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#12. An Entrepreneurial University Paradigm? ¹

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INTRODUCTION

Achieving a university that is innovative and entrepreneurial is a widespread objective of academic institutions and their regions. Nevertheless, the controversy over whether the University of Wisconsin, Milwaukee (UWM) and its region were capable of becoming the Silicon Valley of water technology raised issues of whether it is a viable or even worthwhile goal (Rocha, 2015). A proponent conceded that, “... it will be a major challenge for Milwaukee to become the global leader, if there even can be one”. But, “There would be nothing wrong with being two steps short of being the Silicon Valley of water” (Fishman, 2011). A sceptic held that, “The scenario of a UWM-driven ‘Silicon Valley of water’ in Milwaukee verges on fantasy ... but it is not an innocuous fantasy; it is one that threatens to misdirect considerable public and private economic development and educational resources in Milwaukee away from the need to create low-tech jobs” (Levine, 2009). Lacking a validated methodology, the pathway to attainment is uncertain.

Entrepreneurial projects must navigate the shoals of hype and cynicism in seeking a practicable pathway to realization, especially at a local university seeking to develop a credible research focus. It is presumed in the above scenario of “smart specialization” in water that the university will play a role in regional development that goes beyond traditional academic research and teaching remit. But how this role should be enacted may be opaque. It could be useful in developing an entrepreneurial academic development methodology to identify proven pathways to follow the criteria for success beyond the intermediate metric of matching ambition to resources in a realistic timeframe. Typically, recent phases of success cases are scrutinized to discern clues for replication. But this contemporaneous analytical strategy may create a generative mystery about the sources of the entrepreneurial university, obfuscated by the notion of an elusive “secret sauce” too nebulous to recipe or specify ingredients.

A precise definition of the entrepreneurial university has been sought ever since the original conceptualization of the university taking a role in translating knowledge into economic use (Etzkowitz, 1983). We suggest a formulation amenable to a variety of regional circumstances and university development strategies: a university whose faculty, students and administration are oriented to translating knowledge into economic activity, whether from the pool of existing knowledge that it accesses or from new knowledge that it creates. It is an academic institution that develops policies, programs and practices to achieve sustainable regional innovation and works

¹ This essay draws upon “Envisioning the Entrepreneurial University: the Challenge of Stanford’s Venture” presented in session 11h, Universities, Regions and Smart Specialisation, Manchester 2018 Triple Helix Conference, 9 September.

collaboratively with external actors for this purpose.

ELEMENTS OF THE ENTREPRENEURIAL UNIVERSITY

The key dynamics of entrepreneurial university development include boundary permeability, critical mass and intermediate ties. Openness to interaction across institutional spheres is a pre-requisite, the creation of a talent pool with commercialization potential a necessary condition and the ability to create an organizational infrastructure across institutional borders, the sufficient condition for take-off. The extent to which creation of such conditions can be policy driven or must arise organically is a persisting debate. Informal relationships of collegiality and friendship crosscut and superseded in significance more formal ties of employment and contract in the early days of Silicon Valley (Saxenian, 1994), and are characteristic of interdisciplinary interaction at Stanford to this date, in contrast to more typically siloed universities.

Contrary to expectations that a pecuniary mindset must be induced in academia to encourage entrepreneurship, we suggest that the ability to freely collaborate, without proximate expectation of financial reward, is a more likely and persuasive substrate of academic entrepreneurship that typically exists as a volunteer effort and adjunct to traditional academic activities, especially in its early stages. Thus, we posit that rather than, or perhaps in addition to, a continuum from “weak” to “strong” ties, as classically held (Granovetter, 1973), a distinct “intermediate” or moderate category of ties may be identified. Moreover, an academic curricula structure that requires students to diversify their education provides a platform for entrepreneurial group formation.

The basis for such collaborations are often created through students from different disciplines participating in a common module or course. For example, ME310, originated a half century ago through a collaboration between an Art and a Mechanical Engineering Professor, enrolls post-graduate students from across Stanford University to collaboratively address firm-posed innovation problems. By happenstance, an undergraduate computer science student may interact with a biological sciences graduate student, serving as their Teaching Assistant, and be recruited to a nascent biology-based start-up to code. In this instance, the intermediate tie was fostered by the university’s distribution requirement, mandating that undergraduate students design a significant part of their education from a “menu” that includes all major areas of inquiry and skill.

The perspicacity of “intermediate ties” is that they provide indirect support to innovation and entrepreneurship as a “gift” relationship in which a direct return is typically neither required nor necessarily expected. These moderate ties, through which social capital is freely exchanged, overlay the weak ties of information exchange and underpin the strong ties of mentorship and sustained collaboration, with their affective implications. Such ties constitute the basic building blocks of entrepreneurial support structures, like Stanford’s StartX accelerator, that requires as a prerequisite to application for admission, a pre-existing group, rather than an individual, as the unit of participation. While such a group or proto-firm may possibly have been formed in response to the call for a quarterly session, such entrepreneurship groups are typically preceded by and arise from informal conversations, among students and faculty, about entrepreneurial potential and possibilities in the university’s research groups, coffee shops, and dining halls.

During the past decade, a series of translational research and entrepreneurial support structures have emerged to complement, if not marginalize, the focal role of the University’s Office of Technology Licensing (OTL) that has official administrative responsibility for research commercialization. On the one hand, these new initiatives, comprising a virtual Stanford Innovation System (e.g. SPARK,

StartX, Biodesign, D-School) have moved entrepreneurship more deeply into the university's research and teaching activities while formalizing and giving organizational structure to the university's informal relationships to Silicon Valley that largely take place through its alumni networks. These various independent initiatives are at an early stage of coalescing and discovering synergies. For example, OTL provides SPARK with unlicensed invention disclosures as candidates for translational research support, hopefully increasing their likelihood of returning as future successful licensing candidates (Etzkowitz et al, 2018).

Like the canonical definition of "critical mass" for female faculty presence of 15%, a comparable metric for an entrepreneurial university may be 20% of faculty with serious dual roles within and without academia. (However, to insure radical and permanent change in recalcitrant organizations, a 50% rule may be required in both areas). A significant proportion of Stanford's faculty are consulting, research, teaching and professors of practice, with variable time commitments to different academic and extra- academic tasks. "Impact" broadly defined is an accepted criterion for hiring and promotion, with David Kelley², the contemporary role model, being made full professor and director of the university's Design degree program at Hasso Plattner Institute while continuing as CEO of his firm. Kelley left the Mechanical Engineering PhD program before completing his degree to found IDEO but regularly taught at the university, along with other members of his firm, and informally founded its iconic D-School.

The ideal-typical entrepreneurial university will contain, or be surrounded by a penumbra of firms that originated from academic research, perhaps even sharing infrastructure. Courses may include private-sector internships, and firms may use academic resources such as libraries and research facilities, in precompetitive projects drawing together various firm and academic participants, such as at Stanford's Center for Automotive Research (CARS). This type of cross-utilization has proceeded farthest in newer industries, such as biotechnology, which already offer post-doctoral positions that approximate conditions in universities.

STANFORD'S LEADING ROLE

The process of organizational restructuring to an entrepreneurial academic model, and the broader framework of engagement and interaction with industry, under varying national and regional conditions, is a large and growing field of practice and study (Perkmann, et al, 2013). Stanford's unique institutional feature has been its openness to bottom-up entrepreneurial initiatives from its faculty, students, and staff. Various members of the Stanford community saw the potential to systematize invention, organize interdisciplinary student groups to address firm innovation problems and address the internal translational research gap. Programs have been established that range from seeking out and finding problems to be solved, utilizing design thinking techniques, to providing a pathway for incipient start-up conversations to be translated into organizational structures, with assistance in financing, including from the university itself. Most recently links have appeared between some of these programs so that they fill gaps and extend each other's reach. However, most of these programs are exemplary instances that exist in one part of the university that remain to be replicated and spread across the academic spectrum.

Typically begun as informal pilot projects, these efforts were gradually legitimated, expanded,

² David Kelley, Interview with the author, 2016.

institutionalized, and transferred. For example, the “market model TTO” came as a proposal from a staff member in the university’s Office of Sponsored Research, the administrative unit responsible for accessing external research funds, especially from the federal government. Reimer’s felt that the university, earning several thousand dollars per annum in the later 1960’s from patent licenses, was woefully underperforming its potential and that this sluggish performance could be accelerated through a pro-active approach ³. A group of Management of Technology students came to a similar conclusion with respect to start-up incidence forty years later, despite the university being the global leader at the time, with a frequency of 7-9 per annum.

Stanford’s leading role internationally in the early twenty-first century as a producer of start-ups induced a “paradox of success,” precluding administrative examination of whether its performance could be improved: nevertheless, aspiring entrepreneurs, attempting to follow the serial entrepreneur role model encountered difficulties and, even when successful, often concluded that their success was due to “luck”. Perception of an entrepreneurial support gap, emanating from a variety of faculty and student sources, inspired a new series of bottom up initiatives during the past decade. SPARK and D-School are being spread internationally, renewing Stanford’s earlier status as entrepreneurial university role model through the invention of the science park in the 1950’s, and the market model TTO in the 1970’s.

BERKELEY’S SURPRISING CATCH-UP

Under financial pressures in recent years due to decreased state funding, Berkeley has followed the Stanford model, activating its alumni base to donate and its research base to produce start-ups. Skydeck, an incubator and accelerator program ramped up rapidly with university, alumni, and faculty support and is rapidly closing the gap with Stanford as a generator of start-ups and venture capital investment in university-originated firms (Said, 2018). Most startling is the speed of the catchup and the implication of significant economic potential, hitherto unrealized. An observer noted that, “... since 2006 Stanford had enrolled 1237 startup founders and 987 companies that raised 22.63 billion [dollars], Berkeley’s numbers were 1089 founders and 961 companies with 17 billion raised”... in venture capital funds. ⁴

CONCLUSION

As the university immerses itself more deeply in a wider range of interdisciplinary activities, new institutional relationships will almost certainly emerge - often with the encouragement and support of government. Mode 2, a presumed extra-academic inter-disciplinary innovation format, not surprisingly to this observer, is most deeply embedded in academia (Gibbons, et al. 1994). Even under “new management” constraints and performance evaluation pressures, faculty and students are endowed with “free” resources: time, space and a modicum of freedom to pursue their interests to an extent that consultants are not usually privileged. Stanford has been particularly fortunate in being endowed with these wellsprings of an entrepreneurial culture that expresses itself in social as well as

³ N Reimers, OTL founding director, interviews with the author, 1986, 2005.

⁴ Sourced from <https://pitchbook.com>. It is worth noting that venture capital backed startups are a significant but smaller number than a larger total that would also include boot-strapped, angel and government supported ventures.

economic ventures.

An increasing number of universities have some measure of these attributes or are introducing formal measures, such as entrepreneurship spaces and leave policies, to encourage them. This suggests the existence of an “epistemic drift” to an academic entrepreneurial format built upon previous missions as well as accepted as a mission in its own right (Thursby and Thursby, 2002). As innovation is institutionalized in novel organizational structures as well as linked to the teaching and research missions, the entrepreneurial university becomes a key element in the Triple Helix model of innovation (Etzkowitz and Zhou, 2018). The entrepreneurial university paradigm, the key element in the Triple Helix, is yet at a relatively early stage of development, even at Stanford its most advanced exemplar.

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