MODELS OF UNIVERSITIES AND GLOBAL CULTURE BUILDING PROCESSES. TOWARDS EDUCATION AND SCIENCE BASED CHALLENGES

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Abstract: The paper is going to investigate challenges associated with the idea of improving quality of acquiring scientific knowledge and gaining international experience. The main scope of the paper is strongly focused on the professional place of sharing and exchanging knowledge as university is/should be. The supported perspective is the open science approach which problematizes the core problems concerning the contemporary science overview. The paper's goal is to provide the key propositions which have affected universities. In other words the paper reveals key problems about the changes connected with universities which play a significant role in globalization of world's knowledge.

Keywords: university models, open science, globalization, learning environment, management.

Introduction

The educational geography of contemporary universities is becoming more internationalized and interconnected. In the wider theoretical context this view is identified with the processes of internationalization and globalization of universities. The intention of the paper is to explore the models of universities as a response to complex and demanding processes of internalized and globalized learning environment. On the following pages the models of various university policies will be presented. It is worth noticing that the discussed issue seems to be neglected and rarely under-investigated as digital and manual research indicate.

The paper's assumption is that the day of global competitiveness forces universities to have to undertake long-lasting multidimensional policies to be found themselves successfully in the area of higher institutions' market. The problem also shows the increasing flow of people from various countries. Universities face many challenges to cope with. Among the most burning ones are:

a) cultivating tradition and becoming attractive to upcoming generations;
b) being competitive and offering an added value to future students;
c) providing up-to date knowledge in professional environment;
d) organizing an interesting syllabus concerning both methods of learning and content;
e) offering classes run by leading, creative and inspirational academic teachers;
f) creating highly stimulating opportunities enabling further professional development;
h) maintaining fruitful and promising cooperation with other science centers to elaborate outstanding research and involve students in projects;
g) designing a system of good practices between various groups at university through building up a satisfactory university culture.

The major point of this paper is to concentrate the attention on the organizational forms of universities which give a challenge to traditional university structures. Two theoretical propositions will be sketched: the first one by Gabriel Hawawini and the second one by Hanna E. Donald. The additional part of the paper will be devoted to the processes of

internationalization and the burning points related to trust in science elaborated by Piotr Sztompka on the basis of mostly Robert K. Merton's contribution to the sociology of science. Following the mentioned considerations the paper is aiming at formulating the problem of organization the values within the framework of university.

Models of universities

In the literature several universities' models can be found. Below the key models made by Gabriel Hawawini [6] will be recalled to make an overview upon various propositions (see Table 1). Figure 1 illustrates examples of the particular visualizations of each university type as well. However, it is worth mentioning that the following models do not exclude each other. They exist simultaneously.

The first model is known as the "Import Model" which is characterized by offering both students and teachers possibility to take part in international courses and programs. The main idea is to attract other scholars to university through preparing a relevant level of international background like organizing courses, seminars or mutual conference meetings. Hence the name of this model is "the Import Model" or "Importers" to facilitate enrollment and visits of international teachers and students.

To contrast to the previous one, the second model is defined as the "Export Model" or "Exporters" what means that the particular university is interested in increasing number of outgoing students and teachers. The higher institution offers plenty of programs and trainings to prepare its teachers and students to being engaged in various forms of international exchange programs and also through initiating cooperation with universities abroad.

The third model is called "Academic Joint Ventures" which implies the bilateral forms of exchange agreements between universities (educational programs, research projects etc.). Thanks to it students can obtain double degree within particular programs or spend some part of their studies at a foreign university.

The forth type is shaped by larger number of university partners hence its name is: "Academic Partnerships, Alliances and Consortia". This type of cooperation enables wider and more smooth flow of students and teachers who are involved in this type of international bond because they are accepted by the other university partners at the same time without making application second time.

The fifth category is recognized as the "Campus Abroad". It refers to making a complementary or even the same paths of studies at the domestic and foreign university. The central campus can be consisted of smaller campus units located outside. This makes possible the participation in foreign research and studies by both students and teachers.

Gabriel Hawawini [6] makes a distinction between the two notions: "international reach" and "international richness". International reach is connected with the chosen internationalization strategy of a university (import/export/joint programs/alliances/foreign campus) through which university aims at achieving an internationally recognized status of making its students and teachers global citizens via various courses, programs, initiatives, projects, conferences, offers, etc. Hence the "international reach" is viewed as a form of international extension obtained through many international opportunities offered to incoming and outgoing students and teachers. Contrasted to this option, the "international richness" is defined as a form of density of international students and teachers at the same university. Some universities can have a great number of study programs and research to enhance travelling abroad but at the same time a very low number of international students and teachers on a university campus [6]. From the perspective of internationalization the international richness is more effective because creates a strongly international culture at the particular (even single) university. In other words internationalization happens because it is supported by intensive interactions of international community in one place.

Other categorization of university campuses is divided into the three sub-groups as following: national, international and cosmopolitan based on the internationalization richness achieved by a university. National character of the university is determined by a high number of local/domestic students; international universities are partially occupied by international students and teachers and cosmopolitan ones tend to characterize themselves by dominant number of non-local students and teachers. What is important at cosmopolitan universityis that there is no any major culture and/or nationality. Table 2 provides with the information upon all specificities upon above types of university types.

Table 1. Extent of International Reach and Corresponding Internationalization Initiatives [6]

Extent of International Reach	Corresponding International Initiatives		
	Curriculum and Programs	Student Body	Faculty and research
Importers	1. Offer special courses on the international dimension of the subject taught (when relevant) 2. Infuse an international dimension in all the courses (when relevant)	1. Enroll foreign students in the institution's programs 2. Attract international students enrolled in study-abroad programs offered by foreign institutions	1. Invite visiting foreign faculty 2. Host international seminars and conferences 3. Recruit foreign faculty 4. Recruit local faculty trained abroad
Exporters	1. Help foreign institutions design and deliver a program to its students 2. Offer online courses and programs to students from around the world (virtual exporters)	1. Offer study-abroad, work-abroad, and exchange programs 2. Involve students in international consultancy and development assistance projects	1. Encourage sabbaticals abroad 2. Train foreign faculty 3. Involve faculty in international consultancy and development assistance projects 4. Set-up research centers abroad
Academic Joint Ventures	1. Offer dual-degree programs with a foreign institution 2. Offer joint-degree programs with foreign institution	1. Each institution recruits students separately 2. Students are recruited through a common admission process	1. Set-up joint research projects 2. Join international research agreements 3. Set-up joint research centers
Academic Partnerships, Alliances and Consortia	1. Offer partner's students access to your courses and programs 2. Offer partner's students your degrees	1. Students admitted by one institution are automatically qualify to attend courses in the partner's institution with credit mutually recognized	1. Faculty can teach their load in either one of the institutions 2. Faculty has access to common research budget 3. Set up partnership research centers
Campuses Abroad	1. Offer the same curricula, programs and degrees on the foreign and home campuses 2. Offer different curricula, programs and degrees on the foreign and home campuses 3. Students allowed to move freely between campuses to benefit from integrated curricula and programs	1. The dimension process is either the same as in the home campus or different from the home campus 2. Students are recruited locally or regionally with little mobility 3. Students are recruited internationally and can move between campuses	1. Fly-in/fly-out of faculty (from the home campus or visiting) 2. Use permanent or temporary faculty recruited to work exclusively on the foreign campus 3. Use permanent or temporary faculty that originates from the home campus

Going further there are also different types of campuses which find their location abroad. Hence there is a distinction between "multicampus" (where home institution students are dominant, mobility is rather restricted to the most urgent visits, all branches of the campus follow an offered program prepared by the home institution, the process of recruitment is addressed to those associated with a home campus and/or local branches, the main campus ideology is to "teach the world"); "multinational campus" (where the numbers of international and local students are equal, the rapid societal and technological changes determine inclusion of international students and teachers, the main campus ideology is to "experience the world", mobility is related to programs connected with specific structures and courses); "transnational campus" (although the educational motto of the campus remains the same – "experience the world" – all spread campuses are well integrated what increases the index of mobility within university and its campuses, the major group of students is

comprised by international students and also the recruitment processes are based on the international criteria which are the same at all campuses) and "metanational campus" (recognized as the global campus and/or cosmopolitan campus in other words, the main

idea of the campus is to "learn from the world", all campuses are strictly interconnected what enhances and makes easier smooth flows students and teachers within campus networks, whole university staff is characterized globally, without divisions) [6].
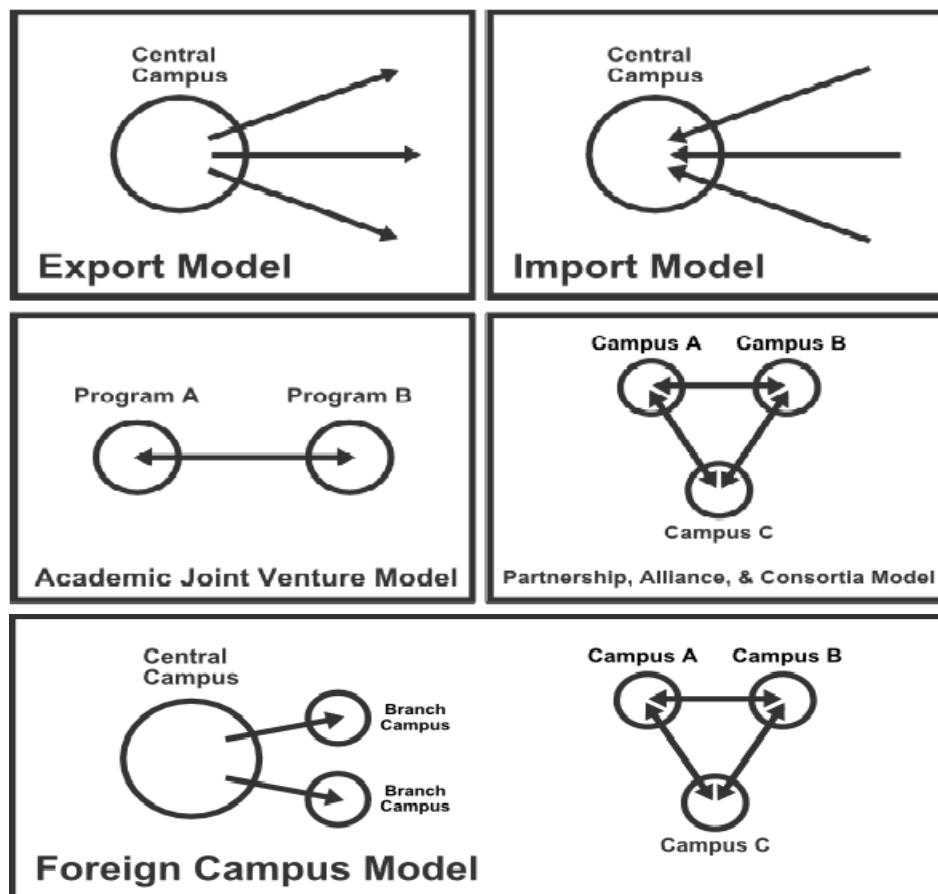
Fig. 1. Models for the Globalization of Higher Education [9, 11]

Hanna E. Donald [5] distinguishes another university models deriving inspiration from opportunities offered by the era of digitalization.

It should be apparent (…) that the organizational models presented are dynamic and the boundaries between them are fluid. Clearly, all universities have the potential to become the educational equivalent of global multinational corporations that operate across national boundaries. While traditional campus-based higher education is organized around a physical place, the evolution toward global transnational universities will result in content and delivery mechanisms designed to minimize cultural and geographic barriers to attendance.

Universities of all types will have new opportunities to build upon diverse views of the world, of organizations, of opportunities and of issues and problems. The ultimate result will be the eventual reduction of barriers to cross-national study, just as international trade and competition is removing the barriers to the creation of a global economy [5].

Donald uses the term of "era of digital competition" to highlight the tendency towards becoming more and more virtually oriented university. The type of the virtual university is thought as a university without any traditionally understood barriers connected with location, costs, forms of human disabilities etc. Education gained at university is strongly

varied and meets high expectations of aging and knowledgeable society. The era of high technology is challenging residential, traditional type of university making it open and inclusive.

Table 2. Alternative Types of Single-Campus Higher Education Institutions [6]

Type of institution		National	International	Cosmopolitan
Mission		Educate local students; international education is not a priority	Educate local students and expose them to the international dimension of the subjects taught	Educate students from around the world and turn them into truly global citizens
Curriculum		Some specialized international courses and programs	An international dimension is incorporated in many courses and programs	A global perspective infuses the entire curriculum and programs
Students	Recruitment	Small percentage of foreign students	High percentage of foreign students but the preponderance of students are locals	Students from around the world with no dominant culture
	Mobility	Limited number of study-abroad and student-exchange programs	Extensive study-abroad and student-exchange programs	No study-abroad program; limited student-exchange programs
	Employment	Recruited by local employers	Recruited by local employers, some to work in foreign subsidiaries of local firms	Recruited mostly by non-local employers for worldwide positions
Faculty	Recruitment	Most faculty members are recruited locally	Some international faculty members	Mostly international faculty members
	Highest degree	1. Granted by a local HEI 2. In many countries, the degree is often granted by the same HEI in which the faculty number works	1. Mostly granted by local HEIs 2. Some faculty members are graduates of internationally-recognized foreign HEIs	Granted by internationally-recognized HEIs located in many different countries
	Mobility	Very limited, some sabbaticals abroad	1. Sabbaticals abroad 2. Visiting positions in foreign HEIs with partial or full teaching schedules	1. Sabbaticals abroad 2. Visiting positions in foreign HEIs with partial or full teaching schedules
	Research	1. Research topics may or may not have an international dimension 2. Some international research collaboration	1. Research topics may or may not have a more pronounced international dimension 2. More pronounced international research collaboration	1. Research topics usually have an international dimension 2. Some international research collaboration
	Evaluation	The quality of teaching, research and service to the institution is usually evaluated irrespective of whether these dimensions have an international content	The quality of teaching, research and service to the institution is usually evaluated irrespective of whether these dimensions have an international content	Because the international dimension is pervasive in all aspects of teaching, research and service, it is indirectly taken into account

Donald [5] speaks about the following types of universities as:

a) "extended traditional universities": which represent sophisticated and developed offer to all people engaged in workforce, who are motivated to receive professional knowledge attending lectures behind standard, regular classes; the intention is to increase and improve access of wider public to university; this university type is a first step towards being open on the demographic changes within society and demands connected with gaining specialized knowledge at the same time

belonging to aging and working class in the knowledge-based society;

b) "for-profit adult-centered universities": refer to career-minded groups of people who seek precisely competitive knowledge resources highly corresponding with the demands of job market; universities of this type offer very standardized tools and programs for their students; mostly curricula is compatible with developing of strictly technical, vocational and managerial career paths;

c) "distance education/technology-based universeities" ("emerging online/web based universities"): there are additional and extended values of two university traditions like "correspondence tradition" and "extended classroom tradition" which are characterized by a wide range of programs at national level; online based universities are transferring the knowledge, content of traditionally designed courses to web world to facilitate interactions between teachers and students, to minimize physical limitations; they are organized around the latest technology achievements to make easy knowledge adjustment on a large scale;

d) "corporate universities": grossly designed to help traditional universities meet successfully challenges emerged from the marketplace and industry sector; the goal is to educate high-skilled students with cooperation with companies and international corporations of various fields; hence some university programs are prepared according to the needs of job market, profiles and demands of corporations; sometimes such kinds of programs can be donated and sponsored by international companies;

e) "university/industry strategic alliances": there are highly specialized strategic partnerships programs and projects to develop concrete competencies and knowledge desirable from the perspective of the industry branches; there are also created to exchange and improve good practices and knowledge between different students from various key countries and/or sectors like entertainment, IT, telecommunications, publishing industry etc.;

f) "degree/certification competency-based universities": this type of university constitutes an answers the dynamically increased tendency towards certified knowledge, skills and abilities; universities facilitate in obtaining required level of testified knowledge through offering variety of on-line tools and materials; the dominant goal of the university is to develop so-called "competency-based approach" reached using strongly diverse and individual methods of learning; programs are provided to the global audience; the most typical distinctions between traditional universities and virtual/on-line ones as the radical challenge to changing the world of higher education are gathered together in Table 3;

g) "global multinational universities": the project of such kind of university is a future challenge to obtain on-line higher education degree available to everyone cross over the world and strongly facilitate access to certified education in developing countries.

The most prominent trends of global education and also the results of organizational transformation are: "the relationship of universities to social purposes and goals; higher education as an open system; the powerful influence of external factors; the importance of multiple points of resistance; alternative means of achieving similar results; the complexity of system-wide adjustments; the role of competition is fostering innovation; collaboration and communication as vehicles of change; technology as a lever for transformation" [5]. In other words: The barriers to accessing learning opportunities are falling dramatically because of improved learning technologies; the number of providers of and approaches to education and training will continue to grow dramatically as access improves and as demand for lifelong-learning increases globally; universities of all types will increasingly focus on responsiveness to learner needs and desires such as convenience, timing, engagement, application of knowledge to the workplace, and learning by doing; instead of simply measuring traditional inputs to the instructional process, universities will be forced by the increasingly competitive and global marketplace for learning to develop new measures of institutional and program quality and responsiveness; the potential reach for all educational institutions in a digital economy is global [5].

Table 3. Differences between traditional residential universities and competency-based organizations [5]

Input	Characteristics of traditional residential universities	Characteristics of degree /certification competency-based organizations
Philosophy	Students come to campus	No physical campus
Mission	Mission defined by level of instruction	Externally and market focused
Funding	Per full time student	Intended to be self-sustaining and market driven
Curricula	Relatively fixed comprehensive curriculum	Curriculum is defined by competencies and knowledge, not courses offered
Instruction	Most courses are lecture-based	Emphasizes student independent learning and initiative
Faculty	Primarily full-time faculty, academic preparation and credentials	No full-time teaching faculty advising and support services are assumed by professional advisors
Students	Selectivity at admission	Life and work experience is major factor in admission – graduation standards more important than admissions standards
Library	Volumes in library	No library – access to materials through cooperative relationships with other institutions
Learning Technology	Enhance lecture-oriented instruction	Access to information about courses and programs provided using technology – technology important in providing the maximum access to learning resources
Physical Facilities	Extensive physical plant	No physical plant
Productivity Outcomes	Student credit hours and degrees	Student assessments, competencies acquired, degrees awarded
Governance	Board of Trustees	Varies, from administrative board to consortial representative board

Culture Building Perspectives

Alison Nussbaumer highlights in her paper [10] the approaches to building internationalization-based culture at universities. In the Nussbaumer's paper the organizational culture is perceived as one of the significant factors which are responsible for successful internationalization policy within universities.

In response to the rapid growth and increasing importance of internationalization, researches began to assess organizational aspects of post-secondary institutions as a means to understand which institutional factors fostered or inhibited internationalization (…). Successful organization change occurs when it is intentional, planned and reflective of an institution's culture. Institutional leadership is often well versed in addressing operational and structural changes, yet the ability to integrate change into the organizational "way of doing things", referring to the organization's culture [10].

The example of the first strategy is to identify the main ideology behind the internationalization process to facilitate implementation and recognize potentially strong and weak sides. Jonas Stier [13] suggests to discuss about idealism (where the internationalism is treated positively enabling mutual learning processes between domestic and foreign students), instrumentalism (which gives the priority towards recruitment processes based on pragmatic strategy) and educationalism (which puts strong emphasis on the self-development and self-actualization dimensions).

Another perspective is called as "cultural readiness for internationalization" formulated by Melanie Agnew and Duffie VanBalkom [1]. This approach is based on the three levels of analysis: micro which is identified with the individual perspective on the global processes in the particular place, mezo embedded in the various organizational forms and their regulations and macro which is referred to all stakeholders also called as "external stakeholders". This perspective was built on Barbara Sporn's categorization [12] of institutional culture including two variables: strength and orientation. The notion of strength is related to the unity between various

components of organizational culture like values, structural division, decisions, regulations etc. The idea of orientation refers to the direction which is undertaken by university and the choice is between being minded externally or internally. According to Sporn the highly adaptable universities must demonstrate strongly external policy which means that they are not affected by contradictions and are oriented towards external partners, solutions, modifications.

Next way of analyzing internationalization is presented by Marvin Bartell [3] who perceives the process of internationalization as a continuum from very basic, non-dynamic field to sophisticated processes which globalize specific university environment. At every university there are potentially conflict-based interplays between different actors, their ways of understanding and implementing institutional culture. Hence Bartell postulates the prominent role of institutional leaders who are able to quickly react and propose proper solutions towards effective internationalization. Especially the external cooperation in gaining good practices is a key to minimize conflicts between different levels of organizational hierarchy for instance between professors and administrative staff.

It is worth adding also the William G. Tierney's reflections upon universities [16]. In his view the organizational culture can be studied from the following perspectives as: leadership, mission, information, environment, socialization and strategy which together constitute a research tool to diagnose university culture. All these steps are needed to facilitate cooperation and communication within university and with its external partners. Only understanding of all these dimensions can improve making internationalization satisfactorily internalized.

The conclusion is directed towards the so-called "comprehensive internationalization" identified and widely elaborated for instance by researchers from the American Council on Education [2] and John Hudzik [7]. The conception of "comprehensive internationalization" provides holistic and far-reaching processes regarding also external opportunities associated with academic mobility including both students and staff. That mentioned idea of internationalization is particularly defined as:

a strategic, coordinated process that seeks to align and integrate international policies, programs, and initiatives, and positions colleges and universities as more globally oriented and internationally connected. This process requires a clear commitmentby top-level institutional leaders, meaningfully impacts the curriculum and a broad range of people, policies, and programs and results in deep and ongoing incorporation of international perspectives and activities throughout the institution (…). Comprehensive internationalization is fundamentally a transformative process. As with any large-scale, institution-wide undertaking, it requires significant vision, the commitment of adequate financial resources, energy, creativity, time, and above all, broad support from all constituencies [2].

Science Burning Points

At the end of the paper it seems necessarily to draw attention towards challenges observable within making science. The conception of internationalization and its various organizational domains have to struggle with some burning aspects of scientific culture in general. Piotr Sztompka, following the considerations formulated by Robert Merton [8] and John Ziman [17] makes a distinction between so called "academic science" and "post-academic science" in the context of his theory of trust culture [14].

According to Sztompka these transformations within science are: firstly, "fiscalization of science" which means referring to external bodies in searching for sources of funding research, providing non-scientific criteria during the process of evaluation projects what stands against the Mertonian norm of universalism in science (making science impersonally); secondly, "privatization of science" what means that scientific results, patents, discoveries are being owned by the external institutions who are research sponsors what consequently means that the access to scientific results can be limited and not freely distributed; this kind of threat is being against the Mertonian norm of communalism (science as a public good); thirdly, "commodification of science" what defines science in the relation to market goods, hence science is becoming more marketable, measurable, socially interested, based of financial flows, salaries and fees; this bias in science stands in opposition to the

Mertonian norms of disinterestedness (lack of non-scientific references and following scientific path towards reliable scrutiny) and organized skepticism (being scientifically curious and suspicious); fourthly, "bureaucratization of science" which means that contemporary science is overloaded by various types of boards like committees, evaluators, administrators, sponsoring institutions and is strongly directed towards project-writing and its rethoric features, financial plans proposals, forms of making reports what additionally implies the need of science project management, this process is contradictory to the Mertonian norm of organized skepticism; and finally "diminishing exclusiveness and autonomy of the scientific community" which tells that within scientific community there are multiple actors not only scientists but also politicians, administrators, policy makers, groups of interests, managers and also scientists on the other hand make careers undertaking above mentioned roles, consequently the Mertonian norms of disinterestedness and universalism are threatened [14, 15]. Hence the "post-academic science" is "more globalized, more industrialized, more bureaucratized, more politicized, more transdisciplinary, more dependent on funding" [14].

The most significant transformations which are perceived as risky to the Mertonian "ethos of science" characteristic for "academic science" are embodied in the core of the processes of internationalization and new organizational forms of universities described above. In other words, the contemporary needed processes of internationalization are simultaneously powered by the culture of "post-academic science".

The conclusion of the paper is constituted by the open question on the internationalization culture building processes with respect paid to the excellence of and in science. All recognized university models enhance discussion upon the problem of trust in science and reliability of "academic science" in the context of new reality – designed by virtual learning and teaching processes, increased accessibility to knowledge resources, media mass communication, strong diversity both in science and education. The challenge is viewed to build open cultural university organization with restoration of science-valued institution.

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