

Introduction

Beyond Silicon Valley

Xavier Helgesen was troubled. He had just returned to his home base of Arusha, Tanzania, after weeks spent pitching Zola, his startup, to Silicon Valley investors. It was 2014, two years into the journey, and Zola already had thousands of paying customers and a large potential market. But Xavier had secured only a fraction of the capital that a pedestrian San Francisco startup might expect to raise in months.

Xavier had co-founded Zola with Erica Mackey and Joshua Pierce to tackle a seemingly intractable problem: eight hundred million people in Africa live "offgrid" and are vulnerable to systematic disadvantages resulting from a lack of electricity. These hardships include respiratory health problems from kerosene smoke inhalation, lower educational attainment due to limited light sources, and the inability to plug in mobile phones and thereby access the opportunities of the digital world.

Xavier was raising funds for a \$7 million Series A round of financing, one of the first large rounds in the burgeoning market for offgrid energy in developing countries. The check he needed was well beyond what could be raised locally in Tanzania—or, for that matter, across the African continent—and so Xavier had looked to Silicon Valley.

But he had received mixed feedback. "You're building a technology startup—why do you have so much overhead? A training academy for the sales force, *and* an in-house payments platform? Can't you be leaner?" "The Tanzanian shilling was devalued precipitously last year. What is your hedging strategy?" "You're raising a Series A now. Who could lead your Series B, and what stock market do you think you'll eventually list on?"

On their face, these questions are not necessarily misguided. But they are deeply rooted in a set of beliefs unique to Silicon Valley and its conception of how to build a startup. Unsurprisingly, these beliefs do not always translate well to the Tanzanian marketplace.

As Xavier patiently explained to his potential investors, it's hard to be lean when you need to provide basic business training to your new recruits or manage collections in a predominantly cash-based economy. The Tanzanian shilling, unlike the US dollar, fluctuates wildly, and hedging is prohibitively expensive. Budgeting for capital commitments and enjoying the necessary certainty of business forecasts are both distant dreams for local startups. And all this is complicated by the limited availability of follow-on funders and a lack of viable exit options in Tanzania.

Many of the investors could not get behind the notion that a company could break the Silicon Valley paradigm so extensively and still succeed. They turned their backs on Xavier.

Instead of telling him how things should be, those potential investors should have listened to how things are.

I first met Xavier in 2014. At that time, I had recently moved to San Francisco and joined a venture capital firm. I had one foot firmly planted in Silicon Valley, and the other investing thousands of miles away—in Asia, Africa, Europe, and Latin America.

The world of technology and emerging markets was not new to me. My maternal grandfather was a computer engineer, in the most literal sense. He replaced vacuum tubes for IBM's early supercomputers and later helped set up one of IBM's early offices in Africa. His stories of attempting to install computers in the steamy Congo are family legend. My own journey to the innovation industry was less technical, and perhaps

less exotic. I have spent the majority of my career—be it as an investor, a regulator, a consultant, or an investment banker—advising CEOs and entrepreneurs around the world and teaching future entrepreneurs in my MBA classes.

Xavier's paradox resonated with me. For my own investing, I was trying to make sense of similar questions about innovation in emerging ecosystems. My venture firm took the plunge and invested in Zola, and I accompanied Xavier and his colleagues on an eye-opening journey through the unique challenges and opportunities of scaling a business outside Silicon Valley.

"Startups Can Change the World!"

This mantra has become a global rallying cry, preached with religious fervor.

The optimism is not unfounded. In the United States, startups companies founded by entrepreneurs and often supported by venture capital—include household names like Apple, Amazon, Facebook, and Genentech. Indeed, more than 40 percent of publicly traded US companies listed after 1979 were once startups.²

Entrepreneurship is a driving force for employment. In the United States, entrepreneurship is responsible for all net new jobs created in the past decade, and in all but seven years since 1977.3

Startups are also a key driver of national innovation, including everything from the creation of the iPhone to the commercialization of drones and driverless cars. Studies have demonstrated that one dollar invested in startups funds three to four times the amount of innovation as a similar dollar in corporate research and development.⁴

The economic value of startups has doubled as a percentage of global gross domestic product (GDP) since 1992 and is projected to double again in the next fifteen years. It is no wonder that our time is referred to as the "age of innovation."5

If we are in the age of innovation, then its economic, philosophical, and spiritual center is Silicon Valley.

Certainly, Silicon Valley's track record is undeniable. If Silicon Valley were a country, its \$750 billion GDP would be in the top twenty globally, larger than the GDP of Switzerland, Argentina, or Taiwan.⁶ Three of the world's five largest companies, all of which were once startups—Alphabet (Google), Apple, and Facebook—call the San Francisco Bay Area home. There are about forty thousand startups, nearly a thousand venture capital firms, and more than 320,000 people in the technology industry in the Bay Area.⁷ Silicon Valley even has its own ambassadors.⁸

Silicon Valley used to have a monopoly on innovation. Only twenty-five years ago, 95 percent of the world's venture activity occurred in the United States, the vast majority concentrated in the two hundred square miles spanning San Francisco and San Jose.⁹

No longer.

Advances in technology mean innovation can now take root everywhere. Cloud computing has brought down the cost of starting companies, allowing anyone to rent Google's enormous computing power by the hour rather than having to purchase and maintain dedicated servers. The plunging cost of telecommunications infrastructure, combined with the advent of collaboration software, has given rise to frictionless remote work. Global markets themselves are looking more attractive for startups. The proliferation of mobile phones provides a way to reach more than five billion users worldwide. More than two billion people have online identities and interconnect and establish digital footprints through social media. These trends have had a tremendous global impact and will only continue to evolve.

The historical near-absolute US monopoly on venture investing has fallen to less than half the global share.¹² Over the past few decades, a number of more-developed, major economic centers have made up the remainder. Cities like London, Berlin, Tallinn, and Tel Aviv are becoming global startup powerhouses.

China in particular has propelled itself to the forefront of the global innovation landscape, with more than one hundred thousand startups (more than double those in Silicon Valley) and more than nine thousand venture capital firms (ten times the number in Silicon Valley) concentrated in Shenzhen, Beijing, and Shanghai.¹³ China is now home to 35 percent of the world's unicorns (a universally used colloquial reference to companies valued at more than \$1 billion), up from a mere 4 percent in 2014.¹⁴

The most exciting story, however, is what's happening in the rest of the world, outside these economic powerhouses. Innovators are increasingly taking root everywhere. There are currently more than 1.3 million technology startups globally.¹⁵ Startup ecosystems are popping up all over the world to support them, with more than 480 hubs worldwide, from Detroit to Bangalore to Puerto Rico to Nairobi to São Paulo.¹⁶ In emerging ecosystems, the incidence of entrepreneurship is double that of the developed world.¹⁷

Already about 10 percent of all unicorns are located outside Silicon Valley, and outside the traditional major developed economic centers in Europe and Asia.¹⁸ International entrepreneurs are quickly eclipsing their Silicon Valley counterparts. Uber has 75 million users worldwide, and China's DiDi has 550 million users, but emerging market leaders like Grab, Gojek, 99, and Cabify are not far behind across Latin America and Southeast Asia, with 36, 25, 14, and 13 million users, respectively.¹⁹ Similarly, PayPal, founded in 1998, has 267 million users, while Paytm, founded over ten years later in India, boasts 300 million users.²⁰

However, despite the globalization of technology, our knowledge of the way startups are built remains stagnant and myopic, centered in a specific time and place and a particular type of company: the Silicon Valley software business.

Questioning the Silicon Valley Gospel

Silicon Valley has codified what a startup should look like, dictated how it should be built, and defined what its culture should be. Via a panoply of channels, including books, blogs, podcasts, graduation speeches, tweets,

and Reddit recommendations, the Valley has successfully spread its vision around the world.

Although Silicon Valley entrepreneurs did not intentionally or collaboratively craft a theory of success, their opinions did eventually morph into a cohesive philosophy on how to build a startup. The gospel according to Silicon Valley covers everything from a startup's raison d'être (to "disrupt" existing industries with new technology, more-efficient processes, and a fresh attitude), to the yardsticks of success (to grow as rapidly as possible, with the hope of becoming a unicorn), to an entrepreneur's comfort with risk (to "move fast and break things" in hopes of scaling rapidly).

Silicon Valley's rule book has been the only proven paradigm we have had to work with so far. What has risen in the Valley is considered the authority on innovation best practices everywhere.

As a result, the global innovation community is inextricably tied to Silicon Valley's principles for building a startup. Would-be innovators from around the world look to the Valley for guidance on how to drive their own innovations. Politicians regularly make pilgrimages to meet San Francisco's leading players and thought leaders, hoping to glean their secrets. Corporations the world over install innovation outposts in San Francisco. Venture capitalists from international ecosystems pursue executive education from Stanford or local fellowships. And universally, they voraciously read what the leading luminaries are sharing.

In many ways, the Silicon Valley phenomenon is reminiscent of the global economic development complex and the Washington Consensus, an economic model exported from America in the 1960s for the development and democratization of countries all over the world. The Washington Consensus was the best system we had, and America sought to transplant it, sometimes for self-serving purposes but also because many well-meaning people in the West honestly believed that the unique US cocktail of liberal democracy and capitalism would solve the world's problems. Yet, as the past century has taught us, America's model cannot simply be exported, and various other systems work in their own local contexts—from Scandinavia's democratic socialism to China's communism.

In a similar way, Silicon Valley has exported its model globally—and, like the Washington Consensus, it doesn't work everywhere. In markets where there is a venture capital shortage, macroeconomic uncertainty, a lower tolerance for risk, less acceptance of entrepreneurship as a career, or limited enabling infrastructure, how could it?

The Silicon Valley model is also starting to show cracks at home. The year 2017 was ignominiously referred to as the "year the world turned on Silicon Valley," as people reacted to the high cost of living, questionable ethical practices at startups like Uber, the impact on neighborhoods by platforms like Airbnb, the revelations of pervasive discrimination and harassment, and the growing frustration with social media platforms and their controversial roles in the 2016 US elections. 21 Since then, these trends have only accelerated. There is a mounting backlash against the industry, and a growing demand to reexamine the status quo.²²

Furthermore, Silicon Valley is no longer generating the innovation we're looking for. As Peter Thiel, investor and entrepreneur, once quipped, "We wanted flying cars, [but] instead we got 140 characters."23 Many argue that even though Silicon Valley continues to deliver technological advancement and richly valued companies, recent innovation has been incremental rather than world changing. Major news outlets accuse Silicon Valley of catering to "tech bros" who are building products and services to match their own lifestyles, often providing basic services they are unaccustomed or unequipped to provide for themselves. On-demand laundry, food, or home cleaning, anyone?24

Lessons from Detroit

Silicon Valley may be about to have a Detroit moment. In the 1950s, the technology of the day was automobiles, not computers. At the time, Detroit was on top of the world. The top three global car companies were headquartered there. The world's leading entrepreneurs flocked there for access to talent, capital, and culture. Detroit was leading the way in automotive technology, which promised to reinvent the ways we built our

cities, organized our society, and lived our lives. Every engineer dreamed of moving there. It was also where the majority of car startups emerged. At its peak, there were more than a hundred emerging car companies in Detroit, and many more innovators were building companies to serve the burgeoning industry.²⁵ Famously, Charles Wilson, secretary of defense to President Eisenhower, told a House committee, "What is good for General Motors is good for the country."²⁶

But now Detroit is a shadow of its former self. General Motors, the largest of the Detroit-based car manufacturers, is no longer in the top three globally. The leaders are Japanese (Toyota), German (Volkswagen), and Korean (Hyundai). Even among General Motors' nearly two hundred thousand cars and trucks produced, only 40 percent are built in the United States.²⁷

What happened?

Innovation started to take root all over the world. Car companies emerged in France, Italy, Germany, Poland, Sweden, and Japan. Over time, certain regions specialized, and others surpassed Detroit. Italy became the home of the best and fastest sports cars, and Germany the home of raw engineering. The playbook on car making was also rewritten abroad. Toyota, for instance, pioneered the transformative approach of "just in time" manufacturing.

If it fails to look beyond its insular bubble, the same thing may happen to Silicon Valley. These days, it is more expensive to rent a U-Haul to drive out of the San Francisco Bay Area than to drive it in.²⁸ Many people are fleeing to more-affordable centers of innovation.

The world of innovation needs a refresh. And that refresh is already well under way at what I call the *Frontier*, which collectively refers to innovation centers located outside Silicon Valley and its closest counterparts. At the Frontier, operating in tough, underresourced, and often underregulated environments, these outside-the-Valley entrepreneurs are out-innovating their Silicon Valley counterparts. To succeed, they are making their own rules and charting their own paths. Along the way, they are challenging us to rethink what the model for innovation should be, both globally and in Silicon Valley. Born at the Frontier, outside Silicon Valley, they are devel-

oping a framework for the next generation of innovation, along with the economic and social transformation that the world is looking for.

So what exactly is the Frontier, and who are its innovators?

Frontier Innovators: The Heroes of Our Tale

By "Frontier," I mean the nascent urban and rural startup ecosystems in developed countries like the United States and Europe as well as in emerging markets.29

These latter areas present an entirely different context from Silicon Valley and other economic powerhouses, and obviously are themselves heterogeneous. Many parts of the Frontier are in developing countries. Innovators at the Frontier must deal with unique constraints that range from the potential for political or macroeconomic instability and dysfunctional or nonexistent infrastructure or government services, to customers that simply cannot afford, or are too risk averse, to purchase newfangled products. Even Frontier regions in developed countries often lack indispensable resources such as angel investors, incubators, venture capitalists, an experienced employee pool, cultural support for risk and failure, interested acquirers, and public markets.

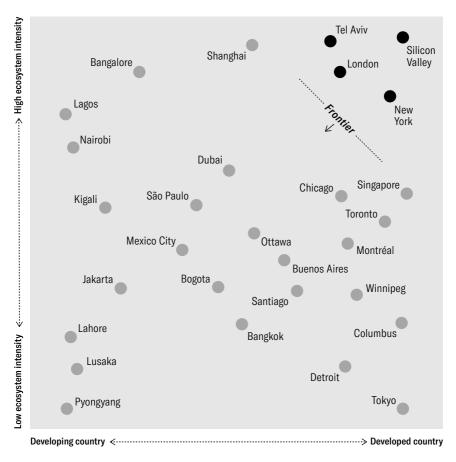
In other words, the world cannot simply be divided into categories of "Silicon Valley" and "Not Silicon Valley." The reality is that the Frontier is much more nuanced. For simplicity, I focus on two particular dimensions.

The first is economic—factors unrelated to the startup ecosystem that reflect the general level and stability of the environment. Is the currency stable? Does the government provide stability? Are there high corruption rates? How high is GDP per capita? The effect of each factor may differ but collectively will impact the level of the ecosystem's development. Ultimately, low ecosystem development makes the operating environment that much more challenging.

The second dimension is the strength of the local startup ecosystem. Is there sufficient capital available? Is there experienced technical talent (e.g., software engineers) or digital talent (e.g., online marketing

FIGURE I-1

The many faces of the Frontier



Note: Location placements are approximate and indicative only.

executives) present? Do corporate laws support startups (e.g., is bank-ruptcy legal)?³⁰ I refer to this dimension as *ecosystem intensity*; the higher the intensity, the stronger the local ecosystem.

By mapping these two dimensions, a simple heuristic model emerges, as shown in figure I-1. Markets that look like Silicon Valley tend to cluster in the upper-right, with both macroeconomic stability and ecosystem

intensity. While Silicon Valley is not alone in the upper-right—places like Tel Aviv, New York, and London sit nearby as well—these ecosystems are the exception rather than the rule.³¹

This book covers geographies as expansive as the Frontier itself. You will meet innovators in Chicago, Dubai, Jakarta, Mexico City, Mumbai, Nairobi, São Paolo, Winnipeg, and even North Korea. Each of these locations has both its own unique political, economic, and social contexts and its own distinct ecosystem intensity. Still, entrepreneurs operating at the Frontier have much more in common with each other than they do with their counterparts in Silicon Valley.

To juxtapose extreme differences between Silicon Valley and the Frontier, you will visit some of the toughest ecosystems in the lower-left quadrant, where you will observe acute challenges. In addition, to explore particular nuances of the Frontier, you will visit ecosystems in the other two quadrants, having either stronger macroeconomic contexts or relatively higher ecosystem intensities (or both).

Our characters are the innovators—admittedly, also a nebulous term. Some studies loftily suggest there are more than 400 million entrepreneurs worldwide, or about 6 percent of the population of every woman, man, and child on the planet.³² You will zoom in on a key subset of the 400 million.

For the purposes of this book, *Frontier Innovators* embody three specific qualities:

1. They are entrepreneurs of opportunity. In many markets, people become entrepreneurs as a last resort. These are the entrepreneurs of necessity—the roadside fruit vendors, beachside masseuses, and street hawkers. In Silicon Valley, news outlets optimistically claim that half of millennials start new businesses. Yet these numbers are misleading; many of them are 1099 contract workers in the gig economy, such as Uber drivers and on-demand delivery providers. Their efforts are significant and their challenges serious, but their situation is outside the scope

- of my focus. I define *entrepreneurs of opportunity* as those who identify a market failure and proactively choose to leave gainful employment to solve it.
- 2. Frontier Innovators leverage some sort of innovation. To be clear, this book is not only about using software. I focus on leveraging any combination of business model and technological innovation that underpins the opportunity-capturing approach of these entrepreneurs.
- 3. I focus on entrepreneurs who aspire to scale their businesses. There are millions of entrepreneurs of opportunity who start a business voluntarily and innovate on the model, thereby meeting the first and second criteria, but do not have scale in mind. Picture an individual who starts a single-location restaurant with a modern design and menu, or a hair salon with unique style options. Of course, this phenomenon also exists in technology companies. An analysis of more than six hundred entrepreneurial software companies in Nairobi determined that more than half, which on the surface might appear as startups, were in fact "low-productivity microbusinesses" (e.g., small technology consulting services).³³

When I started this book, my natural conception of innovators was of traditional entrepreneurs, laboring in small teams, building their own companies. In my exploration, I discovered a range of unconventional Frontier Innovators, including venture capitalists starting new investment models, ecosystem developers building startups to serve their geographies, and "intrapreneurs" who operate within family businesses or large corporations but leverage similar methodologies. Many of them were challenging Silicon Valley's rule book in related ways. This book explores their work as well.

Using this lens, I define Frontier Innovators as entrepreneurs of opportunity who operate outside the most-developed startup ecosystems, leverage technological or business model innovation, and seek to scale their businesses.

Ultimately, as you will see, Frontier Innovators' mindsets, principles, and practices represent a striking departure from and an alternative to the Silicon Valley gospel.

A New Model for Innovation at the Frontier

Frontier Innovators are writing their own innovation playbook. Their methods, while derived from practical necessity, are not only reinventing the rules but also redefining what it means to innovate. This book explores ten elements of this new model for innovation.

First, Frontier Innovators are Creators. Silicon Valley is focused on disrupting established industries, but at the Frontier, innovators must create new industries because often there are no established industries to disrupt. They must build entirely new sectors that offer customers a range of products and services that Silicon Valley takes for granted, such as education, health care, financial services, energy, and even infrastructure.

Silicon Valley's obsession with asset-light, highly focused startups is not practical when enabling infrastructure does not exist, as is often the case when industries are being created. Frontier Innovators must often build the "full stack"—including the enabling infrastructure that their businesses and products require.

Where Silicon Valley strives to breed unicorns, the Frontier raises Camels—organizations that can capitalize on opportunity but also can survive in a drought. Frontier Innovators do not focus on growth at any cost; they focus on sustainability and resilience.

Frontier Innovators also cross-pollinate. They leverage diverse lived experiences, often across multiple geographies, industries, and sectors, to build their businesses. They tap global networks for capital and resources.

Silicon Valley may teach its startups to be based in the Bay Area, build their teams there, and focus on the \$18 trillion US domestic market, but Frontier startups have no such obvious path. In fact, many are born global; they strategically target multiple global markets from day one.

Frontier Innovators don't just sell to the world. They also build the fabric and machine of the organization in a distributed way. They recruit the best talent, regardless of where they are from, and foster an integrated culture through technology and organizational design.

With Silicon Valley's rich talent pool, entrepreneurs have the luxury of recruiting A-players as needed. Companies tolerate high turnover because employees are replaceable from Silicon Valley's sea of talent. At the Frontier, innovators build A-teams with a growth mindset toward employees and a long-term outlook.

Frontier Innovators are also Multi-Mission Athletes who interweave both profit and impact-based goals into the core fabric of their business models.

Silicon Valley's blasé approach to risk—of moving fast and breaking things—is not tolerable when acceptance of risk is lower and the consequences of failure are higher.³⁴ Frontier Innovators manage risk, build customer trust, and formalize their industries.

Venture capital and technology startups exist in a symbiotic relationship; neither can survive without the other. Yet, while the venture capital model serves Silicon Valley's unicorns, it is not adapted to the rest of the world's capital needs. Venture capitalists at the Frontier are themselves innovators in their own right, because they are adapting the model for challenging environments.

Silicon Valley has a rich mosaic of support systems: corporations with innovation departments, venture capitalists who offer support teams, accelerators who specialize in myriad topics, and even regulators who are increasingly looking to engage with innovators. Frontier Innovators often feel isolated by comparison. By necessity, Frontier Innovators don't just scale their startups; they take an active role in building their ecosystems by laying the cornerstones of entrepreneurial culture, creating a community of mentors and supporters, and building the requisite infrastructure for the ecosystem.

Of course, Frontier Innovators are not alone in building their ecosystems. Governments, regulators, investors, large corporations, charities, foundations, and other interested parties can have a disproportionate impact on Frontier ecosystems—not by copying Silicon Valley but by leveraging the lessons from the Frontier.

Each chapter of this book explores one of these thematic lessons. The book is rooted in the lived realities of Frontier Innovators and shares practical advice for all participants in the ecosystem. Chapters also draw on my own data, more than two hundred interviews, industry publications, and, where it exists, leading academic research in the field.

Who This Book Is for and Why It Is Crucial

This book seeks to answer four basic questions: What unique strategies do Frontier Innovators employ to successfully develop their innovations? How can these strategies be replicated by others at the Frontier? What can Silicon Valley learn from these emerging approaches? How should we use these lessons to promote vibrant and successful innovation ecosystems around the world?

Out-Innovate is relevant to a number of key audiences. The first are Frontier Innovators themselves. Silicon Valley has been the sole fount of innovation wisdom for too long. My hope is that this book will start a conversation about what it means to innovate in the rest of the world. Of course, these lessons are equally important for Silicon Valley, if it hopes to stay on top. The Valley must begin to challenge its own conventional wisdom and accepted philosophies and learn from the hard-fought lessons at the Frontier.

This book is also designed to be interesting and accessible for people in the public and social sectors. Supporting entrepreneurs and their innovation ecosystems is increasingly at the top of national agendas worldwide. Policy makers are looking to entrepreneurship for job creation. Nonprofits are looking to innovation to promote and foster social, environmental, and economic change. The lessons in *Out-Innovate* should prove instructive for these players.

At the same time, leaders of large, global, publicly traded companies, ranging from Boeing and Bank of America to General Electric and General Motors, know their industries are evolving rapidly and want to update their business models. Through innovation departments, corporate acquisition strategies, and investment firms, they are more proximate to innovation than ever. Global corporations must adopt a global view on how innovation works, where, and why. *Out-Innovate* may be a good starting place.

At the other end of the spectrum, the social enterprise movement continues to gain momentum. One study estimated that more than 3 percent of the world's population is involved in social ventures (it is nearly double in the United States, at 5.8 percent), and 90 percent of these organizations were created in the past decade.³⁵ Startup approaches are foundational as social enterprises look to the next phase of their evolutions.

Excitingly, the first wave of entrepreneurial activity in many Frontier ecosystems is only beginning to crest. The ranks of innovators across the globe increase daily. In the United States alone, by some counts more than half a million people become entrepreneurs every month. Most are not building Silicon Valley–style software startups.³⁶

Uncritically following Silicon Valley's principles and applying them to different local contexts is a recipe for failure. Learning the lessons of successful Frontier Innovators is crucial for new entrepreneurs, technology workers, and students looking to join their ranks.

When I ask my friends which current Silicon Valley entrepreneurs they see as a positive force on humanity, they often mention Elon Musk. But when I ask for a few more names, they struggle. At the Frontier, I can point to dozens of Elons. They are building various types of companies, in various ways, and they are driving world-changing innovation. This book shares their stories and hopefully will inspire my friends in Silicon Valley to learn from their practices.

William Gibson once said, "The future is already here, it's just not evenly distributed." In this case, Frontier Innovators across the world are leading the charge and providing a glimpse of the future of innovation and entrepreneurship worldwide and, per Gibson, a future that is more evenly distributed. And maybe their lessons hold the key for innovation and startups to change the world after all.