

## ITHI Working Paper Series

### #11. STRATEGY FOR SUCCESS: LEARNING FROM FAILURE AND AMBIVALENCE IN TRIPLE HELIX STUDIES

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University Business Cooperation (UBC) is a relationship in flux, reflecting issues of transition from an industrial to a knowledge-based society. UBC is undergoing a transformation from a dyadic university-business relationship, either to solve firm problems or source new products and provide an outlet for academic research that has evinced commercial implications, to a broader-university- industry government (UIG) relationship. UIG incorporates the older UBC relationships while expanding their purview to include societal concerns for economic and social development at the national, regional, and local levels, as well as meeting more specific firm and university needs.

Academic entrepreneurship has spread from a narrow focus on identifying venture capital-ready high growth potential enterprises to ventures that focus on expanding employment opportunities,<sup>1</sup> and even to the creation of organizations that provide essential services to communities where they are lacking. An early project in “Institution Formation Sociology,” a precursor to Social Entrepreneurship, established the Bedford-Stuyvesant Community Cooperative Center during the 1960’ s, with retail businesses intended to support social services such as an infant daycare center.<sup>2</sup> These projects involved research, education and regional development, engineering and the arts, graduate and undergraduate education, and more. They also show a shift from interactions across discrete boundaries to boundaries themselves transformed, when hybrid entities are created that transcend UBC, making what was previously a boundary-spanning interaction the basis of a new set of organizational dynamics.

Hybridization of elements from different institutional spheres to create new types of organizations at the interface is a common strategy for economic development and intellectual advance. Thus, “The synthesis of new fields focused upon novel objectives, like bioinformatics, from elements of previous interdisciplinary syntheses, drives both the advancement and capitalization of knowledge in an ever- increasing spiral”<sup>3</sup>. Boundaries,

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<sup>1</sup> Almeida, M. Mello, J and Etzkowitz, H. (2012) Organizational innovation in a developing country: invention and diffusion of the Brazilian Cooperative Incu- bator. *International Journal of Technology and Globalisation*.

<sup>2</sup> Etzkowitz, H and Schaflander, G. (1968) A manifesto for sociologists: institution formation - a new sociology. *Social Problems*, 15 (4).

<sup>3</sup> Etzkowitz, H. (2013) When knowledge married capital: the birth of academic enterprise. *Journal of Knowledge-based Innovation in China*, 5 (1) p.24.

and their new dynamics as promoters of hybridization, are increasingly the source of creativity and innovation in the creation of new intellectual and organizational syntheses. In the following, we discuss the expansion of the Triple Helix framework to encompass hybridization and boundary- crossing synthesis and the loss that may entail from strict boundary maintenance in triple helix relations.

### **New Development in the Triple Helix**

The Triple Helix model was designed to capture the essential elements involved in the emergence of a knowledge-based society, centred on the transition from the research to the entrepreneurial university as a carrier of innovation. Whereas the neo-evolutionist Triple Helix approach focuses on measurement of relations among institutional spheres performing their traditional roles, the neo- institutionalist Triple Helix emphasizes synthesis among organisational elements that transcend previous boundaries.

Thus, the topic of university-industry relations is transformed from University-Business I, focusing on boundary crossing mechanisms, to University-Business II, focusing on the invention of new hybrid organizations that are neither academia nor business but incorporate some of the elements of both in a novel organizational framework. Venture capital, the incubator, the Brazilian firm-in-a-lab, exemplifies organizational types that were synthesized from elements of more than one institutional sphere.

This new model does not imply that older organizational formats or relationships precipitously disappear. Rather, they will be modified by the emergence of hybrid organizations that fill the space in between these organizational spheres with their different values and norms. The results presented here illustrate instances of both processes as well as the transition between these two formats. The simultaneity of two contradictory models of university-industry relations echoes Schumpeter' s finding of a similar phenomenon (Mark I and Mark II). This duality occurred within the narrower universe of firms in the mid twentieth century, while the double image of university-industry relations is a contemporary phenomenon that is the subject of considerable controversy and debate over which path to follow.

### **Triple Helix Interaction: Encapsulated or Contagious?**

In addition to the focus on research that UBC has privileged for the past few decades, evidenced by the creation of a plethora of technology transfer and collaborative research modalities, there is also a return to an earlier focus on education and the role of students in university-business cooperation (which, of course, in some places never went away). Students, however, are involved in new ways, beyond traditional internship arrangements, at times creating ventures before graduation as part of entrepreneurial training and mentoring schemes.

Indeed, in the future we may see group as well as individual graduation ceremonies as organizations, as well as trained individuals, increasingly become the output of university

education programmes. For example, the master's programme in Entrepreneurship at Chalmers University invites potential students to submit joint projects as part of the admissions procedure. If accepted, development of a proto-firm then becomes part of the degree programme. It is recognized that the project may fail or change in nature during the course and while a graduated firm is not a requirement for a degree, it may be a result.<sup>4</sup>

Moreover, a broader strategic level has emerged, both as an overlay on dyadic university-business cooperation schemes, but especially as a feature of university-industry-government relations; that is the creation of venues for discussion and development of projects for regional innovation that go beyond discrete sets of negotiations among the dyadic or triadic partners.<sup>5</sup> In addition, the "business" side of UBC has broadened to include cultural, not for profit, and civil society organizations, while the academic side has expanded from engineering and medicine to the social sciences and the arts.

Finally, although some proponents reassure skeptics that these transgressive interactions are confined to a relatively small academic sector, leaving most of the academy untouched, recent developments suggest otherwise. For example, a proponent of the Cornell-Technion Graduate School for Engineering and Entrepreneurship assured potential critics of the project that there were "wide swaths" of the university that were untouched by pecuniary interests. (New York Times, 2013, 22 Jan).

While this particular project is narrowly focused on applied engineering disciplines, a potential flaw may be that it does not take advantage of the cultural and arts resources of New York City for hybridization and economic development. In this instance, too much attention to the traditional MIT model, prior to the new media center, and too little attention to the existing engineering and arts ecosystem may lessen the impact of this project, which is designated for a relatively isolated site on an island in-between an upper east side residential neighborhood in Manhattan and an old industrial area of Queens, rather than Brooklyn with Pratt and Poly engineering schools and proliferating arts clusters.

### **Hybridization and Synthesis**

When resistance to change from University-Business I to University-Business II appears, a strategic research site is opened up. Thus, it is important to analyze the process of transition, rather than simply taking a snapshot at a single moment in time in order to best understand university-business relations, a field in flux. For example, the MIT Entrepreneurship Center intended to create an organizational training program for nascent firms but was held back from this step, and forced to only admit individuals, by proponents of University-Business I who felt training proto-firms within the university to be an inappropriate activity.<sup>6</sup> Indeed,

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<sup>4</sup> Author Interview with Mats Lundquist, Programme Director, 2006.

<sup>5</sup> Etzkowitz, H and Ranga, M. (2012) "Spaces" : a Triple Helix Governance Strategy for Regional Innovation. In Rickne, Lastadius and Etzkowitz (eds). *Innovation Governance in an Open Economy: Shaping Regional Nodes in a Globalized World*. London: Routledge.

<sup>6</sup> Author Interview with Bill Aulet, Director of MIT Entrepreneurship Center, June 2012.

expectation of this resistance in part explains why StartX spun itself off from Stanford University into a “hybrid space” in between the university and industry, rather than growing within the university.

Case studies have been conducted in a variety of institutions: teaching and research, high and low status, urban and rural.<sup>7</sup>

Perhaps the most important inference to draw from the results is the breaking down of the traditional boundaries between universities and business. Most of the initiatives involve the creation of hybrid entities that exist in the space between “university” and “business” traditionally conceived or are designed to move members of the academic community outside the boundaries of academia.

The hybrid nature of some of the projects is difficult to encompass within traditional university-industry categories. For example, StartX, the student originated Accelerator project to mentor nascent firms emanating from academia, viewed as external to the university from a university-business framework, is said not to have an internship program. However, from a hybrid perspective, StartX itself provides an internship experience for groups of Stanford students in the Silicon Valley ecosystem, bundled as “start -ups” . Rather than the internship for a single individual in an organization; the internship is for a proto-organization, a nascent start-up, within the entrepreneurial infrastructure of the region.

A theater festival, initiated during the 1930’ s depression in a town in Oregon with a tradition of hosting cultural activities dating to the late nineteenth century Chautauqua movement, grew into a theatre-arts and humanities cluster in the early twenty-first century. The Ashland case shows the impact that a seemingly modest project initiated by an academic who has aggregated significant business and political support can have over time, if it is carefully renewed and improved, through the continued development of Triple Helix interactions. Although the festival took off beyond its academic origins, it has since renewed its ties to the university, and the university is building on the growing arts complex in the region to secure a unique identify as a regional humanities and arts based university, transcending its teacher training college origins.

Alfred, an institution originally developed to provide technical support to a local glass and ceramics industry that is currently in decline, is attempting to find a broader market for its technical services through a New York State supported Center for Advanced Technology CAT, the apparent successor to the Center for Glass Research (CGR), now closed. It would be useful to have an assessment of the strength of these new ties, whether the far away firms are simply looking to solve a particular problem, or whether they see an alliance with Alfred

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<sup>7</sup> This piece draws, in part, upon the *University-Business Cooperation Study* (London: LSE Enterprise) of US and Canada sponsored by the Education DG of the European Union for some of its examples.

as significant to their future development. Interviews with the firm side of the relationship would be a useful next step in this natural experiment of whether a relatively small and specialized university can transcend its origins and find a viable role beyond its region.

The West Virginia case, on the other hand, is a test case of whether a relatively small university can have a significant impact in raising the technological level of a depressed region. While the signs are promising, it is clear that the effort must be considered as a long-term project that will require additional resources to transform a relatively modest university into an engine of regional development. Kansas City is another instance of a relatively modest university striving to have an economic impact. However, the potential resources that may be placed behind this effort, whether from the Kauffman Foundation, local business leadership and the state government, are significantly greater in Missouri than West Virginia.

Nevertheless, the West Virginia case shows the impact that even a single person can make in a local region, in this instance a university technology transfer office head, who played a leading role as an Innovation Organiser, in aggregating local resources to create an angel capital network. The Boulder Colorado Silicon Flatirons case, like StartX, shows how a missing link can move an already highly successful innovation system to a higher level. Both are examples of “bottom” up individual initiatives, one from a faculty member; the other from a student. Both initiatives leverage already existing local networks, rather than having to form those networks as in West Virginia and Kansas City. Their key contribution is to make those networks available to a broader range of people who are not yet inserted into local high-tech firm- formation and support scenes.

The Fashion Institute of Technology (FIT) in New York City is an exemplar of what can be accomplished by a relatively small, specialized technical school, focusing primarily on training, in assisting the transition of a local industry to a higher value added future when its traditional model of production disappears. By raising its level of training to focus on design, rather than manufacture, FIT has provided the city’ s fashion industry, based on innovative design, the successor to the superseded garment industry, based on low cost manufacture, with a steady stream of fashion design boutique firms, emanating from FIT’ s collaborative student training process.

Cogswell Polytechnic Institute is a small school in Silicon Valley, specialized in Digital Media with a close link to Lucas Films. Cogswell, an institution on the brink of bankruptcy was recently purchased by a for-profit educational entity that has folded Cogswell into its portfolio of schools. Cogswell is an analogue to the Throop Manual Training School in Southern California that was transformed into the California Institute of Technology, a world leading scientific and technological institution, in the early twentieth century by the business leadership of that region.

There is no sign of a similar development in Silicon Valley, a region that could easily support an additional front-rank institution, and may be placing its leadership in knowledge-based economic development in the US at risk, given that the Boston region, which it had earlier surpassed, has been generating a broad group of leading universities (Boston University,

Northeastern, Brandeis, Tufts etc.) in recent years, well beyond MIT and Harvard. This comparison promises to be an interesting natural experiment testing the Triple Helix thesis of the key role of universities in a knowledge-based society.

## **LEARNING FROM FAILURE**

It would be interesting to see more data from the business side, especially the emanation of hybrid organizations from industry that may be interacting with those emerging from academia. There is a need for greater focus on the lived experience of the participants in Triple Helix research projects, rather than a presentation of their organizational frameworks. There is little or no discussion of failure, although experience of failure is currently touted as one of the great benefits of participating in a venture that does not succeed. Most university-industry collaborations are presumed to be a success, but their closure due to irresolvable problems are rarely mentioned, let alone analyzed.

For example, the Berzelius Science Park at Linkoping University, opened with great fanfare a decade or so ago, has since disappeared virtually without a trace. Indeed, an analyst who was writing about its foundation and growth hadn't checked back to update the paper and was unaware of Berzelius' closure. Apparently, it was a bridge too far for medical doctors to pursue entrepreneurship, in contrast to younger graduates who had been successfully spinning off software and electronics technology firms from the university. Embedded in hospital routines and already having family responsibilities, a "light touch" entrepreneurship support structure was insufficient to encourage a stream of medical devices firms to emerge from the university., but this may only be a surface perception.

Triple Helix guidelines for comparative analysis of cases are next on the agenda. One lesson to be learned is that even a successful model from one part of a university may not be effortlessly transferred to another, without taking different circumstances into account. The second lesson, of course, is not to assume the problem is unsolvable, but rather to learn from failure and identify the additional elements that might have to be added to the scheme to increase its chances of success the next time around. Thus, the most important lesson of failure is to analyze, regroup, and try again!

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