

The University and the Start-Up: Lessons from the Past Two Decades¹

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ABSTRACT. This paper explores one of Edwin Mansfield's enduring interests: the interface between academia and industry. It highlights some key lessons regarding the management of university-based spin-outs, drawing on a variety of sources. I highlight the challenges that the spin-off process poses, the impracticality of directly financing firms through internal venture funds, and the ways in which universities can add value to faculty ventures.

Key words: spin-off, venture, capitalist, entrepreneurship, venture capital

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1. Introduction

One of Edwin Mansfield's enduring interests was the relationship between academic science and industrial development (Edwin Mansfield, 1968, 1991). In recent years, these questions have become even more urgent on many campuses: despite the recent decline in venture funding, there remains enormous interest in start-up activity on the university campuses.

University administrators see new firms as having several key benefits: they can generate considerable revenue for the institution, make the university more attractive to current and potential faculty members, and benefit the community and the nation as a whole. Faculty members often view these ventures as potential sources of both personal wealth and career fulfillment.

Meanwhile, venture capitalists have long viewed universities as a fertile source of investment ideas. The first modern venture capital firm, American

Research and Development (ARD), was designed to focus on technology-based spinouts from the Massachusetts Institute of Technology. As envisioned by its founders, who included MIT President Karl Compton, Harvard Business School Professor Georges F. Doriot, and Boston-area business leaders, this novel structure would be best suited to commercialize the wealth of military technologies developed during World War II. Many of the most successful venture capital-backed firms over the decades—including Cisco Systems, Genentech, and Netscape Communications—had their origins as academic spin-outs.

Despite this interest, however, the effective management of these start-ups poses many challenges. If managed incorrectly, a start-up can cause serious disruption to the institution that spawns it. The dangers can manifest themselves in many ways:

- Boston University's venture capital subsidiary invested in a privately held biotechnology company founded in 1979 by a number of scientists affiliated with the institution. As part of its initial investment in 1987, the school bought out the stakes of a number of independent venture capital investors, who had apparently concluded after a number of financing rounds that the firm's prospects were unattractive. Between 1987 and 1992, the school, investing alongside university officials and trustees, provided at least \$90 million dollars to the private firm. (By way of comparison, the school's entire endowment at the fiscal year in which it initiated this investment was \$142 million.) While the company succeeded in completing an initial public offering, it encountered a series of disappointments

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with its products. At the end of 1997, the University's equity stake was worth only \$4 million.²

- The University of Illinois, having developed the Internet browser, licensed the technology to a Boston-based venture, Spyglass Technologies. When some former university employees begin a separate firm to commercialize a related technology, the University commenced litigation against them. The acrimony of the dispute may have influenced the institution's decision to reject the offer of a large block of stock in the new firm to settle the dispute—instead they demanded (and received) a relatively modest cash payment. The value of the equity in the new firm, Netscape Communications, would have exceeded the cash payment by many hundred-fold. Meanwhile, Spyglass largely abandoned its Internet browser effort and was acquired in 2000.³
- The University of Chicago launched the ARCH initiative in 1987 to encourage commercialization of its own technology and that of Argonne National Laboratory, a federal facility which it managed. The group was given a mandate both to license technologies to established firms and to fund start-ups. The venture fund enjoyed some modest initial successes. Shortly thereafter, however, the relationship between ARCH and the University of Chicago was restructured. The ARCH partners received permission to raise a second, more substantial, venture fund with far more generous compensation for the venture capitalists. As part of the new effort, they were allowed to invest outside the University, while retaining a formal "right of first look" at the University's technology. ARCH rapidly expanded after raising the second fund, and the share of new transactions originating from the University of Chicago and Argonne fell dramatically. Meanwhile, many at the school believed in their eagerness to become established as venture investors, the ARCH partners had neglected the more mundane—but necessary—technology licensing activities.⁴

Thus, the successful management of the relationship between universities and start-up firms is thus not a trivial or routine matter!

This article seeks to highlight some of the key lessons about the management of university-based spin-outs. It highlights a number of lessons, based on a wide variety of sources: traditional academic research, case studies on specific programs, service on advisory panels, and special projects that have sought to address the needs of particular organizations.

I highlight five lessons that emerge from these efforts:

- Starting new ventures based on university technology is hard. Despite the confidence of many academic entrepreneurs and university administrators, the process of creating a sustainable new company is a very challenging one.
- In the vast majority of cases, new firms will not generate enormous wealth for academic institutions. Much more modest returns are the norm.
- Directly financing firms through internal venture capital funds is unlikely to be a successful strategy for universities.
- Nonetheless, universities can add considerable value to young firms that faculty begin.
- Old frameworks about conflicts-of-interest must be rethought in light of the special needs of start-ups.

These issues will be explored in turn in the subsequent sections.

2. The Challenges of New Technology-Based Firms

University technology transfer offices typically focus on nascent firms in high-technology industries with tremendous promise. Unfortunately, these firms are also characterized by uncertainty and informational gaps, which make it difficult for the investors to evaluate business plans or to oversee the entrepreneurs once the investments are made. The consequences are often unfortunate. In some cases, the idea is commercialized, but the return to the academic institution is small; often these information problems discourage outside investors entirely and the discovery languishes.