REVISED DRAFT

Proposal for Innovation and Entrepreneurship Minors

Empowering People for a Better Society

Texas A&M University

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Please provide comments to Patricia Thornton, professor of sociology and entrepreneurship, phthornton@tamu.edu

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Introduction

The university serves as the catalyst for transforming knowledge to service in society and the economy. The origins of this transformation stem from extending the study of Liberals Arts to practical subjects such as agriculture, architecture, military science, engineering, and science. In Europe, this legacy created the natural sciences during the renaissance. In the U.S., it ignited the Morrill Acts of 1862 and 1890 to establish land grant colleges focusing on industrial and agricultural innovation to service social class mobility in the aftermath of the industrial revolution. More recently, the 1980 Bayh-Dole Act ushered in the life science and information technology revolution, allowing university, small business, and non-profit ownership of innovation from federally funded research. These transformations have led to a spectacular expansion of the university as the cornerstone of the new knowledge society. In this proposal we make the argument for building on this rich heritage of interdisciplinary inclusiveness in knowledge production in service to society and the economy through a campus-wide interdisciplinary effort to unite research, teaching, and practice of innovation and entrepreneurship.

Social and Economic Trends

Recent trends signal the need to marshal a broad and diverse cross section of faculty and students in transforming knowledge to serve society and economy. Since 2008 the number of business deaths in the U.S. has exceeded the number of business births. (See graph in Appendix.) For the first time, in spite of a college education, it is possible there will be less opportunities and resources for graduates (Karlgaard, 2014). As Jim Clifton, Chairman and CEO of Gallup recently argued, "the economy is never truly coming back unless we reverse the birth and death trends of American businesses," (Clifton, 2015). Once the world's entrepreneurial engine, the U.S. now ranks 12th in start-up activity (Kauffman Foundation data).

These trends have empowered a counter movement on campuses across the nation to develop students' conceptual capacity to transform knowledge into innovation and entrepreneurship. Duke University for example embarked on a university-wide Innovation and Entrepreneurship Initiative (Toone, Interview, 4-20-2015). For example, Jesse Lipson an undergraduate philosophy major in Trinity College (Duke's College of Liberal Arts) founded Sharefile, which was acquired by Citrix. Aaron Patzer, an undergraduate electrical engineering major founded Mint.com, which was acquired by Intuit. Harvard has taken a bolder step with the Harvard-based Xfund (funded by NEA, Breyer Capital, Accel Partners and Polaris Partners), an early stage venture capital firm dedicated to investing in technically-gifted Liberal Arts Majors (Shu, 2014). At Stanford University, undergraduate students in all disciplines are exposed to the entrepreneurial spirit through innovation and entrepreneurship research faculty, entrepreneurs and investors. Student government supports this effort through BASES (http://bases.stanford.edu/). There is a student-initiated accelerator program (StartX) which is not only a laboratory for both information technology and biotech start-ups, but is an investment engine funded directly by the Associated Student Body vending machine revenues (http://startxmedia.wordpress.com/).

Interdisciplinary approach

Texas A&M University excels in developing and commercializing innovation, however the knowledge and skills of how to discover innovation and bring it to market is not equally available to all students across the University. Research suggests there are compelling reasons to synergistically bridge for example liberal arts, engineering, and business students, among many others in innovation and entrepreneurship efforts. The coursework of liberal arts students emphasizes critical thinking in the identification of social and economic problems; the curriculum for engineering students stresses the development of solutions to social and economic problems; and the teaching of business students focuses on how to commercialize solutions to problems. The liberal arts are comprised of a diversity of disciplinary departments recognized for educating students with critical thinking skills essential in today's labor market; a market that rewards investment in transferrable skills enabling people to build bridges across domains. Adaptive solutions to problems require disruptive insights which usually involve a recombination of ideas from different sources (Lozano and Sabicer, 2016). Moreover, people recognize entrepreneurial opportunities based on the depth and diversity of their knowledge corridors (Shane, 2000). Individual diversity is positively related to successful entrepreneurship (Reuf, 2010). People that have access to more diverse sources of information generate better ideas (Burt, 2004). Innovation is discovered and start-ups are typically formed by teams and diverse teams are more capable of creative solutions (Ellison and Mullin, 2014). Combined this research argues for an inter-disciplinary mix of students to realize diversity, accelerate students' conceptual capacity for creativity, and to reflect the real world.

Unconventional responses to these trends are emerging. For example, business schools are beginning to recognize the reasons to embrace non-business majors. The W.P. Carey business school at Arizona State University recently announced offering the MBA degree tuition free to court non-business students, particularly those interested in pursuing careers in non-profit organizations (Gellman, 2015).

The movement toward inter-collegiality comes at an opportune time particularly for some of the liberal arts departments that have been under pressure to demonstrate relevance (Kraatz and Zajac, 1996; Lozano and Sabicer, 2016). This is evidenced by the comparatively poorer job placement opportunities for liberal arts students' fueling public skepticism about the value of liberal arts degrees (Karlgaard, 2014). Interdisciplinary innovation and entrepreneurship curriculum in the liberal arts is a viable response.

Creating the Culture by Transforming the Aggie Spirit to the Entrepreneurial Spirit

Entrepreneurship minded students at the University of California at Berkeley opine that while they have first class science and engineering, they don't have the entrepreneurial culture existing at Stanford University, their rival and close-by neighbor (Kokalitcheva, 2014). This claim speaks to the important role of the university in creating a cultural mind-set of innovation and entrepreneurship. (Berkeley and Stanford represent a naturally occurring experiment controlling for differences in infrastructure as both are proximate to Silicon Valley).

There is much already in place at Texas A&M University. Recently, Texas is ranked first place with the highest start-up rate in the nation (see Kaufmann Foundation data in the appendix). A dedicated focus on innovation and entrepreneurship builds on the legacy of Texas A&M University: the "can do" attitude, the unbreakable Aggie spirit, and Aggie students embracing challenges to make the world a better place. It is a short step to leverage the core values of Texas A&M University—the values of leadership and selfless service to society to further build an innovation and entrepreneurship culture.

There are practical needs at play as well. Some of the academic departments in the College of Liberal Arts (CLA) currently require a minor, for example Communication. Thirty-six percent of all Texas A&M University liberal arts students enroll in a minor. Ten percent of the CLA students who minor enroll in the business minor and this enrollment stems primarily from three majors, communications (31.4%), economics (27.2%) and psychology (12.5%). However, none of the courses in the business minor cover the topics of innovation and entrepreneurship. Luke Neese, a former philosophy major at Texas A&M University and founder and CEO of Acoustic Shield stands out in benefitting from the Center for New Venture Entrepreneurship. The new minor will evangelize this pathway, allowing students to pursue academic progress simultaneously with high impact transformational experience in innovation and entrepreneurship. Elizabeth Holmes, Founder and CEO of Theranos (see Forbes and Fortune Cover Stories), a tragic case in point, was a guest speaker in my classroom when her company was at the seed stage. When asked about her personal background she revealed that she dropped out of college because course work did not allow her to simultaneously pursue her academic education and start-up development. Kauffman data shown in the appendix indicate the highest rate of entrepreneurs occurs among the less well educated. This underscores the need for interdisciplinary curriculum emphasizing the conceptual and experiential capacity to be an innovation leader.

Lessons from Precursor Campuses

Other universities suggest important lessons. At Duke University, Eric Toone, Vice Provost and Director of the Innovation and Entrepreneurship Initiative, and Professor Jon Fjeld, Director of the Program for Entrepreneurs at the Fuqua School of Business, indicated it is essential to involve potential donors from the ground up to ensure their participation in the program. These high profile faculty stressed if you develop it first donors do not have a motivation to fund it.

Donors are needed for many reasons other than financial support. Innovators still practicing their craft are needed to provide a host of benefits including, access to instructional materials, such as live business plans, guest speakers, role models, mentoring, student internships, employment opportunities, and to aid students in building their human and social capital. This action-learning pedagogy has not been easily or perhaps fully embraced (Kraatz and Zajac, 1996), underscoring the need for regular academic faculty to carefully vet and marry empirical research-based theory to practitioner expertise in linking the classroom and the real world.

Fall and Spring Semester Efforts

The first goal last fall was to survey courses, programs, and facilities currently existing on campus and in the adjacent community and to research technology to physically map locations of innovation and entrepreneurship resources. A web survey of all campus courses with some reference to innovation and entrepreneurship in the titles has been completed by Hyunseok Hwang, a first year Ph.D. student in Sociology. A survey of all innovation and entrepreneurship programs and facilities and identification of the mapping technology has been completed by Joel Andrus, a Ph.D. candidate in Management at the Mays School of Business.

To spur development of interdisciplinary collaboration between the College of Liberal Arts and the Mays School of Business, CLA has provided a financial contribution and allocated a faculty person, Patricia Thornton, hired in fall of 2015 as a part of the Grand Challenge Initiative for Entrepreneurship to participate on the board of the Center for New Venture Entrepreneurship.

In the Spring of 2016 a faculty task force, consisting of Patricia Thornton and Leroy Dorsey representing CLA, Kevin Barge, Head of Communications, Steve Puller from Economics, and Charlie Samuelson, Assistant Head of Psychology met in consultation with Dick Lester from the Center for New Venture Entrepreneurship at the Mays Business School and Magda Lagoudas and Dean Hurtado from Engineering to begin discussions on jointly participating in the development of an innovation and entrepreneurship minor in which some core courses would be shared across schools and colleges. The task force for the CLA developed a draft of a course sequence for the minor. This draft sequence was crafted from knowledge of innovation and entrepreneurship theory, early ramp up by making use of existing, though augmented courses as electives, new course development, and directly drawing from the Stanford University model of the entrepreneurial thought leader seminar developed by the faculty in the Technology Ventures Program in Management Science and Engineering in the Engineering School. As a result of this effort, in the fall of 2016 a new interdisciplinary course, Entrepreneurial Perspectives 489, will be offered to both business and college of liberal arts (CLA) undergraduate upper division students. This course has been introduced to the CLA advisors in their monthly meeting under the direction of Andy Armstrong and as well as with the counterpart, Kristi Mora at the Mays School and will be further crafted as we receive student feedback.

Pedagogy

Research shows that retention of content and learning outcomes are enhanced by course work that integrates theory and practice, that is when lessons can be made real (Wagner and Dale, 1970). This is a key reason to integrate expert practitioner content into theory-based courses. Knowledge of innovation and entrepreneurship theories enable the ability to conceptualize and solve problems and to predict future events (Christensen, Anthony, and Roth, 2004). To iterate and pivot are attributes of successful innovation leaders. The "action learning" pedagogy to introduce students to instructional frameworks that require integration with innovators and entrepreneurs suggests a viable approach (Raelin, 2008). In addition, pedagogy should draw from research-based theory to bridge theory to practice using experiential learning opportunities.

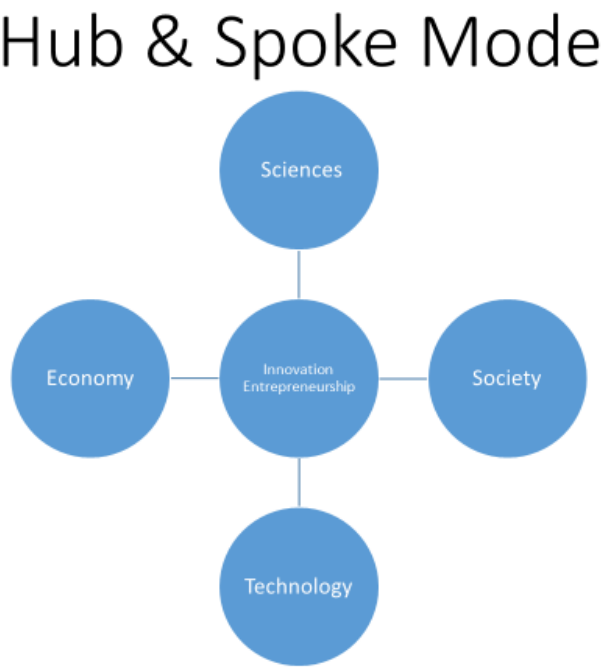
Innovation and entrepreneurship is to a large extent taught by mentorship experiences. This creates the problem of how to effectively scale faculty resources. In addition to scale, the other

distinguishing factor in teaching and research in innovation and entrepreneurship is that content is interdisciplinary. The intellectual roots of the innovation and entrepreneurship fields stem from the disciplines of economics, psychology, sociology, political science, management, finance, and strategy (Thornton and Yang, 2015). Each perspective provides insights into a piece of the puzzle (Shane, 2003). Interdisciplinary, i.e., intercollegiate continuity can be enhanced by early courses emphasizing the creation of testable hypotheses on innovation and later courses focusing on validating an entrepreneurial opportunity related to those hypotheses such as ensuring market fit, developing a prototype, minimally viable product, social mission innovation, and technology commercialization (conversations with Dr. Lester).

Building an Eco-System to Support Intercollegiate Collaboration: Hub and Spoke Model

The challenges of interdisciplinary collaboration to best utilize and scale existing resources suggest a hub and spoke model to relevant knowledge in the colleges in the university in which students and faculty are interested in innovation and entrepreneurship. Engineering, Business, Liberal Arts and other schools and colleges can be vital partners to scale interdisciplinary participation in core and capstone experience courses on innovation and entrepreneurship and to share in the planning of speakers and events. The Engineering and Business Schools already have developed significant innovation and entrepreneurship programmatic activities and pedagogical approaches representing different stages of the innovation process from ideation to maturation, including The Living Learning Community, Aggies Invent, the Raymond Ideas Challenge, 3 Day Start-up, Start-up Aggieland, I-Corps, and, the Aggie100. (see http://mays.tamu.edu/center-for-new-ventures-and-entrepreneurship/)

The diagram pictured below is an example in the spirit of generating discussion. The assumptions of the model focus on integrating knowledge corridors, not college corridors. The organization is based on a professional logic (expertise), not a bureaucratic logic (hierarchy). Innovation requires inter-disciplinary knowledge that spans knowledge corridors, therefore interdisciplinary courses and programmatic activities and their interaction effects form the hub. The spokes are domain specific knowledge sources of problems and solutions.



Requirements

This proposal and accompanying course sequence are an example of the concentration in the College of Liberal Arts. The plan is to achieve inaugural ramp-up by a combination of enriching sections of existing courses with innovation and entrepreneurship content as well as experimenting with new courses through the 489 designation. The 489 classification is one way to experiment with new course development when it is coupled with professional review and student evaluation. The addition of concentrations, for example in business and engineering among others will require their own governance mechanisms to ensure experimentation, feedback, and adjustment. Designating a course sequence is ideally desirable for planning purposes, however practically students need accommodations for when they may not have a linear plan during their undergraduate experience, cannot afford the time to minor, and want access to only specific non-prerequisite course(s). Therefore, it is important to build modularity and open access into the course sequence designing courses without prerequisite entry barriers. The minor for the liberal arts concentration is envisioned as 16 credit hours with 10 required hours and 6 elective hours. Two elective courses can count toward the students' major as well as the minor. See the attached draft diagram as an example of the course sequence. It is an example and therefore it does not represent all potential contributions from existing departments as these discussions remain open and ongoing at this time.

For the CLA concentration, the web survey, ongoing faculty interviews, and discussion with the CLA task force have revealed existing courses that can provide fundamental knowledge relevant to innovation and entrepreneurship. However, existing elective courses will need to be enriched by interested faculty to include material on innovation and entrepreneurship.

Participatory architecture is needed to further develop the curriculum, guidelines, and break-down bureaucratic disincentives to participation. This architecture also requires participation from exemplary practitioners continuing to practice their craft. Below are examples of courses that build on the bench strength of existing faculty. It should be emphasized that these are only suggestions meant to generate discussion and do not necessarily represent the right courses or an exhaustive set.

The Bush School of Government and Public Service has a certificate program in non-profit management directed by Professor William Brown. The certificate includes courses in social innovation and entrepreneurship. One of the growing areas of entrepreneurship theory and practice is social entrepreneurship (Dees, Emerson, and Economy, 2001). Social entrepreneurship combines the passion of a social mission to find innovative approaches to address social problems with business-like discipline. Initial conversations with Drs. William Brown and Laurie Paarlberg indicated potential for synergy particularly with Liberal Arts majors who are interested in social problems and public policy. However, Dr. Brown cautions that current faculty lines committed to the non-profit management area of the Bush School would be constrained by accommodating CLA students interested in social entrepreneurship.

The English and Communication departments have faculty expertise in the study of rhetoric, organizational communication, and digital humanities. One of the vital areas of the entrepreneurship literature is entrepreneurs' use of rhetoric and visualization skills to convince investors, customers, and corporate partners. This topic has practical implications as well, i.e., "Shark Tank" consultants are paid to coach entrepreneurs to effectively pitch their ideas. This set of skills is also highly useful for entrepreneurs to establish innovative corporate partnerships, for example in developing a go to market strategy. Start-ups typically are unable to afford a dedicated sales force and therefore sell through corporate partners. This topic is an active line of research in institutional theory and strategic management (Lounsbury and Glynn, 2001; Martens, Jennings and Jennings, 2007; Cornelissen, Durand, Fiss, Lammers, and Vaara, 2015).

Sociology with its affinity to organization and management theory and practice is a vital source of course development. For example, Schumpeter's classic treatise on entrepreneurship argued that one of the well springs of innovation is new methods of organization. This is evidenced in examples from business history, for example the innovation of the multi-divisional (M-form) organization was central to the development of an internal capital market necessary to enable internal corporate venturing and the externalization of corporate innovation to the start-up community (Williamson, 1975; Arrow, 1983). More recently, the community (C-form) organization has given rise to the innovation of crowd sourcing applications such as Kickstarter, a new force driving innovation and a new mechanism to fund entrepreneurs.

In another example global entrepreneurship and multi-national enterprise are on the rise. Dr. Lorraine Eden in Management at the Mays School points out that digital technology is creating opportunity for the birth of new micro-multinationals firms (Eden, 2015). The digital revolution is drawing closer the developed and emerging economies of the world, making multinational forms of business accessible to small scale entrepreneurs. An essential aspect of market and resource seeking in global entrepreneurship is sociological and political in nature as it involves

the arbitrage opportunities resulting from comparatively weak, missing, or new institutions in terms of property rights (Campbell and Lindberg, 1990), culture, and ethnic clustering.

In another example, the study of the relationship between religion, culture, entrepreneurial traits, and economic development has a long history in sociology (Weber, 1930 [1905]), psychology (McClleland, 1961), and political science (Woodberry, 2012). Recent research has rekindled a focus on religion, entrepreneurship, and economic development which has implications for addressing the question of how entrepreneurs innovate (Thornton, Ocasio, and Lounsbury, 2012, chpt. 5), styles of corporate management (Greenwood, Diaz, Li, and Lorente, 2010), and economic development and wealth aggregation (Keister, 2011).

The discipline of psychology is at the center of one of the most critical risks of the early stages of founding a new organization—that is the quality of the management team which can be based in the behavioral dynamics and conviction of team members. Therefore, the psychological processes of recruiting and developing a management team are critical to the success of founding a new organization. Psychology courses that focus on recruitment and motivation of team members and how to effectively manage team dynamics are fundamental skills that successful innovation leaders need to exhibit.

Research suggests that prior history and experience are relevant to discovering innovation and recognizing entrepreneurial opportunities from those innovations (Shane, 2000). Existing courses such as the history of technology and engineering in America and the history of the American petroleum industry are potentially relevant electives.

Economics is central to innovation and entrepreneurship theory and its implications for public policy (Schumpeter, 1942). The Economics department regularly teaches well-enrolled courses that provide essential background to the topic of entrepreneurship such as the economics 425 course on the Organization of Industry. Moreover, economics has a vital policy role in the study of innovation and entrepreneurship as evidenced by the programs and working groups of the National Bureau of Economic research, the nation's leading nonprofit economic research organization. This think-tank organization focuses on critical economic policy issues and does so by drawing on more than 1,400 professors of economics and business now teaching at colleges and universities in North America, including twenty-five Nobel Prize winners in Economics (http://www.nber.org/info.html), indicating innovation and entrepreneurship is a desirable market for economics faculty and students.

Beginning conversations with Dr. Saurabh Biswas indicate willingness for practicum and capstone course development involving select students. The focus of this course would be for students to learn the pathways to commercialization for technologies sourced from the Texas A&M Office of Technology Commercialization. It could involve the formation of multi-disciplinary and multi-level teams including Ph.D. MBA and undergraduate students to examine and assess different routes for technology commercialization by new company formation through entrepreneurship and by licensing to existing large and small companies. This practicum could include learning commercialization planning and IP protection strategy. Dedicated teams could focus on start-up formation by identifying products and services enabled by the technology and

conduct analysis of the market in terms of size, segments, and competitive dynamics. It could involve the integration of this information to create an assessment report. The Mays school of business currently offers a similar course for MBA students and it may be possible to piggy-back to this course as Ph.D. and MBA students could direct and supervise undergraduates as interns and assistants in the technology commercialization process.

Study abroad programs are an opportunity for transformational learning of innovation and entrepreneurship. Texas A&M has one of the largest study abroad programs in the United States. Don Lewis of the Mays Business School and I had the opportunity to attend an orientation session with the goal of collaborating in the development of an international entrepreneurship course for Liberal Arts students. One approach is to leverage the international business program at the Texas A&M Santa Chiara Study Center in Castiglion Fiotentio Italy, using it as a beach head for field research at the new venture incubators such as H-farm, approximately 3 hours to the north. H-farm is a neo-renaissance site of new venture creation in the Italian information technology sector and a research site on the role of cultural resources in the start-up process (Dalpiaz, Tracey, and Philips, 2013). International study abroad can also be focused on carrying out international service learning projects as a capstone experience which could be the foundation of a social mission non-profit organization. This type of capstone experience resonates with the existing curriculum in Hispanic Studies.

Goals

The minors programs could be developed initially for undergraduates and subsequently be built to serve masters and Ph.D. students. Such students will be seeking to combine the knowledge and skills acquired from their degree programs with core knowledge and skills specific to innovation and entrepreneurship. As previously noted graduate students are essential elements in the pedagogy as they can serve as mentors and supervisors of undergraduates in multi-level team projects, particularly for the capstone experience courses. There also is a more fundamental reason to eventually develop a graduate component to the minors. United States universities are producing a far greater number of Ph.D.s in science and engineering than there are available academic positions (NCSES, p. 2; CUPA.HR, p. 14). Other universities recognize this trend by modifying their curriculum. Duke University for example plans to expand its university wide certificate program in innovation and entrepreneurship to Ph.D students (https://entrepreneurship.duke.edu/).

Fundamentally this proposal focuses on transformational knowledge with respect to four goals: 1) building an innovation and entrepreneurship eco-system, 2) developing innovators and opportunity creators for the future, 3) implementing adaptive solutions within the university, and 4) developing teaching curriculum and scholarly research on innovation and entrepreneurship. This will require cooperation among faculties, innovation in curriculum, and external participation and support. These innovation and entrepreneurship efforts can be advanced by specific goals.

1. Develop learning experiences to enable students to be innovation leaders and know how to transform the knowledge, ideas, and technologies developed in their home disciplines at Texas A&M University for the betterment of society and economy.
2. Develop pedagogy to achieve intercollegiate continuity across core courses, such as research-based theory and practice. Early courses could stress creating testable hypotheses and later courses could validate those hypotheses.
3. Develop curriculum with the capacity for customization and scalability which is needed because innovation and entrepreneurship are often learned through mentorship which presents limits to scaling faculty resources. The hub and spoke model is one solution to building curriculum with the capacity for customization and scalability. The innovative product design class developed by Don Lewis (MGT 689/489) cross listed with engineering and CARC is an example of scaling the entrepreneurship mentoring process. This course can serve as a scalable capstone practicum experience. It makes use of veteran student teachers, practitioner mentors, faculty supervision, and use of the lean start-up methods developed by Steve Blank and colleagues (Blank, 2013; Osterwalder and Pigneur, 2010; Rhee, 2011). This method of instruction has been widely used and is readily available in digital form using cloud software. The National Science Foundation is currently applications of the teaching method to the life sciences, non-profit organizations, and social entrepreneurship. This method need not privilege a linear focus on the customer, undermining foresight of disruptive technologies (Bower and Christensen, 1995). Dr. Kevin Barge and I are discussing developing applications of the teaching method to humanities and social science innovation and entrepreneurship emphasizing, not customer interviews, but instead interviews to build students capacity to innovate off of the human capital of domain matched alumni.
4. Publicize campus and community-wide the survey of existing innovation and entrepreneurship resources that identify 1) courses, 2) faculty, and 3) programs and facilities.
5. Create a participatory architecture to elicit multi-vocal participation and experimentation in this grand challenge by a broad spectrum of faculty and practitioners (Ferraro, Etzion, & Gehman, 2015).
6. Recruit donors from Texas A&M alumni to support the innovation and entrepreneurship minors and programs.
7. Recruit donors from corporate sources to support the innovation and entrepreneurship minors and programs.
8. Create intercollegiate access for undergraduate, masters, and Ph.D students to courses in innovation and entrepreneurship. For example at Stanford University, a course on the social science of entrepreneurship was offered as open enrollment across campus and cross-listed as an elective in the engineering school for their management science and engineering, science, technology, and society, and technology ventures students.
9. Resolve potential tuition and faculty compensation inequities incurred by sharing faculty across colleges, schools, and departments. Duke University pays a $7,500 buy-out plus $3,700 for supplies to existing faculty. As noted by Eric Toone, Director of the initiative, this creates an equity issue for business school faculty. Professor of Strategy Jon Fjeld at

the Fuqua Business School teaches a course on the philosophy of entrepreneurship through the philosophy department (his Ph.D. is in philosophy) and the initiative off sets the discrepancy between salaries in liberal arts and business.

Steps Going Forward

1. Continue to seek feedback on these ideas from a broad spectrum of faculty and administrators across the university.
2. Meet with leaders of parallel efforts in engineering and business to discuss concepts, coordinate, and share resources to continue to build the innovation and entrepreneurship eco-system at Texas A&M University.
3. Consult with Dean Oberhelman to explore the administrative requirements of using the University Studies degree program as a venue for the minor.
4. Form a curriculum task force based on faculty expertise in areas of the hub and spoke model to design and continue to refine a curriculum sequence that a) identify faculty interested in participating in the effort, b) identify existing courses for enhancement, c) develop new courses, and c) create a budget.
5. Develop an Advisory Council of alumni investors and entrepreneurs still practicing the craft of innovation and entrepreneurship as a sounding board on curriculum development, financial support for the minor, and generation of student mentors.

Caveats

This proposal is an idea statement written in the spirit of generating discussion and seeking input. I am new faculty at Texas A&M University and I bear responsibility for any liability of newness inherent in this proposal.

References

Arrow, K. 1983 [2000]. "Innovation in Large and Small Firms," in Entrepreneurship: The Social Science View, edited by Richard Swedberg, Oxford University Press.

Blank, S. 2013. *The Four Steps to the Epiphany: Successful Strategies for Products that Win*. http://www.steveblank.com.

Bower, J. L. & Christensen, C.M. 1995. "Disruptive Technologies: Catching the Wave." *Harvard Business Review*, Jan-Feb.

Burt, R. S. 2004. "Structural Holes and Good Ideas," *American Journal of Sociology*, 110 (2): 349-399.

Campbell, J. & Lindberg, L. 1990. "Property Rights and the Organization of Economic Activity by the State," *American Sociological Review*, 55 (5), 634-647.

Clifton, J. 2015. "American Entrepreneurship: Dead or Alive?" *Gallup Business Journal*, January 13.

College and University Professional Association for Human Resources, 2011-2012, p. 14.

Cornelissen, J., P., Durand, R., Fiss, P. C., Lammers, J. C. & Vaara, E. 2015. "Putting Communication Front and Center in Institutional Theory and Analysis." *Academy of Management Review*. 40 (1), 10-27.

Dees, G. J., Emerson, J. and Economy, P. 2001. *Enterprising Non-Profits: A Toolkit for Social Entrepreneurs*. New York: Wiley.

Dalpiaz, E. Tracey, P. and Phillips, N. 2013. "New Venture Creation and the Use of Cultural Resources: The Case of H-Farm." ASQ/OMT Conference on Organization Theory and New Venture Creation, Singapore.

Ellison, S. and Mullin, W. 2014. "Diversity, Social Goods Provision, and Performance in the Firm," *Journal of Economics and Management Strategy*, 23 (2): 465-481.

Eden, L. 2015. "Multinational and Foreign Investment Policies in a Digital World," International Center for Trade and Sustainable Development, World Economic Forum, http://e15initiative.org/publications/multinationals-and-foreign-investment-policies-in-a-digital-world/

Ferraro, F., Etzion, D. & Gehman, J. 2015. "Tackling Grand Challenges Pragmatically: Robust Action Revisited, *Organization Studies*, 36 (3): 363-390.

Fjeld, J. 2015. Interview with Professor of Strategy, Director of Program for Entrepreneurs, Fuqua School of Business, April.

Gellman, L. 2015. "Arizona State to Set MBA Tuition at $0," Wall Street Journal.

Jennings, J. E. & Brush, C. G. 2013. "Research on Women Entrepreneurs: Challenges to (and from) the Broader Entrepreneurship Literature?" *The Academy of Management Annals*, 7 (1), 661-713.

Karlgaard, R. "Thought Leaders: Buys and Sells: If Colleges Were Stocks," *Forbes*, June, 16, 2014.

Keister, L. A. 2011. *Faith and Money: How Religious Beliefs Contributes to Wealth and Poverty*, Cambridge University Press.

Kokalitcheva, K. 2014. "Stanford's Start-up Community Might Be King—But UC Berkeley Wants to Catch Up,"(http://venturebeat.com).

Koh, Yoree, "Immigrants Drive Tech Start-ups, Study Says," *Wall Street Journal*, Friday, March 18, 2016.

Kraatz, MS & Zajac, E. J. 1996. "Exploring the Limits of the New Institutionalism: The Casues and Consequences of Illegitimate Organizational Change," *American Sociological Review*, 61: 812-836.

Lorano, F. and Sabicer, Amanda, 2016. "Creativity and Innovation: Building Ecosystems to Support Risk Taking, Resiliency, and Collaboration," *Liberal Education*, Spring 2016, vol. 102 (2), 1-9.

Martins, M. L., Jenning, J. E. & Jennings, P. D. 2007. "Do the Stories They Tell Get Them the Money," *Academy of Management Journal*, 50 (5): 1107-1132.

McClelland, D. C. 1961. *The Achieving Society*. Princeton, NJ: Van Nostrand.

National Center for Science and Engineering Statistics, 2010, p.2.

Osterwalder, A. & Pigneur, Y. 2010. *Business Model Generation.* New York: Wiley

Raelin, J.A. 2008. Work-based Learning: Bridging Knowledge and Action in the Workplace.

Ries, E. 2011. *The Lean Start-up*. New York: Crown Business Books.

Ruef, M. 2010. *The Entrepreneurial Group: Group Identities, Relations, and Collective Action*, Princeton University Press.

Schumpeter, J. A. 1942. *Capitalism, Socialism, and Democracy*. New York: Harper

Shane, S. 2000. "Prior Knowledge and the Discovery of Entrepreneurial Opportunities," *Organization Science*, 11 (4), 448-469.

Shane, S. 2003. *A General Theory of Entrepreneurship: The Individual-Opportunity Nexus*, Cheltenham, UK: Edward Elgar.

Shu, C. 2014. "Harvard-based Xfund Closes A $100M Second Fund," TechCrunch, December, 4.

Thornton, P. H. 1999. "The Sociology of Entrepreneurship." *Annual Review of Sociology*, 25: 19-46.

Thornton, P. H., Ocasio, W. & Lounsbury, M. 2012. The Institutional Logics Perspective: A New Approach to Structure, Culture, and Process. Oxford, UK: Oxford University Press.

Thornton, P. H. and Yang, L. 2015. "Entrepreneurship." *Oxford Bibliographies in Sociology*, (ed.) Janeen Baxter, New York: Oxford University Press.

Toone, E. 2015. Interview with Vice Provost and Director, Duke Innovation and Entrepreneurship Initiative, Duke University, April, 20.

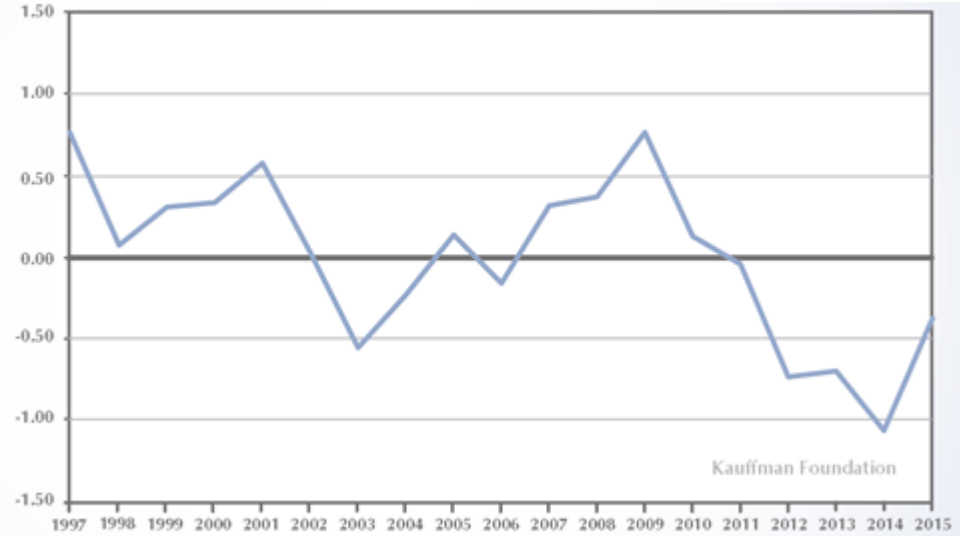
Weber, Max 1930 [1905]. *The Protestant Ethic and the Spirit of Capitalism*. New York: Harper Collins.

Willamson, O. 1975. "The Multidivisional Structure," chapter in Markets and Hierarchies: Analysis and Anti-trust Implications, Free press.

Woodberry, R. D. 2012. "The Missionary Roots of Liberal Democracy," *American Political Science Review*, 106 (2), 244-274.

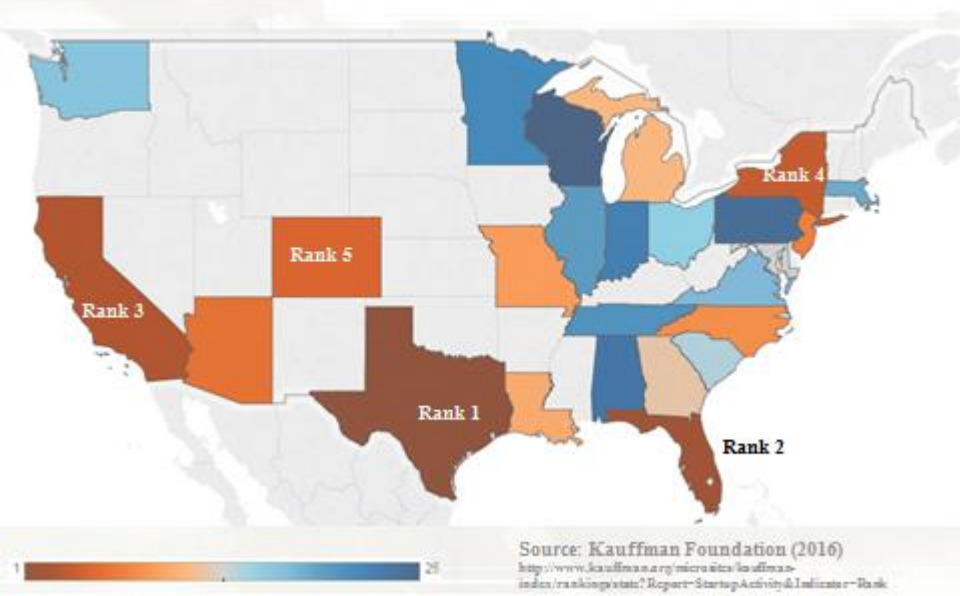
Appendix:

Kauffman Index: Startup Activity (1997-2015)



Source: Fairlie & Reedy, 2015
2015 The Kauffman Index 2015 Startup Activity

Kauffman Index of Startup Activity
2016 rank for Larger States



Source: Kauffman Foundation (2016)
http://www.kauffman.org/microsites/kauffman-index/rankings/state?Report=StartupActivity&Indicator=Rank

Kauffman Index of Startup Activity
2016 rank for Larger States

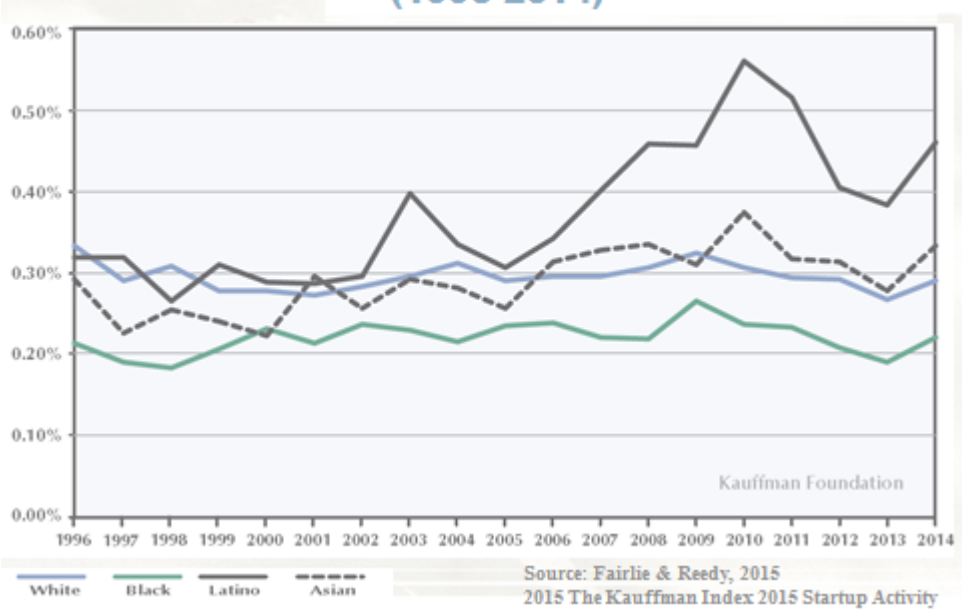
Rank 2016	Index 2016	State	Rank 2015	Rate of New Entrepreneurss
1	1.3	Texas	3	0.39%
2	1.01	Florida	1	0.36%
3	0.95	California	4	0.39%
4	0.73	New York	6	0.35%
5	0.69	Colorado	2	0.33%
6	0.27	Arizona	7	0.33%
7	0.25	New Jersey	18	0.32%
8	0.09	North Carolina	8	0.33%
9	-0.09	Misouri	10	0.29%
10	-0.59	Louisiana	5	0.28%
11	-0.85	Michigan	19	0.29%
12	-0.87	Georgia	14	0.29%
13	-0.89	Maryland	12	0.28%
14	-0.9	South Carolina	9	0.29%
15	-0.92	Ohio	13	0.24%

Source: Kauffman Foundation (2016)
http://www.kauffman.org/microsites/kauffman-index/rankings/state?Report=StartupActivity&Indicator=Rank

Rate of New Entrepreneurs by Education (1996-2014)

Source: Fairlie & Reedy, 2015
2015 The Kauffman Index 2015 Startup Activity

Rate of New Entrepreneurs by Race (1996-2014)



Source: Fairlie & Reedy, 2015
2015 The Kauffman Index 2015 Startup Activity