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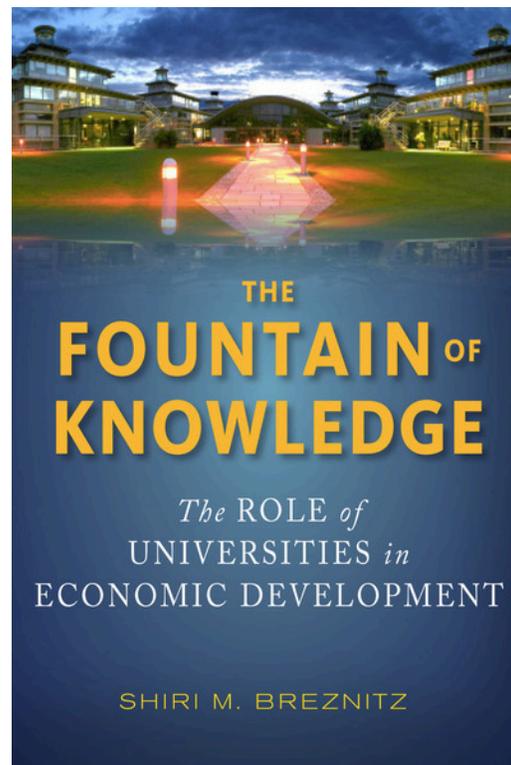
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In *The Fountain of Knowledge: The Role of Universities in Economic Development*, Breznitz, assistant professor at the Munk School of Global Affairs, University of Toronto reports on the results of a comparative case study of the regional impact of biotechnology transfer at two of the worlds leading universities: Yale University (United States) and University of Cambridge (United Kingdom). The plural “universities” in the subtitle suggests that Breznitz’s interest transcends a comparison of these two institutions. Indeed, for Breznitz this “is a book about universities and their role in today’s global economy: how (and why?) they are contributing to their local economies” (p. xiv).

In a well thought out chapter two Breznitz examines the literature on technology commercialization and organizational change, and presents her “theoretical approach” (pp. 38 - 40). Based on this literature and her own research she posits that the internal commercialization policy, organization, and culture must be set within the equally important external regional history and environment. Most significantly, “each university has



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<http://edrev.asu.edu/index.php/ER/article/view/1880>

its own approach to investing and organizing knowledge transfer, which resulted in different mechanisms of commercialization” (p. 40). In chapter three, Breznitz presents a useful comparison of science and technology policies in the US and the UK.

Breznitz has conducted research on industry location, technology transfer, and economic development with a particular focus on biotechnology. Her work in Massachusetts led her to the realization that a biotechnology cluster existed in Cambridge, MA. She discovered that “it all was connected to MIT and Harvard” (p. xiii). This discovery led to the question, why universities?

Breznitz’s explanation as to why two elite, non-representative universities were chosen for her research is that they each had made an effort to make a significant economic contribution to their respective regions. In addition, “I was in the right place at the right time – I was at each of these institutions [Yale and Cambridge] after they began the process toward change, and during the process” (p. xiv). Given the differences in process and outcomes at Yale and Cambridge, Breznitz certainly was in the right place at the right time. Unlike previous researchers, cases were not chosen in retrospect because they were successes or failures. Informative descriptions of the data collection, interviews, and secondary resources are available in Appendix 2 “Methodology.”

A background assumption of Breznitz’s is that “universities do not exist in a vacuum - they are influenced by social and economic processes and politics” (p. 5). Few critics would argue with this and suggest that an ivory tower model is a more accurate observation about contemporary universities. However, a strength of Breznitz’s work is her ability to demonstrate the importance of the interaction of Yale and Cambridge with their political, social, and economic regions.

By mission and history, Cambridge viewed itself as a national and international university and not as a regional player. In a similar manner, Yale had little involvement with the New Haven community or with applications of the research that was conducted in its laboratories. However during the 1990s both universities were under pressure to make an impact on their local communities.

Briefly, the two institutions took divergent paths. Cambridge had strong university-industry relationships. However, the university executed policy and structural changes “without consideration as to how those changes would affect other regional players” (p. 8). This resulted in a reduction in the number of spinoffs and an increase in the number of negative responses from members of regional industries. In contrast, Yale collaborated with other regional players and industry representatives throughout the period of change. This resulted in a growth of spinoffs and positive feedback. A number of easy to understand, valuable tables, charts, and diagrams are strategically placed throughout the book. These are excellent supportive material to the text.

Differences in the process of change were that while: (1) Yale made comprehensive changes to its entire approach to technology transfer that include policy, culture, and organization, Cambridge made partial changes to some of its property rights policy and organization; (2) Yale instituted one process that took three years, Cambridge made numerous smaller changes over eight years; and (3) Yale included the external stakeholders, Cambridge made changes without input from external stakeholders.

Two of the seven chapters (including introduction and conclusion) are devoted to the details of the history and organizational changes that occurred at Yale (Chap. 4) and at Cambridge (Chap. 5). In addition to the fundamental differences cited above, a number of differences between the schools and their internal and external environments emerge in these chapters.

In terms of changes over time, the biotechnology and pharmaceutical cluster in Yale’s region grew from six in 1993 to 49 in 2000 to 70 by 2013. The comprehensive and quite rapid internal changes, “were complementary to, as well as supported by, the State of Connecticut, the City of New Haven, and local industry” (p. 61). For example, the Connecticut Innovations was charged in 1989 by the State with investing in local companies to enhance economic development, and in 2001 the State established the Office of Bioscience within the Department of Economic and Community Development. The City of New Haven made its contribution by upgrading the infrastructure that supported biotechnology industries.

In terms of organizational change, the Yale Office of Cooperative Research (technology-transfer office) employees were educated and experienced in transfer commercialization. The significance of such a qualified staff and the commitment of the president and his leadership team appear to have been necessary conditions for the successful technology transfer process at Yale. Meetings with faculty and departmental chairs stressed the commitment of the university to the new transfer policy and helped to change Yale's culture. New policies supported commercialization in general and spinoffs in particular.

Cambridge University has served as a central player in the evolution of Cambridgeshire County as the location of the largest biotechnology cluster in the United Kingdom. However, in the late 1990s Cambridge University began a series of changes that were detrimental to the university-industry ties in the county.

A number of the most significant differences between the two universities in the development and implementation of technology-transfer and commercialization policies and programs have been cited above. A particularly detrimental action at Cambridge was the almost constant announcement of organizational and personnel changes in the technology transfer office. The lack of collaboration with internal and external actors contributed to a situation in which both groups were confused about lines of communication and authority. The case of Cambridge supports Breznitz's argument that not all change will have positive effects. It also demonstrates the value of the "law of unanticipated consequences."

On the basis of a comparison between Yale and Cambridge, a large and professional staff in a university's technology transfer office appears to be a necessary condition for a successful commercialization program. However, even here Breznitz argues that there is no universal formula for a successful transfer office. For instance, universities, e.g., Stanford, MIT, in regions with strong existing venture capitalists and entrepreneurs, e.g., Silicon Valley, Boston, do not need professionals who can walk students and faculty through the start-up phases of the transfer commercialization process. The best advice that Breznitz can give universities is that "we should provide them [technology-transfer offices]

with appropriate tools to evaluate and commercialize technology” (p. 134).

From the perspective of members of the higher education community, technology transfer is a significant, timely topic for research universities. Spinoffs, licenses, patents, etc., bring money, prestige, connections, and high quality researchers/professors, and students. From the point of view of the region, the process brings economic development and opens opportunities for experimentation and for access to well-educated collaborators.

Upper-level policy makers and administrators, e.g., deans, provosts, chancellors, presidents, and members of board of trustees at research universities will find Breznitz’s findings and advice to be of value. Although the findings and advice may not always be new, university leaders will find empirical support for their actions. To restate her major piece of advice, “There is no ‘secret sauce’ or a silver-bullet model that one can apply” (p. 137). In addition, administrators and board members should remember Breznitz’s concluding observations that while universities make short- and long-term contributions to economic development, “the economic contribution should not be their main mission” (p. 144). This is a welcome, but unanticipated, conclusion for a book that reports on the role of universities in economic development.

## About the Reviewer

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Mark Oromaner is an independent scholar who, prior to retirement, taught sociology and served in administrative positions at a number of colleges. His publications on the sociology and politics of higher education institutions and on the creation, diffusion, and utilization of knowledge have appeared in numerous journals in sociology, the social studies of science, and higher education.



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