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Twenty Practices of an Entrepreneurial University

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The idea of an entrepreneurial university caught on fast after the American sociologist Burton R. Clark published his books on entrepreneurship in universities (Creating Entrepreneurial Universities, 1998; Sustaining Changes in Universities, 2004). *Inspired by the alluring of the notion of an entrepreneurial university, and by decreasing levels of state funding for universities, we undertook a study on four very active ECIU universities (ECIU = European Consortium of Innovative Universities,* www.eciu.org). *To evaluate and quantify their level of entrepreneurship, we extracted from Burton Clark's case studies twenty organisational practices against which a university's entrepreneurship can be measured. These twenty practices or factors in effect formed the basis for an entrepreneurship audit. During a series of interviews, the extent to which the universities are seen as entrepreneurial by the interviewees was surveyed. We showed that the practices have been implemented only to various degrees and rather unsystematically. There are important differences among the universities, to some extent depending on the level of ambition that each university has regarding each practice. There are also important similarities; especially that entrepreneurship within universities has to be welcomed and facilitated top-down, but organically occurs and develops bottom-up. Implementing entrepreneurship at universities is thus about stimulating a culture of organic intrapreneurship and we provide practical recommendations and further research options to that effect.*

Introduction

In 1998, Burton R. Clark introduced the concept of the entrepreneurial university. The construct was based on his study of five European universities, *i.e.* Warwick in England, Strathclyde in Scotland, Twente in the Netherlands, Joensuu in Finland and Chalmers in Sweden (Clark, 1998). His main finding was that in order for a university to be entrepreneurial, the organisational culture must be characterised by a collective mindset in which entrepreneurship is facilitated in a combined top-down bottom-up fashion, including a high tolerance for risk-taking. An entrepreneurial university proved to be an organisation where risk-taking is a normal phenomenon when new practices are initiated, and where entrepreneurship is often perceived as taking innovative practices to a commercial profit-exploiting stage. The way in which the transformation of universities into entrepreneurial universities took place was through collective action. Clark noted that this transformation occurs when a number of various individuals come together and agree on a new organisational vision.

The subtitle of Clark's study was "organisational pathways of transformation" and his observations on pathways to the new entrepreneurial university vision can be summarised as follows.

First, at the heart of an entrepreneurial university one finds a strong and expedient central decision-making body able to react to expanding and changing market conditions. In his view, elite institutions can ignore a lack of steering capacity for some period because of the support and influence of other factors such as history, reputation, patronage, resources and competitive status. However, universities that are in a different position or that are more ambitious need to become quicker to react, more flexible and needs-driven in order to refashion and change their capabilities. Fast and innovative mobilisation of resources at all levels is of the essence, so the steering core must be able to embrace the values of managerial practice as well as the values of academia.

Second, entrepreneurial universities have active units, both in mainstream academic and specialist fields, which positively employ a dynamic and flexible approach to external activities and third-party relationships. According to Clark, entrepreneurial universities experience growth in units that cross organisational boundaries more quickly than traditional academic departments. They often do so through linking up with outside professional organisations and groups. Part of this growth is in the proliferation of

professional outreach offices that exist to focus on issues such as knowledge transfer, industrial contacts, intellectual property development, continuing education, fundraising and alumni affairs. Furthermore, the propensity to promote an entirely new periphery of non-traditional units is higher, and outward-reaching research centres are more likely to express non-disciplinary definitions of problems and research areas.

Third, the funding base of an entrepreneurial university displays a high degree of diversity where new and changing sources of funding appear on a continuous basis. Since an entrepreneurial university displays a high-risk profile, access to discretionary funds and a widened financial base is vital. Financial diversification especially occurs in the form of the so-called third stream funding, *i.e.* funding from private business, regional and local government, intellectual property rights, campus services, student fees, alumni fundraising, etc.

Fourth, the core academic units have adopted an entrepreneurial ethos. This is a crucial precondition for an entrepreneurial university since the main control of basic university activities often resides within the academic heartland. For an effective transformation to take place the academic core units need to aspire to becoming entrepreneurial units able to link with external organisations and derive third-stream income. From an organisational point of view, securing the support from the academic heartland is perhaps the most difficult part of being an entrepreneurial university and is often more difficult in social sciences and humanities than in technical sciences. In order to diversify activities and funding effectively entrepreneurs must have management authority and power and this implies a change of power relations that needs to be accepted by departments and faculties. Consequently, the academic heartland must accept a modified version of the traditional university management hierarchy, where administrative managers have power equal to that of professors, department heads and research team directors. Furthermore, the academic heartland must accept that research achievements may be only one of several ways to be merited within the university, others being the ability to teach innovatively, transfer knowledge to the external community, create bridging mechanisms, etc.

Fifth, the culture of the entrepreneurial university embraces entrepreneurship into its working practices and, in general, change is simultaneously welcomed, fostered and absorbed by the organisational culture. When an entrepreneurial culture begins to flourish it has a tendency to reinforce itself. Success with entrepreneurial practices will deepen an entrepreneurial culture, building strong roots and sustaining the capability to develop into a university-wide set of beliefs. If an entrepreneurial culture is to

be observed only in fractions of a university, some university-wide entrepreneurial actions are needed that are guided by a macro-institutional perspective and exerted by a strong central core.

Clark's initial insights about how universities embark on the pathways for transformation were elaborated upon in his subsequent study (Clark, 2004). Clark revisited the five universities that were central in his 1998 study and included a number of new cases, comprising Makerere University in Uganda, The Catholic University of Chile, Monash University in Australia, and a number of American universities, *i.e.* Stanford, MIT, University of Michigan, UCLA, North Carolina State University, and Georgia Institute of Technology. Clark observed both previously described practices and a number of additional organisational practices. He thus elaborated on his observations from earlier on. In his second book he stressed that a transformation to being an entrepreneurial university does not come about by focusing on one or a few practices. Transformation requires the simultaneous existence of seemingly opposite practices that involve a mutual reinforcement between stability and change. For instance, he points to "a 'steady state' infrastructure that pushes for change" and "includes a bureaucracy of change" (Clark, 2004, p. 5). He characterises the organisational foundation of the entrepreneurial university as "the steady state for change" (*ibid.,* p. 92) and discusses "how transformation and sustainability interrelate" (*ibid.,* p. 178). These are powerful metaphors as they combine concepts that basically contradict one another, but taken together they do signify strong organisational dynamics, effectively, in entrepreneurial universities where the status quo is to change continuously.

In order to capture the increasing complexity of Clark's concept of the entrepreneurial university, we decided to extract from both of Clark's books a list of pertinent organisational practices. This inventory was created by a detailed review of Clark's studies; we noted the instances in which he describes the various organisational practices in his case studies. We compressed them into twenty practices (see Appendix A). We subjected this list to a quantitative assessment as part of our interviews with key players at four ECIU universities. The purpose of our survey was to scrutinise the sobriquet of the entrepreneurial university and arrive at problem identifications and ensuing recommendations regarding the entrepreneurial universities studied (see also *Higher Education Management and Policy*'s Special Issue on Entrepreneurship, Shattock, 2005).

Recent approaches to the entrepreneurial university

In recent years, the literature on the entrepreneurial university has proliferated, as has the amount of related policy strategy documents pertaining to universities and their "commercialisation" throughout the world. This has

happened in a period of time when universities in most countries experience a decrease in the basic public funding for teaching and research. It seems reasonable to suggest that the fascination of the entrepreneurial university comes not only from the theoretical and practical attractiveness of the concept, but also from basic financial necessity. In fact, tracing the changes in the conditions for academia in Australia, Canada, United Kingdom and United States between 1970 and 1995, Slaughter and Leslie (1997) found that governments gradually give more priority to commercially oriented research at the cost of funding for basic research, and that public funding of education is continuously decreasing. In consequence, universities need to find alternative sources of funding in order to survive; this quest for alternative funding leads to "academic capitalism" in terms of a proliferation of market-oriented activities throughout university centres and across faculties. The increasing number of market-oriented activities is stimulated by a growth in support structures like technology centres that are able to create new sources of income but at the same time lead to "change in the knowledge base of fields, the organisational structure of the disciplines, and institutional resource allocation patterns" (Slaughter and Leslie, 1997, p. 176).

When observing the recent trend in academic capitalism, Slaughter and Leslie did not like what they observed. Their main concern was: What will happen to the autonomy of universities? They saw university autonomy decreasing, forced moves into academic capitalism and strategic research programmes. Some faculties will suffer more than others from this process. In effect, they call out for re-establishing the autonomy of universities by general public funding. This is quite different from the approach of Burton Clark (1998, 2004) who seems to accept that conditions have changed in favour of entrepreneurial universities. However, he is not at variance with Slaughter and Leslie (1997) regarding the need for autonomy. Discussing how to address the market, he distinguishes between two pathways: one that is "not only state-led but also system-centred and top-down in viewpoint" and one that is "not only university-led but institution-centred and bottom-up in understanding and advocacy" (Clark, 2004, p. 180). According to Clark, the "state-led pathway is clearly not one appropriate for change in complex universities in the fast-moving environments of the 21st century" (*ibid.*, p. 182). Instead Clark argues in favour of the second pathway to addressing the market. He claims that it must be applied in a diversity of ways: "… complex universities operating in complex environments require complex differentiated solutions: One hundred universities require one hundred solutions" (*ibid.*, p. 183). Thus, even though common practices may be identified their combinations are highly contextual.

Etzkowitz (2003) describes the occurrence of the entrepreneurial university as part of a historical process by which the university adds to its mission of

teaching and research a third mission of "economic and social development" (Etzkowitz, 2003, p. 110). He phrases the adding of a third mission as the "second academic revolution" as opposed to the first one that "made research a university function in addition to the traditional task of teaching" (*ibid*.). As part of the second academic revolution, research groups become quasi-firms in the sense that they "operate as firm-like entities, lacking only a direct profit motive to make them a company" (*ibid*., p. 111). The increasing business-orientation of research groups is accompanied by the creation of liaison offices, technology transfer offices and incubators, in an almost linear fashion where research results are transferred through various organisational arrangements to a stage of commercialisation (Etzkowitz, 2004).

To some extent inspired by Clark, Etzkowitz (2004, pp. 65-66) observes what he calls "norms of the entrepreneurial university":

- capitalisation of knowledge;
- interdependence between university, industry and government;
- independence of the university as an institution;
- hybridisation of organisational forms in order to resolve the tensions between interdependence and independence;
- reflexivity in the sense that the internal structure of the university changes continuously "as its relation to industry and government changes", and that the same happens to industry and government "as their relationship to the university is revised" (*ibid*., p. 66).

The point of view that Etzkowitz holds on the entrepreneurial university regarding the autonomy of universities is in contradiction to the point of view held by Slaughter and Leslie (1997) – because universities operate in complex and changing environment and have the capacity to change, by developing hybrid forms, they will be able to operate autonomously to a high degree. Clark (2004, pp. 179-184) adopts a medium position, arguing that universities need to be autonomous in order to be effectively entrepreneurial, but fearing that top-down state-led entrepreneurship may twist the nature of the entrepreneurial university.

An important issue touched upon both by all three approaches presented so far, *i.e*. Slaughter and Leslie (1997), Clark (1998, 2004) and Etzkowitz (2003, 2004), is the occurrence of conflicts on values and practices as part of organisational tensions which accompany the evolution of the entrepreneurial university. Clark (2004) is especially focused on how to create the mindset necessary for entrepreneurship, the basic problem being that traditional academic values differ from the values implied by entrepreneurship and that researchers are more often assessed according to the former rather than the latter, particularly in the social sciences and humanities than in the technical sciences. However, as evidenced by

Sotirakou (2004) in her study of organisational changes at 56 Commonwealth universities, value conflicts are only a part of the organisational conflicts to be resolved in becoming an entrepreneurial university. Incompatibility between assignments, responsibilities, expectations and resources become organisational tensions often creating numerous and serious role conflicts, especially at old universities when compared to young universities. Thus, the process of hybridisation argued by Etzkowitz and Clark requires careful deliberation on how to avoid goal conflicts and the resulting fatigue or inertia in the flexible university organisations.

The idea of universities being able to accommodate constant changes through hybridisation, brings connotations of the organisation theory of the "learning organisation" (Pedler *et al.*, 1991; Burgoyne *et al.*, 1994; Easterby-Smith *et al.*, 1999), the flexible organisation (Gjerding, 1996, 2003; Volberda, 1998) and the knowledge-creating organisation (Nonaka and Takeuchi, 1995; Krogh, Ichijo and Nonaka, 2000; Nonaka and Nishiguchi, 2001). All of these approaches are based on the notion that organisational dynamics derive from reconciling seemingly contradictory practices. They also share the idea that entrepreneurial practices emanate from within individuals and small organisational groups. Entrepreneurship cannot be solely decided upon top-down, but evolves bottom-up. In effect, we are not only dealing with entrepreneurship, but also with intrapreneurship that is increasingly recognised as the prerequisite for large organisations becoming entrepreneurial (Hitt *et al.*, 2002). Indeed it is even one of the main lessons from our empirical study to which we turn now.

Methodology

As mentioned at the end of the introduction, the purpose of our study was to scrutinise the sobriquet of the "entrepreneurial university" and identify specific problems and resultant recommendations regarding the individual universities studied. Consequently, the authors decided to focus on how entrepreneurship is perceived and pursued at each university by key players and to derive recommendations based on that understanding. The present study relies on a relatively small number of key individuals that are in a position to influence the direction of the universities in question. It is based on the assumption that the perceptions and opinions of key individuals are valid images of the policies and practices pursued by each university included in the analysis.

The operational objective of the study was to determine whether the universities in question were as they claim entrepreneurial, and how they can achieve an even greater entrepreneurial culture. The study took into account that there may be conflicting demands arising from the dynamics required for entrepreneurship, that formula-driven government funding may impose

financial pressures, and that quality standards in teaching and research must be maintained. In order to pursue the objective of the study, we had to reflect more on the implications of the Clark studies on the entrepreneurial university before conducting the interviews. In that spirit, three observations were made.

Firstly, the notion of an entrepreneurial university implies that universities have to operate on the basis of external pressures and demands that in some instances may limit how entrepreneurial universities may be. A key requirement is to educate graduates to meet the (inter)nationally required standards of the Bachelor and Master degrees, defined by formal definitions of competence levels and the content of these levels. Another key requirement is that the research of universities must conform to international academic standards on how good subject knowledge is produced and what good subject knowledge is. Funding of university activities is to a large extent regulated by these two requirements. Thus, the definition implies that entrepreneurship can only be pursued to the extent that the university fulfils its key obligations.

Secondly, the notion of an entrepreneurial university presupposes that the university operates within a context on which it depends. Since the context of each studied university is different, differing also across nations, the extent to which the universities are entrepreneurial must be defined with due reference to the unique context in question. This implies therefore that it seems impossible to define a uniform standard of university entrepreneurship when several universities within different national contexts are analysed.

Thirdly, our study had to take into account that the notion of an entrepreneurial university is not a very well or clearly defined concept. As explained previously, the concept is quite broad and relies on references to practices from several different universities within different national contexts. In order to develop a workable definition, we listed the various practices that Clark described in his cases and compiled them into an inventory of entrepreneurial organisational practices. The process of compilation resulted in the identification of twenty organisational practices (Appendix A). By organisational practices we mean "particular ways of conducting organisational functions that have developed over time" and by now have become taken-for-granted because "they reflect the shared knowledge and competence of the organisation" (Kostova, 1999, p. 309).

During the preparation of the study, the authors realised that they had to reconcile two analytical requirements. The point of departure of the study was that the research questions could be answered with reference to the decision-making reality of influential and informed players. The basic assumption of this choice is that key individuals can be sufficiently powerful to create and drive entrepreneurship within universities, partly through the creation of strong organisational structures. However, these key individuals and

organisational structures cannot *a priori* be assumed to operate in a way that corresponds with the twenty practices that we have identified from the Burton Clark studies. They may (and presumably do) act according to a different logic. Thus, it becomes important to discover this logic before assessing the degree of entrepreneurship of the universities implied by the inventory of practices. At the same time the research questions require that the logic discovered within the Burton Clark definition is confronted.

In order to confront both the logic of the key individuals and the logic of the twenty practices, a three-step analysis combining a qualitative and a quantitative approach was chosen. First, a number of interviews with key players at each university were conducted. The interviews were based on a limited number of questions that were kept open and asked informally in order to let the respondents reveal their thoughts about being entrepreneurial and the type of practices that need to be in place for entrepreneurship (cf. Appendix B). Second, the key players were asked to assess the extent to which their university complies with the twenty practices that we identified by analysing Clark (1998, 2004). Third, the resulting data was analysed.

The analysis reveals what the respondents think about entrepreneurship and which practices they think make their university entrepreneurial; which practices facilitate or create barriers to entrepreneurship; and how entrepreneurship within their universities can be further developed. The analysis also reveals how the respondents perceive their universities according to the Burton Clark definition. Finally, our analysis uses both data sets in order to make recommendations for furthering effective entrepreneurship in universities.

The basic approach of the study is hermeneutic, in the rather conventional way described by Arbnor and Bjerke (1997) and relying on the notion of sense-making (Weick, 1995). Instead of relying on a uniform definition of entrepreneurship, the study assumes that entrepreneurship may have different meanings in different contexts, depending on the people involved in entrepreneurship. The report aims to understand the actions, influences on the actions, perceptions on internal activities and interpretations of the social reality within which universities operate. The way in which the study creates knowledge is by discovering how key people interpret their context and actions, and what type of conclusions they arrive at on the basis of their perceptions. In essence, this means that entrepreneurship is seen as a social and contextual reality that is co-constructed by the individuals involved in that reality.

The hermeneutic approach implies that the data created during the analysis is derived through qualitative analysis. The qualitative analysis primarily takes the form of open questions in order *not* to impose the pre-understanding of the group members on the respondents. Instead, the

respondents have a large degree of freedom to define and describe what they mean by entrepreneurship and entrepreneurial practices. The influence of pre-understanding only occurs in the case of asking the respondents about the twenty given practices. Even in this case the hermeneutic approach is maintained, as the respondents appear to interpret the twenty practices very differently and are not influenced by the interviewers in doing so. As a consequence, any recommendations that come out of our study are highly influenced by what we as interviewers/authors have learned from the respondents. The recommendations can be seen as the outcome of a dialogue between and reflection of the authors and the respondents.

The respondents were chosen on the basis that the set – per university – should represent the following aspects:

- significant experience in university administration;
- position as an academic head of faculty/department/school;
- recognition as a successful entrepreneur within the university;
- independent of the university and able to provide an informed view from the outside;
- background in providing professional services/support activities related to entrepreneurship.

In total twenty-five interviews across the four participating universities were conducted with a range of four to six taking place at each university. This figure includes six respondents who were involved in piloting the research instrumentation. The main findings reported are based on the remaining nineteen interviews, including the quantitative assessment of the twenty practices that took place at the end of the interviews.

The interviews took place in four steps. *First*, the respondents were asked to define an entrepreneurial university and then describe in what sense they think that their university is entrepreneurial, and which main activities and people make their university entrepreneurial. These questions allowed for the respondents to define the agenda for the interview. *Second*, the respondents were invited to reflect upon the agenda by describing the key facilitators and barriers to entrepreneurship at their university. This part of the interview aimed to dig further into the state of effective entrepreneurship, as perceived by the respondent. *Third*, the process initiated in step two focussed the responses on the distinctive entrepreneurial characteristics of their university, and practices that could be developed or implemented in order to make their university even more entrepreneurial. Besides pointing to possible recommendations, step three also served as a further validation of what had been previously stated during the interview. *Fourth*, the respondents were asked to look at the university environment in order to find people and

organisations that are, or could become, important to the entrepreneurship of their university. Besides pointing to recommendations, the fourth step helped to make the respondent less focused on the practices within the university, if such a focus had occurred.

The interviews created a process of reflection and dialogue that increasingly validated what the respondents were saying, not only to the interviewer but also in their own minds. This created an interview where the respondent reflected on more than one question at a time.

At the end of each interview, the respondent was asked to assess on a five-point scale the extent to which his/her university complies with the twenty entrepreneurial practices that the authors have identified (*cf.* Appendix A). The purpose of the assessment of the twenty practices was to create a scoring matrix for comparison, both across the respondents within each university and across all the universities in question. Comparison of the scores indicated the following:

- the extent to which the universities comply with the inventory of practices;
- areas where changes are needed according to the inventory of practices;
- difference of opinion among respondents;
- the relevance of the practices to the universities in question.

The derived score list informs the recommendations made in this article.

In the following sections, the insights on entrepreneurial practices that were obtained during the interviews will be described with respect to four main areas:

- how the respondents define an entrepreneurial university;
- how the respondents understand the entrepreneurial practices of their universities;
- the main facilitators and barriers to entrepreneurship;
- the distinctive entrepreneurial practices and suggested areas for change at each university.

Defining an entrepreneurial university

During the conversations with the respondents – on how to define an entrepreneurial university – three main issues emerged:

- the relationship between being innovative and entrepreneurial;
- the importance of making money;
- the relationship between internal and external entrepreneurship.

In essence, all universities are supposed to be *innovative*, and they always are if innovative means that research and education are continuously developed and

pointed in new directions. However, being innovative does not necessarily mean that the university is *entrepreneurial*. Most respondents associate entrepreneurship with external collaboration by which the university contributes to the development and formation of companies and the evolution of society in general. Being entrepreneurial is regarded as time-specific, meaning that the university is located in a certain period of time and that the extent to which the university is entrepreneurial depends on the university's ability to contribute to the needs of firms and society in that period of time. One respondent summarised this issue by saying that being entrepreneurial today means that the university transforms itself from operating in the industrial society to doing so in the knowledge society. In order to be able to transform itself, the university must be innovative and externally co-operating at the same time.

The debate on entrepreneurship often equates entrepreneurship with *making money*. That is, the university should embark on activities that generate an incoming cash flow from the outside world. To some extent, the respondents were divided on this issue, presumably reflecting differences in traditions and funding across nations. While the aspect of generating commercially viable ideas and activities is widely agreed upon, the aspect of making money was most strongly pronounced in only one case and less pronounced in another case, with the remaining two cases taking middle positions. In all cases, gaining external funding is considered important and is actively pursued, but the emphasis on making money as a strategic objective in itself differs across universities. Some respondents point to the fact that the logic and time horizon of academic and market-oriented activities are often quite different, and the recognition of this point of view as part of a strategy for entrepreneurship may be one possible explanation for the observed difference.

Generally, entrepreneurship is not only perceived as a phenomenon that has to do with *external* relationships, but with *internal* relationships and activities as well. Several important features are pointed to. First, there need to be sufficient support structures that can assist researchers with getting funding, protecting intellectual property rights, commercialising viable business ideas, managing projects and so on. Second, the administrative part of the university organisation itself needs to be innovative and entrepreneurial. Third, there must be a willingness to take risks, financially and intellectually, and regarding intellectual risk there must be an academic recognition of high-quality applied research. Fourth, entrepreneurship must pertain not only to research and administration, but also to education because the whole ethos surrounding educational activities highly influences what is going on in other parts of the university.

The distinctive entrepreneurial features

Regarding the extent to which the universities are innovative and entrepreneurial and the main stakeholders and activities which contribute to this, several themes occurred as the respondents reflected on these questions.

The *history* of the university is very important because it defines the general ethos of the university, a history of being entrepreneurial means that the university is to some extent entrepreneurial in what it is doing, even though the management's or researcher's focus on entrepreneurship may weaken from time to time. Especially in two of the cases, the young age of the university provoked an entrepreneurial atmosphere because staff still feel that they had to prove themselves *vis-à-vis* the older and more traditional universities.

The *culture* of the university regarding the willingness to take risks and the willingness to promote applied research backed up by strong basic research is highly conducive to entrepreneurship. An important part of organisational culture is how flexibly rules are interpreted, and more specifically how rules can support entrepreneurship, but also when not to apply rules and rely on broad, activity-directing values instead. Finally, an ethos that emphasises the importance of external co-operation and the role of the university in the development of start-up firms and society has stimulated entrepreneurship at all the universities and is especially conducive in cases where there is a strong focus on solving real-life problems through collective research and learning.

Being entrepreneurial is subject to *diversity* at each university, simply meaning that some parts of the university are more entrepreneurial than others. The differences in being entrepreneurial are determined by three background factors. First, some fields of research and teaching, especially within the technical sciences, attract tertiary funding more easily and thus have better opportunities for being entrepreneurial. Second, some of the support structures for entrepreneurship are better linked with some parts of the university than others. (In fact these two points seem to be closely linked.) Third, the ethos of some fields of research and education offers fewer stimuli to entrepreneurial activities than others.

Finally, an *understanding of commercialisation* seems important at all universities. A recognition that entrepreneurial ideas have to be commercially viable enhances the ability to co-operate externally with firms and other organisations. However, many respondents differed in regard to the extent to which the universities in question are successful in creating and promoting commercially-viable ideas and the extent to which this should take precedence over other types of external collaborations.

Facilitators

The basic facilitators for entrepreneurship may be grouped into four main factors:

- organisational culture;
- supporting organisational structures;
- strategy in practice;
- external co-operation.

Regarding *organisational culture*, the ethos of the organisation seems to be crucial. If entrepreneurship is a basic value guiding what people are doing, the university will experience entrepreneurial activities even in cases where supporting infrastructures, funding systems and the like may not be ideal for promoting entrepreneurship. A culture of free discussion and inter-disciplinarity in research and teaching is conducive to entrepreneurship, especially if there is no contradiction between the academic virtue of publishing and the entrepreneurial virtue of co-operating with external partners. In general, it is important that the researchers understand and respect the culture of those with whom they co-operate.

Even though a university cannot be entrepreneurial without key individuals with a strong entrepreneurial spirit, *supporting organisational structures* need to be in place in order to facilitate entrepreneurial activities. Lump sum budgeting and a dynamic management mindset combined with supporting entities committed to entrepreneurship are essential, as is funding that can be used flexibly. Potential external partners often mandate matching internal funding. Thus it is important to have ready access to internal funds set aside for this purpose.

The type of *strategy* that the university leadership pursues *in practice* (rather than on paper) is important to entrepreneurship; a strategy that combines strong leadership with decentralised degrees of freedom seems preferable. A combination like this must take a form where individual researchers and groups of researchers are allowed to take intellectual risks without effectively risking their jobs and academic reputation. Associated incentive structures, financial and otherwise, need to be in place.

External co-operation is also an intrinsic feature of a university being entrepreneurial. Fields of technical science appear to offer more opportunities for external co-operation than human and social sciences. Human and social sciences do not academically offer fewer opportunities for external co-operation, but in practice this has been the case because of the availability of funding. Taking a key role in the development of the region in which the university is located stimulates external co-operation and hence entrepreneurship. However, it is also important that the university adopts a

national and global perspective in order to find partners that are sufficiently sophisticated for co-operation, especially important is co-operation with industry and support structures for company spin-offs.

Barriers

Logically, the major barrier to entrepreneurship is an absence of the key facilitators to entrepreneurship mentioned above. However, apart from this, the respondents' comments on barriers indicate that the basic barriers for entrepreneurship may be grouped into five main factors:

- flexibility of administration and regulation;
- risk-averse culture;
- absorptive capacity and recruitment of external users;
- long-term commitment to external co-operation and applied research;
- systems for spin-offs.

Regarding *flexibility of administration and regulation* there seems to be a tension between the governmental and administrative need for rule-guided behaviour and the entrepreneurial activities' need for flexible solutions. Lack of transparency in rules and administrative decisions, too centralised decision-making, and HRM policies which prevent flexible hiring in projects can stifle, or block, entrepreneurial initiatives. Low quality of administrative support is often experienced as a problem. Furthermore, management is often not project-oriented and planning cycles are too rigid.

A *risk-averse culture* often characterises the management decisions when it comes to the allocation of resources to new initiatives and the freeing up of existing resources to new forms of use. There is a tendency for management to equate entrepreneurial activities only with making money rather than with developing the quality of research, teaching, and external co-operation. In general, incentive structures need to be unambiguous and tuned to entrepreneurial activities, *e.g.* in the form of demand structures that result in positive incentives. Lack of security, job-wise and intellectually, prevents people from taking risks. Finally, in many cases, there is a general resistance to organisational change, both among administrators and researchers.

External users are often hard to come by, in the sense that many external partners do not have the knowledge or the willingness necessary for co-operating with universities. To some extent, the university must educate external users and provide them with opportunities they cannot refuse. Furthermore, a lack of alumni activities and effective lobbying mean that the university can miss entrepreneurial opportunities. Finally, the lack of a university "showcase" and worn-out buildings are often detrimental to external co-operation.

There is a need to strengthen *long-term commitment* in several fields. Often, money is more easily allocated for short-term purposes than long-term strategies which can limit the scope for sustainable entrepreneurship; resources for basic research that form the foundation for applied research are needed. Finally, there is a need for closer co-operation between the different research groups at the university as fragmentation of the university organisation into many different groups makes it more difficult for external partners to co-operate on a broad scale. However, de-fragmentation must not take place at the expense of decentralised decision making.

Systems for spin-offs are, in general, lacking. The universities are not sufficiently focussed on assisting students or faculty members to create start-up businesses. Seed capital is lacking, and there is often a lack of good practical business ideas. This is due to the primary educational and research focus rather than a focus on entrepreneurship while the knowledge and insights available within universities are generally underutilised by outsiders.

Contrasting the four universities with the entrepreneurial practices

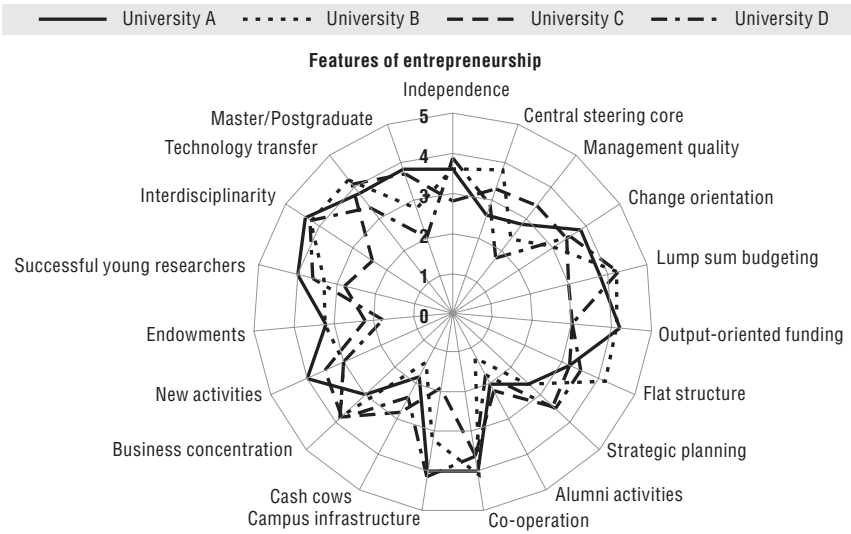
As explained previously, the respondents were asked to assess the extent to which their university adheres to the twenty entrepreneurial practices outlined in Appendix A. Each of the practices was scored on a 1-5 scale (see Figure 1 that shows the average score for each university). As can be seen from Figure 1, the universities display different profiles and the values across the twenty practices are unevenly distributed. However, since the number of observations is small the results must be interpreted with care. Calculating the arithmetic average value from the average values of the individual universities and pointing out where the variance of each of the twenty practices is more than 0.25, seven practices appear to display notable differences across the universities (*cf.* Table 1). These differences are touched upon in the following and explained on the basis of what has been learned from the interviews.

Regarding the *management quality of staff*, no university scored particularly highly. This implies that further investment in training and development of staff is required in order to promote greater entrepreneurship. In one case the low score was related to the problematic installation of a new IT management system; substantial performance loss resulted from staff being unable to properly make use of the new system. This, in turn, was largely due to poor staff development and training opportunities.

In terms of *output-oriented funding* Universities A and B were felt to perform particularly well, reflecting that output-oriented funding is a very well-established feature at these universities.

Figure 1. **The twenty Burton Clark practices at the four ECIU universities**

Average scores



Values:
1. Very poor 2. Poor 3. Okay 4. Good 5. Excellent.

Considering the *campus infrastructure* University C performed badly and the respondents generally recognised a substantial need for estate refurbishment and development.

Cash cows did not rate very highly at any of the universities, although Universities B, C and D considered them to be strategically important.

Concerning *endowments* University D scores lower than the rest, because there is no tradition of this within the nation in which this university is based. Whilst A and B did not emphasise endowments and were content with the scores given, C had recently decided to give endowments priority, thus finding the current situation unsatisfactory.

Regarding *interdisciplinarity*, all universities apart from C scored highly. Within A, B and D interdisciplinarity is considered as important and actively pursued, especially at A which has a strong tradition in the field.

Finally, A and C scored above average on *master/postgraduate* activities, whilst B and D scored below average. Within the former postgraduate activity has always been emphasised. The Bologna conversion to the bachelor/master system has yet to be implemented at B and D. Particularly in University D the focus was traditionally more on research than on teaching.

Table 1. **Ratings of the twenty Burton Clark practices**

Practices	Average value at each university				Total average	Variance	Std dev
	A	B	C	D			
Independence	3.6	3.6	2.8	3.9	3.5	0.16	0.40
Central Steering Core	2.6	3.8	3.3	2.9	3.1	0.21	0.45
Management Quality	2.8	2.4	3.4	1.8	2.6	0.36	0.60
Change Orientation	3.8	3.0	3.4	3.5	3.4	0.08	0.29
Lump Sum Budgeting	3.8	4.2	3.0	4.3	3.8	0.25	0.50
Output-oriented Funding	4.2	4.1	3.0	3.0	3.6	0.34	0.58
Flat Structure	3.2	4.2	3.2	3.5	3.5	0.17	0.41
Strategic Planning	2.6	2.6	3.4	3.5	3.0	0.18	0.43
Alumni Activities	2.0	1.3	2.2	1.8	1.8	0.11	0.34
Co-operation	4.0	4.1	3.6	3.6	3.8	0.05	0.22
Campus Infrastructure	4.0	3.2	1.9	4.1	3.3	0.79	0.89
Cash Cows	1.8	1.4	2.8	2.4	2.1	0.29	0.54
Business Concentration	3.0	3.8	3.8	3.9	3.6	0.13	0.36
New Activities	4.0	3.0	3.5	3.0	3.4	0.17	0.41
Endowments	3.2	3.2	2.2	1.8	2.6	0.40	0.63
Successful Young Researchers	4.0	3.3	2.8	3.6	3.4	0.19	0.44
Interdisciplinarity	4.4	4.2	2.4	4.3	3.8	0.67	0.82
Technology Transfer	3.8	4.2	4.1	3.4	3.9	0.10	0.32
Master/Postgraduate	3.8	2.8	3.7	2.0	3.1	0.54	0.74
Spin-offs	3.8	4.2	3.6	4.1	3.9	0.06	0.24
Proportion of practices with an average value > 3	70%	65%	55%	60%			

Scale: 1. Very poor 2. Poor 3. Okay 4. Good 5. Excellent.

The results endorse the practices of the entrepreneurial university culture. They highlight that universities striving to be recognised as entrepreneurial need to ensure that entrepreneurship is ingrained within their identities. It points to the fact that the change of organisational identity requires time and effort. While teaching and research are firmly perceived as part of a university's identity after the second academic revolution, the inclusion of entrepreneurship as a third part is still in its infancy, however evolving at increasing pace (Jacob and Helström, 2000; Etzkowitz, 2004). This goes for the universities we studied as well. Even though they consider themselves entrepreneurial and increasingly do expand activities, much still has to be done before entrepreneurship is fully integrated into teaching and research.

As it appears from Table 1, only 55-70 % of the entrepreneurial practices are valued by our respondents above the middle value of the 5 point scale that was used for scoring the practices. In the following, we point to the entrepreneurial practices that the individual universities need to address,

based on the scoring of the practices. The evidence from the interviews is used here again as a source for interpreting the scoring of the practices.

At University A the respondents attached a value greater than 3 to 70 % of the entrepreneurial practices. However, even though the university appears to be quite entrepreneurial, entrepreneurship is unevenly distributed across faculties. While the technical faculty is renowned for being entrepreneurial, entrepreneurship is less prevalent at the faculties for humanities and social sciences. In terms of the entrepreneurial practices, the university performs comparatively poorly with regards to a strong steering core, strategic planning, alumni activities and cash cows. The respondents generally agree that a strong steering core is less marked than at the other ECIU universities, and that strategic planning is generally lacking in terms of well-communicated plans. Generally, the decision-making culture has relied on decentralised decision-making within broad guidelines. Alumni activities and cash cows play a small role and is not in general emphasised by the university management, partly because it is not part of the tradition for higher education management within the country to which University A belongs.

At University B the respondents attached a value greater than 3 to 65 % of the entrepreneurial practices. In terms of the Burton Clark practices, this university performs comparatively low in terms of management quality of staff, strategic planning, alumni activities, cash cows and master/postgraduate activities. Regarding management quality, the university has implemented new IT management systems without also nurturing sufficient changes in management processes and associated staff development and training opportunities. In terms of strategic planning, alumni activities and cash cows there is commonality with University A. Finally, the low score in master and postgraduate activities may be explained by the fact that the national university system to which the university belongs is still in a period of transition to the bachelor/master system.

At University C the respondents attached a value greater than 3 to 55 % of the entrepreneurial practices. Furthermore, it also has the largest numbers of practices in the categories of "poor" and "very poor". This is a highly surprising result as this university is well regarded and externally perceived to be innovative and entrepreneurial. However, the interviews indicate that even though the university is highly innovative it is not necessarily entrepreneurial. This is a strong indication that innovation should not be confused with entrepreneurship when considering the entrepreneurial university. Furthermore, the respondents appear to have high ambitions and thus tend to score the entrepreneurial practices comparatively lower. This clearly indicates that any comparative study of the practices must take into account that different groups of respondents across a sample of universities may differ in the level of ambition that they attach to how the practices are implemented and used.

At University D, the respondents attached a value greater than 3 to 60 % of the entrepreneurial practices. In particular the quality of the finance staff, alumni activities, the ability to attract endowments and an insufficient share of master/postgraduate students was rated lowly. The scores reflect a general feeling among the respondents that the university needs to focus more on disseminating an entrepreneurial spirit throughout the university, co-operating closer with firms and external funding sources, and upgrading the skills of support staff.

Reflections on our results

Regarding the *general findings* of our study, it is important to notice that most of the respondents associate entrepreneurship with external collaboration through which the university contributes to the development and formation of companies and the evolution of society in general. The growing importance of external collaborations is increasingly being recognised by higher education managers and scholars in the field of university management, and has during the recent years been phrased in terms of the triple helix model (Leydesdorff and Etzkowitz, 1996; Etzkowitz and Leydesdorff, 2000). According to the triple helix model, the relationships between universities, industry and government become increasingly intertwined, creating activities of collaboration where the different rationalities of universities, government and industry are bridged and merged. The activities of collaboration will change through time and assume various forms, creating a diversity of structures that we also have been able to observe through our study. Although the notion of a triple-helix has yet to gain a general acceptance within the scientific community (Shinn, 2002), it seems promising in the sense that it "stresses historical continuities" of the relations between universities, industries and government (*ibid.,* p. 600), "has developed an empirical base, in the form of multiple case studies" (*ibid.,* p. 604), and "explicitly addresses concrete and pressing problems of government, academic and industrial policy" (*ibid.,* p. 605). Furthermore, it is "accompanied by a theoretical framework that takes the form of self-organisation and co-evolutionary theory" (*ibid.,* p. 606). The findings that we have reported above indicate that the key actors that we interviewed are very much aware that entrepreneurial practices depend on the persistence of external relationships and the evolution of bottom-up organisational practices.

Thus, the notion of a triple helix captures the perceived reality of our respondents and seems to be a promising line of future research. However, our findings indicate that in order to pursue future research on the entrepreneurial university, one has to take into consideration that establishing an entrepreneurial university involves developing an entrepreneurial culture while addressing the practical problems of higher education management. These issues have only been addressed to a modest extent by the triple helix research. In effect, we recommend that future studies on the entrepreneurial university

aim at integrating theories and insights on entrepreneurship and intrapreneurship, organisational culture and higher education management.

In a recent contribution Clark (2005) stresses the importance of cumulative analysis in terms of institutional case studies. The way in which we have approached institutional case analysis in our study is by way of grounded theory, employing a hermeneutic approach. Instead of relying on a uniform definition of entrepreneurship, our study adopts the approach of Burton Clark in assuming that entrepreneurship may have different meanings in different contexts, depending on the people involved in entrepreneurship. The study aims to understand the actions, influences on the actions, perceptions on internal activities and interpretations of the social reality within which universities operate. Thus, the way in which our study creates knowledge is by discovering how key people interpret their context and actions, and what type of conclusions they arrive at on the basis of their perceptions. In essence, this means that the study sees entrepreneurship as a social and contextual reality that is constructed by the individuals involved in that reality.

Ideally, we should have had further post-interviews to inform the respondents of the overall results from the interviews and then conduct renewed dialogue based on the findings, especially focusing on how the answers to the open questions correlate with the scoring of the twenty entrepreneurial practices. The dialogue should then have continued until some sort of intersubjective agreement on entrepreneurship had been arrived at. Due to time limits this was not possible.

Taking this limitation into consideration, our study still implies some important recommendations for the management of higher education. It is vitally important to develop a clear and commonly agreed upon understanding of what entrepreneurship contextually means and how it is applied (and why) to a specific university. This understanding must be operational in terms of goals regarding teaching, human resource development, innovation, and creation of value for society and monetary profits, and how these goals relate to academic achievements. Especially important is to include an assessment on the type of risks that the university management is ready to accept and how risk-taking affects academic careers. It is necessary to strike a balance between central steering and entrepreneurial freedom that allows self-organising processes to occur. Self-organising processes require a flexible yet highly professional support structure that responds to the demands of entrepreneurial activities. Demands through which entrepreneurs are rewarded in terms of free resources, time for research, academic recognition and to some extent monetary rewards.

These recommendations come directly out of the reactions to our open questions that the respondents have given. It appears from our study that even though the four universities we studied strive to become fully-fledged

entrepreneurial universities, they still have a long way to go. The impression from the interviews is that if the recommendations implied by our inventory of practices are met, entrepreneurship will catch on and spread throughout the university organisation. We might summarise this conclusion in terms of "viral entrepreneurship – catch it and share it". However, considering the present state of the universities that we studied, our *bon-mot* of "viral entrepreneurship – catch it and share it" may be described as an inspirational strategic vision rather than as a reality. Instead, the present state of the universities that we studied may be phrased as "virtual entrepreneurship", referring to the fact that entrepreneurial ventures occur on a small scale surrounded by an institutional "baggage" that is truly a different context or mode of operating. Thus, with inspiration from managerial theory, we may argue that "intrapreneurship" is the more proper term to describe the phenomenon under study. In effect, we recommend that insights from the growing literature on intrapreneurship is applied in future cumulative studies of entrepreneurial university practices, particularly when studying university cultures, including the degree of affinity between entrepreneurial ventures and their institutional contexts.

In conclusion, we would like to add a final word of caution and recommendation for future research reflecting on the method that we have used. The type of grounded theory approach that we have applied in our study implies that we rely heavily on the perceptions of our respondents without taking into consideration how these perceptions are affected by the organisational culture and climate within which our respondents live their lives as organisational members. This approach is in line with the approach of scholars like Etzkowitz and Leydesdorff who analyse the entrepreneurial university as a type of general standard of organisational practices that can be achieved across various cultural and national settings. However, the organisational culture and climate constitute the institutional setting within which entrepreneurial practices can be envisioned, developed and implemented, and therefore future studies of the entrepreneurial university have much to gain from drawing on the diversity of theoretical perspectives that have been developed in the field of organisational culture (see for example Ashkanasy, Wilderom and Peterson, 2000, for an overview). Especially in the case of comparative studies across cultures, lessons from theories on organisational culture and climate as well as *intra*preneurship become important.

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APPENDIX A

The Twenty Burton Clark Practices

1. **Independence of government funding**

   The university does not need to seek approval from governmental offices for major investments, *e.g.* to establish new scientific branches (for research and teaching), commercial units, etc.

2. **Emphasis on a central steering core**

   There is a strong and decision-orientated senior management group delivering expedient outcomes on entrepreneurial requests; participation of wider academic and student committees is less important.

3. **Management quality of staff (especially in finance)**

   The university hires quality professionals and offers sufficient staff development programmes to maximise their input and retention.

4. **Entrepreneurial culture**

   The administration and academic staff have a culture of change rather than a rule-based orientation; they prefer innovation and realisation of new ideas instead of strong rule-executing.

5. **Lump sum budgeting**

   The university is largely permitted to use government funding as it wishes (*e.g.* it can transfer funds between personnel, IT, estates and other infrastructure and investments) and can retain annual unspent income (*e.g.* to set up strategic funds).

6. **Output-oriented contracts with financiers**

   Government, foundations and other financiers funding is calculated and based on measurable outputs and outcomes, and these are monitored through regular reporting.

7. **Flat structure**

   Reporting barriers and hierarchies are minimised between the centre and base units in order to shorten idea creation and associated decision-making processes.

8. **Mission statement and strategic plan**

   There is a well-communicated paper which is a guideline for all the strategic decisions and objectives of the university.

9. **Extensive alumni activities**

   There is a programme of extensive and appropriate alumni-funding or other alumni support activities.

10. **Co-operation with industry and other (excellent) universities**

    The university realises possible synergies in research, investment in research equipment, teaching and other useful activities with a network of excellent individuals and institutions.

11. **Competitiveness of campus infrastructure**

    The campus and its environs are attractive environments for the recruitment and retention of excellent students.

12. **Additional funding through "cash cows"**

    Establishing third-stream income sources, *e.g.* conference centre, management/business school, other offers for "lifelong learning", hotel, etc.

13. **Focus on a limited range of teaching and researching fields**

    Management of the university should not be over-stretched through extremely diversified activities in fields which are outside of the core know-how.

14. **Monitoring future opportunities in teaching and research**

    The university has a permanent sight on the development of the teaching and research markets and reserves resources for fast response to such market developments.

15. **Attractiveness for endowments**

    The reputation of the university, its plans and alumni attracts regular and substantial donations.

16. **Attractive environment for young researchers**

    The university recruits and retains successful young researchers because they can attract students and donors and carry out innovative research.

17. **Interdisciplinary research structure**

    There is an established organisational structure in research and teaching which supports intra-organisational co-operation.

18. **Technology transfer**

    There are well-established/structured technology transfer processes into the region.

19. **High share of master and postgraduate students**

    New teaching income streams are developed by thinking beyond traditional/historical reliance on undergraduate activities.

20. **Service-offers for spin-off/out companies**

    There is logistical support for gaining risk capital, consultation, office and small production facilities, finding guarantors, etc.

APPENDIX B

The Open Questions of the Interviews

How would you define an entrepreneurial university?

In what sense do you think that this university is entrepreneurial? What are the main activities and people that make this university entrepreneurial?

What do you think are the key facilitators in this university for entrepreneurship – if possible please identify the main three?

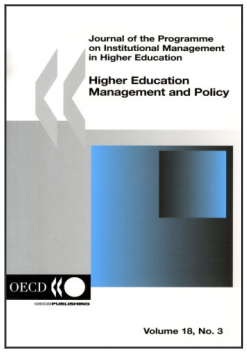
What are the (three) key barriers in this university to entrepreneurship?

Is there anything unique or distinctive about this university's entrepreneurial practices?

What else could this university do to increase entrepreneurship? Are there any practices you think are missing which ought to be in place?

Are there any external individuals or organisations that have major influence on entrepreneurship, either as a facilitator or obstacle? Are there any external people or organisations that you would like your university to co-operate with in order to facilitate entrepreneurship that it is not currently co-operating with?

Is there anything else we should know, but didn't ask or discuss, about this university as an entrepreneur? Could you point to other universities that you find entrepreneurial to an extent that you would like this one to be?



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