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Diffusion of student business incubators: An institutional theory perspective on the emergence of a hybrid organizational form

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Abstract

This paper undertakes a longitudinal examination of the diffusion of a relatively new organizational activity ? university student business incubators ? by studying the processes through which actors grounded in three different institutional logics interact in the organizational field of higher education. Applying neo-institutional theory, we examine the development of student incubation activities in the field of general state-funded Danish universities. We review institutional pressures from the political sphere that led to the diffusion of student incubation, introducing a three-phase process involving experimentation, demonstration, and integration. Our study shows that universities? responses changed over the period from initial coercive isomorphism and structural and functional decoupling of incubation from core activities towards a higher degree of integration, although still loosely coupled. The process was facilitated by the institutional logic of entrepreneurial culture that integrated elements of the commercial and classic university logics. We find that the diffusion and adaptation process were mainly influenced by resources available, organizational constituencies mobilized, discretional power, and congruity between competing logics. Our findings have theoretical and empirical implications for the development of entrepreneurial promotion activities associated with pre-existing institutional structures as well as the political/institutional dimensions of entrepreneurship relative to the role of the

contemporary university.

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1 Introduction

The last decades have witnessed a substantial growth in the number and variety of university-based incubators (Abetti and Rancourt, 2006). Incubators are organizations designed to support the development of new technology-based firms, seeking to link talent, capital, technology, and know-how toward the development of new businesses (Mian, 1996b). They are one of the responses to the world-wide demand for universities to engage in a ‘thrid mission' and play a more prominent role in wealth creation and social and economic development (Etzkowitz, 2008; Etzkowitz and Leydesdorff, 2000; Gibb and Hannon, 2006; Mian, 1997). The triple helix literature refers to these emerging structures as hybrid organizations situated at the overlays between industry, the university, and government (Etzkowitz et al., 2000; Etzkowitz, 2002, 2008). In keeping with the economic development logic, universities are increasingly engaged in patenting faculty inventions, supporting academic spin-offs, and incubating student and graduate start-ups (Valdivia, 2013). This pursuit is not without controversy, as tensions exist regarding whether universities should primarily pursue scholarly eminence or engage in economic development and financial gains (Bjerregaard, 2010; Florida and Cohen, 1999).

Several studies examine the academic-commercial nexus, in terms of incubation strategies, spinning-out companies (Clarysse et al., 2005), licensing (Lach and Schankerman, 2004), team composition and dynamics (Ensley and Hmieleski, 2005), and valuation (McMillan and Thomas, 2005). A vast literature exists on business incubation including typologies of incubators (Grimaldi and Grandi, 2005), incubator management and best practices (Bergek and Norrman, 2008), incubator-incubatee interaction (Ahmad and Ingle, 2011) and the network aspect of incubation (Hansen et al., 2000; Bøllingtoft and Ulhøi, 2005). A different strand of literature has looked at how third mission related institutions diffuse

(i.e., the socially mediated spread of a practice or organization within a social system (Colyvas and Jonsson, 2011)) and become institutionalized (i.e., when a practice is integrated into social order, becomes self-reproducing, and invulnerable to contestation (Scott, 1995)) within the university setting. Such studies have examined how universities' patent practices have changed (Berman, 2008; Henderson et al., 1998; Owen-Smith and Powell, 2001, 2003) and growth over time (Berman, 2008). Similarly, scholarship has addressed the institutionalization of technology transfer (Colyvas, 2007; Jong, 2008). However, neither the incubation literature nor the literature on institutional changes has examined the introduction, diffusion, and institutionalization of incubation activities, a gap we address in this paper.

We specifically examine how the university-based business incubator and associated practices was introduced into the organizational field of higher education. Unfortunately, these innovations are poorly understood, partly because the majority of extant research on university-based incubation activities focuses on issues related to efficiency, often highlighting the importance of engineering and technical universities and primarily address issues of assessment and evaluation (Fayolle and Degeorge, 2006; Hisrich and Smilor, 1988; Markman et al., 2005; O'Shea et al., 2005). Rare are studies pertinent to the general multi-faculty university, and we were unable to identify previous research that examines the evolution, processes, and impact of incubation on the universities own charter of activities. In this article, we specifically address this research gap by examining not only the longitudinal diffusion of a new institutional activity, but also the implications and challenges to the traditional Mertonian model. In this way we help answer the call to examine processes of institutional convergence over time (Bjerregaard, 2010), studying university student incubation in the field of higher education.

To address the question regarding how this new practice has diffused we apply the concepts of institutional logics (Friedland and Alford, 1991; Lounsbury & Crumley, 2007; Thornton and Ocasio, 2008) and organizational fields (Bourdieu, 1985). Accounts of diffusion and institutionalization of new organizational forms such as the introduction of the technology transfer office (TTO) or the technology licensing office (TLO) (Belenzon and Schankerman, 2009; Lach and Schankerman, 2008; Valdivia, 2013) and practices such as patenting practices (Berman, 2008) and technology transfer practices (Colyvas, 2007) clearly show that such social processes involve both institutional arrangements and organizational action. Institutional theory inquiries into how organizational action reflects the perspectives defined by the group of actors which comprises the institutional environment (Scott, 1995). Institutional logics provide a link between individual agency and cognition and social constructed institutional practices and rules (Thornton and Ocasio, 2008). The third mission represents a very different logic from that associated with the traditional university missions and the prescriptions associated with the different logics provide inconsistent expectations (Bjerregaard, 2010). Institutional logics provide insight into the organizing principles, belief systems, and practices associated with conflicting perspective on the role of the university and the adoption and implementation of hybrid organizational forms such as technology and business incubators. We also utilize the concept of the organizational field (Bourdieu, 1985) in order to provide a useful analytical framing of the relevant social system under consideration.

We examine how different actors have responded to political pressure to establish campus-based student incubators as a means of introducing the third mission into the higher education institutions (HEIs), with the following research question:

- Why, how and with what consequences have institutional actors impacted the diffusion process that introduced student incubation activities at the multi-faculty university?

We chose to study multi-faculty universities in the Danish university sector, which is interesting for two reasons. First, Denmark was a pioneering country in operationalizing a EU and OECD policy agenda emphasizing business support services, such as incubation, to innovative start-ups (EC, 2003, 2004; OECD, 2003), including those founded by entrepreneurs enrolled as students in HEI (EC, 2008; OECD, 2010). Second, the Danish policy for promoting entrepreneurship included the entire range of HEIs, i.e., not only business schools and technical universities. The latter organizational field is interesting from an institutional logics perspective because it represents a higher level of institutional pluralism compared to, e.g., the business school setting.

First, the study contributes by providing an example of institutional dynamics involved when attempting to mainstream entrepreneurship support throughout an entire HEI system – a contemporary challenge facing policy makers and practitioners world-wide. An understanding of how policy makers' and other actors' respond and shape institutionalization processes is not only relevant for proponents of university-based incubators but also for other hybrid organizations attempting to integrate different institutional logics in other fields. Second, we address a call within institutional theory for a more nuanced conceptualization of the relationships between organizational communities and field-level social referents, e.g., how actors responses change over time (Greenwood et al., 2011). We show that universities have resisted, molded, and finally co-opted a new organizational form in response to a decade of political pressure. We find that universities organizational responses are influenced by resource availability, internal constituencies mobilized, discretional power, and congruity between practices associated with different institutional logics. These findings expand our understanding of how

political mandates and community expectations are adopted, modified, or ignored by credible institutions held accountable to public demands.

2 University-based incubators

In this study we focus on university-based or academic incubators, one of four typical archetypes of incubators described in the literature (Barbero et al., 2014). The rational of the university business incubator (UBI) is to bring together technology, know how, and capital to leverage entrepreneurial talent to speed commercialization (Grimaldi and Grandi, 2005). UBIs are assumed to lessen the "liability of newness" (Stinchcombe, 1965) associated with the commercialization of new ideas by entrepreneurs. Such organizations aim to support transfer of research knowledge to industry, commercialize university research, facilitate faculty-industry and university-community collaboration, and more generally support student and graduate start-up initiatives (Allen and McCluskey, 1990; Aernoudt, 2004; Clarysse et al., 2005).

The extensive UBI literature has overlooked the institutional pressures and implications for HEI, typically focusing on practices and efficiency. For example, Mian (1994, 1996a,b, 1997) scrutinized their organizational designs, management policies, and performance assessment. Rather than studying the efficiency of incubation activities, we examine how, why, and with what consequences student incubatiors have been introduced to the field of higher education.

3 University student business incubators

One consequence of the 'university for regional development and growth' argument (Etzkowitz and Leydesdorff, 2000) has been a considerable increase in student incubation activities in OECD

universities (Kirby, 2006; Mars et al., 2008). EU policy makers have long emphasized the importance of stimulating entrepreneurial mindsets among university students (EC 2008).

On this backdrop, we chose the SBI as the study object for developing a better understanding of the diffusion and institutionalization of the incubator organization within the university setting. To our best knowledge, no study has addressed the diffusion and institutionalization of this hybrid organization. As an example of the diffusion of a new initiative within university organizations, SBI is an interesting case because the phenomenon is adopted world-wide and because institutional pressures have been exercised by national and EU policy makers to promote SBI in the European context. In the next section we introduce our theoretical framework based on institutional logics and organizational field theory. This theoretical lens is pertinent for studying the SBI phenomenon in its context since the process of diffusion of this particular incubator type is highly influenced by its embeddedness within the mature field of higher education.

4 Theoretical framework

To analyze the process of adaptation and implementation of hybrid organizations by HEIs we adopt a modification of the framework for understanding organizational responses originally proposed by Greenwood et al. (2011). Figure 1 depicts our model.

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Organizational responses are shown as reactions to institutional complexity shaped by institutional pressure within an organizational field, or resulting from logics derived from other fields, in our case, the international, national, and regional political environments. An organizational field is defined as a

recognized area of expertise or activity (DiMaggio and Powell, 1991: 64), such as, e.g., higher education, and includes a diverse array of organizations working within the area, e.g., universities, state agencies, industry, student associations, and accreditation agencies. Moreover, fields are not static, but are "structured systems of social positions within which struggles or maneuver take place over resources, stakes and access." Oakes et al. (1998: 260). In this way, fields may change and adapt over time, particularly in contested arenas. As Bourdieu contends, "[Every] field is the site of a more or less overt struggle over the definition of the legitimate principles of the division of the field" (1985: 734). Moderated by a wide range of organizational attributes, the field-level pressures, e.g., through the political arena result in universities' responses that influence both the university organization and in turn contribute to configure the field.

Competing institutional logics are particularly likely in complex multi-faceted organizations such as universities, where a multiplicity of actors, sub-units, and competing institutions compete for resources and decision making authority (Kraatz and Block, 2008). Institutional logics can be defined as the "belief systems and associated practices that predominate in an organizational field" (Scott et al., 2000: 170). For example, academic science departments in universities are influenced both by the logics of science and of commerce, which prescribe different behaviors such as producing new knowledge as a public good versus retention of intellectual property and commercial exploration of research results (Philpott et al., 2011; Kalar and Antoncic, 2015).

Organizations face institutional complexity when they confront incompatible prescriptions from multiple institutional logics (Greenwood et al., 2011), e.g., sociocultural as well as commercial expectations (Meyer and Rowan, 1977), creating a social pressure on organizations. These pressures may come from either within the field or from outside competing fields, such as the political

environment. Such complexity is shaped by the number of constituencies an organization depends on for legitimacy and material resources; to what degree the demands of these constituencies are organized; as well as the power hierarchy among institutional constituents (Greenwood et al., 2011: 337). For example, following the rise of industrial applications for biotechnology, biochemistry departments appealed alternately to either public or private patrons to develop institutional legitimacy, resources, and attributes that eventually yielded industrial competitiveness and the emergence of the new field of biotechnology in university studies (Jong, 2008).

An actor's position refers to whether an organization or individual/group is located at the "center" or "periphery" of the field or organization, respectively, and may influence actors' responses, e.g., when large universities experience more institutional complexity due to expectations from a wider range of social actors than smaller regional universities. An organization's structures also allow social referents to obtain varied degrees of influence on an organization. Ownership and governance are reflected in power relations, and organizational responses are likely to be reflexive of the interests of the most influential groups (Greenwood et al., 2011).

Organizations respond when facing social expectations in order to gain social legitimacy because it influences access to critical resources (Meyer and Scott, 1983; Suchman, 1995). Their responses may vary as organizations experience different degrees of complexity. Early neo-institutional scholars argued that field-level actors' adoption decisions are influenced by powerful isomorphic forces (i.e., mimetic, normative, or coercive) that drive actors to implement similar practices and activities (DiMaggio and Powell, 1983) because such practices provide legitimacy and resources when they reflect major referents' institutional logics (Friedland and Alford, 1991; Meyer and Rowan, 1977; Strang and Meyer, 1993).

Contrary to this emphasis on isomorphic forces, the institutional logics perspective embraces the concept of "embedded agency" (Garud et al., 2007), arguing that "the interests, identities, values, and assumptions of individuals and organizations are embedded within prevailing institutional logics" (Thornton and Ocasio, 2008: 103) and that organizations interpret, translate, and transform institutional prescriptions. Thus, organizations and individuals act as institutional entrepreneurs that crate new and modify old institutions because they have access to resources that support their self-interests (DiMaggio, 1988). To succeed in constructing and legitimizing new practices, they rely on support from existing and newly mobilized actors who stand to gain from the success of the institutionalization project (DiMaggio, 1991).

Organizations react differently to external and field level logics, depending upon their organizational attributes. Meyer and Rowan (1977) proposed that organizations may decouple their practices from their formal structures to simultaneously accommodate efficiency requirements and institutional pressure for conformity. Further, Oliver (1991) proposes a typology of available response strategies and tactics (in brackets) to institutional demands including: acquiescence (habituate, imitate, comply), compromise (balance, pacify, bargain), avoidance (conceal, buffer, escape), defiance (dismiss, challenge, attack), and manipulation (co-opt, influence, control). Pratt and Kraatz (2009) maintain that organizations may a) delete or marginalize institutionally-driven identities, b) increase cooperativeness through linking multiple institutional demands, c) immunize themselves against external demands by building durable identities, and d) relate to different demands by compartmentalizing identities.

Greenwood et al. (2011) also refer to the concept of 'organizational ambidexterity' addressing the notion of organizations achieving the benefits of exploitation and exploration simultaneously. This notion is relevant when scientific research and commercialization are conceptualized as different

logics. Ambos et al. (2008) show that universities manage this tension through creating 'dual structures' and that those individuals who produce scientific outcomes tend to be rather different from those that engage in commercialization. This results in structurally differentiated hybrids in which separate subunits deal with particular logics (Simsek, 2009) as opposed to blended hybrids where different logics are combined into a single organization (Lounsbury and Crumley, 2007). As Greenwood et al. (2011: 355) argue, some organizations, e.g., universities "are legitimate only if they use hybrid structural arrangements hosting multiple professional disciplines and commercialization."

Finally, Greenwood et al. (2011) draw our attention to a lack of empirical studies that address the fact that different subunits within an organization find alternative ways of responding to environmental pressures and that organizational may temporarily adjust to such institutional pressures applying different types of responses over time. As we will discuss shortly, our case study is illustrative of this concept and helps bridge this important empirical gap.

5 Methods and data

In this study, we examine the diffusion of a new institutional phenomenon across five multi faculty state-funded Danish universities over time. Using a country-level analysis and a theory-testing approach, we examined case data employing triangulation regarding the emergence, diffusion, modification, and transitional status of these innovations. We elected to avoid studying the Danish universities that focus on management (Copenhagen Business School) and technical innovation (Technical University of Denmark and IT University of Copenhagen) as their mandates are much more clearly related to economic development and complementary of SBIs, reducing the theoretical implications of innovatively implementing SBIs.

To ensure the study's credibility and transferability (Shenton, 2004), we used a variety of techniques, such as reviewing documents and obtaining data from different sources, including diverse actors for cross-checking information and revisiting data through ongoing analysis. We began our literature and document review with an event list of the related developments in the political environment (Miles and Huberman, 1994). We reviewed 47 documents, including EC, OECD, and Danish governmental policy papers; evaluation reports; university strategies; and university development contracts. An overview of key policy documents is presented in Table 1. Subsequently, critical incident charts (Miles and Huberman, 1994) were developed for each university, identifying critical events in SBI development between 2004 and 2014. Such events include, e.g., project start and closure, funding sources, and strategic decisions made by the university.

Our analysis consists of three major elements. First, we conducted a content analysis (Gillham, 2000) of government policy papers (see Table 1), universities strategy documents (n=7), and university development contracts concluded with the Ministry of Science (n=25) with the purpose of identifying institutional logics influencing the diffusion of SBIs in Denmark. The analysis was guided by the following key words: belief system, role of university, values, goals, performance criteria, valued competencies, and associated practices. Based on this analysis, three internally consistent and basically different logics emerged (see Table 5).

Second, we conducted a word count analysis on university strategy documents identifying and quantifying the use of terms related to the three missions of the university (see Table 3 and Table 4). Organizational strategies reflect to what extent organizations embrace prescriptions imposed by field-level references (Greenwood et al., 2011). For example, development contracts are the government's tool for directing universities towards public policy goals, but the universities are themselves

instrumental in defining the indicators used in the contracts. These contracts include the 20-30 most important development goals and associated indicators.

---------- Insert Table 1 about here----------

Third, we interviewed representatives of key field actors to verify and supplement the SBIs' development time lines, further explore the notion of the three institutional logics, and to obtain participants' insight on the relationship between institutional pressure and organizational responds. Data was gathered between January 2014 and January 2015. Appendix A1 shows the distribution of interviewees across categories and organizations. Snowball sampling (Miles and Huberman, 1994) was used to identify interviewees starting with the incubator managers (CEOs), who were asked to identify a number of academic staff members who had experience and long-term engagement in the entrepreneurship field and the local incubator, and students who had been attached to the incubator for one to two years. Semi-structured interviews were conducted based on 20 questions addressing the following main topics:

- Experiences of the impact of the entrepreneurship and innovation agenda within the university
- Organization of the student incubator
- Integration of the student incubator with teaching and research activities
- Factors influencing collaboration between the incubator and the rest of the university.

Interviews were conducted as phone or face-to-face interviews and lasted between one and one and a half hour.

Case study

At the turn of the century, the European Commission increasingly focused on entrepreneurship as a basis for economic growth and improved competitive advantage. The role of HEIs in supporting innovative attitudes and entrepreneurship competencies was stressed in the Treaty of Lisbon (2001). In Green Paper: Entrepreneurship in Europe, the European Commission stated the need for boosting entrepreneurship and increasing the number of start-ups (EC, 2003). This strategy was supported by an action plan for the European agenda for entrepreneurship (EC, 2004). Similar agendas on entrepreneurship and start-up promotion developed in the OECD (OECD, 2003, 2005). In Denmark, this policy pressure appeared in the higher education field in 2002, when policy makers called for universities to engage in creating an attitude shift towards a culture more supportive of innovation and entrepreneurship (Danish Government, 2002).

Denmark has eight universities. This study includes all five comprehensive multi-faculty universities: Aarhus University (AU), University of Southern Denmark (SDU), Aalborg University (AAU), Roskilde University (RUC), and University of Copenhagen (UCPH). The universities are located in the five major geographical regions, and offering a wide range of study programs within humanities, social science, health, and science.

At some stage over the past decade, all five universities established in-house student incubators and they currently host some form of SBI service, though some do not provide office space for student entrepreneurs. Table 2 provides an overview of the characteristics of the SBIs and present incubation activities at the five universities. The sample ranges from a fully-fledged SBI at Aarhus University Center for Entrepreneurship and Innovation at AU to a business advisor offering a weekly workshop at RUC Innovation. All SBIs are embedded in an administrative department or separate university center rather than in the regular university department structure. During the last decade, all incubators have

gone through a number of independent project phases, and some are the result of mergers of previous projects.

---------- Insert Table 2 about here----------

Table 3 shows the occurrence of entrepreneurship-related criteria in the five universities development contracts. Large differences exist in how student entrepreneurship, including SBI issues are addressed. The most common criterion is the number of students who have attended entrepreneurship courses. Overall, though to a varied degree, the Danish universities see student entrepreneurship as a combination of incubation, teaching, and industry practices. Gray shaded observations explicitly mention SBI or incubatees. A general reduction in entrepreneurship related indicators is observed in the 2014-2015 contract period.

---------- Insert Table 3 about here----------

Table 4 shows the result of a word count analysis of university documents. The 'science/education' word category (first mission) is most dominant, followed by word forms related to 'teaching/education' (second mission). The third mission related categories 'business' and 'innovation' are represented throughout the studied time period but mentioned significantly fewer times in the strategies. The 'entrepreneurship' category is rarely mentioned, and is absent in four out of seven strategy documents.

---------- Insert Table 4 about here----------

Three distinct phases can be identified in the historical account of the evolution of SBI in the Danish context. An initial 'experimentation' phase from 2003-2009, a second 'demonstration' phase is distinguished during 2010-2013, and finally, a third 'integration' phase started in 2014.

Analysis and discussion

In this section, we first document and define three intuitional logics before identifying the institutional pressures and organizational responses during the three phases outlined in the previous section.

5.1 Three institutional logics shaping the field

Three distinct logics (see Table 5) are encountered in the Danish higher education context. We base our characterization on existing literature, policy documents, university strategies, and interview data. In practice, more than one logic are voiced to varied degrees by actors within each university and official documents, such as strategies and university development contracts reflecting the relative power of proponents of different logics and the complex expectations to HEIs.

---------- Insert Table 5 about here----------

In Denmark, as in most western societies, higher education is a mature field fundamentally influenced by the logic of the classic (research-based) university. Table 5 summarized the main values and behaviors associated with this, the so-called Humboldtian model. The role of the university is to conduct "Independent, critical, deep discipline-based knowledge creation" (AU, 2013). A fundamental value is that the university contributes to "Societal and individual development [through creation of] knowledge as public good." (AU, 2013). An analysis of the university strategy documents shows emphasize on the discipline structure and research-based teaching, e.g., AU (2013) identify "Basic research and core [mono] disciplines of the highest quality […] [and] solid research-based degree programmes […]" as core objectives. UCPH's 2012-2016 strategy states that *"Our core services are* free basic research and research-*based education."* Research and research-based education constitute the core missions. Interdisciplinary thinking is recognized as important although "interdisciplinarity is not a goal in itself […] [but] only beneficiary when rooted in academic depth." (UCPH, 2012). The

educational goal is "deep academic insight" that enables students to be critical and analytical. The main indicators in all the university development contracts include published peer-reviewed articles, obtained external funding, and MSc, BSc, and PhD student enrolment, all performance criteria linked to the classic research-based university logic. From the outlined belief system it follows that the practices of university staffs focus on peer-review publishing, often funded through highly competitive research funding schemes that reward disciplinary depth which in turn is reflected in the research-based teaching programs.

The "science-as-engine" (Berman, 2012) perspective is more recent in Denmark than in the US, where university involvement in commercialization is a well-established practice (Berman, 2012). In Denmark the legal basis was established with a law passed in 1999. It epitomized the political mantra "from research to invoice" that became normative for Danish research policy during the 00's by transferring property rights to scientific discoveries from the individual researcher to the university. The explicit commercialization logic is not very prominent in Danish entrepreneurship education policy papers, although reference is made to "economic development and job creation" in several cases. On the other hand, the explicit SBI-promoting grant policy of the Ministry of Business and its underlying rationale that the entrepreneurs existed but lacked "a targeted provision of tools-oriented training in relation to start-up and operations of own enterprise" to realize their potential (MoS, 2004) shows the operation of this logic. The two regional universities AAU and SDU most clearly embrace this commercial logic. AAU (2010) states in its vision statement of the 2010-2015 strategy that it will:

> "[…] work to promote knowledge intensive entrepreneurship and innovation. The university will cooperate with local and regional companies and business development agencies and with science parks, enterprises *and universities nationally and internationally in order to promote knowledge based enterprises."*

Moreover, AAU emphasizes entrepreneurial action and aim to "integrate an entrepreneurial culture in relevant programs and encourage its students and researchers to test ideas and inventions with a commercial perspective through new or existing enterprises." (AAU, 2010).

In their development contract, SDU commits to establish two spinoff companies in collaboration with a business accelerator, and commits to a specific department to support active outreach in order to identify challenges in the local industries as a basis for future university-industry collaboration. In general, TTOs had a limited success in Denmark (Norn et al., 2013). The lack of success of the commercial logic is also reflected in their most recent strategy documents. None of the five comprehensive universities' refer to their SBI activities and only two refer to 'entrepreneurship' or 'enterprising culture'. In the 2013-2020 strategy, AU (2013) states that the university aims to ensure:

> *"A prominent position as a knowledge*-creating and culture-bearing institution that contributes to technological, economic, social and cultural innovation in society through entrepreneurship and the transfer, *communication and exchange of knowledge."*

AU's strategic objective is to "develop learning environments that focus on innovation, entrepreneurship and intercultural competencies." [authors' emphasis]. The explicit linkage between education and entrepreneurship represents a third logic that we identify in our empirical material, that we call the entrepreneurial culture logic. This logic is dominant in the policy papers that initially introduced the entrepreneurship discourse (Danish Government, 2002; MoB, 2003; MoS, 2004). AAU's (2010) mission statement illustrates this rationale:

> *"AAU's profile was developed for the purpose of value creation within education and research in dialogue* with the surrounding society. The essence of the central output is the education of highly qualified and

> dedicated graduates who have worked in an integrated manner with industry, the business sector and public institutions already during their studies.*"*

This logic emphasizes the importance of ingraining an entrepreneurial spirit in the students through interdisciplinary teaching and research, addressing real-life challenges, and allowing students to "bring their knowledge into play". From this perspective the goal is:

> *"not to get more young peop*le to establish firms after finalizing their education [which] is unrealistic for most [but to create] a broad foundation for innovation and entrepreneurship, that can provide students with innovative competencies and an open attitude towards establishing *their own enterprise."* (MoB, 2003)

Value creation is broader than individual entrepreneurs' successful start-ups and includes the contribution made by innovative intrapreneurs and engaged employees in private as well as public organizations. As expressed in AU's (2013) strategy: "[AU] will contribute to value creation, innovation capacity […] through incorporating innovation and entrepreneurship in teaching […]." Teaching is the central means of "enhancing an entrepreneurial culture" and the objective is that "a *larger part of student participates in courses in entrepreneurship during their studies"* (Danish Government, 2009). The increasing use of 'numbers of course' as an indicator in development contracts (see Table 3) clearly indicates the recognition of this perspective in the universities. The type of teaching involved is interdisciplinary, problem-based learning, and team based (Danish Government, 2009; AAU, 2010). This pedagogical component was a highly visible element in the demonstration projects in Phase II and, in addition, entrepreneurship teaching increasingly became research-based. Another important outcome of an entrepreneurial culture is more employable graduates that are "ready for the job market when they leave the university" (SDU, 2013). Having established three institutional logics, we now turn to our analysis of the diffusion and institutionalization of SBIs during 2003-2014.

5.2 Phase I: Experimentation (2003-2009)

As with many institutions, the diffusion of incubation as both an accepted and desired set of activities disseminated from various EU and OECD policy papers and recommendations emphasizing entrepreneurship as a tool for economic growth. By introducing SBIs, the Danish government buttressed the new commercial logic into the higher education field; a logic aligned with the "from research to invoice" policy discourse but in conflict with the traditional university logic. The policy agenda was promoted though two different government-funded SBI schemes. The Ministry of Business SBI scheme had a clear commercial logic perspective:

> *"We are interested in entrepreneurship, mainly entrepreneurship and not education … we are the Ministry of Business, so we are interested in business."* (Civil servant, 1)

The IDEA scheme had a broader agenda, including both education and student start-up support.

As an extracurricular activity, SBIs posed no threat or competition to the guardians of the values and practices associated with the traditional university logic:

> *"… the money was avai*lable, and by establishing a SBI you could avoid too much trouble internally in the *organization and get something established."* (Civil servant 2)

Public funding for SBI organizations was relatively easy accessible and Danish universities could engage with SBI with a minimum of reallocation of basic funds. On the other hand, the schemes provided no incentives for academic staff engagement and the amount of funding was limited for the individual SBI.

As a response to the coercive pressure from the government, SBIs occurred approximately at the same time at all comprehensive universities in Denmark. The initial establishment of SBIs was driven by

institutional entrepreneurs (Greenwood and Suddaby, 2006), in most cases coming from the margins of the organizational structure, often administrative staff, project developers, or entrepreneurship teachers with a weaker affiliation to the classic disciplinary departmental structure. Referring to the emergence of the first generation of SBIs, one interviewee argued:

> *"I believe that it was a reaction from their* [the universities] *side to, 'Hey, there is some money here'. And* then, of course, there are some fireballs at the universities that thought it was the right thing to do, and then they combined the two*."* (Civil servant 1)

Thus, the introduction of SBI emerged from the periphery of the organizations, rather than being voiced by central intra-university constituencies. Several interviewees indicated that the legitimacy of the SBI within the university was challenged by proponents of the classic university logic.

> *"It* [entrepreneurship] *was so strange to the researchers and teachers at that time, that you couldn't get it into* the education. But what you could do was to place it outside the teaching, because with the money [external funding] *you could just employ project managers to manage the activity."* (Civil servant 2)

These project managers acted as institutional entrepreneurs aiming at creating new institutions because the public funding schemes provided access to resources that supported their interests (DiMaggio, 1988).

The wide-spread disapproval among traditional university cadres to a general policy-driven 'from research to invoice' agenda (Norn et al., 2013), also played a role in deepening the perceived incompatibility between the SBI advocates and the academic staff. The SBI phenomenon had diffused due to external pressure but struggled to obtain managerial attention and become institutionalized.

In both public SBI funding schemes, the external sponsors' expectations were relatively unambiguously focused on start-up support, leaving little scope for discretionary managerial action

allowing for convergence of conflicting logics through the development of practices bridging different interests. Moreover, limited efforts seem to have been made to integrate the SBI with the core university functions of teaching and research:

> *"*[…] and then you had some very, very sporadic and unwelcomed teachers who somehow had slipped into the university to undertake this kind of teaching.*"* (Civil servant 2)

When SBIs provided teaching it primarily aligned with the commercialization logic, e.g., in terms of entrepreneurship and business plan courses and as extracurricular activities. Moreover, the SBI organization was compartmentalized in the sense that it was anchored in administrative units outside the classical university department structure, i.e., based on a dual structure. Thus, the response of the five universities to the external expectation to establish SBIs was characterized by symbolically embracing the concept, but decoupled (Meyer and Rowan, 1977) from core activities.

During the latter half of Phase I, the initial government funding was increasingly supplemented by regional funding through EU Structural Funds. Thus, the universities had established sufficient external legitimacy (Meyer and Rowan, 1977) to attract additional resources to sustain the SBI projects – whose efficiency had not yet been proven. Notably, no attempts were made to document the effect of incubation in terms of stated objectives such as economic growth increasing number of jobs, neither by the field-level sponsors nor by the universities. Few attempts were made to develop a codified and evidence-based approach to student incubation, and the SBIs themselves were unable to produce sufficient evidence to legitimize their existence within the university structure, e.g., through an increased professionalization within the field (Lounsbury, 2002).

In Phase I, SBIs failed to convincingly answer how universities could address the third mission by engaging students in value creation before and after graduation. We argue that the universities

generally opted for coercive isomorphism during the 'experimentation' phase and lacked incentives to carry through with the experiment and distill the possible joint learning and institutionalization of an emerging new hybrid organizational form. When funding ceased, the universities responded by 'deleting' (Pratt and Kraatz, 2009) the SBI as argued by a ministry respondent:

> *"We got what we paid for, and once the money had been distributed, we didn't get anything more.* […] In many cases, the SBI were just closed down when the money ran out.*"* (Civil servant 2)

We see the incompatibly of the commercial and the classic university logics as the fundamental reason for this course of development. The relatively weak and organizationally peripheral power positions inhabited by those implementing the SBI combined with the relatively limited resources provided by field-level proponents of SBIs seemed to have made it unattractive to more powerful actors to engage in promoting SBI beyond symbolic levels. This situation changed as processes within the organizational field fundamentally reshaped the patterns of institutional complexity during 2009.

5.3 Phase II: Demonstration (2010-13)

As the SBI concept did not meet initial expectations, it was increasingly recognized that the assumptions concerning students' entrepreneurial potential did not reflect reality.

> *"In the beginning we had this hype that 'Wow, all growth companies are started by 17-*year-*old, right?' But* all growth companies are started by 41-year-*old. All research shows it."* (Civil servant 1)

The policy discourse turned towards emphasizing a broader cultural change in HEIs to generally make students (and teachers) more entrepreneurial and innovative. During this phase the entrepreneurial culture logic increasingly dominated the discourse. This policy change ushered in the 'demonstration' phase during 2010-2013 where, responding to the lack of success in Phase I, the main policy actors increased coordination of the field by aligning their objectives and establishing formal structures that

lowered the level of field-level fragmentation in terms of uncoordinated constituents that the universities had to relate to:

> *"We assembled all the money that previously had been used on all those sub*-initiative, at one place and said: everything that happens in the educational sector is the responsibility of FFE.*"* (Civil servant 1)

Compared to the first phase, less importance was placed on start-ups and more on changing the culture of HEIs and fostering innovative and enterprising behaviors, as illustrated by a SBI manager:

> *"We don't emphasis that the students learn to start a company, but that they learn to create value. It doesn't* mean that they necessarily need to go out and sell something. It might just as well be that they should become *better employees in a company."* (SBI manager 1)

This reframing (Fligstein, 2001) of the entrepreneurship agenda appealed to a more diverse group of actors as the resulting hybrid logic, the entrepreneurship culture logic, included bridging elements of the otherwise largely incompatible logics of commercialization and the classic university.

A defining characteristic of the 'demonstration' phase was the reorientation of the public funding mode towards benefitting large-scale 'demonstration' projects. The outlook to a substantially higher level of funding prompted a change in universities' response. It enabled the original institutional entrepreneurs to mobilize and ally with more powerful voices representing the classic university logic, both at the management level and among teachers and researchers. This policy shift introduced a project modality with more ambiguous goals and with increased discretion to the university, which made it easier to reconcile commercial logic with classic university logic interests. Thus, the group of actors that acted as 'carriers' (Zilber, 2002) of the emerging entrepreneurial culture logic had broader representation, both horizontally and vertically, across the university organizations. Increasing management attention also added to the intra-organizational acceptability:

> When […] we started [in Phase I] we went out to the departments because they should have some entrepreneurship. It *was very much uphill. But when we suddenly got the 'prize'* [a flagship project] *... as I usually say: 'when you got at prize bull, everybody comes dragging with their cow.'* […] Then they could see *that it was prioritized, that it had management support."* […] *It contributed to a lot of staff wanting to join."* (SBI manager 1)

As entrepreneurship evolved from being a goal to becoming a means of achieving personal realization and deep learning, an increasing number of discipline-based educators experienced how innovation and entrepreneurship as a pedagogical method could enrich their teaching, which in turn enhanced internal legitimacy. This process was reinforced as purely practice-based approaches (e.g., as associated with previous SBI practices) came to be supplemented by research-based entrepreneurship education (e.g., Bager et al., 2010; Blenker et al., 2013).

During this 'demonstration' phase, an element of mimetic isomorphism was operating. Some interviewees indicated that since most of the 'global role model' universities, e.g., MIT and Stanford, possessed SBIs, "*we needed one too"*. Several interviewees stated that SBIs hold primarily a symbolic rather than technical value for the university. As argued by an interviewee, "And both vice chancellors and deans also had a need to be able to show it [the SBI] to their foreign partners." [Civil servant 2]. This would suggest a 'loose coupling' of institutional forces and symbolic behaviors (Karlsson and Honig, 2009). Interestingly, during this period, limited national-level policy pressure seems to have operated to sustain the implementation of the SBI concept. This is confirmed by the development contracts that clearly indicate a declining emphasis on SBI and extracurricular activities towards the end of Phase II (see Table 3).

Although the emergent third logic – the entrepreneurial culture – had integrated elements of both the commercial and classic university logics and gained a broader constituency than the pure commercial perspective, it was still challenged. Incentive structures for universities as well as individual staff members are centered on bibliometric research indicators rather than contributions to innovation and economic growth:

> *"It is a question about* which career path that exists. How you reward people. You create a career if you go academia. […] then it is something about producing journal articles, and creating a research portfolio. It is a different *agenda. Teaching is almost an obstacle. And entrepreneurship… that is totally hopeless."* (Incubator manager 2)

Among academic staff, only a few enthusiastic souls spent time on extracurricular activities associated with SBI. Several interviewees emphasized that no incentives exist for such involvement, which supports recent findings by Philpott et al. (2011).

Greenwood et al. (2011) contend that organizations' responses to competing logics depend on both how logics are given voice within the organization, but also to what degree the field-level proponent of a logic controls resources. Our findings support this view as the increase in external funding after 2010 engaged new and more powerful actors and generated broader acceptance of the SBI functions as it was closer linked to teaching and research.

The financial support for The Entrepreneurial University projects concluded at the end of 2013. Although the SBI concept had diffused and taken hold in all universities, the field-level institutionalization was limited. In this situation, changes in institutional complexity once again revived the universities' interest in the entrepreneurship and SBI agenda.

5.4 Phase III: Integration (2014-)

With the finalization of the flagship project phase, policy actors expressed that after ten years of public funding, the HEIs needed to take responsibility for internalizing the SBI organizations:

> *"We didn't think that they* [the universities] down the road should have money from the Ministry of Business to fund entrepreneurship activities. They have so large budgets and they should be large enough to get that knowledge. […] We wanted th*e universities to become more and more independent."*(Civil servant 1)

However, most comprehensive universities seemed reluctant to fully institutionalize the SBI concept; or signal its importance through strategy documents and development contracts. On the other hand, some interviewees referred to two emerging developments in the higher education field that impacted the universities' perspective on innovation and entrepreneurship, including the relevance of SBI. First, major research funding sources such as the European Commission and the Danish Government increasingly expect universities to integrate teaching, research, and innovation, often in partnerships with private sector stakeholders. This is clearly stated in the EU Horizon 2020 program:

> *"Horizon 2*020 will fund researchers and innovators at the cutting edge of their fields […]; it will support projects across the cycle from research to innovation.*"* (EC, 2013)

This development is also mirrored in national-level funding schemes that aim to align efforts across research, technology development, and innovation. Today's research funding schemes require that research has real impact, and scientists need to convincingly document this to obtain funding. As argued by Woollard et al. (2007), funding regimes have brought the delivery of the third mission to the top of the agenda for vice chancellors. Some interviewees have used the SBIs to support proposal development and for quality assurance. One interviewee explained that his research was "venturing into this kind of practice-based research for humanities [and that] these questions […] have been qualified with the help obtained from the incubator." (Researcher 4). This supports the proposition by Todorovic

and Suntornpithug (2008) that incubators can provide a means by which universities can improve business education and remain relevant for the business community.

Second, the national study reform and its focus on reducing study time, enhancing quality and employability, and developing industry linkages has raised a number of concerns to which the behaviors associated with the entrepreneurial culture logic may provide answers. These changes in institutional complexity can have significant implications for the prospects of SBI institutionalization at the comprehensive universities.

The external pressure has also raised an interest among more powerful intra-university constituencies to integrate previous extracurricular activities into credit-awarding activities offered by traditional departments. The study reform render impossible the extension of the study time often associated with engagement in a venture start-up. Because entrepreneurship had in general gained internal legitimacy, associated activities such as SBI were also more readily embraced by newly mobilized actors among management and academic staff.

> *"Our vice chancellor argues that the university needs to create tighter links between the theoretical* educations and practice. And you can say, that this [the SBI] is o*ne way of getting that."* (SBI manager 1)

In line with the observation made by Rao et al. (2003) we observed that the change in the institutional logics (from commercial to entrepreneurial culture) lead to the creation of new categories and to changes in meaning of existing categories. The three functioning SBIs already have or are planning to offer start-up incubation framed as credit-awarding courses. As an incubator manager argued regarding their considerations about this integration:

> *"How can you give so*me credits for taking something extracurricular; or how can you get it [SBI activities] in [as course work] *... and the interesting thing about getting it in is that then you also establish the ownership with the educators."* (SBI manager 2)

Thus, student start-up has changed from a commercial and extracurricular activity to an educational activity. This development was facilitated by the fact that university basic budget allocation is partly based on credit-awarding course provision and departments thus gain economically from the integration.

This recent response has implications for internal legitimacy within the university and thus for SBI's resources access and further institutionalization. Closer affiliation with academic staff through teaching activities potentially makes teachers and researchers more engaged with SBI activities although several interviewees argued that this engagement is unlikely as long as no clear incentives are created. The lack of rewards and sanctions to govern organizational behavior inhibit the process of institutionalization (Jepperson, 1991). As Ocasio (1995) contend, institutional logics affect the allocation of attention to alternative schemas for perceiving, interpreting, evaluating, and responding to environmental situations and the present staff-level incentive structure continues to be entirely aligned with the classic university logic. The observed lack of academic staff involvement and the transformation of SBI activities into teaching activity clearly reflect the hegemony of the classic university logic. On the other hand, substantial incentives in terms of increased legitimacy and resource access exist for SBIs to align with practices associated with the classic university logic.

Most studies drawing on institutional logics examine a logic shift in the notion that the ascendance of a new logic results in the dismantling of the previously dominant logic because of their fundamental incompatibility (Greenwood et al., 2011). Our study shows a different case: a partly integration of the

commercialization logic in the dominant classic university logic. This integration takes place through a structural overlap (Thornton, 2004) where previously distinct individual roles and organizational structures and functions are forced into association in the creation of blended hybrids (Lounsbury and Crumley, 2009). As we have shown, the emergence of triple helix structural overlaps within the university, e.g., SBI organizations can be facilitated by a hybrid logic, such as the entrepreneurial culture logic, that legitimize the institutionalization of structural overlaps, but without establishing associated incentives such transformation is unlikely to sustain.

6 Conclusion

We investigated the diffusion, adaptation, and institutionalization processes regarding the introduction of university-based SBIs in the Danish higher education context during 2003-2014. We found that the institutional complexity that molded HEIs responses was influenced by government policies, support programs, and institutions shaped by education policy discourse, government agencies, regional governments, research funding agencies, and higher education experts. Field-level actors have in various constellations and at various times advocated three different logics – the commercial, the entrepreneurial culture, and the classic university logics.

Within the university, institutional entrepreneurs at the periphery of the organization steered the entrepreneurship agenda based on personal and professional interests. Initially, with acceptance from top management, they were seemingly driven by personal interest facilitated by coercive isomorphism at the field level. The SBI-university relation was first established as a dual structure configuration. In the ‘demonstration’ phase, when funding attracted more attention and the commercial agenda was reframed as an entrepreneurial culture change agenda, increasing management and academic staff

involvement was observed. This transition also prompted a change in university responses from an initial decoupling of SBI to a loose coupling with increasing interactions between projects and core departments. The entrepreneurship culture logic was critical in bridging the value conflict between the classic university logic and the logic based on the new commercial third mission perspective. During the third phase, higher education experienced a significant external pressure to enhance efficiency and effectiveness. This prompted universities to transform previously extracurricular SBI activities into the formal teaching program, thereby reinforcing institutionalization of the SBI and aligning it with classic university incentive structures, but also transforming the original commercial focus into an educational. In general, SBIs seem to have moved towards a blended hybrid status where different logics are integrated into the same organization.

We found that resource availability, the nature of internal constituencies mobilized, discretional power, and congruity between practices associated with different institutional logics were the main moderators of universities organizational responses. We showed that universities resisted, molded, and finally co-opted a new organizational form in response to a decade of political pressure. Our findings have implications for designing attempts to introduce and institutionalize hybrid organizations in the HEI context. Institutional entrepreneurs were more successful in overcoming internal resistance when external support reached a level that attracted top management attention. However, resources, while critical, were insufficient for institutionalization. The establishment of a compromising institutional logic; and development of incentives for supporting practices that engage academic staff in the commercial role of SBIs seem to be necessary conditions for further institutionalization of SBI.

In this study we conducted a multi-level analysis at the levels of the organizational field, the organization, and intra-organizational actors, with a focus on describing the overall field-level

development. We have seen that universities have responded homogeneously to institutional pressure over the last decade, but recent developments indicate that differentiated responses are emerging. Future research should address the organizational dynamics causing these inter-organizational differences as well as differences between comprehensive universities and business schools and technical universities. Moreover, to institutionalize SBIs, the universities need to develop practices that align with the dominant institutional logic, perhaps by introducing incentives to facilitate academic staff involvement in SBI activities. Further research is needed regarding how to optimize the function of hybrid organizations such as SBIs.

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Appendix 1. Interviewee categories and organizational affiliation (N=22).

Organization	Interviewed persons
Ministry/ Agency	3 civil servantes
Aalborg University (AAU)	1 Students 2 SBI head/staff 1 Researcher/teacher
Roskilde University (RUC)	1 SBI head/staff 2 Researcher/teacher
University of Copenhagen (UCPH)	2 Students 2 SBI head/staff 1 Researcher/teacher
Aarhus University (AU	2 Students 1 SBI head/staff 2 Researcher/teacher
University of Southern Denmark (SDU)	1 SBI head/staff 1 Researcher/teacher

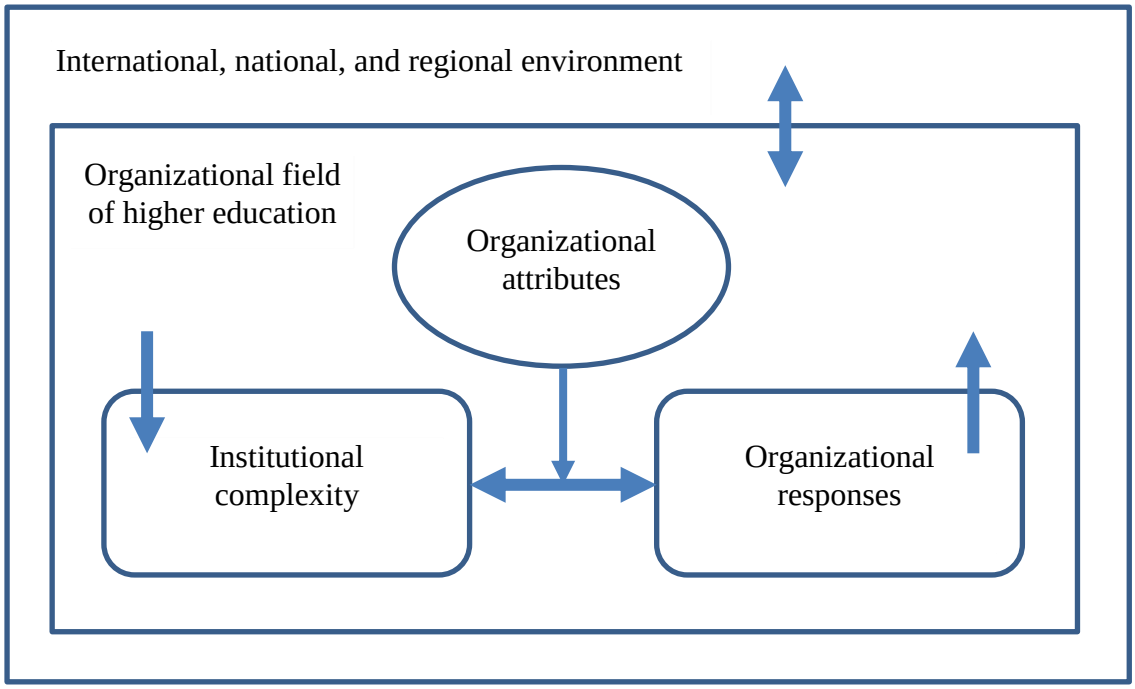

Figure 1. Conceptual model of organizational field dynamics (Modified after Greenwood et al., 2011, Figure 1).

Table 1. Critical incidents in the development of student incubation in Denmark.

Year	Incident	Budget mill. USD	Main Actors
Phase I	**Experimentation (2003-2009)**		
2003	European Commission: Green Paper Entrepreneurship in Europe		European Commission
2003	Government action plan: Action Plan for Entrepreneurs	8.7	Ministry of Business
2003	Government strategy: A Society with Room for Free Initiatives		Ministry of Business
2004	European Commission: Action Plan: The European Agenda for Entrepreneurship		European Commission
2004	Government strategy: Innovation, Entrepreneurial Attitude and Independence Culture in the Educational System		Ministry of Business
2004-2008	Government funding scheme: Establishment of Growth Houses in Connection to Higher Education Institution	3.8	Ministry of Business
2005-2007	Annual calls for student incubator projects (Student Growth Houses) at HEI		Ministry of Business
2005	International Danish Entrepreneurship Academy (IDEA) established	16.3	Ministry of Science, SDU, partners
2005	Independence Foundation - Young Enterprise established	16.7	Ministry of Business
2006	Øresund Entrepreneurship Academy established (Danish-Swedish collaboration across 14 universities)	4.7	Ministry of Business, 2 Regions and 14 universities
2007	National secretariat for student incubators established		
2008-2010	IDEA South 2.0	1.8	EU Social Fund, Region
Phase II	**Demonstration (2010-2013)**		
2009	Ministerial Partnership for Education in Entrepreneurship formed between Ministry of Business, Ministry of Science, Ministry of Culture, Ministry of Child Education		4 ministries
2009	Inter-ministerial strategy: Strategy for Education in Entrepreneurship		4 ministries
2010	Foundation for Entrepreneurship-Young Enterprise (FFE) replaces Independence Foundation	18.0	Ministry of Business
2010	Government funding for IDEA stopped. Continued as IDEA Entrepreneurship Centre at University of Southern Denmark		Ministry of Business
2010	Call for The Entrepreneurial University and subsequent funding of two large projects	14.0	EU Social Fund, Ministry of Business, Ministry of Science, Danish regions
2011	National secretariat for student incubators closed		
2012	Danish innovation strategy: Denmark: The Land of Solutions		Government
Phase III	**Integration (2014-)**		
2014	Study completion reform		Government
2015	Expert Committee on Quality in Higher Education Final Report: New ways and aiming higher		Government

Table 2. Overview of student incubators at the five Danish comprehensive universities.

University	**Aalborg University (AAU)**	**Roskilde University (RUC)**	**University of Copenhagen (UCPH)**	**Aarhus University (AU)**	**University of Southern Denmark (SDU)**
Location / total no. students	Regional / 18,500	Regional - in the proximity of Copenhagen / 7,500	Copenhagen - national capital / 38,000	Provincial capital / 43,500	Regional /26,000
SBI name	Inkubator	The Entrepreneurship Workshop	UCPH Innovation Hub	Student Growth House Århus	IDEA House
Office space	20 desks	No office space	15 desks	35 desks	Few desks on different SDU campuses
Clients no.	75 students	-	50 projects	75 projects/120 students	100 students
Established	2003	2009	2007	2008	2005
Annual budget	USD 0.15 mill.	USD 0.05 mill.	USD 0.2 mill.	USD 0.5 mill.	USD 0.1 mill.
Organizational affiliation / total staff	Supporting Entrepreneurship at Aalborg University (SEA) / 4	RUC Innovation / 8	Research and Innovation, Faculty of Science / 17	Aarhus University Centre for Entrepreneurship and Innovation (AU-CEI) / 36	IDEA Entrepreneurship Centre (EC) / 12
Organizational location	University administration.	University administration	Faculty administration	Center	Center
Funding	University basic funding	University basic funding	University basic funding	EU Social Fund, Regional funding, university basic funding	EU Social Fund, Regional funding, university basic funding
SBI staff (est. man years)	1	0.5	2	3	In-kind contribution by IDEA EC
SBI staff activities	Workshops, counselling, camps, network, facilitates student-industry collaborations	Weekly workshop, counselling, network, facilitates student-academic staff-industry collaboration	Workshops, counselling, network, supervising academic staff on I&E pedagogics	Workshops, counselling, network, facilitates student-industry collaboration, supervising staff on I&E pedagogics	Workshops, counselling, camps, network, facilitates student-academic staff-industry collaboration
ECTS-awarding courses	Wofie (one-week workshop for innovation and entrepreneurship)	None	Contributes to course in collaboration with academic departments	Contributes to course in collaboration with academic departments	Innovation summer camps, Science Innovator, Explore and Innovation

Table 3. The occurrence of student incubator-related criteria in Danish university development contracts during 2006-2015.

Period	Aalborg University (AAU)	Roskilde University (RUC)	University of Copenhagen (UCPH)	Aarhus University (AU)	University of Southern Denmark (SDU)
2006-2008	*Quan[1]: no. incubatees (100)	**No indicator in contract**	Quan: No. students on courses and industry practice	**No indicator in contract**	**No indicator in contract**
2009-2010	Quan: No. courses; no. incubatees (100)	Quan: No. course; Qual[2]: Establish incubator	Quan: Courses	Quan: Courses	Quan: Courses Qual: 'New entrepreneurship related initiatives'
2011[3]	Quan: Courses and supervision; no. incubatees (40)	"Canceled this year"	Quan: Courses	Quan: Courses	Quan: Courses Qual: IDEA[4], MSc modules; Venture Cup
2012-2013	**No indicator in contract**	Quan: No. students and teachers on entrepreneurship courses	Quan: Courses; no. student start-ups[5]	Qual: Integration of entrepreneurial elements in teaching	Quan: Courses
2014-2015	**No indicator in contract**	Quan: No. students and teachers on entrepreneurship courses	**No indicator in contract**	**No indicator in contract**	Quan: No. students in entrepreneurship courses

[*] Gray shade indicates that the development contract explicitly addressed SBI. [1] Quan: Quantitative indicators. [2] Qual: Qualitative indicators. [3] One-year contract was applied this year. [4] International Danish Entrepreneurship Academy. [5] The indicator refers to graduate start-ups in general.

Table 4. Word count analysis of university strategy documents' reflection of the research, teaching, and economic development missions.

			First mission	Second mission	Third mission		
Document name	**Period**	**Pages**	**Science/ research**	**Educat*/ teach***	**Innovat***	**Business[1]**	**Entrepre-neur***
Phase I							
Destination 2012: Strategy for the University of Copenhagen	2007-2012	40	20/114	25/4	6	14	0
University of Aarhus Strategy	2008-2012	44	21/141	103/14	2	7	2
Phase II							
Strategy for the University of Copenhagen 2016	2012-2016	44	13/27	19/7	5	4	0
Aarhus University Strategy	2013-2020	72	3/29	19/9	11	7	3
Strategy for Aalborg University	2010-2015	11	8/98	57/3	15	10	5
Strategy 2020 for University of Southern Denmark	2013-2020	20	4/41	1/7	3	4	0
Roskilde University Strategy	2010-2015	19	10/84	71/13	2	1	0
Average			11/77	42/8	6	7	1

* Indicates truncation. [1] This category includes 'industry', 'business', and 'enterprise'.

Table 5. Three institutional logics shaping the SBI diffusion process in Denmark. Logics are expressed based on quotes from policy papers, university strategies, and interviews.

Logic	Commercialization	Classic university	Entrepreneurial culture
Belief system			
The role of the university	• Contribute to economic development and job creation	• Perform free, independent, critical, and deep discipline-based knowledge creation	• Support value creation in dialogue with surrounding society
Basic values	• Research, teaching, and commercialization the core of university • Knowledge is a commodity that can be commercialized by the university	• Research and teaching contribute to societal and personal development • Knowledge is a public good	• Research, teaching, and societal value creation the core of university • Knowledge is a public and/or commercial good
Educational goals	• To educate students about entrepreneurship and business reality • Entrepreneurial students exist and should receive support to establish start-ups	• To provide high quality research-based teaching • Students achieve deep academic insight	• To develop students' that can work integrated with surrounding society • Students should learn to become innovative, creative, open-minded entrepreneurs or employees
Performance criteria	• Student start-ups, staff spin-offs, university-industry/public sector collaborations, IPR license income	• Credit awarding courses, peer-reviewed publications, external funding	• Credit awarding courses, university-industry/public sector collaboration

Valued student competencies	• Enterprising action and commercial insight	• Deep mono-disciplinary knowledge	• Interdisciplinary research, enterprising and innovative behavior
Associated practices	• Knowledge protected by IPR and IPR licensing • Collaboration between university-industry/public sector • Student and faculty test their ideas with a commercial perspective in new and existing firms • Cooperation with business development agencies • Tools-oriented practice-based entrepreneurship teaching	• Basic and applied research in core disciplines based on external funding • Peer-reviewed publications • Mainly mono-disciplinary teaching and training	• Research and teaching linked to innovation through involvement with practice • Interdisciplinary, problem-based learning, and team based teaching • Entrepreneurship and innovation as pedagogical method applied in all disciplines • Research-based entrepreneurship teaching