
Introduction

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Universities have been around for longer than most things we observe in our modern, contemporary world. By contrast, the concept of entrepreneurial ecosystems is new. That such an old and new concept should collide is sufficiently surprising that their intersection constitutes the topic of this book.

Just because the university is such an established and revered institution does not mean that it is widely understood, particularly when it comes the role of the university in the economy. For centuries, universities were subject to the power, scrutiny and whims of the church and state. We all know the resistance from the church that the famed mathematician and astronomer, Nicolaus Copernicus, met from the Catholic Church when he dared to posit that the earth revolves around the sun.

It took the giant of a philosopher and linguist, Wilhelm von Humboldt, to liberate the university from the dictates of the church and state, freeing it to pursue knowledge for its own sake. Humboldt's revolutionary vision for the university was: 'The purpose of the universities is to cultivate learning in the deepest and broadest sense of the word, not for some practical or utilitarian end, but for its own sake as preparatory material of spiritual and moral education (*Bildung*).'¹

With enactment of the Morrill Act in the United States, which was signed into law by President Abraham Lincoln in 1862, selected land grant universities were given the mandate not just to pursue knowledge for its own sake but rather knowledge to support and promote the agriculture community of that particular state. In fact, research, teaching and outreach undertaken at the land grant universities helped to propel U.S. agriculture to the highest levels of productivity and competitiveness in global markets.

The role of the university in society was further expanded following the second world war. In his highly influential report, *Science: the Endless Frontier*, Vannevar Bush (1945) posited a new and bold mandate for American universities to include not just the inward-looking values of the traditional and scholarly academic disciplines, but also the outward-looking social values.

However, it was not until the advent of contemporary globalization that the role of the university became firmly and decidedly an institution not just to anchor cherished social and political values but also to promote economic ones. As knowledge and ideas emerged as driving forces in the globalized economy, the university came into focus as a key source of competitiveness and growth.

The advent of entrepreneurial ecosystems in the last several years reflects the widespread recognition that entrepreneurship plays a key role in enabling knowledge investments, by the universities but also by private companies, non-profit organizations and research institutions, in commercializing new ideas and ultimately transforming them into innovations. Entrepreneurship has become increasingly viewed as the conduit taking ideas from the research laboratory, shop floor, and classroom and implementing them in the market, ultimately

triggering the coveted economic growth, new jobs and competitiveness in global markets (Hébert and Link, 2009).

The English poet, John Donne, observed in 1624 that ‘no man is an island’. It was not until more recently that both scholars as well as thought leaders in business and policy similarly concluded that entrepreneurs are similarly not an island. Rather, entrepreneurs, along with their start-ups, ventures, organizations and companies, have a strikingly greater propensity to be innovative when they are embedded in a community of other complementary entrepreneurs, institutions, and organizations, or what has become referred to as an entrepreneurial ecosystem. Because of their multiple roles of not just generating valuable knowledge and ideas, but also as a source of entrepreneurial behavior, universities have emerged as a cornerstone of entrepreneurial ecosystems.

Just as Michael Porter (1985) demonstrated that established companies generate a strong performance within the context of what he termed as a *cluster*, so too, entrepreneurs and the ventures also exhibit a stronger performance within the context of an entrepreneurial ecosystem. Thus, the title of our collection, *Universities and the Entrepreneurial Ecosystem*, is intended to suggest two things. First, it emphasizes the primary topic of the collection, namely the university; second, it suggests that universities are an element of the ecosystem that affects entrepreneurial behavior.

As with most titles, different readers might have differing interpretations about the scope of a book. Regarding *universities*, the scholarship that we have selected for this volume views universities as homogeneous agents of change. That is, we, like many others, have treated empirically the university as an independent variable that affects the behavior of entrepreneurial firms. Of course, universities are not homogeneous in their resource base; but we, like others in our field, have yet to delve into what are surely relevant distinguishing characteristics of one university over another. Regarding *ecosystem*, the articles in this volume assume that it consists of multiple enterprises, organizations, institutions, and individuals. And, those interact in such a manner as to elevate their own economic performance as well as those with whom they interact.

In order to decipher the interaction between universities and the entrepreneurial ecosystem, four main focus areas have emerged. The first involves university entrepreneurship. The second is concerned with university technology transfer. The third has a focus on the complementary nature of university-based research, and the fourth on universities as research partners. We have grouped the chapters included in this volume according to these four salient themes.

The articles assembled in the first two parts of this volume – University Entrepreneurship and University Technology Transfer – emphasize the unique characteristics of the behavior of universities, and it is that behavior that is the genesis of understanding the role and impact of universities in an entrepreneurial ecosystem and on its members. The first chapter in Part I on University Entrepreneurship, ‘U.S. Science Parks: The Diffusion of an Innovation and its Effects on the Academic Missions of Universities’, was selected to kick off the volume because it explains how the role and mission of the university has been changing over time. The focus is narrowed to a specific analysis of start-ups emanating from universities in the second chapter, ‘Opening the Ivory Tower’s Door: An Analysis of the Determinants of the Formation of U.S. University Spin-off Companies’. In the third chapter, a different aspect of university entrepreneurship is considered in ‘U.S. University Research Parks’. The final two

papers provide an explicit analysis of the impact of policy on university entrepreneurship. In particular, the impact of the Bayh–Dole Act, enacted by the United States Congress in 1981, on university entrepreneurship is analyzed in the fourth chapter, ‘The Bayh–Dole Act and Scientist Entrepreneurship’, and in Chapter 5, ‘Scientist Entrepreneurship across Scientific Fields’.

Part II of the volume focuses on University Technology Transfer. The spatial and geographic dimension of technology transfer is analyzed in Chapter 6, ‘University Spillovers and New Firm Location’. In Chapter 7 the technology transfer behavior of scientists and researchers is the focus in ‘An Empirical Analysis of the Propensity of Academics to Engage in Informal University Technology Transfer’. Technology transfer is considered within the developing country context in Chapter 8, ‘The University Technology Transfer Revolution in Saudi Arabia’.

The remaining two parts – Complementary Nature of University-Based Research and Universities as Research Partners – discuss and quantify how universities, as an element of an ecosystem, affect the behavior of entrepreneurial firms within the ecosystem. The first article included in the third section, Chapter 9, provides a meticulous analysis of ‘Firm Size, University Based Research and the Returns to R&D’. Similarly, in ‘Real Effects of Academic Research: Comment’ (Chapter 10), the spatial dimension of knowledge spillovers from university research are analyzed. Knowledge spillovers from university research for the specific context of biotechnology are the focus of Chapter 11. The impact of knowledge spillovers emanating from university research on economic growth is the focus of Chapter 12, ‘Knowledge Spillovers, Collective Entrepreneurship, and Economic Growth: The Role of Universities’.

The first chapter included in the final part, Chapter 13, provides an explicit analysis of ‘Universities as Research Partners’. Similarly, Chapter 14 has a focus on ‘Universities as Research Partners in Publicly Supported Entrepreneurial Firms’. The final paper of the volume, Chapter 15, provides an analysis of ‘New Industry Creation and Originality: Insight from the Funding Sources of University Patents’.

Taken together as an integrated body of research offering a variety of perspectives about the intersection between universities and the entrepreneurial ecosystem, this volume provides a starting point for fleshing out the rich and nuanced details of the role of the university in the entrepreneurial ecosystem and vice versa. Our hope is that this collection of scholars will be a seed motivating how scholars think about the economic role and impact of universities. We also hope that seed will stimulate more research on this important topic.

Note

1 Cited from Fallon (1980, p. 5), from Audretsch and Lehmann (2016).

References

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