

An Auto-Ethnographic Perspective on Academic Entrepreneurship: Implications for Research in the Social Sciences and Humanities

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Executive Overview

This paper employs a qualitative method to analyze a successful spin-off from a university's humanities department. We offer insight into (a) how sociospatial contexts may be structured to better evaluate the entrepreneurial facilitation process and (b) why academic entrepreneurship in the social sciences and humanities may differ from that in the hard sciences. Our findings illustrate the importance of bridging innovation using twin skills to balance research and commercial goals, and the need for codifying knowledge capacities and creating new or changing existing institutional structures to legitimize and facilitate entrepreneurial activity. The research also demonstrates the great value of auto-ethnographic techniques to bring fresh insight to the study of entrepreneurship. Directions for future research are offered.

In recent years, the upsurge of entrepreneurial activity within the natural sciences¹ has put the humanities and the social sciences on the defensive across several fronts, including educational relevance, value for money, and impact on the economy (Kayrooz, Kinnear, & Preston, 2001; Wallerstein, 1996). Ultimately, the future of these academic disciplines depends, in part, on the extent to which they are seen as proactive contributors to technology development and economic growth. One pathway to economic growth can be via academic entrepreneurship.² However, signif-

icant subjective and objective barriers remain and need to be addressed to bring social sciences and humanities out of their current defensive position. For academic entrepreneurship to become more widespread, particularly within the humanities and social sciences, we need to better understand (a) the change dynamics in university institutions and (b) the specific processes used to facilitate entrepreneurial outcomes across a wide range of university contexts. In other words, we must refocus our research efforts on how academic entrepreneurship takes place by understanding the relationship between process and the heterogeneous sociospatial environments where entrepreneurship happens. In other words, we need to understand the persons involved in academic entrepreneurship, their interaction with their environment, and how both persons and environment change over time (Gartner, 1985).

We need new and innovative research methods

¹Over the past decade politicians, funding agencies, and research councils have raised the themes that the function of universities is to provide direct in-out benefits for society's economic prosperity, that there is a close relationship between university applied research and economic prosperity through the medium of scientific and technical innovation, and that prosperity correlates closely with university research in science and technology. Universities have responded to this call for capitalizing knowledge by spinning out companies, mainly at the intersection of industry and that part of academia that is concerned with natural and technical sciences.

²We define academic entrepreneurship as the involvement of academic scientists and organizations in commercially relevant activities in different forms, including industry-university collaborations, university-based venture funds, university-based incubator firms, startups by acad-

emics, and double appointments of faculty members in firms and academic departments.

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that can be used to explore the social and structural perspectives that are keenly important to studying how change, specifically the types of change associated with the process of academic entrepreneurship, may be better understood and systematically facilitated. Given the diverse array of institutional structures that exist and the many differences among university environments, researchers must look for broader patterns in the specific contexts where entrepreneurship takes place in order to enhance our understanding of general theory—the root of all best practice. This requires a return to excellence in routine, cumulative field work; reliance on frameworks deduced from observation; and less emphasis on complex statistical models, especially for understanding the complexities of human interaction (involved in the process of entrepreneurship). A helpful way to make meaning of these complex human interactions is to create an epistemology of process that includes the use of narrative theory³ (Langley, 1999; Van de Ven & Engleman, 2004).

Facilitating innovative entrepreneurial ventures is a challenging process in any environment (Shane, 2007). Achieving success is even more daunting in the context of university technology transfer. This is particularly true about entrepreneurial ventures spun out from humanities and social science schools. The focus of this paper, therefore, is to understand this process better. We do so by examining a case in which an academic entrepreneur in the humanities field succeeded with the challenging process of commercializing his research.⁴ Our aim is to understand (a) how a defined sociospatial context may shape the entrepreneurial process and (b) what characterizes this process within a context specific to the social sciences and humanities. To answer these questions, we structurally break down and examine a rich narrative data set using a novel analytical method. We identify factors that convey how the

new venture was created within the environment studied, and then generalize these findings for those who seek to identify a systematic approach to commercialization in this area.⁵

This study makes three contributions. First, research into how university entrepreneurship may be facilitated in areas other than the hard sciences is scarce (Harmon, 2005; Nelson, 2005; Shane, 2002). Assessing the potential approaches for developing commercial activities around research in academic fields other than the hard sciences may have considerable value. Second, we provide insight into social interaction (the milieu of the “where”) in the entrepreneurial process using social constructionist views—that is, we adopt an approach that examines the entire event from a sense-making perspective to better understand “how it happened” (Giddens, 1994; O’Shea, Thomas, Arnaud, & Frank, 2005; Rothaermel, Agung, & Jiang, 2007; Sarason, Tom, & Jesse, 2006). We thus argue the merits of a qualitative approach to understanding university entrepreneurship and test a novel diagnostic tool that may help examine the differences across types of universities that engage in entrepreneurial activities (Shane, 2002). Last, this research offers unique insight into the process of new venture creation from a very specialized and not well-understood area of study. In doing so, we expect to contribute to theory, practice, and policy on academic entrepreneurship, and provide empirical evidence that may inform the field of entrepreneurship in general.

The paper is structured as follows. We first explore academic entrepreneurship and compare and contrast environments in the social and hard sciences to frame the study context. Next, we narrow the domain of academic entrepreneurship to our main case, a university spin-off at a large Danish university. The paper goes on to discuss process theory and introduces a diagnostic tool for empirically examining how community context (here the university setting) influences entrepreneurial process (Hindle, 2010b), using narrative

³ Narrative theory is based on the concept that people are essentially storytellers and that individuals approach their social world in a narrative mode and make decisions and act within this narrative framework. The narrative is therefore a form of “meaning making.”

⁴ Humanities research in the present case is conducted within the institutional context of a large department of language and business communication, which is part of a mono-faculty business school within the second-largest Danish university.

⁵ We use an auto-ethnographic approach in which one of the authors is the entrepreneur who lived the experience and the co-authors provided the conceptual framework and methods and analyzed the data.

data on a specific, successful entrepreneurial process. The generic model permits us to develop a case-specific process model of the entrepreneurial event on which we focus. We conclude with a discussion of our findings, their implications, and how this study may contribute to practice, theory, and future research.

Context: Differences Between “Hard” and “Soft” Sciences

In an effort to fully exploit their academic resources, universities are increasingly looking to new, untapped intellectual property (IP) pools to spin off into business ventures. Most efforts target schools of hard science where most commercial innovations tend to arise (Shane, 2004), while entrepreneurial activity resulting from research into the humanities is overlooked, ignored, or even discouraged (Akerlind & Kayrooz, 2003; Harmon, 2005).⁶ Yet few studies attempt to explain this disconnect between the “hard” natural sciences and the “soft” social sciences. One reason relates to the extent of knowledge codification (Arrow, 1962). Hard sciences are characterized by highly codified knowledge, and produce on average more publications and more start-up firms than do the soft sciences.⁷ Social sciences are characterized by research that is less codified (Stephan, 1996), limited in terms of transmitting tacit knowledge through networks and personal contact, and less likely to influence firm creation (Audretsch et al., 2004).⁸ For example, a study of the history of commercialization activities at Stanford University’s music department found significant differences between musical logic and technical/commercial logics (Friedland & Alford, 1991; Thornton & Ocasio, 1999).⁹ So the inter-

ests of the university in reaping economic benefit from the scientists’ discoveries could therefore be in conflict with the scientists’ pursuit of academic recognition. These two opposed institutional logics could, however, become complementary if mediated by individual logics held by influential leaders and supported by the development of new institutional features (Nelson, 2005). Similarly, an Australian study (Harmon, 2005) found that social science research was overwhelmingly driven by faculty interests and less adaptable to commercial ventures. Thus, faculty focused on research that either led to innovative teaching methods or benefitted their personal academic careers. Moreover, they were more preoccupied with securing ongoing resources for research than producing commercially motivated outcomes.

The Entrepreneurial Dimensions of Knowledge Commercialization

Knowledge commercialization at universities in general encompasses four entrepreneurial dimensions: (a) industry-sponsored contract research, (b) consulting, (c) technology licensing, and (d) technology development and commercialization (Shane, 2002). These dimensions are interrelated, and activities classified in each may potentially lead to the creation of different kinds of spin-offs. Hindle and Yencken (2004) and Harrison and Leitch (2008) offered a useful overview of such spin-offs classified by their organizational type, business model, and types of individuals involved (see Table 1).

Academic Entrepreneurship: An Ongoing Process

To date, research has predominantly focused on defining and testing antecedents significant to spin-off formation and has concentrated on exogenous factors such as the availability of venture capital, geographic resource proximity, and the presence of incubators/research parks. Emphasis on inputs (funding of basic and applied research) and outputs (patents and revenues generated for

⁶ Thursby et al. (2001) argued that disclosures represent only a small portion of the research generated within universities that has potential commercial value.

⁷ For example, long-lived small firms with a substantial public record of innovative success, so-called “serial innovators,” are often specialist suppliers in markets for technology.

⁸ Although the knowledge generated by social science and humanities schools was not significant to firm creation, it was significant to firm location.

⁹ One example of differing logics is that in the musical/humanities logic, scientists strive to be the first to publish, and they are rewarded by the prestige that comes when others quote their publications. They are there-

fore eager to publish their findings. In science/technology, scientists are rewarded in pecuniary terms; that is, they are concerned with economic rent that can be earned from the application of knowledge, and they accordingly show more reticence in publishing their findings.

Table 1
A Taxonomy of University Spin-Offs

Organizational Type	Explanation	Business Model	Explanation	Principal Originator	Explanation
Direct research spin-off	A company created and owned by (or in part by) the university for the purpose of commercializing IP	Consultancy-contracting	Set up to deliver services, either technical or knowledge-based, in a role supportive of regional R&D activities	Faculty member	University-employed faculty member
Technology transfer company	Set up by a university to exploit tacit knowledge that is more process-based than patent-based	Product oriented	Developed around a product or process that achieves a sustainable growth pattern	Surrogate entrepreneur	Outside management consultant, financier, or entrepreneur engaged to become CEO of company
Indirect spin-off company	Started by current or former faculty or students in whom the university does not have a direct IP relationship/legal stake	Technology asset-oriented	Developed around a patented technological asset (or platform)	Graduate student	Student (usually graduate or postdoctoral) who is enrolled at the university
Spin-in	A company spun "in" by existing companies to exploit licensed or collaborative research generated by universities			Team	Constellation of the above or any other alignments where more than one person takes lead

universities through licenses and spinoffs) has dominated, with little attention paid to the role of the individual and the interaction among individuals, organizations, environments, resources, and the processes involved in the commercialization of innovation. Indeed, entrepreneurial activity is not carried out in a vacuum, independent of context. Nor does it take place at a single point in time. Rather, it is an ongoing process of creating and exploring opportunities and negotiating, mobilizing, and organizing resources to extract value from these opportunities (often in the form of new ventures). The understanding of entrepreneurship as a continually developing process is therefore central.¹⁰ The study of process involves identifying sequences of events that describe how things change over time. This invites a meso-environmental perspective where interactions are described in their specific context, thus raising awareness of enabling and constraining influences of various features of context over time. Furthermore, this perspective allows the researcher to describe how variations in context and process shape outcomes, the pace of change, and the performance of a venture.

Process studies can also be historical/retrospective, but in contrast to most retrospective studies, the events with which we are concerned are quite recent, and they take us fully up to the present. Historical process studies reflect the view that history is always present and that new history is always in the process of being created from current reality—or that the legacy of the past is always shaping the future. What happens, how it happens, why it happens, and what results it brings about are dependent on when it happens, the location in the processual sequence, and the place in the rhythm of events characteristic of a given process. Thus, the history of a venture not only highlights the roots of the present by studying the past, but also provides the means and patterns to plan the future.

Context as Community

Conceptualizing the university environment as community allows researchers to understand the "how" of an academic entrepreneur creating a new venture as an interactive and sequential event within a specific meso-environment. We therefore require a more detailed conceptual framework for specifically breaking down the meso-environment into relevant and manageable pieces with respect

¹⁰ See Hindle (2010a) for a detailed understanding of the entrepreneurial process.

to the entrepreneurial actors involved in order to realistically and structurally engage the process of sense-making. We adopt a conceptual device developed by Hindle (2010b), which serves as a diagnostic regime for this purpose. We refer to it as Hindle’s bridge (HB) for easy reference and reproduce it as Figure 1, below. We use this tool to study the dynamic entrepreneur-process-context relationship involved in this humanities-based university spin-off phenomenon. The context is therefore conceptually viewed as a community. The methodological implications of the use of this model for the study of entrepreneurship are discussed below.

ship facilitation team (henceforth called the community facilitators, or CFs).

The empirical examination used in this study is based on one key ethnographic narrative (Trochim, 2005) written retrospectively by the AE as a life history or auto-ethnographic narrative. Supplementary semistructured interview data was provided by key informants (the CFs) who were identified and interviewed by the ethnographer and a coworker. The key informants were stakeholders in the entire process, chosen because of their vital importance as facilitators to the entrepreneurial processes. They were not part of the entrepreneurial team,¹¹ nor did they have the same incentives as the entrepreneur. This group includes the rector, the head of the business school’s business research center, a lawyer working for the administration, and an expert legal adviser hired to advise the university on legal issues in the borderland between public university and private business. The CFs were asked to recount the university spin-off process from their perspective and to

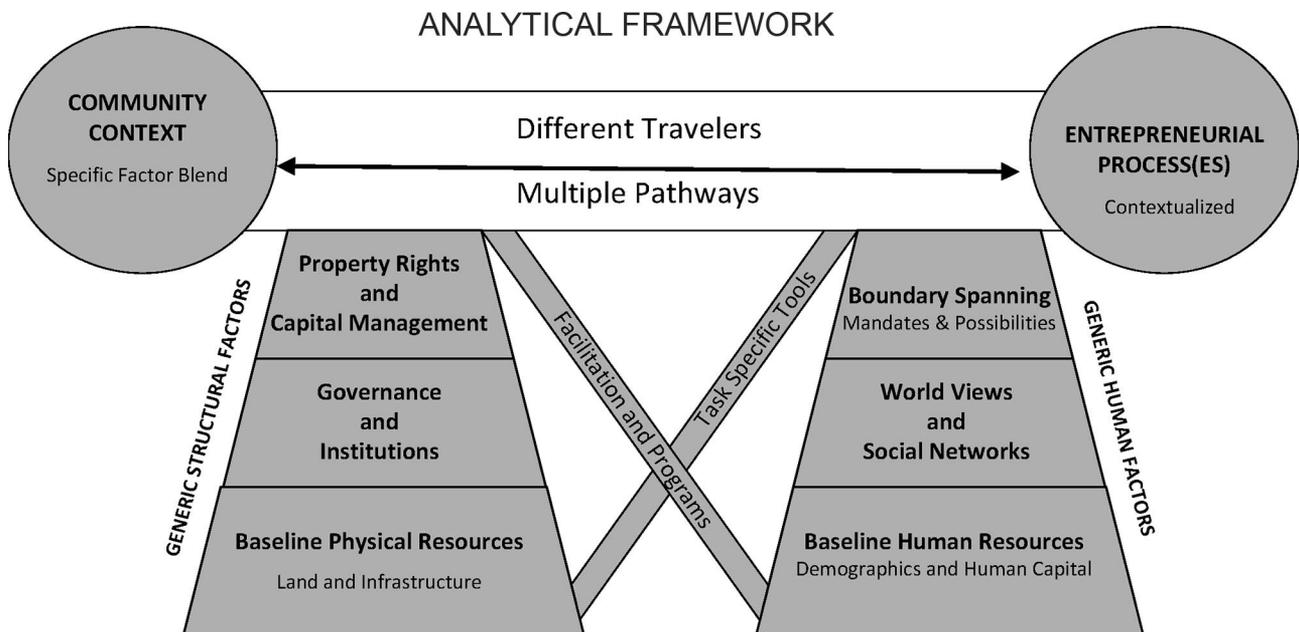
Data

The Setting

The setting of the case is a humanities faculty at a medium-size European university business school, the Aarhus School of Business (ASB). The case evolves over a period of about 30 years from the late 1970s to 2006. The principal actors are the academic entrepreneur (AE) and a group that formed an informal community entrepreneur-

¹¹ They were stakeholders, but not part of the entrepreneurial team proper.

Figure 1
Conceptual Model: Hindle’s Bridge



Source: Hindle, K. (2010b). How community context affects entrepreneurial process: A diagnostic framework. *Entrepreneurship and Regional Development*.

provide insights on what facilitated or constrained the new private venture creation process within the specific public university context.

Tools of Analysis

To analyze the data (i.e., the narrative), we used a qualitative methodology.¹² Specifically, we used the Hindle bridge model (Hindle 2010b) to map elements of importance to entrepreneurial initiatives—particularly new venture facilitation—within the context of community, which helps us identify how context affects process. Two separate research teams used content analysis to code data thematically. Coded findings were compared and contrasted between the two researchers to ensure validity and then categorized. Secondary analysis encompassed firm-based financial data, contractual documents, university archival records, and government documents. Next, we turn to the narrative.

The Narrative

The story of our AE covers a period of more than 30 years and falls into four stages: pre-firm, nascent, spin-off, and growth phase. We look at each in turn below.¹³

The Pre-Firm Phase: Building Human and Social Capital

The journey of the AE, the narrator in this case, started in 1976 during his studies to become a certified translator. To earn a living while studying, he found a part-time job that allowed him to slowly start up a language revision/translation business and to build specialized knowledge of medical language, something that would later be a crucial skill in establishing the entrepreneurial venture. He was employed as a part-time lecturer

at the ASB and then as a doctoral student in 1987, specializing in linguistic politeness strategies—a competence that may well have been useful in later negotiations. However, the entrepreneurial venture might never have come about had it not been for his fortuitous discovery that the business school had bought a box of index cards with medical terms from the wife of a deceased professor of English at the ASB who had been a specialist in medical translation.

The AE perceived the prospects inherent in this box and negotiated access to the data to produce the first Danish-English/English-Danish dictionary of medical terms. Publication rights were negotiated with one of the largest Danish publishers, which had been approached by a professor of medicine (henceforth called “the doctor”) around the same time to produce a similar product. The publishers suggested a joint venture between the AE and the doctor, and the two became the perfect team. Their complementary competences became the basis for a lasting professional cooperation as well as a personal relationship. Their dictionary remains the only Danish-English-Danish dictionary of medicine in the world. The key to the success of this publication clearly lay in the interdisciplinary nature of their cooperation.

Institutional Knowledge Building

After publishing the medical dictionary, the AE began moving up the ranks and became recognized within the university for his vision and forethought. Among other things, he succeeded in attracting substantial European Union (EU) and national research council grants for building new teaching programs. In 1996 he was elected head of the English department for two terms, an appointment that allowed him to develop crucial organizational and administrative capabilities. It also involved substantial involvement with the management of the business school and negotiations for scarce resources with the various deans and rectors.

Nascent Phase: Establishing a Center of Excellence

At the end of his second term as department head, the AE started to pursue the idea of building a

¹² A case study may be defined as a partial, historical, clinical study of a situation that has confronted a practicing administrator or managerial group. Presented in a narrative form, it provides data—substantive and process—essential to an analysis of a specific situation and for the framing of alternative action programs and their implementation, recognizing the complexity and ambiguity of the practical world.

¹³ We do not describe the growth phase here. First, we are here concerned with the conditions and processes of entrepreneurial spin-off activities more than with actual firm growth. Second, the growth phase had only just begun at the time of writing, so data on this phase are sparse.

center of excellence in medical language (henceforth “the Center”), which was formed in late 2001 as the first of its kind at the language faculty, basically to create an organizational platform at the ASB for his academic interest in the medical language domain. The Center was formed during a period of intense departmental and faculty fighting for scarce resources within the university and received no resources at the faculty level.

Looking elsewhere for visionary partners and resources, the AE contacted the university’s chief librarian. The two shared a history of successful joint fund-raising for innovative information technology projects in the interface between learning and information management. During the first two years of the Center’s life, the chief librarian became a key person in allowing the entrepreneur free access to the needed technological resources.

Not long after the establishment of the Center, the AE happened to meet a recent ASB graduate (henceforth called “the co-preneur” to reflect his *de facto* role). The chemistry between the two seemed perfect, and the co-preneur was formally employed in 2003 when the Center received its first grant. He quickly became a key actor in all the AE’s activities.

In Search of Funding

Given the absence of faculty funding to support the Center’s activities, external funding became a key priority, and the previous learning from writing successful applications for external grants now started to pay off. The AE strategically designed a series of overlapping language technology projects in which knowledge sharing and information technology were key components. Briefly, a generic, dynamic web dictionary was created that allowed individual users to make their own private dictionaries while simultaneously accessing a shared web dictionary.¹⁴ Adding a technology component to linguistics was a deliberate strategic move that allowed the AE to seek funding from a much broader range of government funding programs than those otherwise available to scholars from the humanities and social sciences.

Although originating in the medical language area, the idea had potential for extension to other language domains and other industrial sectors as well. The projects therefore managed to attract direct public and EU funding over a three-year period totaling approximately \$2 million—an amount at the time unrivaled for a project at the ASB, indeed within the humanities in Denmark. This meant that the Center was able to hire its first three technical staff during 2003.

Changing Rules of the Game: Fighting for Survival

This attracted much attention, both locally and nationally, and in 2006 the AE won a prize as researcher of the year within the humanities and social sciences and was awarded a chair (professorship) sponsored by the Danish Business Research Academy (DEA), the members of which comprise the major Danish universities; employer organizations; and the Danish ministry of science, technology, and innovation.

During this period, the entire Danish university sector was being restructured. At the ASB, the language faculty was transformed into a language department with the same status as the four business departments of the school in order to pave the way for a subsequent merger with Aarhus University. At the same time, the internal structure was changed, and it was demanded that centers have a strong research focus and critical research mass.¹⁵ The Center did not meet these criteria, as the AE was its only academic staff. To maintain the momentum created by the AE and to create an organizational framework within which this more business-oriented, practical/applied approach could be pursued, the ASB decided to set up a new organizational entity and, in essence, turned the Center into a lab. In 2006, the Center of Excellence in Medical Language therefore became the Knowledge Communication Lab (henceforth called “the Lab”). The AE succeeded not only in attracting major funds for his projects but in overcoming the structural reorganization, which became the source of much envy and spiteful criticism by his basic research-oriented col-

¹⁴ For a detailed description, see a discussion of the use of collaborative knowledge repositories in Pilegaard (2009).

¹⁵ It was required, among other things, that a research center have an academic staff of at least 10.

leagues. However, through all this, the AE found substantial backing higher up in the university from the rector,¹⁶ and the idea emerged to create a spin-off from the Lab. The AE expected that part of the Lab's R&D projects would have commercial potential. The idea of creating a spin-off caught on with management, and the dean provided funds for the AE to employ a lawyer who would supervise and assist in putting together a spin-off plan and an organizational setup that would be attractive to venture capitalists. The AE saw this as a strategic move on the part of the ASB, in the midst of the university restructuring, to maintain independence and create a unique profile for the business school as a unit enjoying close links with businesses, particularly as the merger with the university otherwise curtailed the ability of ASB to define its own strategy and act independently.

Spin-Off

The Lab spin-off, called TermShare, Ltd. (TS), came into existence in 2006 shortly after the formation of the Lab, and the AE was appointed managing director of the spin-off. The creation of TS and the simultaneous transformation of the Center into a Lab to survive restructuring created an interesting and very productive role division. According to the AE, it was like being in two worlds or like riding a tandem, only "I would not always know which seat to take." In his capacity as head of the Lab, the AE had to constantly attract new private and public R&D capital for new projects to be able to pay the Lab staff and to recruit industrial partners to test the relevance and functionality of the software. As managing director of the spin-off, the AE simultaneously had to sell the software produced by the Lab. Thus, the Lab continuously expanded, extended, and added new software elements to broaden the product portfolio of the spin-off. Once developed by the Lab, the software was transferred from the Lab to the spin-off.¹⁷

¹⁶ Dean since the merger of the ASB in early 2008 with Aarhus University.

¹⁷ At the time of writing, the spin-off has just begun to grow. A description of this growth falls outside the scope of the present paper.

The Role of Context in the Spin-Off Process

Pattern matching was used to pull out distinct contrasts and similarities between the two data sets (i.e., the AE's narrative and the interviews with the CFs). We used Hindle's bridge as a means of categorizing and making sense of these data, using a step-by-step process (see Hindle, 2010b). The outcomes of this sense-making process are broken down into headings taken from the two pillars of the model, which, metaphorically, contextualize the entrepreneurial process (refer to Figure 1, found earlier in the paper).

The Conceptual Diagnostic Framework

Basic Human Resources

The AE was the key community driver of the new venture. He had the highest proportion of entrepreneurial capacity invested, owing to his considerable prior knowledge in both the market and the linguistics field on which the eventual business was based. The entrepreneurial capacity was marked by the AE's innovativeness, his ability to perceive opportunities and successfully negotiate and communicate value, and his knowledge of how to produce persuasive applications. The ability to both compartmentalize and bridge the institutional culture at the business school and the business cultures¹⁸ (twin skills) was a key individual resource (Hindle & Lansdowne, 2005). Several key stakeholders at the ASB took an active role as community facilitators and aided in the new venture process (e.g., legal advice, financial support, mentoring, physical resources). Each of the CF interviewees identified the support of top ASB management as crucial to the process of creating the Lab and the spin-off. The CFs all found that the AE's individual characteristics (the ability to generate ideas and tirelessly marshal their implementation) were important resources. In comparison, the AE viewed the mentorship given by the key stakeholders and their managerial sovereignty as critical to the process. Surprisingly, although the principal

¹⁸ That is, his ability to address the needs of the pharmaceutical and life sciences industries for language tools and technologies to facilitate translation and improve their communication.

community housing this enterprise was a large business school faculty, the lack of operational community support for sales/marketing/commercialization¹⁹ was deemed insignificant by the CFs.

Basic Physical Resources

The AE, like so many entrepreneurs before him, basically started the business in the basement of his house. From there the idea grew into something tangible. Making his ideas of creating software tools to improve communication and sharing of language data within medicine part of his academic job and committing his large network and many contacts in life sciences and the pharmaceutical industry to R&D projects at the business school was an essential part of gaining legitimacy with the current management, legitimacy being one of the key variables associated with new venture facilitation within the community. Even here, it started with zero resources apart from the office and its associated computer, telephone lines, and other accoutrements. Getting the technological infrastructure in place represented a challenge because it involved translating the baseline physical resources into a codified institutional (and marketable) framework (i.e., the Lab and the spin-off). Although in-kind physical resources helped to facilitate the spin-off, these resources were deemed insignificant by the CFs compared to all other factors. However, to the AE, they quickly became significant as the venture moved into later stages.

Governance Mechanisms and the Nature and Role of Institutions

Changes in the Danish University Act in 2003 strengthened and professionalized the management structure of Danish universities. This strongly facilitated the university management's understanding of the moves proposed by the AE and the Center/Lab. The changes also gave the rector the necessary discretionary and executive powers to pursue a spin-off unhampered by a col-

legiate, academic body.²⁰ Finally, the change in management structure meant that fewer management levels needed to be negotiated by the AE in his pursuit of his own agenda. Vital to the creation of the spin-off was therefore the dismantling and transformation of the old cumbersome governance system in the university sector in general and the rector's increased discretionary and executive powers in particular. Naturally, the AE's position at the business school was also crucial in providing the spun-off business with the legitimacy to approach potential partners and customers and gain their trust.

One key difference between the two coded data sets is the appearance of "twin skills." Twin skills was defined as an institutional theme by the CFs, whereas it was perceived as an individual theme by the AE. Specific references were made by the AE to the fact that, institutionally, developing twin skills is inherently "schizophrenic," as the institution suffers from rigidities, due process, and incentive structures that openly conflict with characteristics that work well in a market situation (North, 1987, 1990). This reinforces the findings of previous studies that cite conflicting institutional and market logics as a key barrier to academic entrepreneurship, especially in the social sciences and humanities.

Worldviews and Social Networks

It is highly unusual in the university context for an academic from the humanities to "turn businessman." In this case, the AE's worldview often clashed with that of the "peer culture," which perceived his activities to be "off the mark." Often the AE's colleagues and immediate peers at the department level were unable to perceive the advantages this could bring both at the department level and at the school level, seeing only the added administrative problems that would arise. Fortunately, those few who mattered in the decision-making process at management level were trained in the social sciences with an economic or business background and usually understood the

¹⁹ Thus, the AE was appointed managing director of the spin-off and was expected to turn the spin-off into a commercial success (personally undertaking sales, marketing, etc.), while at the same time being Lab manager and researcher.

²⁰ Before the University Act was changed, any change in organizational structure had to be approved by the relevant representative collegiate body of the ASB.

meaning of “potential profit.” The theme of trust was framed by the CFs and can be evidenced as an important factor that helped facilitate the often dichotomous worldviews held by the community and the AE: Because management trusted the AE, they allowed him to run counter to the institutional and faculty cultures that opposed these activities.

One of the major reasons for the success of TS is that the AE combined research in the humanities with research in knowledge management and added a language technology component, thereby strengthening language knowledge codification, which had commercial value. This value was tested in practice in R&D projects involving partners from competing businesses. The AE was thus able to persuade competitors within the language service provider industry that they could participate in the R&D network without divulging essential business secrets, and that they should volunteer part of their specialized language knowledge to a common language knowledge pool in return for access to the pool’s shared, validated knowledge. This is, in effect, a transformation of the original Danish co-op spirit, predominant in primary industries such as milk production, into a technologically advanced and globally valid knowledge-sharing business model. The language knowledge volunteered by the partners is passed through a filter of language specialists employed by the spin-off company, who validate the input and turn it into output. This process is the business formula upon which the spin-off prospers. More important, it seems as if the concept can be extended from life sciences to any industries that has specialized language requirements and a multitude of actors. Thus, indirectly, all the actors involved are part of a large network, all contributing to a continued development of knowledge.

Property Rights System and Capital Management Regimes

The intellectual property (IP) rights environment within the university community is governed by Danish legislation that is very similar to the Bayh-Dole Act in the United States (Mowery, Nelson, Sampat, & Ziedonis, 2001). This requires that all IP generated within the university by its faculty or

students be owned by the university.²¹ In this case, the university received a positive valuation on the IP involved, and the value of the IP was used as an equity stake in the spin-off. The legal costs for the patenting, incorporation, and licensing of the IP were a substantial barrier to the entrepreneur, and thus the property rights system within the community facilitated the spin-off rather than impeding it.

Another institution significant to the community context at the ASB was the government. The Danish government supports a proof of concept grant system, whereas the university operates a project-based innovation system. This implies that the Danish government views the development of technology that is IP patentable as a prerequisite for innovation, while the ASB sees the linkage between proof of concept design and eventual market penetration as a business capacity-building exercise. In other words, the ASB emphasized the tacit knowledge (implementation) side of innovation, while government departments viewed codified knowledge (technology) as the pivotal factor.

Boundary Spanning and Mandates

The AE effectively spanned the boundaries between the humanities and social sciences and the business world, highlighting the theme of twin skills once again.²² A business model for the spin-off was therefore designed to allow the AE to span boundaries both internal and external to the university. Setting up a Lab with a strong applied (as opposed to research) focus and creating a spin-off powered by the Lab allowed the Lab to access resources (from government) to explore collaborative partnerships with industry companies. These collaborations served to both access data and create knowledge value chains by establishing projects that allowed potential customers to use products and provide feedback during an R&D phase and eventually license end-use software in a commercial setup.

²¹ The IP can be returned to the inventor if the university deems it of little value or does not have the necessary structural capacity to exploit it.

²² Hindle (2010b) describes boundary spanning as any set of processes or activities pursued by individuals or groups that bridges, links, or potentially even blurs the nature of two or more separate boundaries.

Boundary spanning within the internal community secured early resources from other departments (i.e., the library) when the line department (i.e., the language department) that was not culturally well-aligned for commercialization activities was pushing back. The AE continually moved around, across, or through physical and cultural boundaries wherever resistance was encountered. Most important, the AE spanned middle management boundaries that were often hostile, duplicitous, or simply apathetic to the process and made direct linkages with top management (where alignments of mandate better suited the entrepreneur). As seen in the contrast between the themes raised, legitimacy was a key point with the CFs. The actual activity of boundary spanning provided a distinct legitimacy that helped facilitate the new venture process.

A Specific Process Model of an Entrepreneurial Event in the Humanities

The model shown in Figure 2 illustrates the key components of the entrepreneurial process, the significance of the entrepreneur, and the six interrelated community factors that helped shape it throughout the entire timeline, which falls into four stages: a pre-firm phase, a nascent phase, a spin-off phase, and a growth phase. Factors such as specialization in both business and research generation and the subsequent networks of business contacts and community mentors, supporters, and facilitators throughout the pre-firm and the nascent phases provided the foundation for an evolving set of opportunity discovery/evaluation and community support processes important to the spin-off.

The nascent phase is represented by factors such as the requirement for a triple “boundary-spanning loop” where the project-based knowledge-generation activities of the Lab must be recognized by the spin-off as relevant to its economic interests. Spin-off activities, in turn, must be recognized by the Lab, the ASB, and the university as relevant to its academic (Lab), strategic (university), and economic (ASB) interests, and Lab activities must be recognized by ASB as relevant to its ambition to align research and commercial activities. These processes are reflected, generally,

in community support for resource acquisition, legitimization, and the setting up of new institutional structures (Lab and spin-off).

The spin-off phase is represented by the themes of ongoing legitimization, the creation of new institutional structures, and collaboration with a wide range of stakeholders, both internal and external to the community. The application of twin skills through boundary spanning is found to be highly significant to these processes. This stage also illustrates the importance of external partnerships with a major data-consulting firm, the CSC.²³ The partnership with the CSC highlights the requirement for external legitimization, realized through the creation of new institutional support structures, which helped to midwife the spin-off. Processes at this stage underscore the importance of strong leadership logic effects and the need to create new institutional features to align opposed logics.

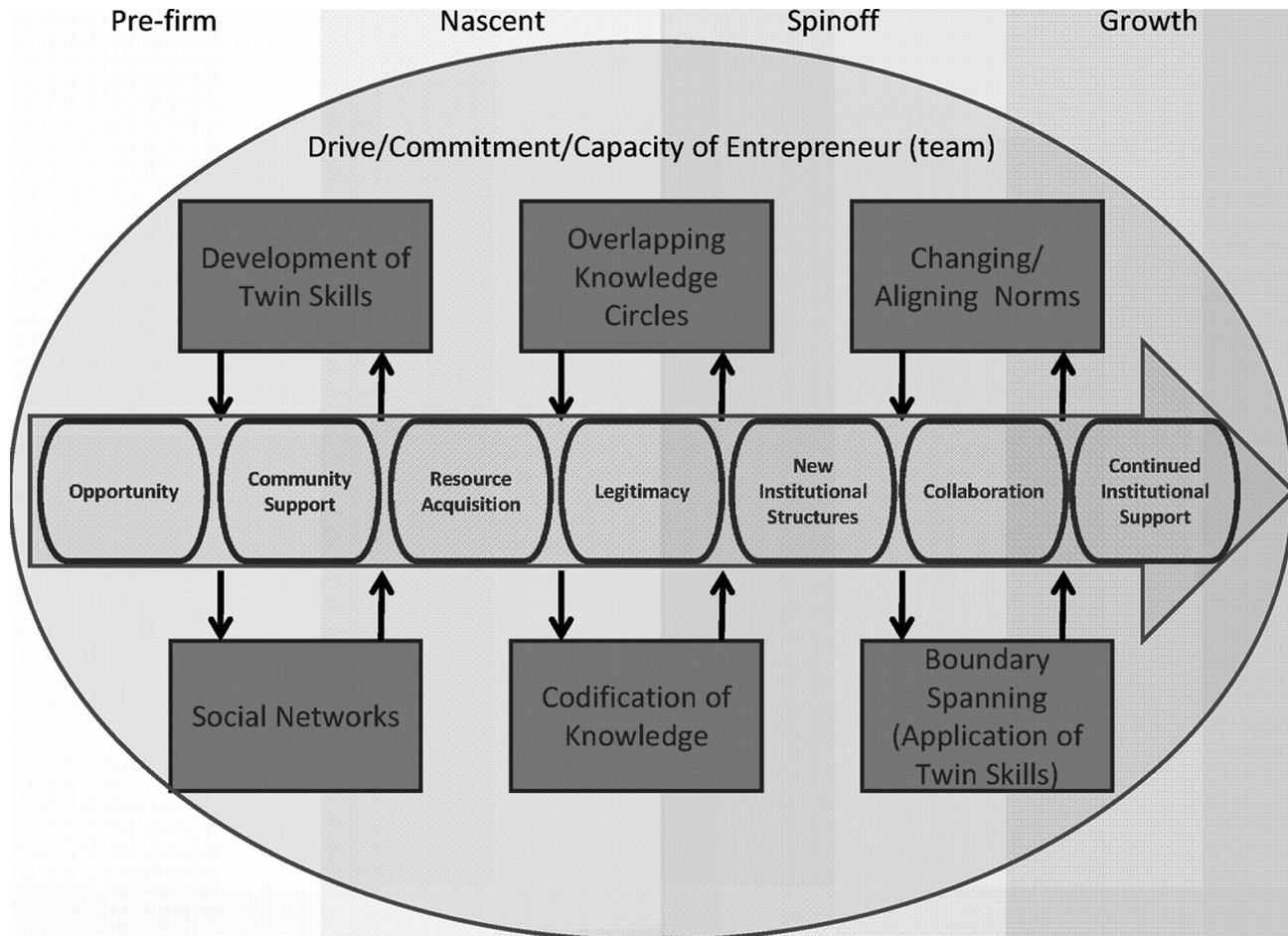
The post-spin-off stage is characterized by a continuing need for changing/aligning norms to allow for planned growth through expanding research focuses to align with new markets. It is represented by the processes involved in continued institutional support, collaboration, and constant application of twin skills to mediate between business and research-based worldviews. It should be noted that the twin skills theme appears throughout each of the stages, corresponding significantly to the human resources (how it was used) and boundary-spanning/mandates (where it was used) domains. The entrepreneurial process for this specific spin-off event is illustrated below.

Discussion

The present case of academic entrepreneurship portrays the complexities involved in the dynamic and highly nonlinear process of entrepreneurship within the context of a humanities and management school taking its first entrepreneurial steps through the activity of research com-

²³ The data-consulting firm, the CSC, specializes in developing software and running software applications for the Danish healthcare sector. The CSC drew up a business case, and a licensing agreement was signed between the spin-off and the CSC granting the CSC license to sell the software on the Danish market.

Figure 2
General Process Model of the University Spin-Off



mercialization and creating a new spin-off company. It is based on a long history, and its eventual success hinged on a gradual shift in institutional priorities, governance structures, and the entrepreneur's personal competences. The conceptualization of context as community has helped us understand the entrepreneurial process by determining the sequences that lead to effective new venture performance. It has also helped us identify interrelated factors that operate concomitantly and recursively throughout the life cycle of the university spin-off process. The study thus breaks down and makes sense of the structural dynamics that exist between the main entrepreneur and the university meso-environment, and it illustrates how these forces continuously interact and influence each other across the entire entrepreneurial process.

The study has identified elements that may be

deemed critical to entrepreneurial success within the humanities—in particular, developing twin skills and applying twin skills to the process. The twin skills construct is characterized by the capacity to effectively navigate through two or more diverse environments by synthesizing or compartmentalizing specific worldviews when necessary in the pursuit and eventual exploitation of entrepreneurial opportunities. This is strongly evidenced by the overlapping triple boundary-spanning loops developed by the AE that required expert knowledge of business-, research-, and institutional-based worldviews, and provided the means for aligning competing institutional logics. Through the constant shaping and reshaping of community and process, twin skills are found to be crucial for achieving successful outcomes.

The present case thus correlates well with the observations made at Stanford University (Nel-

son, 2005) that identified potential disconnects between the hard and soft sciences. The use of twin skills by the AE in the case presented resonates with Nelson's description of aligning competing logics at Stanford as described above, as the AE focused on overlapping areas of knowledge generation that allowed a virtuous circle of new research to be propagated through commercial value discovery/alignment, effectively using individual leadership, community support, and boundary spanning to overcome these polarities. This, in turn, shaped a set of new "logics" for the university that resulted in a new institutional infrastructure (i.e., the Lab). We believe that our findings of opposition at the line department level also confirm the perception in the humanities that teaching and research take precedence over a focus on entrepreneurship and commercialization (Harman, 2005).

Other factors also help ensure a successful entrepreneurial outcome. They include establishing institutional legitimacy, winning and maintaining support from institutional leadership over that of peers, requiring institutional restructuring, and relying on boundary spanning (as a basis for developing twin skills). These factors may be universally important in academic entrepreneurship, as evidenced by many cases, and they may, indeed, be particularly important in the social sciences and humanities context, as illustrated in the present case.

Finally, this case illustrates the importance of knowledge codification to the activity of technology transfer. We find that it has special significance and may partially explain a "disconnect" between the hard and soft sciences that touches on the current debate on the nature of patents (Bessen & Meurer, 2008; Ziedonis, 2008). The prevailing policy and market focus on knowledge codification and the protection of IP may potentially have an adverse effect on knowledge transfer specific to the social sciences and humanities. We have shown that the technology-oriented focus of stakeholders who provide resources (governments, universities, investors) and the structural mechanisms for distributing these resources leaves social science research-based faculty with comparatively few options for entrepreneurship. It therefore ap-

pears that the pillars needed to support the "bridge" connecting social sciences research to entrepreneurial outcomes must conform to this overarching ideology. In effect, the barriers that must be overcome are higher in the soft than in the hard sciences and are significantly influenced by community-based factors such as cultural norms and institutional structure. This has several implications for future research.

Directions for Future Research

One of the broad challenges facing researchers in any field (or subfield) is to present empirical results that can be compared and contrasted with other studies of similar phenomena by using a uniform philosophical approach, comparable measures, and similar and reproducible methods. It is in this manner that cumulative work can be accomplished that is important to theory building and eventually applied to best practice. Our approach to this study is grounded in the epistemological domain of interpretivism,²⁴ is guided by theory on process, and uses a methodological cluster featuring auto-ethnographic techniques and a novel diagnostic tool for measuring factors that constrain or facilitate entrepreneurial activity within a community. We encourage researchers to adopt similar approaches to studying entrepreneurial events within an academic context for four reasons. First, there is a prevailing quantitative methodological bias in entrepreneurship research (McDonald, Gan, & Anderson, 2004). This is also reflected in the subfield of academic entrepreneurship (Rothaermel et al., 2007). However, "entrepreneurship begins with a disjointed, discontinuous, nonlinear (and usually unique) event that cannot be studied with the methods developed for studying smooth, continuous, and linear (and often repeatable) processes" (Bygrave 1989, p. 7). Indeed, "researchers have thus far explained entrepreneurship not as the creation of artifacts by imaginative actors fashioning purpose and meaning out of contingent endowments and endeavors, but as the inevitable outcome of mindless 'forces,' stochastic processes, or environmental selection" (Saravathy,

²⁴ Interpretivism is a paradigm in which interaction and meaning are central to society, and it assumes that meanings are created through interaction.

2001, pp. 261–262). In order to remedy these shortcomings in the extant literature, a concentrated focus on qualitative studies of this type may offer new insights into academic entrepreneurship. As well, a cumulative body of work in this area may provide the opportunity for contrast and comparison to be made across a wide spectrum of events and contexts, allowing for pattern recognition and the development of practice-based theory.

Second, researchers must strive to correctly match the phenomenon being studied with the appropriate suite of research methods. We believe that the methodological cluster used in this paper was appropriate for studying the entrepreneurial process (the actions of the entrepreneur, team, and community facilitators) and its dualistic relationship with context (the meso-environment or “community” in question) and is especially well-aligned for the study of academic entrepreneurship.

Third, Hindle’s bridge represents a diagnostic tool that conveys to the researcher an ability to structurally measure a community’s ability to facilitate entrepreneurial outcomes. It is useful across a range of qualitative methodological clusters and may provide the necessary framework with which to align the study of entrepreneurial process across an infinite number of contexts, making it highly aligned with practice-based theory building.

Fourth, and perhaps most important, researchers must ask the right questions where insight and relevance are important factors for guiding research. Questions on entrepreneurship often revolve around the aspects of *who*, *why*, *what*, and *when*. We argue that a focus on the *how* should be an overarching consideration of researchers who study entrepreneurship. For example, the differences among entrepreneurs are evidenced to be greater than the differences between entrepreneurs and nonentrepreneurs, so the study of who is an entrepreneur, although important and interesting, has not been overly fruitful with respect to theory relating to practice, especially from research on individual traits. By focusing our attention on how context shapes process, we seek to understand the whole (the entrepreneurial event) in conjunction with its parts (individuals, organizations, environments).

With respect to the phenomenon under study, the cornerstones of European research are the “re-

search actors” (i.e., research organizations and researchers) who are subjected to governance measures that strongly influence what research is done and how. The rise in the importance of competitive funding has gradually changed the practice of university teaching and research toward an interdisciplinary and transorganizational model. However, the criteria for evaluating individual, group, and organizational performance remain far too traditional. Entrepreneurial activities often do not contribute to career advancement; moreover, no or little merit is earned by obtaining outside funding. For example, doing innovative work that directly feeds into policy is widely thought of as being of lesser quality. A major challenge for future research is to embrace the methods we have laid out to focus on the structural components of community in a much narrower manner in order to delve deeper into these questions, with particular attention paid to the specific context of the humanities and social sciences.

Conclusion

We conclude that there is value to be found in adopting entrepreneurial approaches to structural change within the social sciences and humanities. They may well represent a series of pathways for rethinking academic education and research, addressing societal needs and developing new methods for funding mechanisms. This paper demonstrates that it is possible to learn from what we may dub the “opportunistic embrace” of those who have successfully pioneered entrepreneurial processes within the social sciences and humanities disciplines. Cases where humanities and social science faculty in search of funding embrace domains that enjoy (traditional) policy makers’ and fund managers’ attention—for example, by adding a linguistic dimension to technology (as in language technology), by adding elements of philosophy to science (as in nanoethics), or by adding ethnography to medicine (as in medical anthropology)—offer exciting new vistas for entrepreneurship researchers. We may also learn from existing best practices within the hard sciences, and through trial and error determine what works and what does not. Thus contrast and comparison between the two are necessary. Hence, we

must explore practices at those institutions that have searched for a new and better balance between traditional and innovative forms of research (and teaching) involving intra-, inter- and transdisciplinary approaches to further innovation. By adopting the proper set of qualitative research techniques, and uniformly applying them to study new frontiers in research, we may better understand not only academic entrepreneurship in the social sciences and humanities, but perhaps a bit more about entrepreneurship in general.

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