Entrepreneurial university as the most important leverage in achieving knowledge-based society

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ABSTRACT

In a world where change is the only constant, the role of education, and especially higher education, is becoming increasingly important.

The question arises whether universities will be capable to carry out the needed reforms in order to occupy an important place in the development (economic and political) of a country. Each of activities of the university (teaching and research) should make its contribution to the development of society, taking into account responsibility towards community and society in which it operates ("culture of accountability").
In order to fulfil its task, universities need to redefine their mission, vision and activities and replace their traditional approach with a new, contemporary approach, which has been named "entrepreneurial approach" by many authors.

Entrepreneurial answer offers a formula for institutional development of university in which university defines and determines its autonomy, ensures diversified financing (and thus decreases its dependence on the state), develops new university departments and activities in accordance with society's demand, and leads to structural changes, which are securing better university's capacity in responding to changes.

The objective of this paper is to present the model of entrepreneurial university and test it at J.J. Strossmayer University in Osijek; to determine the way in which this university perceives its environment, how it reacts to changes, and how close, or how far from entrepreneurial university it is and what needs to be done to change it.
Result of this paper can help management of J.J. Strossmayer University in Osijek in conducting needed changes, but also to all other Universities in Croatia to understand the process of creating entrepreneurial university and urgency to do it.

1. INTRODUCTION

We live in times of great and continual change. Changes are occurring in all fields - from social and economic, to technological, political… No one can afford not to use the wealth of opportunities that are brought by changes in environment in which they live, because they would thus lose the chance to live in a better world. Global competition and new technologies are fathering the need for new skills and knowledge, needed for work. It is difficult to predict the speed of change, but it is certainly greater than any answer to it there currently is (Kirby 2004, Negroponte 1996, WB 2002).
It has become clear that our response to these challenges will have a profound influence on our future as a nation. In such world, where change is the only constant, the role of education, and especially higher education, is becoming increasingly important.

The question arises whether universities will be capable to carry out the needed reforms in order to occupy an important place in the development (economic and political) of a country.
In order to fulfil its task, universities need to redefine their mission, vision and activities and replace their traditional approach with a new, contemporary approach, which has been named "entrepreneurial approach" by many authors.

Entrepreneurial answer offers a formula for institutional development of university in which university defines and determines its autonomy, ensures diversified financing (and thus decreases its dependence on the state), develops new university departments and activities in accordance with society's demand, and leads to structural changes, which are securing better university's capacity in responding to changes.

This paper is consisted from three parts; first part talks about importance of higher education in general and universities in particular for economic and social growth. In order to fulfil its task, universities need to redefine their mission, vision and activities and replace their traditional approach with a new, contemporary approach, which has been named "entrepreneurial approach" by many authors. Second part of the paper is trying to give an answer to following questions: What is "entrepreneurial approach" of university and how (and why) to change university to become entrepreneurial. Third part is giving an example of University of J.J. Strossmayer in Osijek – how far (or how close) is this university from entrepreneurial concept?

2. ROLE OF TERTIARY EDUCATION IN ECONOMIC AND SOCIAL DEVELOPMENT

Tertiary education has a prominent place in this framework, because it provides highly educated people, but also represents the basis for information dissemination and spreading of the culture of use of knowledge.

2.1. Knowledge is the key factor of development (if it is used)

Society's capacity for creation, selection, commercialization and usage of knowledge constitutes the key prerequisite for sustainable economic and social development and improvement of quality of life of each individual. Competitive advantages are no longer based on possession of natural resources, but on possession of certain knowledge and skills. Knowledge is increasingly at the core of a country's competitive advantage (Porter 1990, Delanty 2001, David&Foray 2002).

Today, growth is more in the function of accumulation of knowledge than in accumulation of capital. According to the World Bank report from 2002[1], investments of OECD countries in research and development, education and software, i.e. investments in that what comprises the knowledge base, are either greater than or equal to investments in physical equipment. Companies are dedicating at least a third of their investments to intangibles like employee training, research and development, licensing, design and marketing. International competition has imposed and increased the importance of employment of knowledge and possession of information. The key to success on today's global market is to use knowledge better than the competitors. In so doing, it is demanded from companies to actively participate in creation of that knowledge, which imposes the need of connecting companies with universities, as institutions whose primary activity is "production of knowledge". Investment in development of a country's knowledge base is the main prerequisite for survival in the world market. In the contemporary context, the penetration of knowledge into all spheres of life is clearly one of the major characteristics of the age (WB 2002).

[1] Constructing Knowledge societies: New Challenges for Tertiary Education, The World Bank, Washington, D.C., 2002

2.2. Role of Tertiary education in society

Tertiary education[2] has the central role in society's answer to challenges brought by globalization. It is the foundation for the development of knowledge-based economy; it secures research and analysis, which make it possible to face the oncoming problems and opportunities, and represents important connecting points of national and international environments (Neave 2002, WB 2002). Therefore, the existence of quality and sustainable tertiary education institutions is one of the fundamental requirements of every modern democratic society.

Without adequate higher education that secures critical mass of educated and qualified people, no country can ensure sustainable growth and progress, and developing and undeveloped countries will not be able to decrease the gap that separates them from industrially developed countries. Higher education is facing a great challenge of adjusting to the newly arisen situation and the growing role in the society that belongs to it. Many international institutions, including the World Bank, point out in their numerous reports the importance of the role of knowledge and education for social and economic development. Education is the foundation for creation, dissemination and application of knowledge, as well as for building of country's technical and professional capacities. It is precisely the inadequate preparedness of tertiary education institutions in countries in transition and developing countries to answer the requirements of global competitive society that is emphasized as one of the principal reasons for marginalization and lagging behind in the world economy.

The role of education in general and of tertiary education in particular, is now more influential than ever in the construction of knowledge economies and democratic societies.
Tertiary education, in its training, research, and informational role, is vital if countries are to adapt to these far-reaching changes. Tertiary education is indicated as vital because it has a direct influence on national productivity, which to a great degree determines the quality of living of the individual and the capability of the country to compete and participate in globalization processes.
Universities are the most important respresentative of higher education institution. Their research (especially) and teaching performances are the basis for success (or otherwise) in the knowledge-based economies that mark the contemporary era (King, 2003).

[2] According to definition by the World Bank, universities are the key element of tertiary systems of education, but the diverse and growing set of other public and private institutions also constitute a part of the system. These are: colleges, technical training institutes, community colleges, nursing schools, research laboratories, centers of excellence, distance learning centers, and many more. All of these form a network of institutions that support the production of the capacity necessary for development. – Constructing Knowledge Societies: New Challenges for Tertiary Education, The World Bank, 2002, Foreword, page.ix.

2.3. Role of university in the contemporary world

Of the institutions that had been established in the Western world by 1520, 85 still exist – Catholic Church, the Parliament of the Isle of Man, of Iceland and of Great Britain, several Swiss cantons, and 70 universities. Of these, perhaps the universities have experienced the least change. (Kerr 2001, p.115)

Universities are facing great political and economic changes. Public pressure for easier access to higher education, governments' expectations of universities' involvement and contribution to the socio-economic development of the country, and the demands for applying the principles of market economy and organisation management in their own organisation have created a new context of development of higher education. Univiersities cannot any longer be viewed just as parts of national educational system, protected by the state and in charge of study and research programs. In a highly competitive world, universities have to fight for students, research and financing, they have to pay a great deal of attention to development of relations with external stakeholders, which requires a complete change of their current way of management, financing, internal structure and external relations, as well as the ways of carrying out activities (van Ginkel 2002).

Changes with which universities throughout the world (and especially in Europe) are faced, which impose the need for adaptation and change of these institutions, can be classified into five basic categories (Communication of the Commission, 2004): **increased demand for higher education** *–More persons will attend colleges and universities in the next century than in all of human history* (Goodman, A., Preface in Altbach et al. 1999); **internationalization of education and research** – this trend has been significantly accelerated by the development of information and communication technology. Increased competition appears as the result of internationalization; competition between different universities, competition between states, but also competition between universities and other institutions, such as, for example, public or private research institutes; **increase in the number of institutions which produce knowledge –** due to globalisation and technological development, production of knowledge, innovations and dissemination of knowledge are no longer primarily reserved for universities (Hagen, 2002). The increasing number of places in which knowledge is produced has created a great pressure on universities if they want to maintain the leading position. Leading professor from Oxford and founder of the Manchester Business School believes that universities have outlived their usefulness ("... For the first time there are more clever people outside universities than inside", Hague D., cited by Hagen 2002:205); **reorganisation of knowledge –** this trend has two, completely opposite viewpoints: on the one hand there is increased diversification and specialisation of knowledge and the appearance of very specific research. On the other hand, there is great need for

interdisciplinary character of scientific research, imposed by major social problems, such as sustainable development. Reorganisation of knowledge can be seen through the removal of boundaries between fundamental and applied research. Fundamental research is still university's primary area of research, but taking into account the possibilities of its application, in which significant successes have been achieved by American universities; **emergence of new expectations –** universities must take into account the new needs, which have arisen from the society based on knowledge. This includes the growing need for scientific and technical education, "horizontal skills" (infrastructural skills, such as, for example, financial management, and the so-called "soft" skills, such as negotiation skills, creativity...), and opportunities for lifelong learning.

Some of the factors, which slow down the change in higher education, and which, in combination with each other contribute more to the continuity than to the change of university (Kerr, 1984) are: conservatism of lecturers in opposing the changes in fields such as curriculum, areas of research, methodology of teaching, standards and criteria for career advancement. Those factors also include difficult and lengthy decision-making processes, inevitability of including highest hierarchical levels in decision-making processes, lack of rewards for risk-taking, subordinate position of administrative staff in relation to faculty, and the inability of structure to accept numerous external pressures.

The survival and development of university depend on the extent to which universities will want and know how to incorporate the principles of efficiency (internal performance) and effectiveness (external performance) into its operations. Inertia of the university system, which exclusively uses efficiency as a measure of quality of its activities (using partial indicators: grades, number of students, length of studying, etc.), not taking effectiveness into account (through contribution to the process of change of society for the better, through decreasing the unemployment figures…) leads to the creation of a gap between the developmental demands of the society and the university's ability to respond to those demands (Singer 1996). At present, the gap between what the "society of knowledge" should know and what the existing systems of higher education are able to provide is very large (O'Hara 2007). The reason for this gap can be found in the unpreparedness of the higher education institutions for the challenges of modern society, ignoring and unpreparedness for the forthcoming changes. Universities should behave just as companies do, which have to prepare for and try to predict what the future will bring, and define their strategies for dealing with change based on those predictions, thus ensuring sustainable growth and development (*Shell Global Scenarios to 2025, foreword: "We face real challenges in the future, we will all need to be able to respond to changing circumstances and make informed and rigorous judgements about our decisions...").*
The strategic question with which higher education is faced today is not whether it should, but how should it cope with the changes, which characterise the modern society today.

What characterises the modern society is the new model of production of knowledge, the so-called *Mode 2*, as opposed to the now present *Mode 1 (Gibbons 1998)*[3]. Mode *1* is characterised by a specialist structure of knowledge (Gibbons 1998), which has played a major role in the design of organisation and management at today's universities. Specialist knowledge has represented the framework for defining the curriculum, it provided a foundation for organising teaching at universities, and represented a link between research and teaching. This structure provided guidelines for researchers on important issues for research, the method and place of their research, and the rules regulating employment of new researches and career advancement in the academic world. The new model of production of knowledge, the so-called Mode 2 is characteristic for the society of today, and it leads to disappearance of the previously described Mode 1 model. Mode 2 is characterised by the presence of a great number of producers of knowledge, which are connected by the understanding of the importance and responsibility for the application of that knowledge; universities are no longer the primary places for production of knowledge, knowledge is created in research centres, government agencies, industrial laboratories, think-tanks and through their interconnecting. Research groups do not have to be tightly institutionally connected. Work teams and networks are created and exist until the problem is solved, after which they are dissolved. When another problem has to be solved, new, different teams are formed. Potential solving of any problem requires integration of different skills and knowledge, which do not belong only to one discipline.

Multidisciplinarity, that is, transdisciplinarity is becoming the norm. In organisational sense, Mode 1 is characterised by hierarchy, while Mode 2 is characterised by straighter, lateral organisational structures. In comparison with Mode 1, creation of knowledge in Mode 2 is more socially responsible and includes a wider system of quality control (not just peer review; opinions of various experts are requested, who then consider the problem in a specific and localised context). Greater concern for applicability of knowledge increases the sensitivity of scientists and researchers for greater application of what they do. Research is not carried out only in the interest of researchers, but is the result of the need to solve some problem in the environment. It is expected from research to make the results applicable, which leads to connecting the university with individuals and groups that are traditionally outside the scientific system. They become active actors in defining problems and evaluating their solutions and performance (David i Foray 2002, Altbach 2004, Vlasceanu 2005, WB 2002, Gibbons 1998, Gibbons 2004). It is this change in the way knowledge is produced (research) that significantly affects the functioning and organisation of universities.

[3] Gibbons has decided to use these names, since the conventional terms that were used in everyday speech, such as *applied science, technological research or research and development* were not appropriate, because they were too narrowly defined and did not allow understanding of the relationship between these categories.

The question arises whether universities will be capable to carry out the needed reforms in order to occupy an important place in the development (economic and political) of a country.
Universities of the future will develop many more and different kinds of links with surrounding society. They will increasingly be ranked in terms of their "connectivity" to the distributed knowledge production system and their relevance as determined by their efficiency in drawing upon the resources of the knowledge production system (Gibbons, 1998). Relevance is going to become something that will need to be demonstrated, not just once but on an ongoing basis. Relevance here relates to quality of teaching and quality of research. Each of activities of the university should make its contribution to the development of society, taking into account responsibility towards community and society in which it operates ("culture of accountability") (Singer et.al. 1993, Sesardic 1993, Svarc 1998, Gibbons 2004).

3. ENTREPRENEURIAL UNIVERSITY

The intensity of university's institutional rigidity and its multidimensionality (culture, financing, structure, functions…) constitute such a force of resistance that small, incremental changes in the environment have never been sufficient to articulate an initiative for the university to change. Universities have, as a rule, accepted the options of slow adapting to the changes in their environment. However, the force of change which has been continuously happening in the last decade has raised the issue of different positioning of the university towards changes in the environment, that is, defining new university's mission and re-engineering the organisation, financing, function and the culture itself, in accordance with the new mission.
The simplest explanation of entrepreneurial university is that it is the antithesis of the "ivory tower" (Blenker et.al, 2006). Detachment of research-oriented universities from the needs of the environment requires transformation of university towards entrepreneurial university (Etzkowitz 2000) in which it is expected that university perceives its environment as its market and to respond to it accordingly.
Entrepreneurial capacity of each university will enable for that dynamic change in the environment to be either used or not. Due to differences in organisational culture and leadership capacity, the process of building the entrepreneurial capacity differs from one university to the other. Successful implementation of transformation of university to entrepreneurial university strengthens university autonomy, university unity, educational achievements and achievements in transfer of research to commercial practice in the environment. Entrepreneurial character of universities does not mean that they will become dependent on the industry, nor it turns them into "all-purpose shopping malls" (Clark 2001:10). Entrepreneurial universities are active actors of the society, affecting their environment (industry), just as the environment affects them. These are institutions that are

capable of change, without compromising their mission towards complex and uncertain environment.

In the last twenty years universities were occupied with their teaching mission, mainly by adding new programs and implementing the Bologna reform. Research activities simply continued, as business as usual, with some minor additional topics, but stayed fragmented, underfunded, and disciplinary focused (Singer, Oberman Peterka, 2009).

Technological changes, innovations, and increasing global competitiveness demand a change in the organisation and functioning of each market actor, including universities. *"Universities must turn into evolutionary entrepreneurial organizations to fulfil their mission in an economy which must increase wealth and create employment by incorporating new knowledge in innovative products and technologies." (*Röpke 1998: 8) Entrepreneurial orientation is the way in which some institution/ organisation/ company should be organised in order to be able to respond to the turbulent environment in which it operates (Lumpkin and Dess, 1996)

3.1. Triple Helix – the basis for understanding the entrepreneurial university

In the discussion about the entrepreneurial university, the Triple Helix metaphor is used to describe the interconnection and operation of three forces (actors) in the society: university, business sector and government (Blenker et al. 2006; Etzkowitz et al. 2000; Etzkowitz and Leydesdorff 2000).

The Triple Helix model explains the new arrangement of institutional forces in the process of creating innovation. As knowledge has become an extremely important part of the innovation process, universities as centres of creation and dissemination of knowledge play an increasingly important role in industrial innovation. Previously, this activity belonged either to the industry or the government or, depending on the social system, cooperation of these two factors. Thus, the policies were focused on relations between government and industry, on improvement of the business climate, reduction of taxes or various subsidies for the business sector.

Emergence of entrepreneurial university is a response to growing importance of knowledge in the national and regional innovation system in which university is the agent of effective and creative creation and transfer of knowledge and technology from university to society (Etzkowitz and Leydesdorff 2000, Etzkowitz et al. 2000). In knowledge-based economy, university is becoming the key institution of the innovation system – both as a producer of human capital and as a foundation for the development of new businesses, and together with government and industry, appears as an indispensable element in the development of society.

These three institutional spheres are mutually connected in a helix, and connections between them are occurring at different levels of the innovation process (Etzkowitz et al. 2000).

Four processes have contributed to the development of the triple Helix model (Etzkowitz et al. 2000, Etzkowitz 2000). The first process refers to internal change of each of the institutions in this model (university, business sector, government). Lateral connections have been created within universities, strategic partnerships formed, and university mission changed due to increasing pressure for the university to define contribution to economic development as one of its principal roles. The second process is connected to strengthening of the influence of each of the individual spheres on the other two (government, university and business sector). The third process is the creation of trilateral networks, connections and organisations, as a consequence of mutual interactions of these three spheres, which serve as a means of communication and encouraging creativity, and creation of regional cohesion. The significance of these trilateral networks is especially notable on the level of regional industrial clusters, which previously lacked a common organisational structure. Creation of such new forms of organising is typical for crisis situations, such as general economic recession or increased international competition[4]. The fourth process is associated with the recursive effect of these mutual networks and organisations, not just on university, business sector and government, but on the society as a whole. Triple Helix model does not apply only on relations between university, business sector and government, but also on the internal transformations of each of these spheres. Examples of such effects are internal changes within universities, strengthened by government policies.

The Triple Helix model helps in understanding the concept of entrepreneurial university, but does not fully describe what entrepreneurial university is, nor the creation and existence of relations between these institutions leads to the triple helix effect. In two thirds of cases, partnerships between universities, businesses and governments do not lead to the achievement of the set goals and end in failure (Hagen 2002), mainly due to different business cultures of partners, differences in their products and differences in their methods of work (Cyert and Goodman 1997, cited by Hagen 2002:209). However, when it is successful, cooperation results in synergistic effects.

3.2. Process of creation of entrepreneurial university

Emergence of entrepreneurial university is the result of internal development of the university and external influences on the university, coupled with the increasing role of knowledge in society and innovation based on knowledge. University is becoming entrepreneurial in order

[4] Examples of this are American *The New England Council* and *Joint Venture Silicon Valley Network*.

to meet the needs of its environment and contribute to regional and national economic development, but also to improve its financial situation and position of its employees. Thus, emergence of entrepreneurial university is the result of the increasing importance of knowledge in economic and technologic development and the fact that university is a cost-effective and creative bearer of the innovation process and the transfer of knowledge and technology to the society.
However, some scientists are opposed to the creation of entrepreneurial paradigm, which they see as a threat to the traditional integrity of the university, and excessive emphasis on profit leads to the loss of university's role as an independent critic of the society (Krimsky 1991, cited by Etzkowitz et al. 2000). These critics of the entrepreneurial modality of university believe that production of students and publishing of research should remain university's fundamental roles. But, despite the criticism, creation of entrepreneurial university is evident, although its development, organisation and management pose many questions. The transition towards entrepreneurial university does not mean that university becomes less oriented towards research, but that research and educational activities are seen as capital, and university expects to generate profit from its activities, primarily through projects with the business community (Blenker et al. 2006).

Entrepreneurship at the university does not apply only to natural and technical sciences and possibilities for creation of new ventures in those disciplines; entrepreneurship must be present in all parts of the university, since it provides good results not just for some but for all the scientific disciplines in research, teaching and relationships with the environment. Managing the traditional university disciplines, by combining new and old values is very complicated and is a test of university unity. Ignoring the importance of traditional university disciplines and leaving them to themselves can lead to the loss of university's intellectual heritage, on which university's competence is dependent (Clark 2001).

Integrated, entrepreneurial university will develop its portfolio of activities in which individual activities will have different potential for generation of income, but also for reputation of research excellence. The best situation is when research reputation carries a potential for generation of income. However, sometimes it will be necessary to ensure internal cross-financing between the parts of university that have both reputation and financial attractiveness and the parts with reputation and low financial strength.

Entrepreneurial character of the university, because of its relationship with the stakeholders, and the concern for development of the environment (internal and external), contributes to the creation of a good university image, which plays a very important role in university's development. A positive university image brings more students, greater number of projects, and thus larger income, necessary for functioning and development of the university.

3.3. Characteristics of entrepreneurial university

Entrepreneurial university is an institution which provides the basis for regional and national growth and development through close and intensive cooperation with its environment (Blenker, 2006).

Although a relatively large number of authors (Röpke 1998, Trachtenberg 1999, Clark 1998, Gibb 2005) have studied the characteristics of entrepreneurial universities, there is significant agreement on those characteristics:

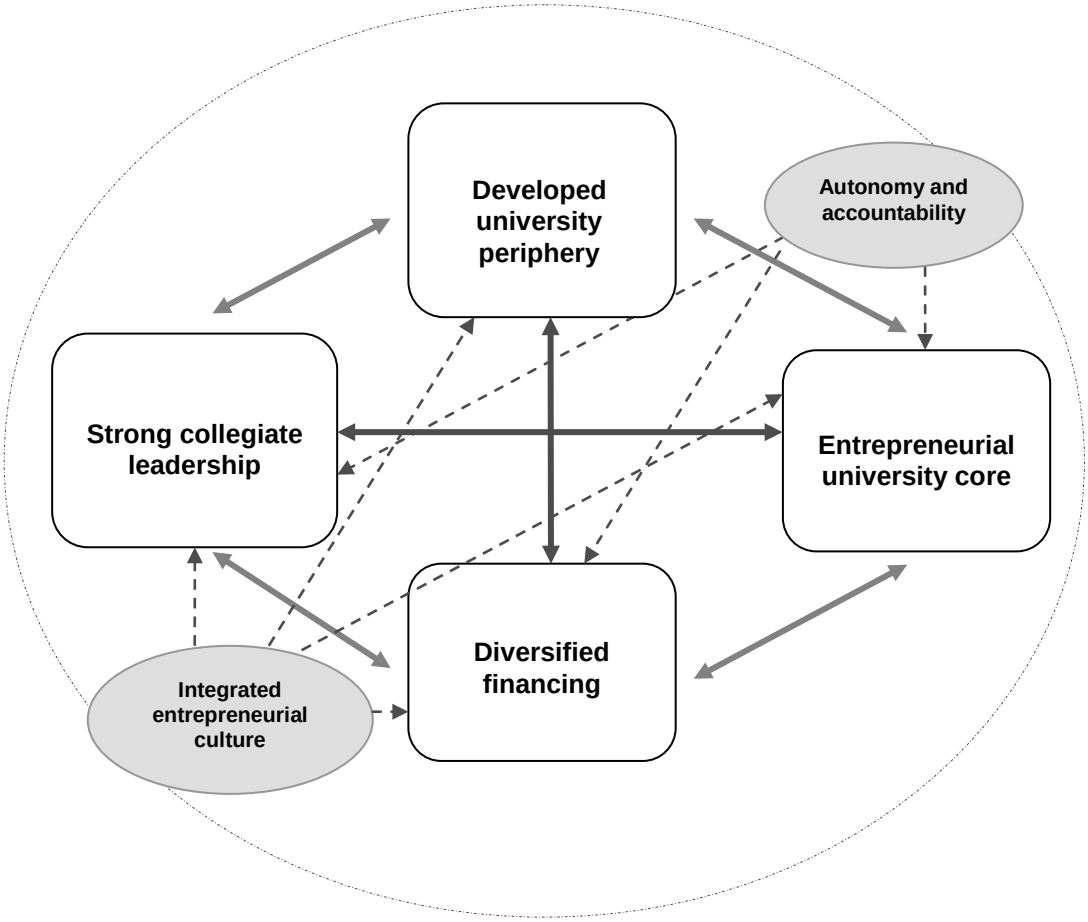
- In order for university to become entrepreneurial, each of its parts has to become entrepreneurial; creation of a unified university in which each of its employees, each department share a common vision is a prerequisite for creation of entrepreneurial university;
- University's leadership capacity is an important factor in transformation of university to entrepreneurial university. Strong leadership[5] is essential in the transformation of university, its increased flexibility, faster recognition of changes in the environment, responding to them, and focusing on the increasing and changing demand for university's services;
- Entrepreneurial university finds other sources of financing (beside the state), and thus ensures its financial independence, which enables it to preserve independence and prevent complete commercialisation (in the sense of choosing activities and not compromising its mission and the quality of its activities);
- Entrepreneurial university develops various forms of partnerships and connections with the world outside the university, though which it provides transfer of knowledge and technology, establishes connections with the business world, develops intellectual property, lifelong learning, finds additional sources of funding, maintains connections with the alumni, etc.
- Creation of entrepreneurial university contributes to restoring university reputation, because it proves that it is ready and willing, and that it knows how to solve specific problems of the environment, contribute to the economic development of the region in which it operates, and knows how to change and adapt to environmental conditions that are constantly changing. Entrepreneurial university is integrated and autonomous, but above all, responsible to the environment in which it operates.
- Entrepreneurial university is always oriented towards the future and is aware that once captured market position does not last forever, which constantly forces it to seek more

[5] James R. Johsen's doctoral dissertation: Leadership in context: A Case study of presidential effectiveness in a State university system defended at University of Pennsylvania in 2006 studies the essential role that university leadership plays in transformation of a university.

effective methods of adapting, changing and responding to the changes in the environment. *"Competition ruled out any stopping point* (Clark 2004:178)".

Model of entrepreneurial university (Image 1) is the result of integration of various discussions and studies on the issues of effectiveness and efficiency of universities, and the ways in which to create the next-generation university (Oberman Peterka, 2008).

Image 1. Model of entrepreneurial university



Source: Oberman Peterka, 2008

The model consists of four basic elements, two value components and a system of connections between basic elements and value components (Oberman Peterka, 2008).

Basic components are: 1. entrepreneurial university core which consists of university components which perform the basic research and education functions (faculties, departments...), and supra-organisational structure of integrated university; 2. developed university periphery that are represented by university's interdisciplinary, project-oriented research centres, which work on the transfer of university's knowledge and technology to the business community (applied research), develop and take care of university's intellectual property, organise and implement (in cooperation with other university departments) continuous education programs (Lifelong Learning), help with university fundraising activities, develop contacts with the alumni, help with the development of their students' careers, and organise and participate in all the activities through which university establishes contacts with its environment; 3. strong (collegial) leadership; it is essential in the process of university transformation. If university leadership doesn't accept the concept of entrepreneurial university, it is unlikely that transformation to entrepreneurial university will take place. Collegial leadership relates to creation of governance structure which motivates and encourages all parts of the university to proactive and enterprising behaviours, achievement of team goals comes is ahead of realization of personal goals ("we" vs. "I"); 4. diversified financing of university, which means creation of financially independent (on state sources of financing) university as an important prerequisite for creation of entrepreneurial university.

Value components are: 1. Responsibility and autonomy of university are two inseparable characteristics of entrepreneurial university: through responsible behaviour towards environment university obtains the right to autonomy in performing of its activity. Responsible behaviour of the university implies caring for the needs of the environment, desire to implement projects which will contribute to solving problems in the environment (research and educational). University autonomy can be observed through gradation: e.g. complete freedom is important in the choice of research approach and expression of positions based on conducted research, and in forming educational programs that meet future needs of the environment for specific competencies. Autonomy can be relatively limited by university's responsibility towards the environment, e.g. in choice of research topics or selection of the offer of educational programs; 2. Integrated entrepreneurial culture presumes high integration of all university elements around the value dimensions of entrepreneurship (proactivity, innovativeness, readiness to assume risk), and high decentralization of university on the principle of subsidiarity in reacting to changes in the environment. For the emergence of entrepreneurial university it is necessary that university core (integrated university, university components in basic research and educational functions), university periphery, as

well as two management functions (leadership and financing) are capable of entrepreneurial behaviour.

Model is based on a systematic approach, which presumes connection of all parts of a system: in the model of entrepreneurial university this means mutual connection of each component and value determinant, and openness towards the environment. Thus, for example, entrepreneurial university core influences the development of university periphery, which creates opportunities for additional sources of financing for the university; precondition for successful implementation of such interactions is the existence of strong collegial leadership at the university. Influences of one sub-system of entrepreneurial university on the other are valid in all directions.

For the process of creation of entrepreneurial university it is not important from which part of this model the process starts, it is important that leadership capacity for managing such a complex change exists (Kerr 2001, Johnsen 2006).

The aim of building entrepreneurial university is to generate accomplishments which will enable the achievement of sustainable university, a desirable partner to the business and government sector within the stimulative Triple Helix development spiral. This can be possible only under the assumption that university is unique, but also subsidiary and autonomous, and responsible towards the environment in which it operates. Only in this way university can achieve the following: faster and better responding to changes in the environment, production of knowledge which allows more efficient problem-solving, educating people who will be able to manage their careers, cope with uncertainty and complexity of the environment in which they live and work, and contribute to the development of the region in which they operate (Singer 1996, Svarc 1998, Clark 1998, Clark 2001, Gibb 2005, Gibb&Hannon 2006, Lauc 2007).

4. Josip Juraj Strossmayer University – how close to an entrepreneurial university?

The J.J. Strossmayer University was established in 1975 and it is one of 7 public universities in Croatia. There are about 14.000 students that are enrolled at 11 faculties (Economy, Electrical Engineering, Philosophy, Civil Engineering, Catholic Faculty of Theology, Medicine, Agricultural, Law, Food Technology, Mechanical Engineering and Scholastic Faculty), 4 departments (Mathematics, Physics, Biology and Chemistry) and Art academy.

With the aim to analyse situation at the J.J. Strossmayer University in Osijek, and to determine how this university looks at its environment, how it reacts to changes, and how close or far it is from entrepreneurial university, in the December 2007 to February 2008 period 10 interviews were conducted (6 deans, 2 vice-deans, 1 head of university department

and 1 vice-rector, according to a previously prepared Guide), 35 university employees (from assistants to full professors) and 364 university students (from 6 faculties) were surveyed (Oberman Peterka, 2008).

It is interesting to note that almost all respondents agree with the thesis that university should be entrepreneurial, but that term is differently understood. Some have noted that private universities are entrepreneurial by definition, while it is difficult for state universities to be entrepreneurial, where the term "entrepreneurial" is most often understood as a university that generates own income and performs commercial activity. It is visible from interviews and questionnaires that one part of respondents associates the term entrepreneurial university with university's educational activity i.e. that is the university which educates its students on entrepreneurship and prepares them for "entrepreneurial career", i.e. develops students' entrepreneurial skills and knowledge, where entrepreneurial skills are seen as those that are important for starting and developing a business venture. However, several respondents associate this term with organisation and behaviour of the university itself, and state that entrepreneurial university is one that anticipates changes in the environment and adapts to them, and one that cooperates with the business sector and enters into projects with it.

The following definition, given by one of the respondents, employed as a full professor at one of university's social science faculties shows to what extent is the term "entrepreneurial university" perceived with certain scepticism and mistrust, almost negatively. For him, entrepreneurial university represents a "sensitive idea which in a small and transitional context, i.e. wild and poorly defined market, can significantly destabilise the foundations of educational processes if it is accepted as a strategic and ultimate projection, since it is aggressively denied by unethical diversions." From this definition we can feel the fear of collapsing of the values on which university is based, and the fear of destabilisation of university in favour of unconditional commercialisation. In this understanding of the term entrepreneurial university we see the often accepted link between "entrepreneurship" and "market", which is still "poorly defined" in our society and is ruled by "unethicalness" and "aggressiveness".

Many do not connect entrepreneurship with proactive and innovative behaviour and therefore do not think that it should have a place at the university. For the vast majority of people (including those employed at the university) entrepreneurship is about starting ventures with the aim to make profit, and university, at least the state university is perceived by many as an institution where that should not be the main mission.

Such attitudes indicate that in the process of creation of entrepreneurial university attention should be given to how entrepreneurship is perceived, and that a wide discussion on relationships between university, business sector and government (Triple Helix), on the new

paradigm of university performance based on the Mode 2 concept and on university's responsibility for those changes is required within the university, but also with all who are interested in the fate of the university.

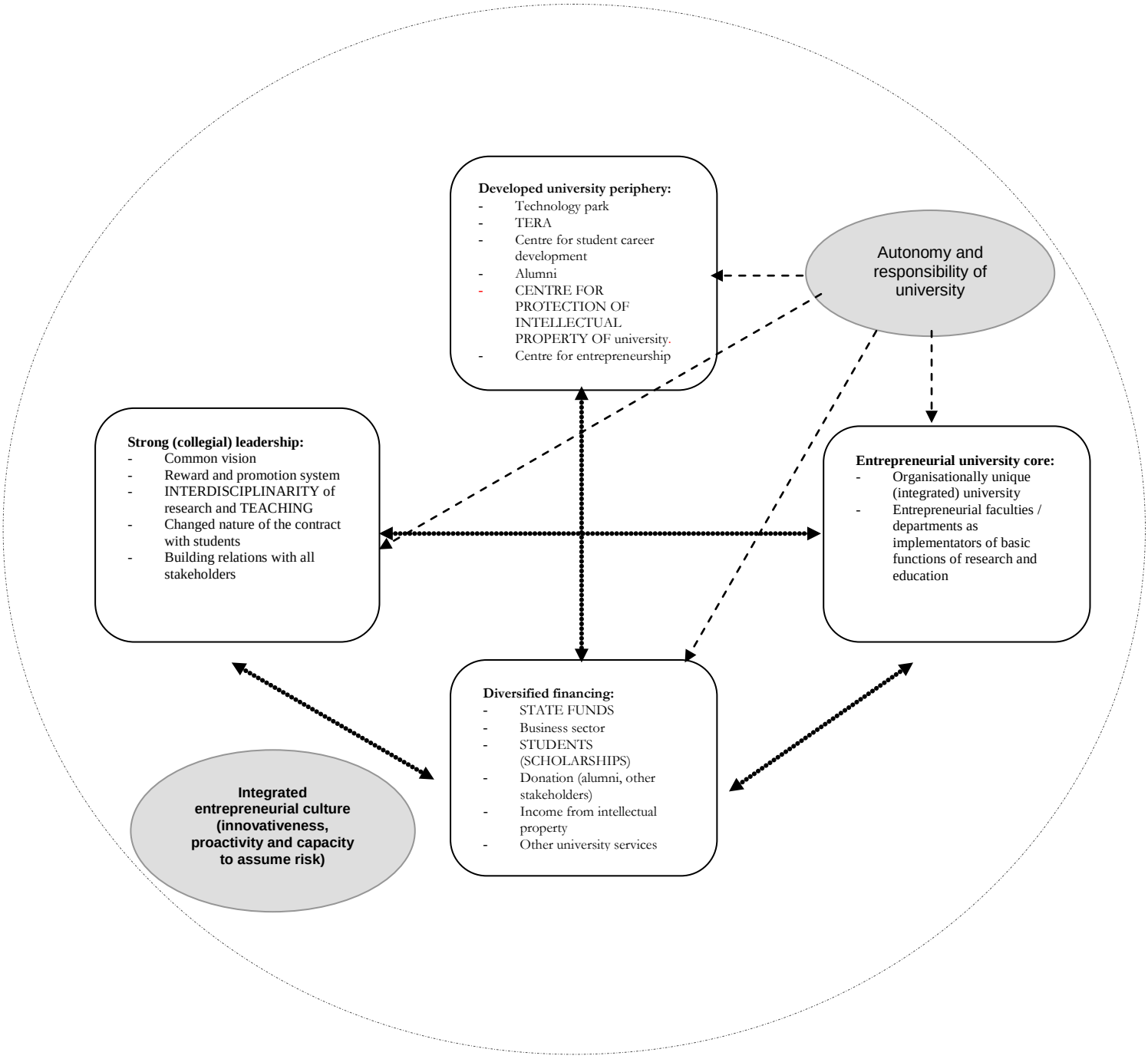
Connecting entrepreneurship with business and profit can be explained by organisational location and content: the vast majority of entrepreneurial studies in the world are located within business schools and faculties of economics (which is also the case at J.J. Strossmayer University in Osijek) and the vast majority of them are really focused on start-up, management and development of small ventures, whose owners' primary goal is generation of profit, which ensures sustainability, growth and development of ventures. However, there is more and more talk of entrepreneurship as an interdisciplinary phenomenon, and distinction is made between terms "enterprising behaviour" and "entrepreneurship behaviour"[6] (Gibb 1998). *Enterprising behaviour* is a wider term, which speaks of enterprising behaviour of each individual, necessary for survival in today's world, while *entrepreneurship behaviour* relates to entrepreneurial behaviour of a person that owns and manages a small business. Also appearing are entrepreneurial studies, which are not primarily oriented to the development of small business and which are not located within business schools and faculties of economics.

4.1. Where is J.J. Strossmayer University in Osijek in relation to the model of entrepreneurial university?

Image 2 shows the model of entrepreneurial university, in which entrepreneurial elements currently present at the J.J. Strossmayer University in Osijek are marked (with capital letters). Much is missing, from institutions, functions to elements of entrepreneurial organisational culture, but the lack of connections between individual components of the model is the biggest obstacle to the emergence of integrative and then entrepreneurial university. It is visible that some connections do exist, but they are insufficiently developed and do not contribute to development of entrepreneurial university in the full sense.

[6] In Croatian, both „enterprising behaviour" and "entrepreneurship behaviour" are translated the same.

Image 2 Components of the model of entrepreneurial university at the J.J. Strossmayer University in Osijek (Source: Oberman Peterka, 2008)



The missing components can be built in into functioning of the university with different intensity of investment (dedication, time, money); some relatively quick and without greater financial strain: interdisciplinarity of research will be easily achieved if the way of financing by the Ministry of Science, Education and Sports is changed; starting university alumni organization and career development office; some demand more time and great financial investments: technology park, enabling faculties / departments for entrepreneurial acting in implementing their basic functions (e.g. development of new educational programs, virtual learning platforms...), while some demand dedication of all actors at the university and time, but not money: developing a joint vision, integrated entrepreneurial culture, social responsibility, organizationally integrated university with a network of relations among all components of entrepreneurial university (organizational and commercial, and value), development of new business functions (fundraising campaigns, collaboration with business sector).

Building entrepreneurial university is a lengthy process work on which must be continuous and systematic. This particularly applies to the mechanisms of internal connections and the value components of the model. It is not not enough to make a decision to create entrepreneurial culture within university and create a responsible university; what is required is to work on building such value awareness through a series of measures and activities, and show on examples what responsibility of university is, and encourage entrepreneurial and responsible behaviour of everyone at the university. University is a part of society in which a huge amount of knowledge is concentrated, and it should serve as an example of an organisation that knows and can solve its own developmental problems. University must educate and bring up young people as socially responsible persons, who will be carriers of positive change in society.

5. Conclusion

Time, when only one out of twenty people sought university education, when the research base was small and when education consisted of preparing students for several possible areas of work, and when the community did not think about what university is doing and how can it contribute to community development, has passed. Knowledge and technology play an increasingly significant role in the development of the society. New discoveries and innovations in natural sciences, information technology, advancements in physics, but also a greater awareness of human rights to involvement, of responsibility to future generations through our relationship to the environment today... completely change the existing social, economic, political and ethical structures. Research directed towards the application of knowledge is the driving source of social development. The demand for different forms of cooperation between university, business sector and government is intensifying (Triple

Helix), which imposes the need for reorganisation of the ways of working and thinking of all subjects in the society, including university.

Monitoring changes in the environment and adapting to them, together with initiating positive change represent the principal assumption for sustainable development of the university, as well as its survival as an important factor for the development of the society as a whole. Entrepreneurial response (proactivity, innovativeness and capacity to assume risks and cope with change) of the university is a chance for active participation in the development of society, in which knowledge becomes a right and obligation for everyone. Entrepreneurial response also offers a formula for institutional development of the university in which university defines and determines its own autonomy, secures diversified financing (and thus decreases dependence on the state), develops new university departments and activities in accordance with society's demands, and leads to structural changes which ensure better capacity of university in responding to changes.

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