founder of Intel, Gordon Moore, describes the requisite conditions providing the catalyst for the Silicon Valley model of entrepreneurship, “Combine liberal amounts of technology, capital and sunshine. Add one (1) university. Stir vigorously” (Moore and Davis 2004).

However, it took more than sunshine to ignite the entrepreneurially driven economy. Fundamental but often subtle modifications and changes redirected and refocused policy and institutions away from the managed economy with its priority on mass-production manufacturing in the traditional industries to supporting and facilitating the requisite functions providing a catalyst for entrepreneurship. Taken together, those policies and institutions form the basis for the entrepreneurial society.

For example, the knowledge produced by universities did not play a major role in the managed economy with its focus on manufacturing. As the managed economy receded, knowledge replaced physical capital as the driving force underlying economic growth and prosperity (Romer 1986, 1994 and 1990; and Lucas 1988 and 1993). However, despite the assumptions inherent in the endogenous growth models, investments in new knowledge did not automatically spill over for commercialization and innovation, leading a United States Senator, Birch Bayh, lamented, “What sense does it make to spend billions of dollars each year on government-supported research and then prevent new developments from benefiting the American people because of dumb bureaucratic red tape.”⁴ The enactment of the Bayh-Dole Act⁵ not only significantly altered the role of a fundamental institution,

universities, but also opened the flood gates for knowledge spillovers from university research that provided a catalyst for entrepreneurial startups.

Systematic studies provide compelling empirical evidence that refocusing the role of universities away from the managed economy to the entrepreneurial society made key contributions as a catalyst for entrepreneurship (Mowery et al. 2004), “Possibly the most inspired piece of legislation to be enacted in America over the past half-century was the Bayh-Dole Act of 1980. Together with amendments in 1984 and augmentation in 1986, this unlocked all the inventions and discoveries that had been made in laboratories through the United States with the help of taxpayers’ money. More than anything, this single policy measure helped to reverse America’s precipitous slide into industrial irrelevance. Before Bayh-Dole, the fruits of research supported by government agencies had gone strictly to the federal government. Nobody could exploit such research without tedious negotiations with a federal agency concerned. Worse, companies found it nigh impossible to acquire exclusive rights to a government owned patent. And without that, few firms were willing to invest millions more of their own money to turn a basic research idea into a marketable product.”⁶

Knowledge spillover entrepreneurship (Audretsch 1995), or new-firm startups founded on the basis of research and ideas generated at universities and incumbent firms, drove economic growth and prosperity, “The Bayh-Dole Act turned out to be the Viagra for campus innovation. Universities that would previously have let their intellectual property lie fallow began filing for – and getting patents at unprecedented rates. Coupled with other legal, economic and political developments that also spurred patenting and licensing, the results seem nothing less than a major boom to national economic growth.”⁷

Another example illustrative of the policy shift away from the managed economy to the entrepreneurial economy was passage of the Small Business Innovation Research (SBIR) program. The United States Congress made an explicit mandate for promoting innovation and economic growth by facilitating knowledge spillovers in enacting the SBIR program in 1982 (Audretsch 2011). A robust set of studies has confirmed the positive impact of the SBIR not just on entrepreneurial activity but also on innovation and economic growth (Audretsch 2011). While the impact of a program such as the SBIR might have been negligible in the era of the managed economy, it was far reaching and pervasive as a catalyst of the entrepreneurial economy.

Other pervasive and fundamental changes in institutions, policies, and culture included the emergence of financial institutions, such as angel and venture capital, but also crowdfunding, that is more oriented towards funding entrepreneurship than large manufacturing corporations, along with the evolution of role models and norms celebrating rather disdaining entrepreneurial values and thinking (Audretsch 2007).

In the decade of the 1990s, Europe seemed far away from Silicon Valley. The economic performance of Europe in the 1990 was dismal, with stagnant economic growth and unemployment ratcheting higher throughout the decade. The policy prescription posited by the new growth theory of endogenous growth (Romer 1986 and 1990; and Lucas 1988 and 1993) had resulted in first the Swedish Paradox and subsequently the European paradox, where high investments in knowledge failed to generate the predicted corresponding robust levels of employment growth and reduction in unemployment (Audretsch and Lehmann 2016). For example, the standard of living, measured in terms of per capita GDP, was roughly at parity between the United States and Germany at the beginning of the decade. However, by the end of the decade, per capita GDP in the United States had surged ahead by \$12,000 more than in Germany (Audretsch and Lehmann 2016).

After a decade of divergent trajectories between the entrepreneurially driven American economy and the European economies, with their managed economies in traditional manufacturing industries, a new view coalesced among thought leaders in business and policy about the driving force underlying competitiveness and economic performance in the rapidly globalizing economy, “In particular, what most of the world, including the Americans themselves had learned by the end of that decade that they did not know or understand in any fundamental way at its beginning, was the crucial role played by knowledge and ideas along with entrepreneurship as a key vehicle to transform that knowledge and ideas into innovation, growth, employment and competitiveness in a rapidly globalizing economy” (Audretsch and Lehmann 2016, p. 8).

The European Council of Lisbon in 2000 responded by reprioritizing the European policy approach to emphasize innovation and entrepreneurship. The primacy of entrepreneurship as a policy priority was echoed by the President of the European Union, Romano Prodi (2002), “Our lacunae in the field of entrepreneurship needs to be taken seriously because there is mounting

evidence that the key to economic growth and productivity improvements lies in the entrepreneurial capacity of an economy.”

The Silicon Valley model of entrepreneurship has become synonymous with entrepreneurship not just to policy makers throughout the world but also in much of the scholarly literature on entrepreneurship. According to Shane and Venkataraman (2000, p. 217) entrepreneurship is the “discovery and exploitation of profitable opportunities,” which is increasingly interpreted as singularly and exclusively emanating from high-growth innovative companies in high-tech industries (Shane and Venkataraman 2000; Wiklund et al. 2011). For example, Lerner (2012) refers to venture capital-financed ventures as entrepreneurship. Similarly, Stuart and Sorenson (2003) interpret initial public offerings (IPOs) as entrepreneurship. McKelvie and Wiklund (2002) follow suit by viewing entrepreneurship in terms of firm innovative performance. This reflects the growing trend in the literature is to distinguish entrepreneurial from non-entrepreneurial firms on the basis of firm growth (World Economic Forum 2011; Markman and Gartner 2003).

3 The entrepreneurship challenge

Entrepreneurship emerged as *a bona fide* field of study because it provided solutions, or at least the promise of solutions to some of society’s most compelling problems in a particular time and context—the United States in the late 1980s and early 1990s, which had been burdened by economic stagnation, unemployment, and the prospects of a diminished standard of living (Krugman 1994). While most thought leaders in economics and policy looked to large corporations for those solutions as the managed economy moved well passed its zenith and into decline, Birch (1981, p. 8) startled the conventional wisdom with his findings that, “Whatever else they are doing, large firms are no longer the major providers of new jobs for Americans.” Rather, Birch found that small- and medium-sized firms, with fewer than 500 employees, provided 80% of new employment. Other studies found that small firms accounted for a considerably greater share of innovative activity than had been measured from corporate R&D of large companies in previous studies (Acs and Audretsch 1988 and 1990).

As the knowledge spillover theory of entrepreneurship suggests, new and small firms play an important role in providing the conduit for the spillover of knowledge from the firm or organization where the knowledge was created to a new firm that is founded to commercialize that knowledge into innovative activity, which ultimately drives economic growth. A large body of literature found a positive relationship between startup activity and the economic performance of cities, regions, states, and countries (Audretsch et al. 2007). Silicon Valley emerged as the prototype for entrepreneurship generating the economic performance providing the elixir to a stagnant economy with putrid economic growth and high levels of unemployment.

The Silicon Valley model of entrepreneurship has emerged as being synonymous with entrepreneurship to much of the public policy community as well as entrepreneurship scholars (Pahnke and Welter 2018). However, the most compelling economic problems confronting developed countries have evolved from high unemployment and low innovation and growth to a host of new problems involving economic and social disparities, inequality and inclusion (Gordon 2017; Piketty 2013; and Stiglitz 2012). As Stiglitz (2017, p. xvii) colorfully points out, “The data describing what has been happening in the United States are sobering: for nearly a third of a century the incomes of most Americans have been essentially stagnant. A middle-class life – a decent job with decent wages and a modicum of security, the ability to own a home and to send one’s kids to college, with the hope of a reasonably comfortable retirement – has been moving increasingly out of reach for a large proportion of the country. The numbers in poverty have been increasing, as the middle is being eviscerated. The one group doing well has been the top – especially the top 1 percent and even more, the top .1 percent, the richest several hundred thousand Americans.”

Not only does the Silicon Valley model seem unable to address such disparities in the distribution of wealth and income, it seems even less relevant when considering such disparities in the spatial dimension. Unemployment rates in rural regions are chronically higher than those in urban areas, because, “Rural communities still haven’t recovered the jobs they lost in the recession.”⁸ Not only do rural regions that have been unable to harness the opportunities afforded by globalization and have been left behind economically suffer from high rates of unemployment, they also exhibit alarmingly

high rates of drug abuse. The state with the highest rate of opioid addiction is West Virginia, with a 2015 prevalence rate of opioid addiction of 39.3 cases per 100,000 people. New Hampshire has a prevalence rate of 29.3, Kentucky 28.8, and Ohio 28.5.⁹ The Silicon Valley model of entrepreneurship shows little promise in igniting economic growth and prosperity in rural regions which are not only geographically isolated but typically exhibit low levels of human capital and investments in research and development (R&D).

4 Rethinking entrepreneurship

There are at least four major problems with the view positing that the Silicon Valley model of entrepreneurship is the only bona fide entrepreneurship. The first is that it has a singular focus on what actually constitutes a phenomenon that is an outlier and exception—Silicon Valley entrepreneurship, which reflects only a modicum of people and enterprises, even as it captures the headlines and imaginations of the broad public. For example, in his highly influential study, *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed – and What to Do about It*, Lerner (2012) suggests that entrepreneurship consists of high tech, venture capital-funded companies. In fact, the normal experience is not in venture capital-funded highly volatile Silicon Valley technology startups, but rather prevalent across a broad spectrum of business organizations and contexts, spanning family business, small business, business ownership, and self-employment.

In the more popular, or real world, context of thought leadership among business and policy decision makers, *Business Dictionary.com* considers entrepreneurship to be “The most obvious example of entrepreneurship is the starting of new businesses.”¹ Similarly, the European Commission equates small- and medium-sized enterprises (SMEs) with entrepreneurship, “Small firms depend on entrepreneurs - the individuals who have the ideas and are willing to take the risks necessary to get a firm off the ground.”² If it comes down to the commonly held view of entrepreneurship prevalent

¹ <http://www.businessdictionary.com/definition/entrepreneurship.html>.

² Commission of the European Union, Directorate General Enterprise and Industry, “Entrepreneurship 2020 Action Plan: Promoting Entrepreneurship,” 2014, http://ec.europa.eu/enterprise/policies/sme/promotingentrepreneurship/index_en.htm

among the public and thought leaders in business and policy versus a highly skewed and special exceptional and exclusive view held by scholars and academics, it is not the latter who will ultimately prevail.

The second problem with the singular and exclusive view of entrepreneurship is that it marginalizes and deems less relevant large and robust literatures focusing on main street entrepreneurship. For example, the large and robust literature on self-employment (Parker 2009), business ownership (Wennekers and Thurik 1999), and family business (Chua et al. 1999; Lehmann et al. 2018; and Wright et al. 2014) are clearly not included in the Silicon Valley model of entrepreneurship.

The third problem arises from viewing entrepreneurial performance through the lens of the Silicon Valley model. For example, this lens applies short-term time horizons in evaluating performance criteria. It also ignores broader linkages and positive externalities. Systematic and compelling econometric evidence provides a consistent and positive link between startup activity of all types and economic performance at the spatial level (Audretsch et al. 2006; Glaeser et al. 2015; and Fritsch 1997), as well as between self-employment and economic performance for developed, OECD countries (Wennekers and Thurik 1999).

Similarly, strong and compelling evidence suggests that different institutional contexts (Guiso et al. 2006; and Bruton et al. 2010), such as the German *Mittelstand*, result in a high performance of not just the companies, and even Hidden Champions (Simon 1996; Pahnke and Welter 2019; and Lehmann et al. 2018), but also for their regions (Audretsch and Lehmann 2016). The fourth problem is that the exclusive and singular view of entrepreneurship may contribute to a warped policy, where the focus and priority is solely on policies and instruments to spur high-tech, high-growth innovative companies at the expense of main street entrepreneurship (Lerner 2012).

5 Conclusions

Welter, Baker and Wirsching (2018, p. 1) point out that, “For much of its recent history, entrepreneurship research was largely “decontextualized.” This paper suggests that perhaps the most dominant and prevalent view of entrepreneurship, The Silicon Valley model of entrepreneurship, suffers not from a lack of context but from a singularity of context—Silicon Valley. This paper has

not argued that the Silicon Valley model is not effective. It certainly has been effective and generated a resounding and sustained economic performance, not just in Silicon Valley but in a plethora of cities and regions across the globe.

Rather, this paper concludes that, as Welter, Baker and Wirsching (2018) emphasize, context matters profoundly. A type of entrepreneurship that works in the context of Silicon Valley may be applicable for other regions as well, but certainly not for all regions in the United States, let alone the entire world.

The Silicon Valley model of entrepreneurship seems to have been adept at providing a solution for penetrating the knowledge filter which inhibits investments in knowledge and ideas from being commercialized and transformed into innovative activity, which ultimately can ignite innovative activity and economic growth. However, the fundamental problems confronting many regions in the developed countries are less characterized by an inability to take advantage of costly investments in new knowledge and human capital but rather a paucity of such knowledge investments and human capital in the first place, resulting in problems of social and economic inclusion. While the Silicon Valley model of entrepreneurship may be less effective at addressing many contemporary economic and social problems, the solutions may be provided by other types and forms of entrepreneurship.

6 Notes

1. “The Next Silicon Valley,” MIT Technology Review, July 2013, accessed on September 12, 2018 at <https://www.technologyreview.com/business-report/the-next-silicon-valley/>.
2. “Can America Compete?” *Business Week*, 27 April, 1987, 41–43.
3. “Can America Compete?” *Business Week*, 27 April, 1987, 41–43.
4. Birch Bayh, statement on the approval of S.414 (Bayh-Dole) by the United States Senate on a 91–4 vote, April 13, 1980, quoted in Association of University Technology Managers (2004, p. 16).
5. United States Public Law 98–620.
6. “Innovation’s Golden Goose,” *The Economist*, 12 December, 2002, Special “Technology Quarterly,” p. 15.

7. Rebecca Zacks, "The TR University Research Scorecard 2000," MIT Technology Review, July 1, 2000, accessed on 12 September, 2018 at <https://www.technologyreview.com/s/400766/the-tr-university-research-scorecard-2000/>.
8. "The Divide between Rural and Urban America," *US News & World Report*, March 20, 2017, accessed on September 12, 2018 at <https://www.usnews.com/news/national-news/articles/2017-03-20/6-charts-that-illustrate-the-divide-between-rural-and-urban-america>.
9. "America's Opioid Addiction is Worsening," *The Economist*, 6 March, 2017, accessed on September 12, 2018 at <https://www.economist.com/graphic-detail/2017/03/06/americas-opioid-epidemic-is-worsening>.

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