

Towards future university by integrating Entrepreneurial and the 3rd Generation University concepts

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Abstract

This paper focuses on analyzing the two interrelating concepts of entrepreneurial university and 3rd generation university. We argue that by understanding their similarities and differences we can learn to develop the practices of future universities. By adopting entrepreneurship in university transitions is not only related to the understanding of entrepreneurship but also related to the institutional and structural changes. Here by identifying the differences in interpreting the characteristics and the concept on entrepreneurship in 3rd generation and entrepreneurial university we suggest that they also lead to fundamental differences in curriculum development and pedagogy. Thus by being aware of these differences university can make choices for future actions in entrepreneurship education.

Introduction

According to Etzkowitz (2004), the second academic revolution, integrating a mission for economic and social development, is transforming the traditional teaching and research university into an entrepreneurial university. Wissema (2009), on the other hand, approaches the current transformation through the concept of the 3rd Generation University. According to him, universities are changing in a fundamental way due to the increasing competition for funding, students and academics as well as government demands for technology-based economic growth. As both of these scholars' ideas about university transformation demonstrate, it has become evident that today's social and economic development is tied to the university's mission, with entrepreneurship playing an integral role in it (see, for example, Survey of Entrepreneurship Education in Higher Education in Europe 2008).

However, it is not so obvious how entrepreneurship is understood or adopted in research of the entrepreneurial university and, consequently, university practices. One common definition that is well supported in the entrepreneurial university discussion describes the entrepreneurial university as a university that behaves like an enterprise, competes for external research funding and emphasizes business-like efficiency (e.g. Liesner 2006). This view highlights knowledge transfer responsibilities and activities (Martinelli, Meyer & Tunzelmann 2007; Bramwell & Wolfe 2008) and focuses on the external outcomes of entrepreneurship such as new venture creation and

commercialization of research findings (Schulte 2004; Searle Renault 2006; O’Shea, Allen, Morse, O’Gorman & Roche 2007).

Another popular model for the entrepreneurial university is the “triple helix model” (e.g. Etzkowitz 2000) which is based on academic-industry-government linkages forming a spiral pattern of cooperation (Goldstein 2010). This model suggests new understandings and metrics for traditional teaching and research missions, internal organizational changes that are more conducive to collaboration (both internal and external), new modes of governance and management and new institutional capacities (ibid, 88). On a closer look, this view is also resonates with the knowledge transfer view with emphasis on advancing economic development through the strategy of technological innovation. Common to these definitions is the managerialistic (Hjorth 2003a) view on entrepreneurship, often linking it to pure economic activities and small business scale (for example Fayolle & al. 2005). Whereas managerial processes are processes mainly of control, normality, and standardization, the “entrepreneurial” approach is about play, anomaly, and movement (Hjorth 2003a, 260).

Adopting an entrepreneurial view that is based strictly on commercialization and knowledge transfer can lead to difficulties in promoting and bringing entrepreneurship into universities as Dreisler, Blenker & Nielsen (2003), Souitaris, Zerbinati & Al-Laham (2007) and Renault (2007) have argued. According to Goldstein (2010), the “entrepreneurial turn” in the university institution is somewhat conflicting with the norm of open science. Also in Finnish context such general difficulties in bringing entrepreneurship to universities have been reported (e.g. Paasio, Nurmi & Heinonen 2006). We take this critique as a sign for a need to revisit the roots of the entrepreneurial and the 3rd generation university to allow us to reflect on differences and similarities.

To resolve these problems, it has been suggested that we ought to have a broader understanding of entrepreneurship. For example, a survey on entrepreneurship in higher education (The European Commission 2008) recommends that all levels (EU, national and institutional) need to embrace a broad definition of entrepreneurship as a state of mind applicable to all settings and aspects of life. Thus entrepreneurship, broadly understood, refers to *the way that individuals and organizations create and implement new ideas and ways of doing things*, respond proactively to the environment, and therefore initiate change involving various degrees of uncertainty and complexity (Schumpeter 1934, Landström 1998). Its focus is on opportunity discovery and exploitation as well as in the pursuit of opportunities beyond current resources (Stevenson & Gumpert, 1985).

Kirby (2006) argues that the entrepreneurial university is based on favorable attitudes towards entrepreneurship in the society, academic people believing on their own abilities in the field and the university staff believing it is an intrinsically rewarding subject. (Brandt, Jacobs & Kruger 2006; in the Finnish context Hokkanen 2001 and Forsman 2007). Considering the social barriers of entrepreneurship (e.g. Mattila 2007) that the “entrepreneurial turn” has made visible in the university context, there is a need to have a closer look at both the transformation and the university processes linked to it.

These findings indicate to us that adopting entrepreneurship in university transitions is not only related to the understanding of entrepreneurship but also related to the institutional and structural changes as well as the interplay between strategy, curriculum, pedagogy and teaching. Thus there is

a need to understand, on the one hand, the institutional and structural changes in universities and their relationship to strategy, curriculum, pedagogy and teaching and, on the other hand, how the understanding of the entrepreneurial university is related to broader economic and social development in society.

The concept of the 3rd generation university and entrepreneurial university both strive to understand these fundamental changes by adopting the concept of entrepreneurship as a catalyst and driving force for the university transition. However, even though they share this ambition, we argue that they still have some fundamental differences in their premises and focus that need to be reflected in order to better understand the problems and opportunities universities come across in adopting entrepreneurship in the current transition. Accordingly, the aim of this research is to gain better understanding of the current university transition by comparing the entrepreneurial and the third generation university concepts and their roles in the university transition.

The roots of the entrepreneurial and the 3rd generation university

The roots of the entrepreneurial university – emergence of entrepreneurship in transitions

The need for change in transitions and entrepreneurship seem to be inherently tied together. As seen by Hjorth (2005, 396), entrepreneurship plays a role of creating disruptions and breaks within normalizing and regulating forces, or, as Nyström (1995, p. 67) formulates it, the focus is on the promotion and implementation of change. More broadly, the entrepreneurial university bases can be drawn from the historical development of entrepreneurship, suggesting that its emergence and importance is related to two transitions: modern and post-modern transition.

The first, modern transition, took place at the beginning of industrialization from the 18th to the beginning of the 20th century (Dillard 1967, Beck & al., 1995, Harvey, 1990, Turner, 1990). Out of the modern transition developed the modern era, which, for its part, started to draw to its close in the 1970's, when the post-modern transition occurred.

The main characteristics of these transitions are change and complexity, which affect social life, businesses and economies. In fact, the role of entrepreneurship relates to change in its broad sense from two perspectives: on one hand, it creates new practices, while, on the other, it breaks down old systems and institutions (Kyrö, 1997, 2000, 2001). Both of these transitions focus on the needs for change in society, in economy and in institutions and education. In the transition from traditional to modern, the focus was on the freedom and prosperity of citizens, their contribution to economy and rights for education. In the modern era between these transitions when the growth of western economies was predictable and provided by large organizations, the target of entrepreneurship changed (Barreto, 1989, Bell, 1981). According to Schumpeter (1996), based on his research in USA, declining economic importance of the entrepreneur as one of the major forces in the economy was lost, since innovations were no longer connected to the efforts and brilliance of a single person, but to the outcome of the organized effort of large teams. The role of entrepreneurship was marginalized and started to refer to small business management and ownership. Innovations were connected to large organizations. When the Western world experienced a decline in growth rates in the 1970's, followed by the notions of complexity and unpredictability, again a new stream emerged in discussions (Piore & Sabell, 1984). The discovery that new work wasn't actually created by large

organizations but by rather small firms and organizations stimulated this discussion (Drucker, 1986). In this post-modern transition, entrepreneurship has penetrated into organizational and learning theories with its original features, aiming to renew practices and to break up old systems. (Gibb, 1993, Fiet, 1999, Petrin, 1991, Pinchot & Pinchot, 1996).

The perceived qualities of entrepreneurship remained unchanged during this development: entrepreneurs were seen as extraordinary human beings who, with freedom and responsibility for their own life, through their own efforts and thinking, by recognizing opportunities and by exploiting them, created something new, which in turn generated economic progress (Barreto, 1989, Casson, 1982, Wilken, 1979). Towards the end of the modern era the scientific base expanded to psychology, sociology, social psychology as well as to anthropology (Landstoö, 1998; Fillion, 1997; Tornikoski, 1999). During the post-modern transition these approaches got support from management, marketing and education (Alberti, 1999, Gorman and Hanlon, 1997, Grant, 1998, Scott, Rosa & Klandt, 1998). The most recent forms of entrepreneurship relate to changes in public spheres, global inequality and environmental problems, with the concepts of social, public and eco-environmental entrepreneurship prominent in the global landscape. In Europe, besides the economy, entrepreneurship is connected to the demand of strengthening the role of active citizenship and democracy.

The 3rd generation university and its relationship to the entrepreneurial university

Compared to the entrepreneurial university also the 3rd generation university concept draws its premises from the historical changes, but in a way that is different from that of the entrepreneurial university. Where the entrepreneurial university concept is closely tied with the history of entrepreneurship and with its role in and relationship to new demands in society and economy, the third generation university concept draws its premises from the needs and problems universities face as an outcome of these changes.

As Wissema (2009, xiii) argues, the demand for the 3rd generation university is due to several forces that propel the need for the change. The first is related to the costs of cutting-edge scientific research that the budgets of governments cannot provide. The second is globalization, leading to competition in three fronts: students, academics and research contracts. The third trend is due to a change in governments' view about the role of universities in society: universities are asked to exploit their knowledge more actively as incubators of new science and technology-based commercial activities. The fourth and the fifth trends concern the need for changes in university management, as multidisciplinary research teams and faculties increase the overall complexity and a huge increase in the number of students has led to bureaucracy.

Table 1: The characteristics of the generations of universities (Wissema 2009)

	1 st generation	2 nd generation	3 rd generation
Objective	Education	Education + research	Education + research + know-how exploitation
Role	Defending the truth	Discovering nature	Creating value
Method	Scholastic	Modern science, monodisciplinary	Modern science, interdisciplinary

Creating	Professionals	Professionals + scientists	Professionals + scientists + entrepreneurs
Orientation	Universal	National	Global
Language	Latin	National languages	English
Organization	Nationes, faculties, colleges	Faculties	University institutes
Management	Chancellor	Part-time academics	Professional management

However, when looking at the transitions of Wissema's (2009) university generations and the history of entrepreneurial university on the same time line, the transition from the first generation university to the second generation one occurs in the era that both views call modern transition. The second transition (Wissema 2009) of the university from modern to postmodern (Kyrö 1997) in the late 20th century creates again a challenge for change in the university institution. For the entrepreneurial university approach in each transition period, entrepreneurship emerges and promotes change (Kyrö 1997), but for Wissema's university generations entrepreneurship is harnessed to enhance change only in the latest transition.

Wissema (2009, 2-23) distinguishes three generations of universities, starting from the medieval university transformed to the Humboldt university and followed by the future 3rd generation university. According to Wissema, each generation emerges via a period of transition.

Wissema describes the medieval universities as "strong organizations in their own right and in the protection they enjoyed from state and Church alike". They were based on the use of Latin language and academic freedom. The main task of the medieval university was education linked defending and finding the truth and obedience to the doctrines of the church. The transition towards the Humboldt University was rooted in the era of societal change between the Renaissance and the Enlightenment, a change where the rise of Humanism as an intellectual movement could be seen. In the entrepreneurial university and in the transitional approach to the development of entrepreneurship (Kyrö 1997), the first transition from traditional to modern emerges between these two university transitions. In the transition from traditional to modern, the focus was on the freedom and prosperity of citizens, their contribution to economy and rights for education.

The second generation university enhanced the meaning of research based on the "modern scientific method", including objective, systematic and reproducible experimentation and transparent argumentation. Following the 19th century nationalism, the Humboldt University gave education in the national language. Universities were seen as instruments of understanding nature in all its forms. In general, there was a sharp boundary between industry and universities. In the second transition period, as Wissema (2009, 22) sees it, universities were experimenting with models for commercialization or exploitation of know-how, with new organizational structures, marketing activities and new ways of financing. Thus they can argue that they became instruments for economic growth. This took place when the Western world experienced a decline in growth rates and was accompanied by the notions of complexity and unpredictability. In this transitional stage, entrepreneurship again emerged as means to facilitate and carry out the change.

Thus by integrating the entrepreneurial university with Kyrö's transitional approach to entrepreneurship and the development of Wissema's three university generations on the time line, their relationship can be identified. The emergence of entrepreneurship occurs during the transitions between the three generations as demonstrated in Figure 1. Thus entrepreneurship seems to take the role of the change agent in transitions, and universities are taking the role of institutions carrying on this change.

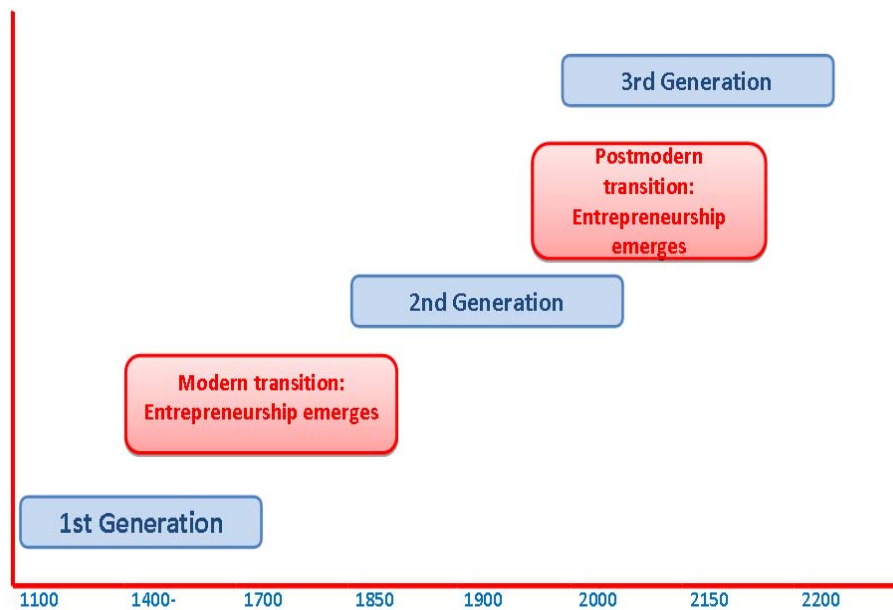


Figure 1. The history of universities and entrepreneurship (integrated from Wissema 2009 and Kyrö 1997)

But comparing the nature and the role of the entrepreneurial and 3rd generation university, there is a fundamental difference in their goals and characteristics. Whereas in the concept of 3rd generation university, entrepreneurship is a tool to enhance technology transfer to enhance the competitiveness of universities, in the entrepreneurial university it has a proactive role in advancing economy, welfare and equality in societies.

Thus considering the essential role of and expectations towards entrepreneurship, it is important how it is understood and used in transitions and adopted to education in universities. As Paasio, Nurmi and Heinonen (2006, 22) have stated, one should become aware of the multiple definitions of the entrepreneurship, in order to be able to support the varying roles of the university, not just from the knowledge transfer point -of-view. Thus next we compare what kind of consequences these different roots and aims have in education and curriculum development.

The curriculum comparison between entrepreneurial and 3rd generation university

As curriculum researchers claim changing curriculum, like developing a curriculum reform, is about making changes in societies and institutions. The curriculum legitimates the idea of “right” knowledge and proceedings being thus a powerful document that gives the basis for educational movements (Flouris & Pasiadis 2003; Littledyke 1997; Marsh 2004, 117). At university level

curriculum is supposed to be embedded in the strategy, developed by research communities and then finally expressed as curriculum aims and competences in the curriculum for each degree.

As for example the ranking of the EU survey (The European Commission 2008a) on entrepreneurship education in European higher education institutes indicates, how entrepreneurship is embedded in the institution's overall strategy and setting out goals for the entrepreneurial activities differs greatly between the top and bottom institutions. When Top institutions have adopted the broader understanding of entrepreneurship, the bottom institutions have a tendency to focus on narrow business oriented definitions. Considering these differences to be able to reflect university transitions there is a need to better understand what kind of consequences different approaches and definitions have in curriculum.

The entrepreneurial university approach is also related to educational reforms. In the postmodern transition this emerged by questioning previous learning paradigms and by bringing the concept of entrepreneurial learning to renew the curriculum and pedagogy throughout the education system. Entrepreneurial learning as defined by Hjorth (2011, 60) can be seen as a social creation process with openings or gaps for learning. Changing educational thinking emerges in national and in institutional curricula development as well as in changing learning practices. The current change adopts again the broad understanding of entrepreneurship demanding action based experiential pedagogy and real life context with new research on how questions such as how to enhance entrepreneurial competences in education. These competences, behaviours and practices as for example Gibb (2005) argues can be applied individually and collectively to help individuals and organisations of all kinds, to create, cope with and enjoy change and innovation involving higher levels of uncertainty and complexity as a means of achieving personal fulfilment. Accordingly entrepreneurship education research nowadays focuses on pedagogy and the processes of learning (Fayolle, Kyrö & Uljin 2005; Gorman, Hanlon & King 1997; Luethje & Franken 2003). This development has undergone different phases. In the beginning of 1990s trait theories were questioned and claimed that entrepreneurship can be taught. Then at the end of 1990s the focus was on the question of what is entrepreneurial or enterprising learning followed by the questions of how to teach entrepreneurship since 2005. Few years later this was accompanied with such questions as who an entrepreneurial teacher is and how to develop entrepreneurial environments to enhance entrepreneurial and enterprising behaviour and competences. Finally since 2010 the focus has changed towards such questions as how to develop entrepreneurial mindset, identity, pedagogy and entrepreneurial learning environments.

However, the process of how to learn and teach these competencies is still in its infancy and leaves many essential concepts and processes unexplored (Hayton & Kelley 2006; Cope 2005). In universities this change is accompanied by structural changes, global alliances and quality demands. This interactive entrepreneurial learning process is emerging from the interplay among single actors as well as between structural layers (Lauring & Christensen 2006, 4). Thus it can take many forms

Wissema (2009) describes in detail what kind of curriculum, courses and teaching practices would best serve the purpose of educating 3rd generation university technostarters. He underlines the need to develop business making skills and decision making competences to start a business. The first stage in the curriculum contains awareness program. Next stage involves turning technology into business and

further for those who have serious intentions to start the business will be taught analytical tools, decision making competences and presented successful role models. Teachers should help the students to make the decision to start a company. Teaching method consist of lectures, case studies, management games and workshops.

Thus even with some similar aspects in curriculum and learning these two approaches demonstrate some fundamental differences too. 3rd generation university seems to have a narrow, business and focus. It underlines the need to educate business skills for those who will start the technology companies. Entrepreneurial university approach has a broader understanding of entrepreneurship and it mainstreams the layers and practices in university.

Summary of the characteristics of the 3rd generation and the entrepreneurial university

Even though both the entrepreneurial university and the 3rd generation university approach hold that entrepreneurship actually is a tool to carry out change in transitions, they have different focus on this. According to Wissema, the need for change in universities is due to the increasing competition over funding, students and academics as well as to government demands for technology-based economic growth kicked off by university-driven IT companies. The entrepreneurial university regards entrepreneurial attitudes, practices, competences and behavior as key drivers to advance needed social, economic and cultural changes in society. Accordingly, whereas the entrepreneurial university focuses on these change processes and competences the 3rd generation university adopts technology-based economic growth from university innovations as a key driver and an opportunity to entrepreneurial education.

According to Wissema (2009), the 3rd generation university is built on university-industry collaboration, commercialization of scientific results and know-how exploitation in the form of technology-based firm creation. University is seen as (Schulte 2004, 187) behaving in an entrepreneurial manner itself, organizing business incubators, technology parks, and the like, involving students in these organizations and, through them, assisting students and graduates in the founding of businesses. Thus the university will contribute to the development of its region, and through co-operation with other entities, to economic development in general. As Wahlbin & Wigren (2006) put it, universities are considered to be a seedbed for entrepreneurship, and students and faculty are expected to establish new firms. Entrepreneurial university, on the other hand, exists not only for reasons of economic growth but also for increasing welfare in society by solving varying societal problems. By embedding entrepreneurship in the strategy, structure and activities of the university, entrepreneurial behavior and mindset are enhanced.

The role of the 3rd generation university is based on the concept of technology transfer, which can be defined as tacit knowledge exchange between universities and local actors (Bramwell & Wolfe 2008, 1176). Universities, which can be seen as multifaceted economic actors embedded in various regions, not only produce codified knowledge and human capital, but also participate actively as important institutional actors in building and sustaining local networks and flows of knowledge and in linking them with global ones (ibid, 1178). Mapping knowledge-exchange relationships (Martinelli et al 2007, 259) is central to the university taking the technology-transfer approach, this being seen as an important part of the know-how carousel (Wissema 2009, 35) based on a close cooperation with industry and other R&D institutes.

In Wissema's (2009, 165) view entrepreneurship is based on the idea of identifying and exploiting inside university developed opportunities. For example the research findings are seen as opportunities for commercialization and generating new businesses ideas that first have to be recognized and then grasped. This follows the traditional/functionalist or "objectivist" approach as Johannisson (1992, 156) calls it, that "consider[s] the entrepreneur to be an economic actor with the function to introduce, more efficiently, ways in which to use available physical and financial resources for existing or new ends." The entrepreneurial university described here has a broader view on opportunity process and is based on the need for finding solutions and contributing to economy and society.

Table 2 summarises these differences and specifics by following some of Wissema's criteria of identifying the differences between university generations and some fundamental cornerstones in the focus of these two approaches.

Table 2. The characteristics of the 3rd generation university and those of the entrepreneurial university

	3rd generation university	Entrepreneurial university
Basis	<p>External changes in the university institution in society</p> <p>Increasing economic growth with new businesses by adopting new technologies</p> <p>Drawn from the need to compete for funding, students and academics</p>	<p>Need for changes in society and economy</p> <p>Proactively advancing economy, welfare and equality in societies</p> <p>Drawn from the need to change the culture, practices and pedagogy in university</p>
Objective, role and focus	<p>Exploiting know-how that is commercialization of knowledge</p> <p>Technology -based economic growth</p> <p>Academic start-up activities</p>	<p>Solving economic and social problems for creating welfare</p> <p>Entrepreneurial mindset, behavior and practices</p> <p>Entrepreneurial competences</p>
Institutional and structural change	<p>Managing university processes for know-how exploitation and entrepreneurship</p> <p>Less dependent on state regulation and funding</p>	<p>Resulting from the entrepreneurial process</p> <p>Leading and supporting innovation, creative processes and communities</p> <p>Entrepreneurial culture surpassing boundaries and degrees</p>
Strategy	<p>Strategy-driven R&D management</p> <p>Innovativeness achieved through strategic planning - Innovation Pentagon: Strategy, organization, partners, technology</p>	<p>Entrepreneurship embedded in the overall strategy</p>
Curriculum, pedagogy and teaching	<p>Aims at educating technostarters</p> <p>Entrepreneurship as a skill, business and entrepreneurship as additional subjects</p>	<p>Aims at creating entrepreneurial mindset, behavior and practices</p> <p>Broad understanding of entrepreneurship</p>

	<p>Awareness programs, obligatory introduction to entrepreneurship Teachers help the students to make a decision to start a company Teaching methods: lectures, case studies, management games, workshops</p>	<p>Learning happens in the openings and gaps that the entrepreneurial process creates Learning as a social process Action- based experiential pedagogy Real- life context studies</p>
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The 3rd generation university has built-in entrepreneurial elements. The strive towards students taking the entrepreneurship path is supported mostly with structural and managerial actions. Furthermore, the view on entrepreneurship remains rather limited, concentrating on how to enable and promote start-up activities. We believe there is more to the entrepreneurial university that stems from deeper entrepreneurial insight woven into the curriculum and pedagogy. The interest is not targeted only to the external entrepreneurship, meaning new venture creation and start-ups but also to the individual or organization acting entrepreneurially, being initiative, creating new openings, renewing, surprising and grasping opportunities (e.g. Hjorth 2003a and 2003b)

The analysis of the roots of two concepts shows how entrepreneurship seems to appear in the junction of the entrepreneurial university and 3rd generation university. However, we see that the paths only cross and then lead to different routes, 3rd generation university following the technology transfer path and the entrepreneurial university the entrepreneurship education path. The difference originates in the conceptual level of understanding entrepreneurship.

As regards the need to transform the university for the next phase, the viewpoint of the third generation university differs from that of the entrepreneurial university. The entrepreneurial university is driven by internal transition forces whereas 3rd generation university is triggered by the external changes in the university institution in society. The 3rd generation university relies on well-structured and managed transformation towards university creating enterprises and entrepreneurs. The entrepreneurial university enhances entrepreneurial spirit throughout entrepreneurship education, embracing the emergent nature of entrepreneurship. For example, while the 3rd generation university concept draws its premises from technological transfer and the needed outcome and institutional change, the entrepreneurial university addresses its focus on the entrepreneurial process needed to change society and economy and further university practices. Thus these processes are related to cultural change within institutions, to curriculum development and pedagogy.

To summarize, the 3rd generation university means technology and competition oriented approach to create new ventures and businesses based on university inventions and to advance knowledge transfer from universities to enterprises, which is in line with the managerialistic view of university executing entrepreneurship in university-industry collaboration. The entrepreneurial university, in our understanding, reaches out for a broad understanding of entrepreneurship, which is not solely tied to the economic interpretations, to solve the emerging problems in society. With the post-modern transition and the introduction of entrepreneurship to organizational and educational thinking, there is a need for change in how we teach, learn and research in the next phase university.

Discussion

The results of this analysis indicate that even the concept of 3rd generation university and entrepreneurial university both strive to understand fundamental changes of the university transition, they have fundamental differences in their premises and focus. Thus to adopt entrepreneurship in the university context is far more complex than thought. The results here indicate that how entrepreneurship is understood and adopted in university context has impact on its practices, management, curriculum and pedagogy. Since entrepreneurship in universities seems to take the role of the change agent in transitions and universities are taking the role of institutions carrying on this change it is important to reflectively and intentionally make choices between different aims and goals in order to reach the goals universities have set to their activities and impact in society. Thus by learning from the differences, roles and approaches of the 3rd generation and entrepreneurial university universities can reflect their own aims and practices.

Since this conceptual study only identifies these differences there is a need to further study these concepts in authentic context.

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