

Introduction

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WHY WRITE THIS BOOK?

Moving to Silicon Valley mid-career in 1980, I was struck by the contrast in the business environment with my previous milieu in the northeastern US corridor. Instead of being dominated by mature corporations with 100+ year legacies, Silicon Valley was, by comparison, a tumultuous ecosystem of large and small companies with a common bond; whether big or small, they shared a hunger to create new products and services that would dominate new and growing markets. Rather than competing over a fixed market, in a win-lose contest, they tended to vigorously compete in growing markets which, in spite of the fierce competition, contributed to a sense of shared community and shared destiny. Experiencing this through the fresh eyes of an emigrant made me keenly aware of the unique role of the community and its various participants. My career also gave me a privileged vantage point from which to observe and engage with the entrepreneurs that drove this ecosystem and the extensive support network that provided the lattice. For the decade of the 1980s I created and led a branch of a leading professional services firm to provide specialized support for entrepreneurs and the new ventures they created. This put me in daily professional contact with entrepreneurs, venture capitalists, investment bankers, lawyers, engineers, scientists, government regulators – indeed the entire ecosystem. The nature of our services led to long-term relationships stretching over many years, with intermittent and intense engagement. This privileged perch gave me a personal perspective on two things: the longitudinal development of entrepreneurial ventures and the community that supported them.

When I joined the faculty of the University of California, Berkeley in 1991 to establish the Lester Center for Entrepreneurship and Innovation at the Haas School of Business, it was natural for me to turn to the academic literature to explain the environment that I had observed and lived in – this vibrant, effervescent ecosystem of innovation through entrepreneurship and new venture creation. It was an exciting time in the literature with an

explosion of contributors sharing rapidly evolving concepts describing the power and benefits of industrial clusters. Michael Porter and others were bringing fresh attention and acuity to the much earlier work by Alfred Marshall. They identified the powerful role of geography and the benefits derived from the concentration of like firms. The capability of industrial clusters to generate benefits and provide a competitive advantage to cluster participants was profound. This insight has had a dramatic effect and is a driving force for much government economic development policy around the world.

While helpful in many regards, the industry cluster construct did not address a core element of my experience of Silicon Valley: the advantage new ventures had in getting started and their increased likelihood of success. Why was Silicon Valley able to support the continuous emergence of startup high-growth entrepreneurial firms almost independent of industry alignment? Why were new industries emerging within dense and highly specialized clusters? An early example for me was the rapid emergence of the biotech industry in Silicon Valley in the early 1980s. Traditional cluster theory would have predicted that biotech would have emerged where existing pharmaceutical companies concentrated. In the US that would be in the northeast corridor, particularly the northern New Jersey region. Why did this new industrial cluster arise instead among the semiconductor and computer companies in Silicon Valley?

While dramatic, this was not an isolated example. In Silicon Valley this process of new industry creation recurred again and again. Sometimes the process seemed evolutionary, such as those that extended the semiconductor industry (computers, software, and related electronics industries) or the Internet and its spawn of applications (search, new media, Internet commerce, and social networking). But often there arose seemingly unrelated new industrial concentrations such as biotechnology, nanotechnology and – more recently – biofuels, solar energy, and other ‘green’ industries. Traditional industry cluster theory did not account for this new industry emergence.

There were other shortcomings in existing cluster theory. It did not address why these innovation clusters were comprised and dominated by startup firms that had rapidly grown into mature enterprises, rather than by mature incumbent firms and their spin-offs. It did not explain how new technology clusters, such as Israel and Taiwan, emerged so rapidly and robustly in indigenous environments, attracting large concentrations of venture capital. Nor did it explain my personal observation that forming business relationships with other ventures was often easier to arrange with others from a similar community where entrepreneurial firms were the drivers of market and product innovation. This increased facility was

apparent even when the communities were geographically dispersed, even across international borders and multiple time zones.

These failures of traditional cluster theory to explain what was so apparent in my day-to-day experience led me to want to capture the insight and explain the process. I tested my perceptions and understanding in my university lectures and refined my conceptions. In the early 2000s, this desire took on greater urgency as the unintended consequence of a collaboration with Intel Corporation. Intel sought to strengthen technology-entrepreneurship education around the world. They selected our UC Berkeley entrepreneurship curriculum as the model, and sponsored us to lead a series of over 40 faculty development seminars all around the world over a period of three years. I conducted many of these seminars personally, and this gave me the wonderful opportunity to travel to many of the leading and burgeoning technology clusters, to meet with my colleagues and to glean from them their understandings of how Clusters of Innovation arose and behaved. This experience affirmed my suspicion that traditional 'agglomeration' cluster theory did not adequately describe the phenomena I was observing. I also came to understand that while individual clusters are unique, Clusters of Innovation do share certain fundamental characteristics.

In 2006 my colleague from Barcelona, Josep Piqué (also a contributing author in this volume) introduced me to an enterprising PhD student, Itxaso del-Palacio, who was looking for a project in Silicon Valley to anchor her dissertation. Together we undertook to describe and test my hypothesis of the characteristics of what we called a Cluster of Innovation (COI). That work led to the publication of our Framework for defining Clusters of Innovation and for describing the relationships that form between clusters for their mutual benefit, an interrelationship we defined as the Global Network of Clusters of Innovation. Later we further explored the bilateral relationships that can so integrate the functioning of two clusters that they can be considered to operate as a single super-cluster, documenting these structures with the case of the Israel-Silicon Valley super-cluster. Ultimately, the desire to enrich this description of the various forms and developmental stages of Clusters of Innovation and their interrelationships became the main motivation for writing this book.

The volume is a collaborative endeavor. It arises from conversations and collaborations over many years (some spanning two decades since the initial Intel faculty development seminars) among academic and community leaders in very different regional clusters and from their agreement with and enthusiasm for the concepts expressed in the COI Framework. This enthusiasm began to coalesce after the initial publication of the Framework in 2009 when Helmut Schönenberger (also a contributing

author), CEO of UnternehmerTUM in Munich, Germany, hosted a seminar where a number of the contributing authors met for four days with other regional leaders to discuss and refine ideas about how the informal network of relationships we shared fit into a larger perspective of networks of relationships among innovation clusters around the world. At this meeting we committed to work together to describe and expand on the benefits of this phenomenon. At a second meeting hosted by Josep Piqué in Barcelona two years later, the discussion was deepened and a formal decision was made to publish our perspectives in a collective volume. This book is the result of this joint resolve to share our insights and diverse experiences in a way that would clarify and put this story forward. I am indebted to my colleagues for their efforts and support.

This book profiles a sampling of COI around the world, noting their commonalities as well as their unique structures and features. This is not a comprehensive survey of global COI, and certainly not a simple recitation of best practices, but rather an investigation into what works and what does not. Silicon Valley is generally accepted as the prime example of a COI; it has been copiously studied and imitated, with varying degrees of success, throughout the world. However, Silicon Valley is not the only model, nor is it the most appropriate model for many economic systems. Our authors provide a series of intimate snapshots that will illuminate the variety of ways innovation clusters are arising as well as the bonds that are increasingly tying them together in a Global Network of COI. The book is authored by practitioner scholars and benefits from their practice-based perspective and ability to draw broad frameworks and implications. Working collaboratively with academic and community leaders in our respective domains, many of us have led the initiatives described in this volume.

It is our hope that this information will prove useful not only to students of business and economics but also to government policy makers in developed and developing countries and to the key players in these COI – the entrepreneurs, venture capitalists, executives of major enterprises, academics, scientists and engineers, local and national government officials, and all who contribute to innovation. We hope it can inform and give guidance to those who work from the top down to design productive communities, and to those who work from the bottom-up – the entrepreneurs building companies – for they are the ones who actually bring innovation to life! In the broadest sense, we hope this book can help give the word ‘innovation’ a richer meaning, when considered in a context that embraces the sociology of business interactions.