Studies on Higher Education

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Rediscovering higher education in Europe

By
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The increasingly lively policy debate on higher education and science in Europe is delineated by two pan–European initiatives — that concerning the European Higher Education Area (EHEA) aimed at making such an area a reality by the year 2010, and the European Research Area (ERIA). The principal objective of those two ambitious initiatives is the creation of a better overall framework and conditions for research to make Europe the leading knowledge–based economy.

The author of this study is taking a bold approach in asking several fundamental questions related to the overall strategic orientation of European higher education.

It is inspired by his own experiences as a "founding father" of a successful private higher education institution. Thus, it is not surprising to see from which perspective arguments are brought and in which direction solutions are proposed.

UNESCO–CEPES is very pleased that it can bring about to international audiences this learned, informative and engaged attempt to "rediscover" higher education in Europe.

Jan Sadlak

DIRECTOR
OF UNESCO-CEPES

Foreword by Jan Krzysztof Bielecki

Over two million Poles undertake higher education. This number may seem unreal to someone, who recalls higher education as a prescription for an elitist life under Communism. Only half a generation was necessary, which from the perspective of social change is a very short time, for the diploma of a higher education institution to cease symbolising elite caste membership and for it to provide a decent entry into life. Today, a diploma is often not enough, and we see increasing numbers of young people pursuing two or even three degrees simultaneously. They know that such pursuits will ease their professional career and that the modern labour markets appreciate flexibility and knowledge. They will also increasingly often face equally educated and frequently cheaper contemporaries from across the globe, in accordance with the laws of Globalisation.

Even if we adjust for the generational boom that is currently filling Polish education institutions and flooding out onto the labour market, the dramatic increase from 400 000 to 1 800 000 students in a country of under 40 million must be impressive. It is one of the miracles that graced Poland in the last 15 years and one that has occurred without an increase in the outlay of public funds for education. It was enough to liberalise the regulatory framework and get rid off the national monopoly on education for hundreds of schools to materialise, educating young people at the high school, undergraduate and graduate levels. Of course not every institution is good and deserves a place in the rankings. On the other hand, WSB–NLU in Nowy Sącz, founded and managed by Rector Pawlowski belongs to the best and is often considered to be the best private higher education institution in Poland.

Therefore, I have read with great interest Rector Pawłowski's book—the volume You, the Reader, now hold in Your hands. I was very interested to discover the views of someone who nearly 15 years ago went against the advice of friends and contemporaries, against reason, to create a higher education institution in Nowy Sącz, a mountain town 400km from Warsaw. Rector Pawłowski often reminisces that people who then heard about his plans barely contained their laughter. The goal was so strange then, at a time when only a few Church–dependent higher education institutions challenged the monopoly of state–owned universities. Yet, the idea was a success. Money appeared, as did an external, foreign partner, the first lecturers arrived and with them, the first students who placed their faith in an unknown, distant institution. Rector Pawłowski decided to show the problems facing higher education and to seek solutions. Those

problems are numerous, serious and, what is most important, common to many nations.

Higher education, understood in its classical sense, i.e. as based on academic communities, is threatened by a major crisis. The first problem is tied to the emergence of for–profit institutions that do not fund Basic Research and focus solely on educating young people, for which process they charge money. They acquire lecturers from established, reputable institutions and we can observe a process of "credibility acquisition", which brings with it negative consequences for institutions that have spent decades on developing their scientific and academic cadres. The second problem results from the emergence of Internet–based on–line programmes. On one hand, they provide an immense and exciting opportunity for the democratisation of learning. Yet, on the other hand, on–line programmes are an antithesis of the classical university, where learning was as important as the Master–Apprentice relationship. Admittedly, the large state universities that are educating thousands of students on each programme, have long forgotten about this relationship, yet its approximation still exists—at the graduate thesis stage, the young student can experience the comfort of working close to an established scientist/academic. Also, we should not forget the value of on–campus life in the acquisition of knowledge. All these benefits are taken away in on–line study. Such statements might sound antiquated for enthusiasts of Internet opportunities, yet there are certain reasons why the best results emerge in institutions where the tutor–student relationship has been retained. Globalisation has brought another change—a completely new scale of educational competition. Previously, a businessman in need of scientific research always turned to the nearest higher education institution, whose profile matched his needs. Now, the same businessman can look for research possibilities virtually anywhere in the world. The above–mentioned are only a few of the issues that have shook up the higher education system in recent years, especially in certain European nations, accustomed to the state support model.

Why do I state this thesis as applicable primarily to Europe? All we need is some facts: the economy that speedily and effectively utilises scientific thought is not that of Europe but rather, of the United States. America has the greatest number of emerging patents, there the transfer from science to business is gentlest and industrial implementation is the result of activity by the scientists themselves. At the moment, Europe can only dream about such an interaction between science and capital. Yet, American expenditure on higher education is on par with European average. The differentiation of effects comes from alternate systemic solutions and from the different attitude towards the practical utilisation of conceptual scientific activity.

I agree with Rector Pawłowski's evaluation of the current state of Continental higher education. It is true that scientists and politicians dominate this area and that it ignores business needs and perspectives. It is true that the system has extensive inertia and often brings out graduates unable to deal with new challenges. It is also true that the EU system has inadequate participation from private capital and an over reliance on state support. As a result, we are facing a serious debate about the future of higher education. We must look at alternative models that exist across our globe and seek those solutions that will on one hand, uphold the increasing democratisation of access to knowledge, and on the other hand, allow the best students and scientists to benefit from the Master–Apprentice relationship. Admittedly, I do not believe in the existence of the one true system, as countries have differing experiences, cultures, habits and customs, yet we have to stop pretending that a system based on state funding and "free" access to education is the only one possible.

Jan Krzysztof Bielecki

POLISH PRIME MINISTER,
JANUARY–DECEMBER 1991,
EXECUTIVE DIRECTOR EBRD,
DIRECTOR PKO, S.A.

From the Author

The knowledge society will inevitably become far more competitive than any society we have yet known—for the simple reason that with knowledge being universally accessible, there will be no excuses for non–performance. There will be no "poor" countries. There will only be ignorant countries.

Peter Drucker[1]

The idea for this book came while preparing a speech for the "Academic Forum" conference organised by the Wroclaw University of Technology, Poland, in May 2003. The conference focused on the EU Commission Communiqué "The role of universities in the Europe of knowledge"[2]. I studied the text with great interest. It left me with many doubts yet also brought a sliver of hope—the Communiqué seemed important enough to focus on providing my opinions and answers to the questions posed within it, i.e. on the role of higher education in the fast–approaching Europe of Knowledge.

To this day, I've had a rather unusual professional career that has lasted 34 years, which allows me to take part in the debate about higher education. For over 19 years, I've been a scientific researcher active in large research centre, which gave me direct experience of the science–industry interaction and exposed me to cooperation with various Polish scientific and higher education institutions. After the 1989 systemic upheaval I became a politician and served the country for four years as a Senator and then as the first Chairman of the newly founded Christian–Democratic Party. Since 1991 I am the founder and Rector of two private higher education institutions that annually educate nearly 5.5 thousand students. Alongside founding and belonging to several economic organisations, I have, by the very nature of my activities over the recent years, become an entrepreneur. Both of my Schools have been created from nothing, and grew rapidly with no recourse to public funds, simply relying on the income from student tuition fees. I think that through such activities I am qualified to look upon the Communiqué through the combined eyes of an entrepreneur, politician, a researcher who spent his life in the Applied Sciences and a manager–organiser

1 Drucker, P. F., (1994), *The Age of Social Transformation*. As originally published in The Atlantic Monthly. Electronic document. Access: http://www.theatlantic.com/politics/ecbig/soctrans.htm

2 EU Commission Communiqué, *The Role of Universities in the Europe of Knowledge*, 5th March 2003, COM (2003) 58 final, Brussels.

of higher education.

The idea to create a higher education institution in Nowy Sącz, Poland[3], was a political initiative. I wanted to leave behind something important—an institution that would ease and accelerate the process by which young Poles can gain the most important asset of all—Intellectual Capital. Higher education, nearly everywhere, but primarily in advanced developed nations, is the most important investment that an individual and his family can make for himself and his children.

We are lucky to live in times when access to knowledge and higher education is incredibly democratic. In many developed nations, over 40% of the young continue their education past high school. The education drive[4] has its social and economic reasoning—the 20th century and its technological revolution brought to an end the dominant role of physical labour and labourers. Peter Drucker[5] observed that, in the USA on the verge of the 21st century, the number of knowledge workers (professionals with a higher education) was higher than that of physical workers. We can also observe a transformation in the value of natural resources, especially those not subject to cartel agreements, as they become less important in determining the wealth of nations, while technologies and financial resources are increasingly available. The primary factor responsible for the development and wealth of entire nations and individuals is now Intellectual Capital: knowledge and the ability to manage knowledge and information. The extremely fast development of nations devoid of any natural resources (e.g. Hong Kong, Singapore) and the explosion of corporations based on IC (e.g. Microsoft, Cisco, Nokia) show what will dominate the global economy in the coming years. Scientific research, backed by an ability to effectively utilise the results in economic practice, and the speed of implementing new technologies, all depend upon people, their knowledge and ability to utilise what they know as well as a constant drive for the transformation of existing and the acquisition of new knowledge.

Knowledge becomes the key to success for individuals and entire corporations. Hence we can safely say that, in the 900–year university history, the importance of higher education has never been greater.

Education as a whole, starting from primary school, via university, all the

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[3] Wyższa Szkoła Biznesu—National–Louis University, is registered as the 10th private higher education institution created in post–Communist Poland and educates its 4500 students on undergraduate and graduate programmes at the Faculties of: Entrepreneurship and Management, Political Science and Computer Science. It also operates an MBA and graduate programmes. Nowy Sącz is a town of 85 000 inhabitants, located in South of Poland, in the Małopolska region, 100 kilometres from Cracov.

[4] In Poland, the number of students grew 4.5 times during the last 13 years.

[5] Drucker P. F., (1985), From capitalism to knowledge society, in: Neft, D., & Woburn, M. A., (eds), *The Knowledge Economy,* Butterworth, pp.15.

way to modern continuous education systems, has become a notable part of the global economy. Not only because it provides the most important of resources—knowledge present in the minds of alumni[6]—but also because it employs a large number of highly educated and generally well–paid professionals. Increasingly, when writing about education, a new term emerges: "the education industry", not only to underline the role of education in the economy, but also to illustrate the vast sums of money that are annually spent on education by governments and individuals.[7] In the eyes of politicians and strategists thinking about the future, citizen education and scientific research are becoming the key for a nation to achieve high economic status and through that, acquiring sizeable political power on the global scene. Yet, education and the research process evade standard project management criteria, so typical for conventional businesses. These areas are incredibly sensitive, even chimerical, where the amount of money spent cannot be easily translated into final results and nearly everything depends on the people engaged in the education and research processes, their knowledge, but also their talent and motivation. Pure systems, even when efficient and well funded are not enough.

The key to the future is an effective, macro–scale education system, which enables everyone able to think in abstract terms (i.e. over 85% of the population) to acquire high school–level education, and allows over 50% of adults to acquire a 1st level (undergraduate) higher education. This is a diametrically different task than the one imposed upon the education system over 100 years ago. It should be noted, that over the last century, the average level of education rose by 2 stages, from a population–wide primary–level education to higher education.

The coming times appear stormy[8]. But a storm is a threat to some, while creating an opportunity for others. Even in the most stable of areas, and here I include higher education, stormy times can overturn the existing order—dethrone existing leaders while promoting those that took upon themselves to face the challenge, and who look upon new technologies or changes in the external environment as an opportunity not to be missed.

The book is structured around three major parts.

Part 1 outlines the position of European science and higher education, the challenges faced by higher education in the light of the EU Communiqué of 5th February 2003. The conclusions drawn from the presented analysis are uniform

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6 The term is used to encompass all higher education institution leavers.

7 During the 1990's America spent over 635 USD billion, a sum much larger than that spent on national defence or retirement benefits. Reading, writing and enrichment. Private money is pouring into American education – and transforming it, *The Economist*, 16.01.1999, p.57.

8 Davis, S. & Meyer, C., (1998), *Blur: the speed of change in the connected economy*, Reading Massachusetts: Addison Wesley; Drucker P. F., (1993), *Managing in Turbulent Times*, New York: Harper Business; Bloom A., (1988), *Closing of the American Mind*, New York: Simon & Schuster.

and illustrate the fall from global leadership of European science in the face of American competition and the dominance of US universities. They also show that the number of problems and scale of challenges posed to European academia will require the introduction of entirely new solutions, seeing that those employed to this day are no longer effective.

Part 2 presents the factors responsible for the dominance of American universities, highlighting the importance of professional management techniques used in running higher education institutions and the notable support from private capital. Then, the chapter presents the changes that occurred in Polish higher education after 1989, highlighting the refreshing influence that private institutions have had on the overall higher education system. A new system of organising and funding European education is then presented. Both proposals (the first of correcting the present–day system and the second outlining a completely new system) utilise the very best European and American solutions and draw conclusions from the changes that occurred in the Polish setting. The proposal based on new solutions requires a change in the overall higher education philosophy, accepting the fact that, on one hand, that higher education is the most important of life investments, and on the other, that educating the best professionals is in the interest of society and state.

Part 3, outlines the historical relationship between University and Knowledge and attempts to define what is the "Europe of Knowledge", or maybe the Knowledge–Based Economy, outlined in the EU Communiqué. Then, the Author presents his views on education and knowledge management.

Each of the chapters ends with a summary that attempts to group the most important ideas. As a result, there is no need for a uniform final conclusion.

The aim of this book is not to present a comprehensive picture of everything related to higher education and scientific research. Rather, it presents new ideas, which can form the building blocks for a debate on and preparation of specific solutions, applicable to individual nations and the EU in general.

The writing of this book was possible thanks to the support, help and inspiration from three people, who over a period of months offered their time, and knowledge: prof. Roman Galar from Wroclaw University of Technology, dr. Jan Kozłowski from the State Committee For Scientific Research (KBN), and dr. Rafał Matyja from Wyższa Szkoła Biznesu—National–Louis University. I am extremely grateful for their help and cooperation.

Thanks go out to my staff: dr. Maria Sidor and Krzysztof Głuc, who took upon themselves to prepare the tables in Appendix II, literature searches and work on the footnotes; Magdalena Furmanek–Kopiec, for her support in the laborious editing process and Marcin Duszyński, for the translation into English.

Krzysztof Pawłowski

NOWY SĄCZ, 5TH FEBRUARY 2004

PART I

1. The developmental challenges facing the European Union in the areas of science and higher education

1.1. EUROPE IN THE CHANGING WORLD

Over the last century, Europe has persistently lost its hegemonic status, and done so in all of the most important areas of human activity: political, social, cultural, economic or that of scientific research. We can make an analogy to the times of the Roman Empire. Greece as an area, which just recently dominated the world was loosing its importance, Greek cities were crumbling, the Greek fleet was non–existent, and primitive farming was re–emerging as the primary mode of survival. While the state crumbled, Greek culture spread across the ancient world carrying forth its amazing achievements in philosophy, mathematics and literature. Today, our modern world, just like its Roman equivalent, has accepted, transformed and developed the greatest achievements of European civilisation, including the institution of the University and scientific research, while Europe as a whole is beginning to lose its place as a political, military, cultural and economic power.

It is difficult to tell an enlightened European, who can look back on a glorious past, that we can easily envisage a world without the considerable influence of geographic Europe. It is easy to create a script, where Europe joins the global periphery. To illustrate Europe's declining role in world economic affairs, we can draw on much data[9], but the exercise would be pointless—we treat this process as fact visible to all who engage in analysing the present and future.

If we assume that, in the 21st century the world's development will depend on the Knowledge–Based Economy, then the expansion of scientific research, or widely–defined, the production of knowledge and its application, will be the fundamental way in which corporations or countries will acquire supremacy or at least a sizeable portion in the global division of the results of human economic activity[10].

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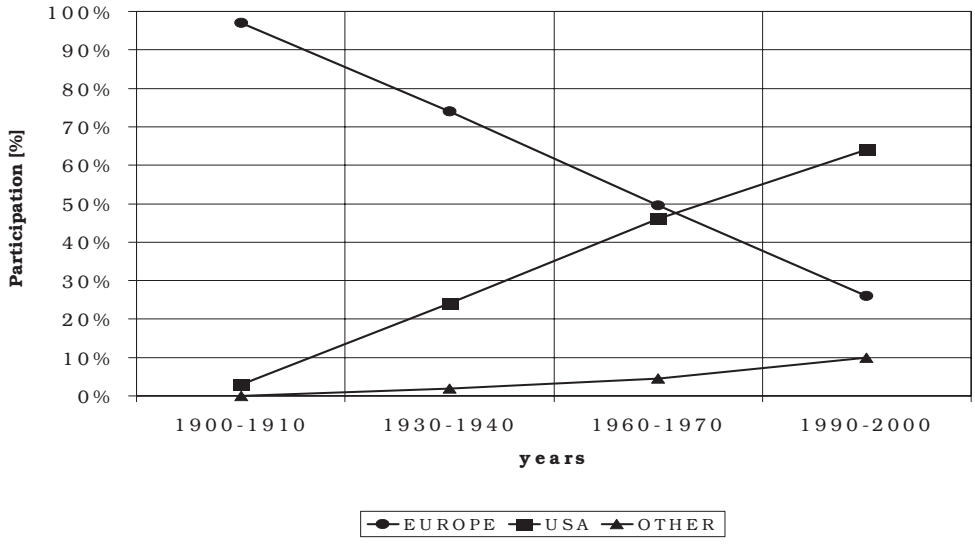
9 Kennedy, P., (1989), *The Rise and Fall of the Great Powers*, New York: Vintage Books; Huntington, S. P., (1996), *The Clash of Civilisations and the Remaking of World Order*, New York: Simon & Schuster; Oswald, S., (1991), *The Decline of the West*, New York: Oxford University Press.

10 Read: Kleer, J., Liberska, B., Kukliński, A., (et al), (1998), *Globalizacja gospodarki światowej, a integracja regionalna. Konsekwencja dla Polski*, Warszawa: Komitet Prognoz „Polska w XXI wieku" przy Prezydium PAN, Dom Wydawniczy ELIPSA; Bożyk, P., (et al), (1999), *Jaka przyszłość Europy?*, Warszawa: Komitet Prognoz „Polska w XXI wieku" przy Prezydium PAN, Dom Wydawniczy ELIPSA; Jałowiecki B. (2000), Brukselskie scenariusze dla Europy, in: *Strategia rozwoju Polski do roku 2020, Vol. 2, Studia eksperckie na temat 20–lecia 2001–2020*, Warszawa: Komitet Prognoz „Polska 2000 Plus" przy Prezydium PAN, Dom Wydawniczy ELIPSA, p. 164–181.

To illustrate the level of scientific research development in a given country we can utilise a variety of data or synthetic indicators. This work proposes to use the simplest of them all, which clearly illustrates the position in the global race for scientific dominance—the percentage of the entire number of Nobel Prize laureates (excluding the Peace and Literature prizes), generated in 10–year periods by Europe, the United States and the rest of the world.

The process of globalisation and the development of the Knowledge–Based Economy will boost the role of world leaders—corporations and countries that have direct access to research data and its applications in the shortest possible time frame. The winners will be those, who can create the best systemic conditions for the conduct of science and for utilising the results of scientific research and who acquire the best scientists. That is the reason why the number of Nobel Prize winners working in a given country is a clear illustration of the country's scientific potential, and thus its developmental opportunities.[11]

Figure 1. Percentile participantion by nation in Nobel Prizes awarded between 1900–2000



Source: Own analysis, based on data from www.nobel.se

[11] To simplify the analysis, numbers of laureates have been partitioned into 10–year periods: 1900–09, 1930–39, 1960–69, 1990–99, and those are the periods of relative stability in crucial areas of the world (therefore the decades following both World Wars and the periods of turbulence that followed have been omitted).

The data speaks for itself, and should provide the necessary impulse for Europe to initiate special actions. The number of Nobel prizes awarded to Europeans has declined from nearly 100% to 26% in the 1990's while the number of Nobel Prizes awarded to scientists working in the USA has exploded from 3% to over 60% in the same period. The number of Nobel prizes awarded to scientists from outside Europe and the US is also steadily rising. Of course we could delude ourselves that, when looked upon in absolute values, the decline is much smaller because we still generate over a third of the laureates and six of the American laureates in the 1990's came from Europe[12]. But such explanations only weaken the message emanating from the graph above, especially when we extrapolate the European decline into the future, even if we assume a relative slowdown of the process. The message is stunning: should the decline in the number of Nobel Prize laureates living and working in Europe persist, after 2030 the number of Prizes awarded to the Continent ought to be marginal. The data presented is a shocking signal of Europe's possible marginalisation in one of the crucial areas of human activity—the development of science.

When observing the European Union's activities over the recent years, we can argue that the EU authorities see the threat of scientific marginalisation and are attempting to deal with the danger, as illustrated by the activities centred around the V and VI Framework Programmes, with a joint budget of 31 billion EUR, or the reports synthesised in various EU Commission Communiqués[13].

1.2. HOW EUROPEAN UNION SEES THE FUTURE OF HIGHER EDUCATION

The most important EU documents that focus on the development of science and higher education are the Communiqués regarding the Lisbon Strategy: one about the European Research Area[14] and one, which is the direct inspiration for this book, about "the Role of Universities in the Europe of Knowledge"[15]. This Communiqué, published on 5th March 2003, stipulates that a fundamental part of European future is the functioning of a European knowledge society, and it illustrates the subservient role that the Knowledge–Based Economy has towards society. The EU Commission argues that the development of a Knowledge–Based

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12 Detailed data about the Nobel Prizes awarded in various areas can be found in: Braun T., Szabadi–Peresztegi Z., Kovacs–Nemeth, E., (2003), No–bells for ambiguous of ranked Nobelists as science indicators of national merit in physics, chemistry and medicine 1991–2001, *Scientometrics*, vol.56, no1, p.3–28

13 EU Commission Communiqué, op. cit. footnotes 3,4,7.

14 European Commission, Communications, *Towards a European research area*, COM (2000) 6 of 18.1.2000; *The European research area: providing new momentum*, COM (2002) 565 of 16.10.2002; *More research for Europe/towards 3% of GDP*, COM (2002), 499 of 11.9.2002; *Making a European area for lifelong learning a reality*, COM (2001), 678 of 21.10.2001. See: http://europa.eu.int.

15 European Commission, Communication, *The Role of Universities in the Europe of Knowledge*, COM (2003), 58 final of 5.02.2003.

Society is dependent upon four primary factors: the creation of new knowledge, its transfer via the education process, its propagation and utilisation in new services and industrial processes. In fact, universities[16] not only participate in all of the above–mentioned processes but are at their very core, and play a fundamental role in three areas: scientific research and its utilisation, education, local and regional development.

The Commission argues that European education institutions are not competitive on the global arena compared to institutions of major European partners. The Communiqué highlights the extensive heterogeneity of national education systems within the EU and the varied effects of their activity. The Commission states that already a third of all Europeans are employed in knowledge–intensive industries (whereas 40% in Denmark and Sweden) and that possessing a higher education adequately shields workers from unemployment (see Appendix 2, Table 1). Currently, 20% of EU citizens aged 35–39 possess a higher education, whereas 20 years ago that number was only 12.5% for this age group[17].

The Commission's Communiqué formulates new challenges facing European higher education institutions:

— **An increase in demand for higher education**, highlighting its mass–nature;
— **A progressing process of internationalisation in terms of education and scientific research**, highlighting the fact the European institutions draw in fewer students from other countries, compared to American institutions;
— **The development of effective and close cooperation between educational institutions and industry**, highlighting the fact that this relationship is currently the weakest side of European education. The Communiqué lists shocking data—fewer than 5% of all innovative companies see as important and useful, the information gained from state scientific institutes and educational institutions;
— **An increase in the number of places responsible for science creation**, highlighting the increasing tendency towards outsourcing of scientific research by companies to the best educational institutions, regardless of their location, which often means outsourcing to non–European educational institutions;
— **The reorganisation of knowledge**, highlighting two opposing tendencies: the growing diversification and specialisation of knowledge, and the need for the academic world to adapt to an interdisciplinary character of the

16 Following the Communiqué, the term "university" is used to mean all higher education establishments, including for example "Fachhochschulen", "Polytechnics" and "Grand Ecoles". ibid. footnote 1.
17 ibid. p. 9.

areas defined by major societal problems. The Communiqué also signals the increasing lack of differentiation between Basic Research and R&D, simultaneously underlining the fact that the ability to conduct scientific research by American universities defines their attractiveness as industry partners;

— **The emergence of new expectations**, for example: the increasing need for educating new entrants into applied and technical sciences, and the growth of continuous learning[18] .

The EU Commission Communiqué points out that current responsibility for higher education institutions is located at the national or regional level, whereas the greatest challenges await those institutions at the European or global level. The discrepancies between the organisation of a higher education institution, its management at the EU member level and the emergence of challenges surpassing state boundaries, are constantly increasing due to three factors:

— The creation of a true European labour market;

— The emergence of a globalised, wide selection of academic course offerings;

— The continuous "brain drain", resulting in the loss of top–class students and leading researchers that are EU citizens[19] ;

These factors will be further enhanced after the EU expansion in 2004. The above–mentioned statements led the EU Commission to a conclusion that, due to their nature and scale, the challenges related to the future of European universities have to be dealt with at the European level.

EU authorities place an ambitious goal before European education. The European Council, on its 2002 Barcelona Summit, formulated the goal that European education systems should become the global standard by 2010, which should help in the realisation of the EU's primary goal, formulated during the Lisbon meeting of the EU Commission in 2000, of "*making the European Union into the most competitive and dynamic knowledge–based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion.*"[20]

The Commission poses the problem in a clear manner: if European universities are to play their role in creating a Europe of Knowledge, they must, with the help of EU member states and within a European context, face a series of challenges. A precondition for freeing up their true potential and creating a uniform world reference[21] is the introduction of radical changes. According to the Commission, three goals have to be realised simultaneously:

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18 ibid. p. 11–16.

19 In: Jałowiecki B., Hryniewicz J., Mync A., (1994), *Ucieczka mózgów z nauki i szkolnictwa wyższego w Polsce w latach 1992–1993: Raport z badań*, Warszawa: UW. EIRRiL.

20 Communiqué, op.cit. p.3.

21 ibid. p. 2. The European Council in Barcelona recognised this need for excellence, in its call for European systems of education to become a "world reference" by 2010.

— Assuring that institutions have appropriate and stable resources and their effective utilisation;
— Consolidating academic and scientific excellence, especially via the creation of cooperative networks;
— A wider opening of institutions outwards and raising their international attractiveness[22];

The most interesting characteristics of the 5th February 2003 Communiqué is the open criticism visible in the current situation outline and the formulation of questions combined with an invitation to a debate, and an encouragement to explain one's experiences and "best practices".

The summary of the Commission Communiqué of several dozen pages outlined above is rather simplified, but serves the purpose of drawing attention to the most important issues in the EU–wide discussion on the future of higher education and scientific research.

1.3. WHAT SHOULD BE THE STRATEGIC OBJECTIVE FOR THE EUROPEAN UNION IN THE AREA OF HIGHER EDUCATION DEVELOPMENT?

The most surprising aspect of the Communiqué is the incorrect primary notion, regarding the attainment by 2010 of such a level of European higher education so that it can become the world reference. The Communiqué, via its selective choice of data and argumentation, is filled with a competitive tone, one aimed at the United States. According to the Commission, the US sets the current global benchmark and the American economy dictates the world's development pace. In this context, the theory that EU education systems must become the world's reference in 2010 is doubly incorrect, as proven by two arguments. First, the EU and its member states have to stop the progressing marginalisation of European higher education and science. Second, the very act of placing upon Europe such a goal, that demands pronounced structural changes and extensive expenditure within a period of only 10 years, is a large, also political, error. Such an approach is typical for politicians, who think through the perspective of time–in–office, and for whom looking beyond the nearest parliamentary election is a mark of true courage. Yet, we should remember that educational processes are governed by their own laws and are characterised by a very specific slowness and inertia in relation to the changes. Changes implemented in the shortest educational programmes—3–year undergraduate—even if of the most revolutionary kind, bring measurable and credible results after several more years as their effects can only be evaluated once several waves of alumni have

[22] ibid. p. 21 & 23.

emerged onto the employment market. Thus, a decade is the shortest viable timeframe that should be considered in the educational context. The Commission places before the European educational system a goal requiring fundamental systemic changes and the outlay of immense financial resources. Unfortunately, in 2004 we can safely assume that European educational institutions will not become the world reference by decade's end. The shortest reasonable timeframe in which we can think of raising quality and catching up to the US universities in terms of comparable results is 25 years, assuming that the period is filled with dedicated activities. Stating unrealistic goals within an unreasonable timeframe can effectively discourage and slow down the transformation process. The Communiqué has a worrying "political underlay"—the ambitions of European politicians, keen to win the race with the US, and to do so in a very special area. Science and education at the higher level are by definition trans–state and trans–national and that is how European universities were created and functioned. Attempts at confining an institution within the corset of a single nation always end badly—enough that we look towards the ex–USSR, where gigantic resources were invested in the development of science and education, while the results were a huge disappointment.

With the Internet currently easing access to knowledge, any attempt at defining the rules of university and scientist competitiveness against others has to result in a complete fiasco. We can state a proposition that, besides the entertainment industry, the scientific world is the second most globalised part of our reality. Scientists, especially when we think of those top–class ones, think and work in a global dimension, often having cooperative partners scattered all over the world and evaluate them not by their passports but by the quality of their scientific CV's. Of course, they compete for leadership in narrow scientific areas, but for realisation of specific research aims they are able to create multi–national, multi–ethnic research teams, where the only evaluation criteria are competencies and usefulness to the team. Even research institutes of large and medium–sized corporations compete amongst themselves, but it is usually a race towards some specific goal—leadership in some area, which is immediately translated into the quickest and most effective implementation of scientific results into actual production—rather than a race against someone or something.

Thus, the goal is in need of a correction that in no way denigrates its importance. Rather, there is a requirement for systemic changes[23] across the EU and its member states, which would permit a large group of the leading and most innovative European universities to join those that will, at the time, represent the world reference. We can safely assume, that alongside American

[23] In the perspective of about 20 years.

universities, this leading group will also contain universities from other countries (especially from the Asia–Pacific region) that have aggressively promoted the development of the Knowledge–Based Society.

The entire Communiqué radiates a faith typical for EU authorities that through well designed and implemented regulations and procedures the desired aims can be achieved. Unfortunately, it is not an appropriate approach to the problems of education and scientific research, which avoid simple and quantitative rules.

The area of higher education and scientific research varies incredibly across the world. Both in Europe and the US, we can point to amazing institutions and wonderful research teams, but there also exist a number of weak universities and bad scientific institutions. This differentiation is not only a fundamental systemic characteristic, but it is also necessary seeing that competitiveness in education is required for effective functioning of the education sector and the development of scientific research. Due to this fact, attempts at excessive regulation, which are visible in the Commission's Communiqués, are dangerous and can lead to inverse results. Presented in the Communiqué as one of the primary aims, the need to provide educational institutions with adequate and lasting resources and a need for their research and academic consolidation, can result in a negation of competitiveness and differentiation so necessary for the identification and selection of the most talented individuals and strengthening of the best research teams or the best educational programmes.

The debate over the future of the European higher education system cannot be separated from the wider political, social and economic contexts. We cannot deny that Europe, especially its political and intellectual elites, accustomed over centuries to dominance and tasked with forging the future, feels badly in a situation, when it becomes only a part (and not even an important one) of the modern world, whose future is defined by others[24]. EU member states, together with Norway and Switzerland, achieved their high level of societal welfare, but paid a hefty price for it with the decline of individual activity, overextension of the social support system and an increasingly ageing population, which in the coming decades can lead to a "de–nationalisation" of various countries (see Appendix 2, Tables 2–6).

A major task for European politicians, who want the EU to build the most competitive of global economies based on knowledge, is the creation of new mechanisms that would help European society in regaining its traditional drive, the worldly desire of the European explorers, fascination with the Unknown of great European scientists and the creativity and imagination of the great artists. The current laziness of wealthy Europeans is very dangerous—as a symbolic

[24] As illustrated by the fact that the major developmental centres prefer non–European locations.

illustration, we can quote the example of an attempt by ComArch, an aggressive Polish IT company and prime illustration of knowledge–based companies, to develop its German operations. In its Frankfurt–Am–Main headquarters, the founder, professor Janusz Filipiak[25] employed German IT specialists because:

"We were driven by a conviction that the Germans are the ideal workers—dedicated and honest. We paid dearly for this myth. Pampered by the social system, they felt secure. They were ineffective, didn't want to fight for the best results. The place of Germans was taken by young Poles—their German counterparts can learn a lot from them".[26]

Most EU nations will face the ageing population problem, where an increasingly clear group of voters is forming from those retired and the elderly, whose priorities can and will be diametrically different from those of the young and active societal group. The European elderly, who are in a most natural manner interested in maintaining and strengthening the current welfare and retirement system, will be difficult to convince about the need to invest in a far–away future (see Appendix 2, Tables 5–6).

It is notable, that the 5th February 2003 Communiqué does in no way mention the issue of EU expansion. Yet, very quickly, the EU will experience an inflow of new educational material: 3 million students, hundreds of thousands of scientists and researchers and over 600 universities. Will it be a problem for the EU (due to the underinvestment prevalent in institutions of the entering new members), or an opportunity resulting from the appearance of new human resources (scientists) and new human potential (youngsters)? (see Appendix 2, Tables 7–8).

Creating the appropriate mechanisms for funding and supporting the best can result in a new developmental impulse for the widened Europe in terms of creating a Knowledge–Based Society.

The EU and its elites can expect a crucial and in–depth discussion over the aims, which Europe should set for the coming decades. The author argues that such aims, which can be used to mobilise Europeans into action and encourage those most talented and ambitious to live and work in Europe, should include:

— Widening the span of wealthy areas and making Europe into a good place for individual and social life;
— Appropriate utilisation EU expansion effects;
— Widening (or at least maintaining) the current level of the European economy's participation in the global economic system;
— Regaining by European universities of their rightful place as co–leaders in scientific research, shaping and forming within them of intellectual capital, which is a crucial developmental asset.

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25 Professor Janusz Filipiak is a Polish Computer Science specialist.
26 Chomątowska, B. (2003), Profesorowie sukcesu, *Dziennik Polski*, nr 184, 8 August.

1.4. SUMMARY

* Europe as a whole, together with its largest nations have gradually lost their hegemonic status during the 20th century, and done so in all important areas of human activity—political, social, cultural, economic and scientific research. If we assume that, in the 21st century, the pace of global or national development will be defined by the Knowledge–Based Economy (increasing numbers of facts point in that direction), then the development of scientific research, or rather the production of knowledge and its transformation, will form the fundamental method of attaining leadership and acquiring a competitive advantage.

* The graph illustrating the relative proportions of Nobel Prize laureates generated by Europe, the US and other countries, clearly shows an increasing tendency for American scientists to win the Prize, coupled with a constant decline Awards going to Europeans. We can draw a simple and depressing conclusion: Europe is threatened with a dramatic decline in its competitive potential, at least in the area of scientific research.

* EU authorities have recognised the threat and are undertaking appropriate political steps and specific activities aimed at reversing the decline and regaining the competitive advantage. The fundamental documents related to the higher education are the EU Commission decisions from its meeting in Lisbon in March 2000 and the EU Commission Communiqué "The role of universities in a Europe of knowledge". In the following meeting in Barcelona, March 2002, the European education systems have been tasked with becoming the world reference by 2010.

* The Commission's Communiqué of 5th February 2003 outlines the challenges facing European educational institutions: increase in demand

for higher education, progressing internationalisation of education and scientific research, developing cooperation between universities and industry, increase in the number of locations responsible for knowledge creation, the reorganisation of knowledge and appearance of new expectations. The Communiqué stresses the fact that the new challenges outgrow national boundaries.

* The most surprising characteristic of the Communiqué is, according to the author, the incorrect notion, regarding the attainment by European educational institutions of the world reference by 2010. The shortest period, which can bring measurable and positive changes in European higher education, if appropriate actions are undertaken and correct resources utilised, is 20–25 years.

2. The current world of European academia

2.1. THE UNIVERSITY AND ITS NEW ENVIRONMENT

It is of concern that European politicians, rather than the academic community, are creating an analysis of the present situation, are voicing opinions about the progressing marginalisation of European universities, and are outlining ambitious goals of attaining by those very universities of a world reference[27] . Unfortunately, the majority of analyses coming from the academic world centre on a single issue—inadequate funding of science and higher education by the national governments. Poland is a good case, where the lack of financial support is used as a shield, behind which feeble organisational and academic structures continue their existence and prolonging the period of illusion that finished elsewhere 15 years ago.

American universities are clearly dominating, and the disturbing reality is visible to anyone able to accept the facts rather than seek comfort in pointless delusions. It is a humiliating reality that, the ambitious goal of catching up with or even overtaking American universities, has been stated by people from outside the academic world—politicians and EU civil servants. Have the European academic circles accepted American supremacy and admitted defeat? Many European luminaries of science travel extensively to US universities where they give lectures and conduct research together with American colleagues. They have to know about the potential and attractiveness of American universities. A solution comes to mind: science is trans–national, and we should not infuse it with our political or economic habits, like competitiveness. If we assume that the above–mentioned theory is correct, we still have to admit that the results of scientific endeavour are not divided in a democratic manner, rather, they bring wealth to the countries and institutions in which research is conducted.

It is worth noting that, while the visits of European scientists at American universities are numerous, the same cannot be said of reciprocal arrangements—research trips or multi–month visits of American professors at European universities. Why do Asian students prefer to study at US universities? Why have over 50% of Europeans who received their PhD in the US, according to the Commission Communiqué, decided to prolong their stay or even settle in the US?

It is worth repeating that the European academic circles must redefine their place in a drastically different external environment and reinvent their primary

[27] The term is used in the EU Commission Communiqué, op.cit.

goals. In the constantly evolving 21st century world, the importance of education and science will continue to grow and the condition of universities cannot worry solely those employed within, but becomes the "to be or not to be" of entire societies.

Today's times can be defined as: many from outside the academic world see the increasing importance of science and education, placing their hopes upon universities and scientists, whereas the majority of academics fail to see (or pretend not to) the necessary changes and increased interaction with the external environment[28].

It is appropriate to define the major challenges facing European universities at the beginning of the 21st century. To maintain clarity of discourse, the challenges have been grouped into four major categories:

— Internal, essence–based, related to the conduct of science and realisation of teaching programmes;
— External competitiveness;
— University management;
— Resulting from the emergence of new challenges: financial restrictions, the emergence of continuous education, demographic changes that are reducing the number of Europeans.

One of the most important, and continuously growing, problems facing European universities is that of scientific and academic financial efficiency. Currently, even the wealthiest European states face increasing challenges in funding higher education from public sources, and for many years the increase in designated budget resources did not keep pace with the rise in student numbers. Across the EU those ratios have even declined over the last 10 years[29] (see Appendix 2, Table 9).

Traditional universities are being challenged by for–profit institutions, which consciously abandon research and focus solely on student education. They take forms similar to conventional enterprises, where innovation and constant change are normal, routine activities. Devoid of the ballast that is scientific research, they forego forging their own faculty, instead preferring to "shop" on the employment market for "ready–made" academics, those that are most effective and innovatory. For–profit universities, managed in a professional manner can be much more effective financially and client–, or in this case, student–oriented. Some students will choose those institutions, forgoing the free education in European state universities. Commercial enterprises might act in a similar

[28] More about the trends and the need for changing university organisation and its relationship with the external environment read: Lundvall, B–A., (2002), *The University in the Learning Economy*, electronic document, http://ideas.repec.org/p/aal/abbswp/html.
[29] Communiqué, op. cit. p. 23

fashion—outsource their research to a small, elastic, private research institute, from which they can expect quicker results obtained at a lower cost (due to the institute's minimal fixed costs), compared to big state universities.

For–profit universities resemble parasites, feeding off the best "products" of the global academic environment—people and programmes—and are a by–product of the developed world. But they exist and develop because free market logic brings forth a requirement for minimising fixed costs by a company or institution. Because they abandon internally generated research and the expensive development of own faculty, for–profit universities can effectively restrict fixed costs.

Traditional universities are also threatened by the introduction of Internet technologies into the educational process. On–line courses[30] are no longer a theory—education sector leaders are already offering such programmes. It is worth noting that the proliferation of Internet access, in terms of ease and cost minimisation, can result in a dramatic move away from traditional education by a notable number of potential students, especially in the social sciences. It doesn't take too much effort to imagine a gigantic virtual university, which offers programmes all over the world, with a library collection larger than any university library and employing the most notable scientific minds and lecturers. Such an institution would take over a sizeable portion of the market segment in the given discipline, which would result in the loss of jobs by thousands of academic lecturers, who didn't see the looming threat or were too weak to join the still–employed chosen few.

The 20th century challenged the conventional university with the mass nature of higher education—student numbers increased by several factors of magnitude, as did the corresponding number of academics. The increase in university size means that conventional management and quality assurance techniques are no longer adequate.

The European academic community is still attached to the notion of academic independence in its broadest sense—not only in terms of the freedom to decide upon scientific research but also the right to select university leaders or ways of utilising public financial support. Most modern universities that educate tens of thousands of students have become large "enterprises" that employ thousands of workers and are very difficult to manage. In most European states, a broad interpretation of academic independence retains the right to choose the Rector in the hands of the university's professors. Traditionally, one of them becomes the new Rector, and he is usually a noted scientist, one of the best the institution

[30] French D., (1999), *Internet Based Learning: An Introduction and Framework for Higher Education and Business*, Sterling, Va: Stylus Publishing; McCormac C., Jones D. (1998), *Building a Web–based Education System*, New York: Wiley Computer Publishers.

possesses. During his term–in–office, the scientist is removed from scientific and academic endeavours faces an insurmountable challenge, that conventional corporations spend 15–20 years preparing their own managers to overcome. The matter is further complicated by the fact that most academic institutions have given away many statutory and control rights to collegiate bodies like Senates, Faculty Boards or their equivalents. Therefore it isn't a surprise that we observe increasing challenges to the current management techniques related to the utilisation of public funds intended for its maintenance. It seems that the European academic establishment didn't notice the increase in university size and continues to use management techniques (like traditional faculty–run governance) suited to institutions that were ten times smaller. The biggest universities experience far reaching faculty, departmental and institute autonomy, where those segments create and implement their own development policy independently, or even in spite, of the strategic goals set for the whole university. Of course, there are positive examples where large universities or campus federations experience correct management, as illustrated by US state universities or UK institutions. Yet these positive cases do not negate the notion that there is a need for new management techniques, which are scale–specific and appropriate to the complex university–external world relationships. They have fast become a current and important issue facing the European academic environment and state institutions.

The Master–Student relationship that has developed over centuries in academia has become difficult to maintain in a situation where hundreds if not thousands of students enter the university each year. The best universities attempt to uphold this relationship on the doctoral level, but even then it is a challenge. As a result, institutions find it difficult to monitor educational programme quality and to evaluate the knowledge gained by a student. Because nearly 50% of young people enter European universities each year, not only the best and chosen ones find their way into the academic world, but also those who are average and often ill motivated. The result can be summed up by the prevalent opinion that even the best universities have suffered from a noticeable drop in the quality of their programmes.

The European model[31] of democratic access to a free higher education has led to a situation where, alongside educating those motivated to achieve the best education possible, European universities have become a shelter for those avoiding unemployment or delaying their entry into adulthood. How can universities assure quality and avoid depreciating their diplomas and accusations of "degree selling"?

[31] To learn more about education system structures, read: Morawski, R.Z., (ed), (1999), *Efektywność Funkcjonowania Zachodnioeuropejskich Instytucji Akademickich*, Warszawa: ISP; or online sources: http://www.euroeducation.net; or http://www.eurydice.org/Eurybase

Multiple–choice tests, so popular in assessing large student groups, enable the weak, undereducated ones to slide through the system. Of course not all universities and students suffer from lower standards—Cambridge University has retained its individual tutoring system and the Master–Student relationship, despite the increase in student numbers, but it is a fairly isolated case. We can still observe large numbers of students that are highly motivated and possess a strong work ethic and who effectively utilise the study opportunities on offer in every university. Yet, the perception of a given university is not only defined by the success of its alumni, but also by the procedures and quality control systems that prevent the weakest and under–educated from finishing a programme.

The mass nature of higher education has not only brought an increase in student numbers at traditional universities, but has also resulted in the appearance of new institutions. The new reality is one of notable differentiation, which, while in itself a positive thing, has brought about the emergence of very weak institutions, offering degrees and diplomas that require reduced effort in comparison to good state universities. Programme licensing and accreditation is becoming increasingly important. American academic practice has developed a system of voluntary accreditation where well–prepared representatives of university professors and Presidents of other institutions conduct programme and institution evaluation. But only institutions that care for their external image undertake such procedures. Those that don't care about prestige create a sizeable problem. The entire world faces a problem of appropriate evaluation of programme quality and the correct definition of requirements to be fulfilled by every student at institutions awarding the same title and degree. On the other hand complications arise from the fact that overly strict enforcement of criteria, like minimum programme requirements, can bring about the absence of programme differentiation and, should the criteria be incorrect, result in massive negative effects upon institutions. Incorrect criteria and programme requirements, when applied on a European scale, would bring catastrophic results.

Many universities have suffered from the move of scientific research, especially in applied sciences, away from the institution to corporate research centres or highly specialised research institutes. The process entails a continuous migration of top–level academic and scientific cadres, as well as fresh graduates, who embark upon a scientific career in well–funded specialised industry laboratories and scientific institutes.

What are the foundations of original universities? We often receive an incorrect answer, that it was the creation of new knowledge. Yet, early universities collected, catalogued and passed on existing knowledge. Humboldt's idea of the necessity for coexistence of science and education developed only during the 19th and 20th centuries, while earlier universities were the storehouses and

transmitters of codified knowledge. It is highly probable that the role of universities in the future will once again be the transmission of knowledge.

Economic globalisation and the proliferation of information networks are increasing the distance between local businessmen and managers from the local or nearest university (see Appendix 2, Tables 10–11). Until very recently, requests for research and analysis from small– and medium–sized enterprises were sent to the nearest university. Today, the manager can order such research from any institution on this planet, if he decides that the results, their quality, time–to–delivery or price warrant such a decision. This development has brought about competition in the race for private research funding. Such competition is much needed, as it raises research standards, yet is also very dangerous to weaker universities devoid of top–class scientists or renowned research teams. Continuous concentration of research in a few top–class institutions is worsened by the fact that institutions will be unable to receive increased state funding for research and day–to–day operations. We can safely assume that the current level of expenditure of 1.1% GDP, will not increase, while the few wealthy countries with small populations[32] (Finland, Sweden, Denmark) where this sum is higher are exceptions to the rule. Many European universities, devoid of private funding that is so popular in the US, will find it increasingly difficult to fund independent research by each and every staff member, which will result in a major challenge to Humboldt's unity of research and education under a single roof, especially that the world has now witnessed the emergence of for–profit and on–line virtual universities focused solely on education.

The notion of distance education over the Internet is a challenge that isn't even well defined, yet definitely underappreciated. Information Technologies like intranets, open opportunities for enhancing traditional teaching techniques and the individualisation of education. The Internet, when used correctly, helps in effective management of the teaching process and lowers administrative costs. Simultaneously, the Internet is helpful in raising the standard of education for part–time and already employed students. Well–designed Internet programmes individualise the study process, by allowing the student to choose the most beneficial time for study, while retaining student–lecturer contact, even if only via virtual means instead of face–to–face. The development of online programmes might restrict the numbers of students undertaking traditional, full–time, stationary education. Distance learning brings with it mass customisation—the process of educating huge student groups within a unified programme framework, while enabling them to choose the appropriate subjects and contact the lecturer,

[32] For detailed financial indicators for individual countries see: OECD, (2002), *Education at Glance: OECD Indicators 2002*, Paris: OECD; EU Commission, *Key Data on Education in Europe 2002*, Paris: EURYDICE, electronic document, http://www.eurydice.org/Eurobase

even if in a virtual manner. This development might bring about the collapse of many universities that will be unable to find a financially viable number of students. New technologies will create opportunities for new entrants onto the education market. Opportunities related to the Internet and IT will in the coming years change our current academic reality and result in profound quality changes and an overturning of established position rankings.

The Internet is an opportunity for new entrants because its utilisation in the education process lowers costs of entry. Developing physical infrastructure and the related need for funding vanishes, while fixed costs related to academic processes are much smaller. Internet–based educational programmes also lower costs for the student, especially when embarking on a programme located away from home. They also create study opportunities for those working on positions requiring full–time employment. In this mode of study, physical contact with the university is limited to exams, although even this aspect will decline over time as Information Technology progresses. Many from the academic environment find Internet–based programmes unacceptable. Accusations are made about dehumanising the study process or the lack of physical lecturer–student interaction. Yet, in the author's experience (although limited to nearly 3 years of observing the realisation of such a programme), when well–designed and backed by materials prepared by top–class specialists, programme quality, and thus its results, can be much better than that of traditional large–scale programmes.

The academic establishment is accustomed to the traditional form of programmes on offer, while the very nature of the learning process enforces a multi–year inertia. When coming face–to–face with the real, fast–changing world, it is clear that many institutions are "educating for the past", a notion that is increasingly correct when applied to highly–specialised programmes of study. In extreme cases we can look at a 5–year programme, developed only 10 years ago (therefore relatively recently in academic terms) and which has created 5 annual groups of graduates, is already producing specialists that are completely useless on the labour market. Fortunately, the challenge of preparing programmes appropriate for up–to–date labour market needs does not refer to the whole of higher education. We can name entire groups of programmes[33] that offer fresh information in a given subject area and the skills necessary for its interpretation and application in real life, as well as teaching students independent thinking, instead of creating specialists desirable on the local employment market. The speed of change and the difficult to define needs of future labour markets poses immense and difficult challenges to higher education. An idealistic answer to

[33] For example: aerospace engineering, biochemistry, genetics, computer systems engineering, computer game design, robotics.

this quandary is that universities are not tasked with educating people ready–for–work, nor educating people to fulfil the needs of labour markets, and it is the student who takes full responsibility for his future, from deciding upon a programme of study and university to what he will do upon graduation. The social consequences of the above answer include unemployment, mismatch between worker abilities and labour markets needs, over–qualification and its associated costs, frustration of unemployed graduates, etc., and have to be considered.

In the coming years, universities will experience increased competition for fresh students, who will in turn make their decisions based on the perception of whether completing a given university will enhance employment prospects, which will in turn make passing through life more enjoyable. Of course, such social perceptions can be shaped by and be subject to fashions. Sometimes, a solid education is overtaken by the pursuit of programmes that are fashionable today, gone tomorrow, while fashionable gimmicks, techniques and tools dominate issues fundamental to a normal human being, like understanding the surrounding world or problem–solving. To prevent such a situation from occurring, educational leaders worldwide are moving away from highly specialised programmes towards those that widen the student's knowledge in multiple areas, enhance skills in the utilisation of information and knowledge and attempt to form character traits. The products of such programmes can effectively move in our ever–changing reality.

2.2. FUNDING HIGHER EDUCATION

Academic and political circles are faced with the challenge of creating and implementing a system of effectively financing higher education. Everybody knows that our current system is inappropriate—both those deciding about the size of public funding (often critics of the way those funds are utilised) and those that are employed by or manage universities (often complainers about the meagre amount of funds)[34].

The new century will not bring an increase in higher education funding in the EU member states because the number of young people aged 20–29 (university age) inside the EU is declining[35], and even if the "scholarisation" coefficient[36] rises further from its already high level, it will not result in increased student

[34] Morawski R. Z., Systemy finansowania szkolnictwa wyższego a efektywność funkcjonowania zachodnioeuropejskich instytucji akademickich, in: *Efektywność Funkcjonowania...* op.cit, p. 59–116.

[35] 51 million people in 2000, about 45 million people 2010 r. in: EU Commission, (2002) *Investing efficiently in education and training: and imperative for Europe*, COM (2002) 779 of 10. 01. 2003, p. 32, tab.6.

[36] The participation/enrolment rate in higher education as a percentage of the 19–24 age group.

numbers. Low economic growth, or even stagnation, prevalent in may EU nations will not lead to an increase in budgetary incomes, while subsequent governments will be increasingly challenged by failing retirement systems, excessive welfare state contributions, and will therefore redirect resources to those needs. Internal EU competition will probably result in lowered tax rates, which in turn will enforce restrictions and more effective spending of public resources. If we look towards the US, we can assume that the current EU public expenditure level of 1.1–1.2% GDP on higher education comes close to the maximum[37]. State universities thus leave the academic community with searching for funds from other sources—the Germans have tried to introduce university fees, while the United Kingdom raised its existing fees—and enforcing systemic changes that will open opportunities for effective utilisation of public funds.

EU Commission Communiqués regarding higher education highlight the major differences between the US and Europe in funding higher education—the percentage of public funds is similar (in 1999 the EU spent 1.0% while the US 1.1% of GDP), but there is a major difference when it comes to the share of private funds (EU spent 0.2% while the US 1.2%—six times more!)[38].

A fundamental doctrine of European higher education is democratic access, which in turn means tuition–free study. The author sees this assumption as unsupportable—it is very difficult to talk about democratic access when those most talented are partially funded (via taxes) by the families of those less able, who cannot gain a higher education, while their families are generally poorer than those of people studying. EU authorities highlight the wastage of public funds, which results in the high fall–out rates that reach 40%, while the time–to–completion of identical degrees differs in EU member states differs by a factor of two. The author's opposition is not a result of these above–mentioned issues[39], rather it stems from a completely different understanding of the nature of education from the perspective of public interest. We should look upon the education process from two perspectives: social and individual. From the social point of view, it is crucial to extensively educate young people for future leadership and specialist positions, who will decide about the long–term conditions within society, economy or culture[40]. From the individual point of view, it is important to provide the remainder of the population with an education that will enforce civilisational identity, active participation in civil society and an adequate

37 Communiqué, op. cit. p. 23.

38 Banaszkiewicz, M. (trans), (1998), Badania uniwersyteckie w okresie przejściowym – streszczenie raportu OECD (Raport OECD University Research in Transition), in: *Nauka i Szkolnictwo wyższe*, nr 11, p.13–31; EU Commission, (2002), *Investing efficiently in education and training: and imperative for Europe*, COM (2002) 779 of 10. 01. 2003.

39 The social inequality of such a solution and the wastage of public funds.

40 The question is one of: what percentage of each age group will it be? 1, 2 or 10%?

elasticity in terms of job seeking. It was a grievous error by all European states, to accept a single common strategy of education and it's financing, that results in the misuse of financial resources and the waste of many talents[41] . The American educational system, or rather systems, deals effectively with the problem of selecting the most gifted and offering them special educational opportunities. Ivy League universities have special and extensive scholarship funds that create study opportunities for the best candidates, even if they come from low–income families in the United States or elsewhere.

Institutions, especially those that educate tens of thousands students, employ thousands of staff and possess immense annual budgets, have become difficult to manage, and thus require special qualification. In a situation where European institutions cannot expect budgetary increases, the qualifications of their managers take on new meaning, and force the academic community to deal with the challenge of effectively managing universities. The choice is between defending at all costs academic independence, which in European conditions is in essence a form of professor–based corporate governance, or promoting the introduction of management professionals into the academic setting, as is being practiced in a particularly liberal way in US higher education.

Universities must increase the amount of private funds transferred to European higher education. Such resources can only come from three areas: student fees (this issue must be decided by politicians at nation level), donations from private individuals and institutions, and funds from economic entities in exchange for requested research or analyses. While the first two factors are dependent upon beneficial legal regulations and administrative regulations at government and parliamentary level, the third one is dependent solely upon the scientific and entrepreneurial potential of staff employed in a given university. With the continued growth of the knowledge–based economic sector, global demand from economic entities for scientific research, technical solutions and innovations will continue to increase.

Yet, the private entrepreneur or corporate manager always carefully calculate the costs and benefits of any investment, so we can expect them to request and pay for research only when they are convinced about the potential for receiving added value in a short timeframe. Rising to this challenge of co–existing and cooperating with the commercial world is the "to be or not to be" for European academics and their institutions. Academic authorities and top–level scientists are also challenged by the need to create an intermediate area between the research university and the economic and business environment, based upon technology transfer centres, spin–off companies implementing new

41 The common opinion about the low quality of political and civil service elites illustrates this theory.

technologies, or such patent–oriented solutions that facilitate the speedy introduction of new academic achievements into commercial practice.

The challenges facing European universities stem not only from bad systemic solutions or incorrect internal practices. External competition in the form of American institutions dominates the horizon. American universities are the goal for many gifted European scientists who aren't necessarily looking for increased wages, but rather are looking to avoid institutional bureaucracies and overly long career paths leading to the attainment of a professorship.

Additional challenges will face the academic communities of nations accessing the EU, especially those post–Communist countries joining now. Nearly all those countries experienced a dramatic rise in student numbers, which in several nations was accompanied by an explosion in the number of universities, yet the academic community remained as it was, with institutions, their structures, and development of faculty still frozen in the previous era. Their public funding for education is similar to that of the EU (0.9–1.1% GDP), yet we have to remember that per capita GDP in post–Communist nations is much lower than in existing EU members, which in real terms translates into much lower expenditure per student and smaller overall public funding for higher education. State institutions in countries like Poland, that cannot charge student fees, limit full–time student numbers and boost their finances by offering part–time courses to students who pay tuition. Post–Communist countries can expect an increase in absolute values of higher education funding only when national GDP, and though it budgetary incomes, will approach that of current EU member states. Until that time comes, state universities in post–Communist countries are left with increasing the effectiveness of public funds utilisation, structural changes and attempting to increase the demand for research and innovation from the local economy. The readiness of post–Communist nations (perhaps with the exception of Hungary) to create a Knowledge–Based Economy and Society is rather weak. International reports[42] place Poland and the Czech Republic at the very bottom of the EU state list. The innovation and new technology absorption rate in those countries is also weak. As a result, the academic communities of new entrant countries will face challenges typical for EU higher education, but also those resulting from and specific to the process of systemic transformation and overall small national GDP.

European institutions are facing a new challenge—the demographic changes that are clearly decreasing population sizes and thus restricting the number of potential new students. The fall in student numbers can be compensated for by

[42] Investing in Central and Eastern Europe, *Financial Times*, July 2, 2001, p. I & II,; Also see the ranking of R&D locations: Fiejka Z. (2000), Polska w świetle mierników rozwoju społecznego oraz międzynarodowej konkurencyjności; in: *Strategia rozwoju Polski do...* op.cit, p. 289.

institutions that are flexible and can speedily react to market signals, with an enhanced offering in the fastest growing segment of education—continuous, life–long learning. This sector has its own rules and small training companies challenge conventional institutions. Continuous learning aimed at adults creates the need for single courses or short, intensive programmes, all the way to full professional education where the instructor must possess appropriate professional expertise alongside his scientific and academic skills.

2.3. NEW ECONOMY: OPPORTUNITY OR THREAT?

The modern world requires increased university–real world relations that can be divided into two major categories: university–economy and the university's influence over local and regional development. Both aspects acquire increased importance when the university is located in a small town and/or by the poverty in its surrounding environment. We can safely state, that a fast–growing university once it reaches a certain number of students and is located in a town of 150 000 inhabitants becomes a major, if not only, source of local development[43].

European institutions have to increase their cooperation with industry, especially in the context of introducing technological innovations. The Commission Communiqué reminds us that the proliferation around European universities of innovative companies implementing advanced technologies is much lower than the number grouped around American institutions. European scientists create or participate in significantly fewer companies than their US counterparts.

Universities across the world have to create appropriate forms of relating to the economic world and widely understood local environment. There is an unclear but real border between providing university scientists with the time and appropriate conditions to undertake important and long–term scientific research (including Basic Research) and the need to gain additional financial resources via the undertaking of externally ordered applied research, analyses, etc. It is difficult to define the appropriate model of these relationships and to show a model university.

We can name the countries where the flow of private funding for higher education is notable. Here, the discrepancy between the US and Europe is striking, with the Americans spending 1.2% GDP while the Europeans outlay a meagre 0.2%. Of course, a major part of the 1.2% comes from student tuition fees (which in Europe contribute a marginal amount) while the lion's share flows from industry sources. Acquiring considerable financing from corporations looking to outsource scientific research is very difficult. The companies usually require

[43] For example: USA–Princeton, Stanford and state universities in Pennsylvania; Poland–WSB–NLU in Nowy Sącz and WSH in Pułtusk.

specifics, even the transfer of results that are ready for industrial application in terms of new product development or application of new technology or service, and stress the need for short turnarounds. Communication between two very different groups of people is rather difficult—entrepreneur or manager mentality is very different from that of a scientist working in a completely different reality and time rhythm.

There is no escape from tighter university–industry relationships, especially in poorer countries, where public funding for higher education will remain limited for the foreseeable future. Burton Clark's[44] research shows that entrepreneurial universities, which build elastic structures that are adaptable to the ever–changing circumstances, can create increasingly effective relationships with industry.

A common model is difficult to define, as a university focused on social sciences will have a different relationship with the economy and its environment than a technical or business institution. Based on the author's experience of an industrial research laboratory, it is difficult, even in the long term, to enforce a change of attitudes in the majority of scientific and research staff, who are employed in faculties working in the applied sciences, especially those areas that are of economic interest. The majority of scientists employed in such institutions are not interested in direct contacts with particular companies. They are busy with their own research and teaching, focused on producing publications, which are the primary form of professional evaluation by university authorities and of attaining personal prestige. They treat the time spent on relating to the external environment as wasted. Despite the fact that scientists complain of meagre university wages, the opportunity of "cashing in" on commercial applications of their work isn't a prime motivator. We can argue that the guarantee of continuous employment with its relative safety weakens staff motivation regarding work on inventions or commercial applications. Yet, it is also important to state that many of those scientists aren't gifted or skilled enough to engage in the processes of inventing new products or developing commercial applications. Countries that are interested in fostering effectiveness of scientific research are forced to introduce tax incentives that will stimulate the creation of spin–off companies[45], which are focused on the development industrial applications, around major research centres. We have to remember that such companies,

44 Clark B.R. (1998), *Creating Entrepreneurial Universities: Organisational Pathways of Transformation*, Oxford; New York: published for the IAU Press by Pergamon Press, p.135.

45 A sector where: "[…] the technology transfer and commercialisation of new innovations resulting from University research is conducted via the formation of a new spin–off company […], which then finds management assistance and financing to build long–term success by commercialising its intellectual property and marketing a product based on that proprietary position." Westlink, (2000), *Westlink Aggregate Report of Spin–off Companies*, electronic document, http://www.westlink.ca/news/SSIS_Aggregate_Report2000.pdf.

especially during the foundation period, are high–risk entities, which in turn means that the number of potential investors is minute. Also, the people managing spin–off companies must have extensive, yet very specific knowledge, which allows for effective cooperation with scientists representing various areas of knowledge, from biology and physics to highly advanced technologies.

Academic authorities have limited opportunities for initiating advanced university–economic environment relationships. They can, at best, try to create increasingly flexible university structures or build specialised inter–faculty units focused on industrial implementation[46]. Unfortunately, there arises the question of appropriate and timeframe–specific returns on investments made into such units in a situation when there is a lack of funds for basic institutional activities. The experiences of post–Communist nations that created dedicated Research & Development institutes are depressing, as the majority of those institutions focused on conducting research of often questionable quality, while the scale of effective applications for developed technologies and products was and still is very small.

When analysing the science–economy relationship, we can assume that an increasing proportion of scientific achievements with practical applications, are sourced from outside universities, even those specialising in specific research areas. When we add the communication dimension, i.e. the ease with which companies can communicate with scientific teams regardless of the distance between the company's location and the research centre, we can deduce a trend where the best, most mobile and open to the outside world research teams will concentrate in their hands sizeable portions of scientific research, while less flexible institutions will be increasingly marginalised. As a result, the majority of universities and specialised universities will have to resign themselves to reproductive research and trying to catch up to the best.

There is a multi–year debate, whether Knowledge–Based Economy and Society will strengthen or weaken the role of universities. Opposing views are voiced. Daniel Bell[47] theorises that in the information society, the university and its professors will have a deciding role, whereas Michael Gibbons[48], highlighting the increasing number of knowledge–creating centres, argues for the decline of university importance. It seems that both views are justified: that focusing on the dominant role of knowledge and the related position of people engaged in creating and transforming it, and that arguing for a decline in the

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46 UNDP, (2001), *Human Development Report 2001: Making new technology work for human development*, New York: UNDP, p.32–34.

47 Bell, D., (1968), *The reforming of general education: the Columbia College experience in its national setting*, garden City, N.Y.: Anchor Books.

48 Gibbons M., (et al), (1994), *The new production of knowledge: the dynamics of science and research in contemporary societies*, London: Thousand Oaks, Calif.: SAGE Publications.

role of universities as producers and owners of new knowledge, as based on the decreasing number of awarded patents that are generated outside higher education.

A primary weakness of the European education system is the inadequate mobility of academic lecturers employed by universities, which complicates the creation of correct relationships with the external environment. Often, the entire scientific career occurs in one university, from graduation to professorship. Rare is the engagement in advisory activity or permanent cooperation with a specific company, even in the case of advanced and specialised universities or faculties of a technical or economic nature. That is most unfortunate, as such a multi–level integration, from individuals, through research teams all the way to Faculties and institutes, would result in a creation of an entrepreneurial and innovative atmosphere at the university. A very valuable group, innovation–wise, is comprised of doctoral students and of young academic and scientific staff, who must for some reason leave the university. Preparing such people for entrepreneurial activity within the spin–off sector via special courses of graduate programmes, would open sizeable opportunities for employing people well–acquainted with scientific research and the atmosphere and regulations pervading universities, yet already prepared for professional implementation of the results of scientific activity into commercial practice.

2.4. INTERNATIONALISATION OF EDUCATION AND GLOBALISATION PROCESSES

The internationalisation of science and teaching presents a rising challenge to state universities in Europe. We can assume that private institutions, accustomed to competing for funds and students from the moment of their inception, will be better suited to dealing with the challenge. Internationalisation of science and education carries with it increased competence in English across Europe, which when combined with the developments in Information Technology, can cause real danger to the majority of European state universities that will be unable to mount a realistic counter–challenge based on their sole competitive advantage—free education. It is logical to assume that the globalisation of labour markets will result in increased demand for programmes taught in English, and thus students will attend one of "brand–specific" universities, the completion of which gives a widely acceptable diploma, even if young people will have to pay for that privilege. American institutions illustrate a simple law—return–on–investment made for gaining an education occurs in a timeframe that is inversely proportionate to the status of the institution.

Economic globalisation will enhance the trend where the most talented young coming from poorer families and less–developed states will spend part or the entire period of study at universities located in nations deemed to be centres of development for the New Economy. The number of foreign students learning in Europe[49] and the US is greater than 1 million. Assuming that this number will continuously increase, and that foreigners pay tuition fees (or rather, do not receive state support intended for the state's citizens), then the "game" is one played out for huge sums, the lack of which can cripple even the largest universities.

Looking from the perspective of less–developed nations, the process of undertaking study in highly developed nations and top universities by the most gifted students has two issues: the opportunity to initiate knowledge, or even know–how transfer to the parent nation, and the chance that the most talented will stay in the host nation and undertake work for large international corporations.

Therefore, the process of internationalisation will lead to a concentration of gifted youngsters in developed nations and to a continuous drain from remaining nations of their most talented citizens, and of future financial assets that would emerge due to their presence. A reasonable education policy in less developed nations ought to focus on the creation of educational institutions that would become the local centres of academic excellence and motivating local youth to stay in the home country via a precise programme of academic scholarships and offering of programmes taught in English, that open opportunities for accepting international students.

In the short term, the process of internationalisation can be slowed down by a more restrictive immigration policy, introduced and enforced within the state's overall anti–terrorist activities. It is difficult to say at this point in time, whether the "open door" policy aimed at gifted students will win over the fear of terrorist insurgency under the guise of study in a given country, as was the case with the terrorist preparations for 9–11.

The process of continuous concentration of top scientists at leading universities cannot be stopped, since a decision to transplant ones life is not based solely on increased income but also on the improved opportunity to conduct ones scientific activity, gaining appropriate funding or the speedy transfer of new ideas into commercial practice, all combined with a different atmosphere surrounding scientists and the conduct of science. Poor countries suffer from an insurmountable problem—inadequate budgetary resources that prevent institutions from creating proper research conditions, while low GDP per capita

[49] EU Commission Communiqué, 5.03.2003, op. cit. p.13.

means that the local economy is unable to absorb the results of scientific research[50] and private expenditure on science is low, which results in an exodus of the most gifted and a weakening of the nation's development potential. Countries like Finland and Ireland decided in the 1990's on a notable increase in education spending and gained, after only a decade, a clear increase in national GDP and the development of a Knowledge–Based Economy, including the emergence of New Economy enterprises. Yet, here we have to point out that such cases occur in nations with relatively small populations (respectively 5.1 and 3.6 million citizens[51]), which, with a relatively stable age structure across society, can bring large qualitative results for reasonably low expenditures. Large countries face much more daunting challenges, seeing that the amount of resources needed to obtain visible results is much larger.

[50] Janowski, A., Koźmiński, A.K., Woźnicki, J., Ziejka, F., (2002), *Raport o Zasadniczych Problemach Szkolnictwa Wyższego w Polskim Systemie Edukacji Narodowej*, report prepared for the President of Poland, January 2002, electronic document: http://www.forumakad.pl/archiwum/2003/03/artykuly/08–rozmowa_forum.htm

[51] Bińkowski A., (2003), *Almanach Państw Świata 2003*, Warszawa: Książka i Wiedza, p. 138 & 184.

2.5. SUMMARY

* The European higher education system, and its national equivalents face immense and varied challenges. It is characteristic that the most important document, which presents a dramatic diagnosis and outlines the need for radical changes, was created by politicians and EU administrators rather than by the academics themselves. It is surprising how many people from outside the academic community understand the growing importance of science and education, placing high expectations upon universities and scientists, whereas the majority of academics does not see (or pretends not to) the need for change and increased interaction with the external environment.

* Nearly everybody sees three new phenomena, which affect in a dramatic manner the future of higher education: the problem of public funding for state universities across Europe, the emergence of new competition to traditional universities from for–profit universities and on–line programmes.

* There are a lot more problems to be tackled. To ease emerging debates, we can group them into four categories:
  - — Internal, essence–based, related to the conduct of science and realisation of teaching programmes;
  - — External competitiveness;
  - — University management;
  - — Resulting from the emergence of new challenges: financial restrictions, the emergence of continuous education, demographic changes that are reducing the number of Europeans.

* The 20th century required a creation of mass–oriented higher education, which multiplied the number of students and the related number of university staff, but retained the old, traditional university management techniques. Mass access to higher education resulted in new problems that challenged quality retention. Fears about loss of quality and

standards are increasing (especially when hundreds or a thousand students attend one programme) and debates are raging about quality control. Licensing and accreditation systems are increasingly popular, but their implementation creates new, hard to overcome challenges, like how to assure a wide selection of programmes while retaining comparative equality of graduate qualifications.

* The European education system suffers from a weakness, that until recently was considered its primary strength—the democratic access rule, which means access to free education for all citizens that want to study. This resulted in large waste of resources (the Communiqué mentions 40% drop–out rates) and, at a time of severe budgetary restrictions in most nations, leads to a lowering of overall education quality in state universities.

* A considerable threat comes from the persistent shift in scientific research, both applied and Basic Research, outside universities, which can result in the exodus of leading scientists from universities.

* The process of globalisation and widespread access to information networks has lead to the loss of certain traditional university "stakeholders"—entrepreneurs and managers, who are no longer restricted to cooperation with the nearest university, but can outsource research or analyses to the best teams or individuals, regardless of their location. What is an opportunity for certain institutions, can become a major threat to weaker universities, which will loose funds necessary for supporting scientific research within the university, especially that there is no short–term possibility for an increase in public expenditure support.

* Universities are increasingly facing the question: how to educate? On the one hand, society and the economy needs highly specialised professionals, while on the other, the pace of change is so large that it brings forth a need to change ones place of employment several times, and often to change the actual job type. A question is posed: how to educate for the future?

* European universities and their supervising politicians must decide, whether the academic independence rule prevalent today, that leaves all power in the hands of a "professor corporation" is to be retained in a situation where state universities have become organisations employing thousands of staff and educating tens of thousands of students. American experiences, as well as certain UK ones, point towards the application of professional management in running universities.

* Increasingly important is the relationship between the university and its external environment. Two areas are crucial: the relationship with the economy and the role that universities can play in local and regional development. Within this context, European scientists and politicians must answer the question: what should be done to support the development of European universities with private funds, seeing that their percentage participation in higher education funding in EU is six times lower than in the US.

* A new event will challenge European universities for the first time: the demographic changes which each year are reducing the number of potential students. This will sharpen the competition for students between universities and will force some institutions to enter the increasingly popular continuous learning sector.

PART II

3. European higher education and the American challenge

3.1. WHAT THE DATA SAYS AND WHY AMERICAN UNIVERSITIES ARE THE BEST

The Nobel Prize data presented in the Chapter 1, illustrates the increasing lead that American science has over its continental European counterpart. To avoid any accusations of one–sidedness it is necessary to quote additional data from Burton Clark's "Places of Inquiry"[52]. The US economy has roughly 25% of global GDP, but American share of the global expenditure on R&D amounts to 38%. Also, 38% of scientific publications originate in the US, but the share of index citations is over 50%[53]. In various disciplines, 18–20 US universities are places in the global top 25, while the top 10 is traditionally dominated by 8–9 of them. In the "electrical engineering" top 25 category, 20 universities are US–based, 4 in the UK and 1 in Japan. In the "economics" top 25, twenty–one universities are US–based, 2 in the UK and 2 in Israel. New inventions and achievements originate from the US: 72% of all new business methods based on the use of Internet originated from America[54], while US corporations were responsible for 60% of the top 100 innovations made between 1945 and 1970[55]. Despite the fact that biomedical R&D is conducted all over the world, 75% of all biotechnology pharmaceutical patents emerge in the US[56]. American domination is clearly visible in the area of organising and funding scientific research: 89% of global venture capital belongs to US investors, while half of the 17 well–known innovation centres[57] are located in the US (Silicon Valley and Boston Route 128 are the most famous)[58]. When quoting such data we have to remember that the USA never achieved the level of R&D expenditure that the European Union has it eyes upon—3% GDP. The US case shows that excessive funding is not enough and that effective systemic solutions are needed. The US economy has retained

52 Clark, B.R., (1995), *Places of Inquiry: Research and Advanced Education in Modern Universities*, Berkeley: University of California Press, p. 139.

53 JSI data for 1991–2000. ibid.

54 NSF, (2002), *Science and Engineering Indicators 2002*, Arlington, Da; Washington, DC: National Science Foundation.

55 OECD, (1970), *Gaps in Technology: comparisons between member countries in education, research and development, technological innovation, international economic exchanges*, OECD.

56 Porter, M.E., Schwab, K., Sachs, J., (et al), (2002), National Innovation Capacity, in: *The Global Competitiveness Report 2001–2002: World Economic Forum, Geneva, Switzerland, 2001*, New York: Oxford Universitry Press p. 24.

57 Manuel Castells calls these centres „technopolis sites", in: Castells, M., Hall, P., (1994), *Technolpoles of the World: the making of twenty–first century industrial complexes*, London, New York: Routledge.

58 UNDP, (2001), *Human Development Report 2001: Making New Technology Work For Human Development*, New York p. 32 –34.

the status of the world's most dynamic economy, and over the last 50 years has increased GPD per capita by 2.5 times, despite the fact that it spent less than 3% GDP on R&D over this lengthy period.

A different argument illustrates the dominance of American higher education: in 2000/2001, there were 23 705 American students in Europe, whereas the US hosted over 80 000 Europeans[59]. But if we consider the overall population size and recalculate the data the US–Europe ratio would be even higher. If we recalculate the number of European students relative to 1 million US citizens, we receive 295, whereas there are 49 Americans for every 1 million European citizens (six times less). It is appropriate to point out that a decision to undertake study in the US also means the need to fund ones study, the costs of which are much higher than comparative study at even the most expensive European institutions.

If we assume that top research universities in the US are the current world reference, we should ponder upon what differentiates them from European institutions.

The author's experience in creating and managing a higher education institution, situated on the crossroads of two cultures and education systems—Polish and American—allows for the formulation of five major factors that differentiate US universities:

1. Effective and professional management;
2. A shortening of the journey to scientific and academic independence of staff;
3. Financial and organisational stability;
4. An academic atmosphere where scientists and students coexist; that situation creates attitudes and character;
5. A much stronger relationship with the surrounding environment, especially with the economy.

3.2. PROFESSIONAL MANAGEMENT OF UNIVERSITIES

We can safely assume that a debate over the future of higher education and the development of science in Europe would feature politicians and academics—especially professors—luminaries of science. The same discussion, but held in the US, would draw in two additional groups—university and college Presidents and the representatives of very influential scientific societies, think tanks and private research institutes, as well as representatives of corporations that are

[59] OECD, (2001), *Number of foreign students in tertiary education by country of origin and country of destination*, electronic document: www.oecd.org, table C3.5; OECD, (2002), *Foreign students enrolled in institution of higher education in the United States and outlying areas, by continent, region, and selected countries of origin:1980–81 to 2000–01*, electronic document: http://www.opendoorweb.org, table 415.

interested in practical applications of and the implementation of new scientific discoveries (like pharmaceuticals or IT). The difference is major and illustrates why Europe lacks academic managers who can oversee the creation, transfer and application of knowledge, and this has direct impact upon the overall condition of European higher education and science.

European and American education systems differ in the way they are managed. The American system has devolved management functions away from academic ones, which has resulted in the emergence of a new professional group—academic managers who are specialised in running higher education institutions: colleges and universities or narrow–purpose institutions. They take the posts of institution President, selected in a competition, and seldom belong to the academic–scientific staff of the institution in which they accept the post. A typical university President is an alumnus of a good institution, who spent many years in one or several universities as an academic or scientist, progressing from post to post as he undertook various administrative and academic roles and passed through a special training system. Important characteristics for a university President include: management abilities and the combination of academic experience and management skills, which is well illustrated by Curtis McCray, President of National–Louis University and the author's business partner:

"While management is heavily emphasized in the selection of a college or university President, academic experience is still expected in most cases. Because faculty still plays a role in the selection of Presidents, there is a result, at least, some emphasis on the academic experience. This is especially true in the non–profit universities (the for–profit universities (University of Phoenix, for example) hire almost entirely persons with management experience).

This, however, will vary by type and status of university. The University of Chicago and Stanford University, for example, still insist on the academic preparation of their Presidents, but with a clear indication from the resume that the persons have had management experience as vice Presidents, provosts, or deans. As a different example, Michigan State University hired some time ago a senior vice President from Bank of America.

The small, elite colleges of America still seem to insist on the academic backgrounds of their Presidents, sometimes at the expense of management. But more and more boards of trustees are insisting that Presidents be able to read a balance sheet and understand the human and information systems of their institutions. The Institute for Education Management at Harvard University is only one of many, many examples of special institutes and schools created for the purpose of giving Presidents are called on to know finance, investment, information technology, marketing, politics, and fundraising, and strategic planning, in addition to what academic knowledge may be required. The various associations of higher education

in America in recent years have emphasized through seminars and conferences the increasing needs for management skills in their member Presidents. AASCU, ACE, NASLGU, AACU, and others have been most active in this arena.

As the for–profit universities continue to grow in the US, as they manage their bottom–line, and as the cost of higher education in the non–profit sector continues to rise, board and legislatures will be placing more and more emphasis on how universities are managed and one would expect to see an even larger number of persons entering the presidency with deep management experience. I see no reason for this trend to reverse itself."[60]

American academic institutions retained a limited–term system, yet the term lasts longer than in Europe, while the number of terms–in–office is not limited.

The difference between US and European universities, can be brought down to a single characteristic: decisions regarding European higher education are made by politicians and professors and only they play an important role in defining strategy and decision–making. In the US politicians and professors matter less, since the field was left open to professional academic managers. Professional management isn't based solely on finances or human resources; rather a crucial aspect involves the production, transformation and transfer of knowledge, management of which assures success for the institution. When observing the role that a Rector plays in European public institutions (of course the author's observations stem primarily from the Polish sector), we can outline three primary roles: administration, representation and funding acquisition from state authorities. The Rector's position is complicated by the relatively short term–in–office, the need to acquire support from interest groups before every election (combined with support retention during his time in office) and the need to return to the post occupied prior to his election. All those factors condition and complicate the Rector's activities related to institution development, often making them impossible to conduct. That is why many external observers and the more critical (impatient) staff of public institutions experience the sensation that their universities simply continue to exist, nothing more, while the time needed to reform them is extremely long. A European Rector is chosen by his colleague professors and by definition becomes their hostage. His American counterpart, the university President, is chosen via special procedures, where the entire faculty can voice their opinions, yet the deciding voice comes from outside the institution from people who have strong ties with the university or college—in the case of private institution it is the Board of Trustees, while in the case of state institutions, the local government. The President has a strong position within the institution and he can select his closest co–workers, who are often specialists from outside

60 Personal correspondence with the Author, August 2003.

the university. The chosen leader has undoubtedly studied, completed a PhD and worked at or managed various universities, assuring extensive and varied experience, which allows him to fully appreciate university assets and to effectively manage the institution. The President doesn't have to enact a "survival strategy", so typical for European institutions, where the threat of returning to one's previous post looms constantly over the Rector. The US university President is directly interested in the institution's success, because the "value added" that occurred during his presidency strengthens his position vis–á–vis the next term in office at this or other, more prestigious, institution.

The need for strong leadership in modern universities is increasingly vital. Here I will modify Peter Drucker's statement: "the only permanence in the functioning of higher education institutions is permanent change". Introducing changes, even those desperately needed and acceptable in a given institution is very difficult. Every traditional university, with the exception of those for–profit, is a conglomerate of smaller or larger academic and scientific teams, that are fairly independent yet still submerged in the overall administrative body. Alongside its scientific activity, the team usually conducts academic duties in the area falling under its expertise (entire programmes, or certain areas) and is therefore interested in the retention (sometimes even enlargement) of its "competence sphere", yet it is always against its own limitation (or even closure), even when there are no rational reasons to offer a particular programme, degree or group of subjects. The concession system within the framework of accreditation and authorisation enhances stability, because both procedures are focused on the number (rather than actual class) of professors conducting academic activity in the given discipline. The situation leads to a constant increase of this professional group—professors hire the best post–doctoral students, which creates an opportunity for accepting increased student numbers, regardless of whether the local and global labour markets have a need for the particular group of graduates. Anyone professionally involved in higher education can give examples of programmes that were completely useless to the labour market or created specialists for declining sectors. A university needs strong leadership for difficult decisions to be made regarding the discontinuation of a particular programme and resulting cut–downs in related academic and scientific staff. The alternative is terrible—the acceptance of uncontrollable development, limited only by budgetary restrictions, which can easily result in the loss of prestige and drive the university into an early grave.

What clearly differentiates American higher education system from its European counterpart is the advanced simplification and shortening of the scientific and organisational promotion system for scientific and academic staff. With real pragmatism and love of simplicity, the Americans tied the European

"professor" title with the highest position in a university. As a consequence, the final state–awarded title is the doctorate, while the professor "title" is related to work for a particular university, and thus tied to winning a competition for a particular post. The competition has clearly defined criteria, which include considerable achievements in the fields of science and education. In most European nations, the state awards the "professorship", while many countries still possess an intermediate title (between a doctorate and professorship) of "habilitated doctor"[61] . Because the majority of senior posts are reserved for holders of professorships or habilitated doctorates, the time in which academic and scientific independence can be achieved is considerably longer in European institutions, which effectively culls any ambitions that talented young scientists and academics might have to continue their career after the doctorate. In the European academic culture we can openly state that we are observing a "professor corporation", based on their monopoly to take senior university positions (on departmental level and beyond), through a clear advantage in terms of accessing research funding to the point that they retain senior positions well into their 70's.

We cannot be surprised therefore that many talented young scientists leave Europe for the US, where a 30–year old with notable scientific achievements working as a professor at a well–known university will not cause a sensation. The debates concerning the progress of a scientific career in Europe involve claims that the additional titles and posts (and the resulting accessibility to positions) defend the prestige of scientists and deny access to the highest university positions for people without the appropriate scientific achievements, therefore defending the institution from loss of overall quality. It is difficult to agree with this view, as US universities that remain focused on the doctorate title, haven't suffered from a decline of scientific achievements or a loss of prestigious awards, including the Nobel Prize. The European academic culture, that enables position holders to stay at their posts for decades and as a result decide about the direction and scope of research with the related issues of funding, obviously inhibits the conduct of science in new areas, especially those that are fast developing, and slows down the development of individuals and entire scientific teams. Most European institutions inhibit the career progress of innovators and the development of innovative research. Tightly knit hierarchies complicate entrepreneurial and innovative activities of young scientists and academics and

[61] A post–doctorate degree, whose primary requirement is the mastery of a specific area of knowledge, and which is awarded upon submitting a very large thesis or series of topic–specific publications. The "dr.hab." title only exists in several European countries and is often a prerequisite to the awarding of a professorship.

they are prevented from acquiring advanced organisational abilities at an early age.

A primary stabilising factor for European universities that is also a crucial adaptability inhibitor in terms of responding to the challenges of our contemporary world is the permanent financing from the state budget. Due to the doctrinal retention by European nations of free higher education, the state is forced to funds its educational institutions, even when it is clearly visible that they are unnecessary or function incorrectly. Easy access to public funds, even if limited, brings about laziness.

A professional manager of a university, where he is not tied to any particular interest groups and hasn't been emotionally involved in the creation of specific academic programmes or conducted scientific research, can manage it in a more rational and effective manner, rather than just administrate the process of knowledge creation and transfer. He can improve working conditions, objectively create an appropriate motivation system for academics and scientists employed by his institution and invest financial resources into research areas and teams that will bring the greatest benefits.

3.3. CONCENTRATION OF OUTLAYS

The author prefers the government to conduct a much more decisive scientific and educational policy. When analysing the policies of European nations in this respect, we can observe that such activities resemble to "thin spreading" of financial resources, i.e. the equal support for all academic and research institutions. The American practice is much different and seems much more effective. To avoid any accusation of one–sidedness, we can quote the footnote in point 3.2 of the EU Commission's Communiqué:

"By way of comparison, there are over 4000 universities in the USA, 550 of them issuing doctorates, and 125 identified as "research universities". Of these, some 50 account for the lion's share of American academic research capacity, public funding in support of university research and the country's Nobel prizes for science."[62]

The result is simple—managerial rationality leads to the support for top institutions and brings considerable benefits on the national scale. It is worth noting, that the American system based on supporting the best, does in no way result in the collapse of remaining universities—they function on a true academic market. Depending on their legal statute—who is the founder (state or private individual)—they charge higher or lower tuition, apply for assistance and federal

62 EU Commission Communiqué, 5 March 2003, op. cit. p.9.

or state grants, look for funding from individuals or institutions. Their staff is accustomed to independently acquiring funds for the research they want to conduct. The American system of career promotion is also healthier—competitions held for professorship posts demand longer scientific and academic activity for the younger employees. There is a quite common trend of employing oneself in increasingly respected universities, in tune with the growth of one's scientific and academic achievements. Every new institution requires enhanced participation, compared to an average European education employee. Tenure is the culmination of one's academic career, yet even it does not equal "academic retirement", where posts are held at all costs and often without the conduct of any recognisable work for the university.

The policy of concentrating public funds in a selective group of top universities serves to foster qualitative increases of the scientific and academic cadres in remaining universities. The author read multiple CV's of American professors that often worked in universities below the top 50. There is a certain trend visible: they graduated from a top, branded university (classified within the top 100), gained their doctorate from a top institution and worked in 2–3 state or private universities. Such a system feeds top–class doctoral graduates into the entire higher education sector and results in the overall increase in quality. Graduates of doctoral programmes that have spent several years in a top university (centre of excellence) will take with them the best research methods and techniques, as well as academic practices. They bring to the hiring institution the atmosphere of intense student–teacher interaction that is so characteristic of Ivy League universities. The US therefore benefits from a very positive proliferation of quality, of "academic perfection" so needed in Europe.

US institutions, especially the leading ones, are characterised by a partnership arrangement professor–student or administration–student. Students that pay, often very high tuition, obviously expect an appropriate programme of study, correct organisation and a partnership–based approach. Academics employed within the institution appreciate that their primary, if not the only, duty is student education. In a good university, the professor–student relationship isn't restricted to the classroom, which (not counting the top UK universities) isn't a popular attitude in European institutions. Such partnership relations ease the selection of top students and create strong emotional ties between the student and his/her Alma Mater. One of the determinants of increased financial stability of US institutions is the differentiation of funding sources—alongside tuition, federal or state funding, orders for research or consultancy from industry, an important source of funding comes from the alumni (especially in top universities), who donate customary, annual and small sums all the way to funding massive endowments from post–mortem wills. To maximise

the effects of private support from alumni and other benefactors, US universities have created advanced systems of communicating with their financial backers—from dedicated magazines addressed to alumni to naming entire departments, institutes, research centres, Faculties or lecture halls after their benefactors.

This diversification of income sources, especially the well–developed private donation system builds long–term financial security for US universities. The best, most famous, have gigantic funds at their disposal, often in the form of endowment funds. Such universities have no fear of economic downturns and its related financial hardship in terms of investments or scientific research, and the accumulated wealth permits long–term developmental strategies.

3.4. STAFF MOBILITY AND THE DYNAMIC SOCIAL ENVIRONMENT

European higher education is trapped in a dual trap: free education and full financing from state sources. This keeps the institutions from developing, as it prevents them from initiating changes that lead towards academic excellence, so desired by the Commission. The development of private universities has been restricted by the offer of free education for unlimited numbers of candidates (EU citizens). If we ignore universities founded by churches or other religious institutions, we can safely state that EU private higher education is extremely small. When analysing the differences between Europe and the US, as well as the reasons for success of American universities, we can see that private institutions take the top places. It should be important that we ask ourselves: is it an accident or natural tendency resulting from the nature of Capitalism, that private institutions are better suited to dealing with market forces and strong competition?

Europe desperately needs a private higher education sector, not only to take the burden of financing university education off EU member states but also to increase competition between universities and create a tendency of building academic excellence. A private institution has two primary methods of assuring its long–term stability: cheaply "selling" its diplomas, i.e. offering easy programmes with low tuition, or offering high–quality programmes. In the first case, national licensing and accreditation systems with appropriate authorities able and willing to take away the right to award nationally recognised degrees and professional titles in the case of loss of license and accreditation should prevent the poisoning of the educational market. The second case is known in Europe (but examples are few: French INSEAD, Spanish IESE or German WHU) of the elite institution, but functioning solely within the area of business education. Yet, in the US the best medical, artistic or technical universities are also private, challenging European governments to create such administrative and legal regulations that

would enable the creation of multi–disciplinary and multi–programme private universities and result in the rationalisation in the area of financing and management of state universities and the initiation of quality–oriented processes.

A positive aspect of the American academic community is pronounced staff mobility, which eases the dissemination of good academic practices. A professor tied to one institution from his MA or doctorate all the way to attaining the professorship, is a rarity, whereas this approach very pronounced in Europe. two–three universities during his education are the norm, followed by work at increasingly renowned universities. If we combine this trend with a tradition of simultaneously working in firms or other institutions, like think tanks, research institutes, foundations or scientific associations, then the distinguished American academic has a much wider network of connections and greater professional experience. High mobility and ease of employment at other universities, especially for those with high scientific and academic achievements, gives US professors the much needed intellectual freedom and resistance to administrative pressures and is much healthier and efficient than the "glorious" European scientific autonomy.

It seems that a primary factor responsible for the advantage of US universities is the fact that they function in a very dynamic social environment, where fast exchange of knowledge and its accumulation in multiple locations is the norm. The American society is extremely active, people congregate in various organisations, professional corporations and create a network that is widespread and intensively exchange information. The US has proportionately the largest number of groups that function or meet together in special organisations (social clubs, associations) of people possessing advanced professional knowledge and real–life experience. In such cases, knowledge can be easily accumulated and transferred in a multidimensional manner to meeting participant and organisation members. The mobility of American society translates into social activity of US academics and university professors are members of the same social and professional organisations. They are invited to give lectures and themselves invite professionals to reciprocate at their own university. In such conditions, knowledge exchange occurs swiftly and fully. It is characteristic of US society that it is pervaded by the knowledge related to activity—how to set up a company, transfer technologies—and practical knowledge (including its simplest forms). It all creates a social climate that forms attitudes of openness to new knowledge and a conviction about its availability. One of the secrets of American success seems to be the fact that the US society, and not only economy, has built lasting mechanisms for discovering, promoting and then incorporating innovators. Such people are open to new knowledge and are able to transform it.

3.5. SUMMARY

* Data presented at the beginning of this chapter allows us to draw two conclusions about:
  - The domination of American universities amongst the top world institutions in the sphere of scientific research, and in nearly all areas of science.
  - The importance of expenditure on scientific research, especially R&D, in the creation of increasing competitive advantage by the American economy.

* According to the author, there are five factors that assure US advantage over European universities:
  - Effective and professional management;
  - A shortening of the journey to scientific and academic independence of staff;
  - Financial and organisational stability;
  - An academic atmosphere where scientists and students coexist, that creates attitudes and character;
  - A much stronger relationship with the surrounding environment, especially with the economy.

* As opposed to the majority of European universities, where professors elected by the academic community undertake management functions, American universities are run by professional university managers, who are elected in accordance with specific criteria set by the Board of Trustees, and come from outside the institution. A President of an American university is not tied to (or often dependent upon) particular interest groups that exist in every university, and does not have to return to his previous post upon ending his term–of–office. As a result, the President can manage in a rational and effective manner, rather than just administer.

* A notable advantage of US universities comes from their financing methods. On one hand there is a concentration of public funds on scientific

research in top research universities, while on the other all universities possess a differentiated financing system, including direct financial support from alumni, whose donations are recognised by law.

* An important factor differentiating US universities is the partnership arrangement between professors and students, which stems from the fact that the latter pay tuition, while the former know that student education is their utmost priority.

* US universities offer academics the chance to remain mobile, while their professors conduct activities in external research institutes, scientific associations, consultancy firms, etc.

4. The Polish lesson of the 1990's and its influence on European higher education

4.1. THE POLISH EDUCATION MIRACLE OF THE 1990'S

A good illustration of the necessary changes in the organisation and financing of European higher education that are being proposed by the author are the developments that occurred over the last 13 years in Poland. Under socialism, higher education was considered a rarity, available to the select few. In 1990 Poland had only 400 000 students out of a society of 37 million, of which 320 000 studied free of charge in state universities that offered a limited number of places, assuring a "scholarisation" coefficient of 12.9%. Only 7% of Poles[63] had a higher education, compared to over 20% of EU citizens and university studies were accessible to a selective minority (see Appendix 2, Tables 12–13). There were several causes for this but the two primary ones were: financial collapse of the communist states in the 1980's and limitation in funding for higher education, an artificial remuneration system in the state–owned economy and administration which favoured physical labour and labourer wages.

The system effectively discouraged potential candidates. The young who came from poor families found daunting the perspective of undertaking higher education in large cities with a resulting low–wage job, when they could enter employment immediately upon high school graduation and earn more than an engineer or teacher with several years of experience. Before 1990, Polish higher education had a single non–state institution that was supported by the Catholic Church (if we discount the various institutions educating only priests). The other 100 or so universities had a structure typical for those within the socialist group of nations: alongside the top 10 multi–faculty universities situated in the largest cities, there was a group of narrowly specialised institutions that educated professionals: artistic, medical, economic, farming or technical. All were situated in only 17 Polish cities, leading to the creation of the "academic city" term, which signified a large city with multiple higher education institutions. Besides working for those institutions, many scientists worked in state research institutes, primarily the Polish Academy of Sciences, and it was customary for them not to conduct any student–related activity.

In 1990, the first non–Communist government and Parliament introduced a new, liberal Higher Education Law, which opened the doors to the creation of private higher education institutions and favoured extensive academic

[63] GUS, (2003), *Szkoły wyższe i ich finanse w 2002 roku*, Warszawa: GUS; GUS, (2002*), Rocznik Statystyczny Rzeczypospolitej Polskiej: 2002*, Warszawa: GUS.

independence of state universities. The new Law limited the rights of state administrative bodies regarding the supervision of universities, limiting those bodies to the division of state financial support between institutions (but based on an algorithm worked out in conjunction with the academic self–governing body—the Central Council for Higher Education) and to give out operating licenses to private institutions.

The free market regulations that were simultaneously introduced brought about a radical shift in social priorities on the Polish labour market. Immediately after June of 1989, education acquired incredible value and wages in normal, private companies became tied to qualifications, skills and as a result, to education. A certain social mental revolution occurred—higher education became valuable not only in the families of professionals and the multi–generational families of the classic intelligentsia, but also amongst labourers and farmers. The process occurred quickly—over a period of several years and was compounded by the fact that increasingly large numbers of 19–year olds were appearing as a result of a demographic boom. An assault on universities began, which continues to this day.

The Polish academic community responded to this growing societal need for higher education in an active and entrepreneurial manner. State higher education, faced with the freezing of state funding intended for full–time studies, expanded its offer of paid studies, both part–time and weekend, while a new trend emerged—the creation of private institutions, initially in Warsaw and other large academic cities, and later in smaller cities and towns, that never had such institutions before 1990. It is fascinating, that in a sector far removed from the conventional economy, the fundamental free market rule came to life once again: where there exists demand for higher education, stimulated by new societal aspirations, supply will rise to fill the void—be that from institutions already in existence or new, private ones. In the initial period such institutions offered education in the most vital of areas, needed desperately by the labour market: business education.

We can debate which sector proved to be the more entrepreneurial and innovative one—public institution sector or that of newly formed private schools. One fact is certain: the liberal Higher Education Law, well suited to the period of systemic transformation, resulted in a Polish educational miracle, as we can only describe the four–fold increase in student numbers during the decade. Currently, there are over 1.8 million students and the gross enrolment rate reached 46.2% gross (35% net) and it is higher than that in many developed European nations[64].

Illustrations 2 and 3 present the increase in Polish student numbers and the rise in numbers in state and private institutions.

[64] ibid, p 19 & 20.

Figure 2. Increase in student numbers between 1999/1991 – 2002/2003

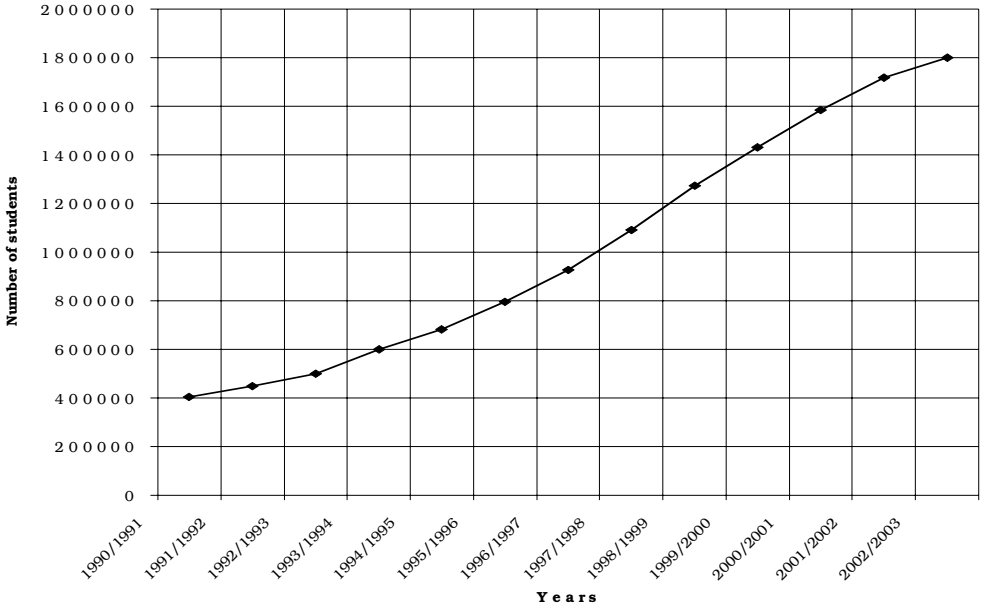
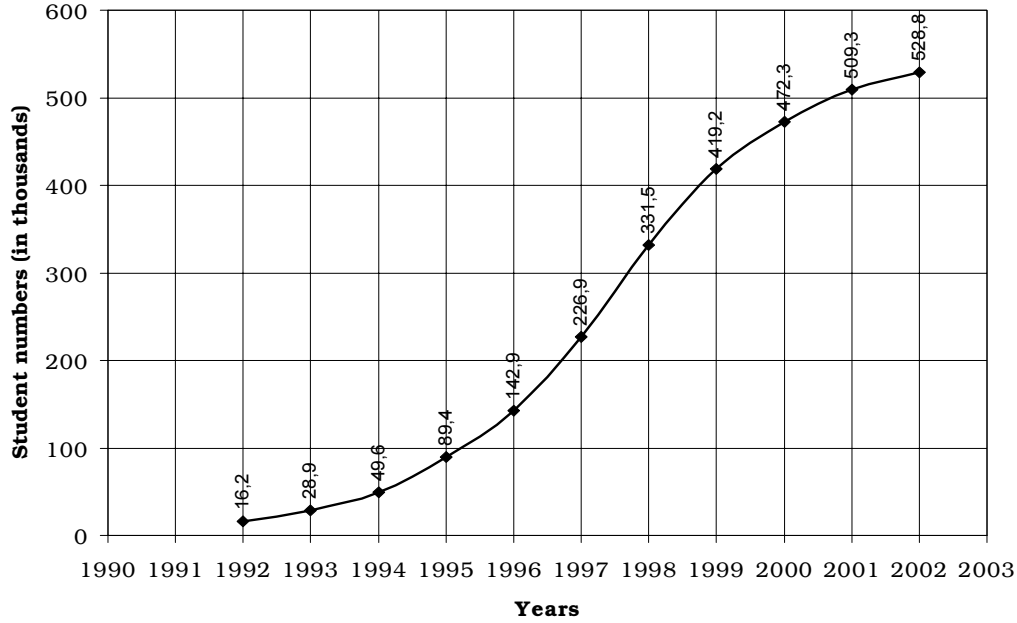


Figure 3. Growth in student numbers in Polish private higher education between 1990–2002



Source: Own analysis, based on GUS, (2003), *Szkoły wyższe i ich finanse w 2002 roku*, Warszawa: GUS; GUS, (2002), *Rocznik Statystyczny Rzeczypospolitej Polskiej: 2002*, Warszawa: GUS.

At present Poland has 377 higher education institutions, of which 252 are private, and new ones are appearing, despite the fact that the demographic low has begun to arrive on university doorsteps. Increasingly, private institutions are created away from large cities with their state universities and large pools of qualified cadres, in medium cities and small towns. WSB–NLU was the first of such schools, created in 1991 in a town with 80 000 inhabitants. The early success (after 3–4 years) of its graduates on the labour market resulted in the emergence of multiple similar initiatives. Today, there are 106 institutions, situated outside Polish metropoli including 28 state higher–professional schools, created in recent years to mimic the German Fachhochschulen institutions that educate solely to the BA level over a three–year period. Such schools become one of the only development opportunities for small and medium towns, which experienced the collapse of large, ineffective, socialist companies.

2003 can be treated as the final year of rapid and extensive transformation in the Polish higher education system. Due to the approaching demographic low, the number of candidates for higher education will stop growing, even if the number of high school graduates entitled to enter university will keep increasing. For the first time, the number of available places is greater than the number of candidates. The coming years can be described as a period of relative stability, before universities begin to suffer from reduced intakes due to the demographic low, which will result in a 30% decline in entry numbers.

The structure of Polish study is complicated. Because of governmental budgetary restrictions, only 39.3% (706 854) of the overall 1 800 548 students attend tuition–free programmes in state universities. The remainder pay for their education: 31.3% fund their study in state institutions, whereas 29.4% (528 820) attend private institutions[65] (see Appendix 2, Table 13).

4.2. CHARACTERISTICS OF POLISH HIGHER EDUCATION

The tuition–based segment of Polish higher education that exists today can be divided into three basic categories:

- State schools, that in 2000 accepted 131 235 students into their self–funded programmes;
- Non–public schools, that are "professor cooperatives";
- Non–public schools, that are private, created by founders, private individuals or legal entities.

Of course, the difference between "cooperative" and "private" institutions is unclear, but they can be differentiated by analysing expenditures. With high

[65] GUS (2003), *Szkoły wyższe i ich finanse w 2002 roku*, op. cit. p. 2.

probability, we can state that in public and "cooperative schools the flow of tuition will be in its entirety consumed by the lecturers that are directly involved with student activities, whereas "private" schools will dedicate part of their tuition income into infrastructure investments, the development of creative academic and scientific teams and student services. When looking at the non–public sector, we can find over 30 institutions, which consciously and consequently invest in their own development and will continue to exist as an alternative to public institutions. The remaining "cooperative" institutions will silently vanish once the number of students will be inadequate to support the institutions' daily cash flows.

Comparative analysis of the Polish higher education system with its European, American and other counterparts is complicated by the existence of programmes leading to a professional titles taught in full–time and part–time mode. It is a remainder of socialist times, when the leading Party was interested in accelerating time–to–graduation, rather than the acquisition of knowledge, by people in full–time employment. Such programmes were by definition modest in size and scope compared to full–time studies, yet, despite attending classes only 4 days a month (compared to the 20 day monthly cycle for full–time), students could graduate at the same time and receive the same diploma as their full–time colleagues. The situation hasn't changed during the 1989 systemic changeover, and the Higher Education Law in no way inhibits the process. The part–time formula assumes that the student will work intensively at home, utilising the appropriate textbooks and supplementary materials, while simultaneously working. With a few exceptions, the academic qualifications of part–time students are lower than those on full–time programmes, especially when we compare both types that undertake higher education immediately upon leaving high school. The differentiation would not be so problematic if the number of part–timers was lower, as happened during the 1980's when they amounted to just 20%. Currently, when the number of part–timers (including various modes of study) passed 50% of all students and has reached 1 million, the level of part–timer qualifications is determining the value of the labour market.

Therefore it is easier to outline to potential of Polish higher education on the verge of the 21st century via data on the number of places available to full–time students on the 1st year of university (see Appendix 2, Table 14).

The 1990 Law introduced a two–level education process, alongside the conventional 5–year progressive mode of study, it introduced 3–year professional programmes ending with the awarding of a conventional or engineering Baccalaureate, followed by a 2–year graduate programme. Looking back on the last 13 years we can safely say that the 3–year Baccalaureate programmes

haven't gained social acceptance and the majority of undergraduates study all the way through to the graduate stage.

An analysis of data in Appendix 2, Table 14, shows that Polish higher education possesses extended potential in terms of professional education, especially in the area of polytechnic and medical degrees. Private institutions offered 17% of all available full–time places in 2003.

Polish state universities offer a limited number of tuition–free places on full–time programmes, while offering an unlimited number of places of paid part–time programmes. This system results from the limited financial support flowing from the state (there were nearly 200 000 tuition–free places offered, while the total number of students entering higher education amounted to 470 000) and from the paragraph in the Polish Constitution outlining the right to a free education. Private institutions, devoid of state support, have limited opportunities of competing with state universities, especially in the sector of full–time programmes. With few exceptions, private universities are denied state and regional support yet, over the last decade, at least 30 out of 252 managed to develop their own infrastructure enabling them to compete with state institutions in offering top–class study conditions. When they were founded, private institutions didn't possess excessive financial resources and rented or leased their infrastructure, while accumulating resources from student tuition that could be utilised on infrastructure investments. Programme fees are rather low in comparison with world standards, with the highest fees amounting to no more than 1 600 EUR[66], whereas the socially acceptable level of tuition is no more than 800 EUR per year of study. In most private institutions, tuition–based incomes are over 90% of total income, so the majority of investments come from student funds. Private institutions exhibit very effective financial management techniques, while state universities carry administrative costs that are much greater that at their private competitors. When analysing comparable programmes, private universities have 20–30% lower operating costs, (assuming we do not consider the burden of research conducted by state institutions).

The higher education system created by the 1990 Law focused on advanced internal academic independence, that is so pronounced in complex, multi–Faculty institutions (so–called "autonomic institutions") that have the right to award doctorates and habilitiations. The deciding voice in state universities belongs to the "professor corporation"[67]. It is the professors, with small participation from other university staff, which select the Rector and form most university bodies that decide not only about the university's development strategy but also about the division of available funds. A certain number of professors provide the

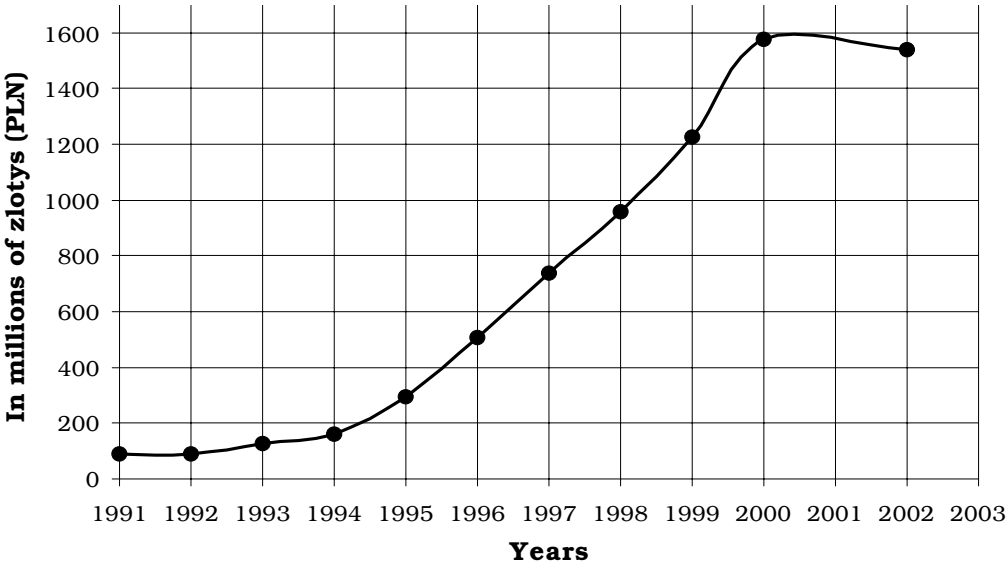
[66] At the 1 EUR : 4.6 PLN exchange rate on 04.04.2004.
[67] The Polish President awards the professorship, and the average age is over 50.

competence for an institution to be granted the right to conduct a specific programme, while their number and scientific achievements enable the institution to award scientific titles: doctorates and habilitations. The autonomy is so advanced that professors even decide about the division of public funds intended for scientific research, in terms of dividing the resources between various institutions and awarding individual grants, as well as deciding the number of places of study that a university can make available on a particular programme. Politicians are left to outline the total sum made available in the state budget for scientific research and higher education. The state does not conduct any active policies aimed at developing scientific research and higher education. The decisions have been left to the academic community. Yet, any professional group, even academics, will defend their interests and we can hardly imagine a situation where the group will act against its own best interest, even if their activities hurt national or social interest.

A 300% increase in state university student numbers over the last decade, coupled with a 10% increase in the number of academic and scientific staff has resulted in drastic workload increases. A negative consequence of that is the decline in scientific and research activity of most staff, especially those that conduct classes and related activities on fashionable or beneficial employment–wise programmes.

In the long run, the situation in the Polish education sector will begin to change, as the number of candidates will start to decline, both on the full–time and part–time programmes as the "educational reserve" of mature citizens who decided to raise their qualifications disappears and Poland experiences a decline in the number of youngsters entering adulthood. The overall three–fold student increase in state universities has occurred primarily on the part–time programme, where the number has risen 700%, filling those universities with huge crowds every weekend and worsening their study–related infrastructure. Yet, most institutions have began investing in their material infrastructure—despite continuous warnings about the decline in state support, the actual sums intended for public institution investments has been growing until 2001 (500% over 5 years). The trend levelled off only slightly in 2002.

Figure 4. Capital investments on Polish public higher education institutions in 1991–2002



In Polish conditions, should 1.5 PLN billion (about 325 million EUR) be invested in new buildings, each year over 500 000 square metres of academic infrastructure would be delivered. Even if we assume that two–thirds of that sum is used for the purchase of scientific equipment and ongoing renovations, we can still safely presume that over 150 000 square metres of new or entirely renovated academic infrastructure is added each year, which assures good study conditions for 30 000 students.

4.3. NEW PRIVATE INSTITUTIONS AND THEIR FOUNDERS

The explosive development of private higher education in Poland has introduced a new group in the system: the founders and Rectors, who naturally became the managers of education.

When analysing the CV's of over a dozen founders or organisers that created widely known private universities, where they usually are Rectors, we can find strong ties to the American educational system, as they had experienced US institutions before founding their universities. Polish founders have spent several months in the USA on various scholarships, taught at American universities and have usually accepted complete know–how tied to a programme of study from specific universities, as was the case with WSB–NLU or the Open University.

The most well–known Polish private universities are usually associated with their leader–founder and Rector, and most are referred to by the leader's name: "Bartnicki's School", "Koźmiński's School", "Lazarski's School" or "Pomianek's School". Those institutions are managed in a professional and effective manner and have created their own academic, sports and social infrastructure, funded from internally generated resources.

Professional management of private institutions has clearly limited the day–to–day operating costs, especially the administrative and fixed costs. For every 1 000 students, private universities have administrative staff that is several times smaller than that in state universities (sometimes even by a factor of ten), yet private institutions offer much higher standards of service. Fixed costs per student are also much lower. Such savings and efficiencies are only possible via professional management techniques that, at a tuition level comparable with the state–funded tuition per student at state universities, allow for the creation of sizeable resources intended for institutional development.

Professional management also brought about a change in the philosophy of university operations and a clear focus on the student. The primary, if not the sole, purpose for the existence of private universities is the education of tuition–paying students that are the "customers" who become active partners for management boards and academic staff and make a sizeable contribution to the universities daily existence.

New management techniques, combined with innovativeness and entrepreneurship exhibited by private universities clearly affect their state competitors. They introduced competition into the higher education sector: if we ignore the 200 000 tuition–free places offered by state universities, the remaining group of students is open to competitive bids. Academic and scientific staff is increasingly abandoning their posts in public universities and are moving to private institutions. The competitive process results in a continuous drive of programme quality improvement, in the top state universities and in a large number of private ones.

The emergence of the private sector was matched by a process of public scrutiny focused on universities and their programmes, as is the norm in developed nations. This scrutiny was unknown in Poland pre–1990. All the important weekly and monthly magazines began publishing university rankings, coupled with selected academic programme rankings. While initially contested by the conservative academic community segment, the rankings have become a common–day occurrence, and the institution's position is often the primary criteria of its success, as candidates and their families study the rankings with increased attention.

The nature of Polish higher education has evolved from a closed system accessible only to the elite to mass education of nearly 40% in each age group and from state universities situated in major cities to an offer reaching every city with over 50 000 inhabitants. The existence and functioning of a higher education institution in a small town has become a good developmental stimulator, or at least an unemployment inhibitor. At the turn of the millennium, alongside many private institutions, over 28 state professional universities that educate to the Baccalaureate level found their home in small towns. All local governments aspire to possessing a higher education institution, since it accelerates local development, improves worker qualifications, draws in investors and raises the wealth of the local population. Research undertaken during 2000 in Nowy Sącz[68] showed that 1 500 full–time students left over 4.5 million EUR in the pockets of local inhabitants, which was a considerable sum in a nation where the average monthly income is 500 EUR. A university surrounds itself with multiple new jobs in services and every 40–50 students that undertake their education in a given institution create one external job and two jobs within the school.

4.4. MIRACLE: AN EPHEMERID OR BASIS FOR SUCCESS?

The future of Polish higher education centres primarily on the political decisions regarding methods of funding—will the current monopolistic access to funds by state universities remain, coupled with the absurd Constitutional statement regarding the right to a free education in a situation of continued budgetary cutbacks? Or will new rules be created—partial tuition for all full–time programmes in state universities combined with the flow of public funds that follows the student, regardless of what institution he enters (based on an algorithm). This approach, strengthened by enhanced access to state and local government scholarships and preferential credits, would result in the change from the current badly structured system of study (dominance of part–time programmes) and in a qualitative increase of offered programmes due to the introduction of fair competition between institutions. The time for qualitative changes is ripe, especially when considering the upcoming demographic low, which will lower the number of new student entrants from 1,8 million to just 1 million over the next 20 years.

2004 can be a decisive year for Polish education: the surplus of available places over the number of candidates entering higher education will be magnified and become the norm, while a new Higher Education Law might be formulated that will surely redefine how universities function.

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[68] Chlipala, P., Remi, M., (2001), Wpływ WSB–NLU na rozwój Nowego Sącza w opinii studentów–wyniki badań, *Studia Regionalne i Lokalne* (6), nr. 2–3, p. 157

At the present we cannot speak of cooperation between the public and private education sectors. State universities retain their monopoly on public funding and fair competition is non–existent. Limited public funds allow only 700 000 students to study for free (40% of the total), while the current state of public finances in no way indicates that funding might grow in the coming years.

Both segments are in a state of a resource–oriented "Cold War". State universities, after years of ignoring the threat brought on by a recent surplus of candidates over offered places, have gone on the offensive and are actively trying to restrict the developmental opportunities of private institutions. The issue of whether private institutions should be able to employ professors still working at state universities, brings forth a lot of negative emotions. Private institutions focus on the welfare of students and the Polish state and demand access to public funds. It seems that Polish higher education is at a crossroads: should it go the "American–British" route with a strong focus on private institutions, or follow the route typical of continental Europe where tuition–free studies are free for some.

From the perspective of scientific research, the potential of Polish higher education is sizeable, especially in the areas of interest for the EU—applied and technical sciences. Unfortunately, these assets are badly utilised. A qualitative improvement can only be brought by creating equal and transparent rules, enabling equal access to public funds intended for education and a concentration of resources on the best entities—universities, teams or individual scientists. The alternative is a slow return to the monopoly of state universities, retention of the "professor corporation" caste domination, and a continuous increase in the number of students undertaking study abroad and the resulting collapse of some Polish universities—also those state–owned.

The future of Polish education rests on the destruction of three primary barriers, inserted into the system by incorrect legal solutions:

— The funding of student education solely in state universities;
— Overly extended career advancement for scientific and academic staff;
— The acceptance by law and the academic community of reduced programme lengths and content in part–time education.

All three barriers are easy to remove via legal solutions and concrete organisational changes, which would result in the strengthening of Polish higher education and increase the nation's competitive potential. Yet, the reforms would upset the interests of the professor professional grouping and could upset the stability of state universities.

The present system of funding is similar, in its systemic solutions, to those used in most European states, yet in practice the system is a shambles.

The Polish Constitution assures democratic access to higher education, but in practice this right is limited to about 39% of all students. The rest pay for their education, both in state and private institutions. The division is caused by budgetary restrictions and we can safely assume that it will continue to exist in the foreseeable future. As a result, state universities can offer tuition–free studies only to a limited number of students, which leads to the introduction of competitive entry exams—universities accept those with the best results. This in turn means that tuition–free study is usually undertaken by children from wealthy families that have expended considerable financial effort on the children's education on all the previous levels. Such families receive a "gift" in the form of free higher education, the cost of which amounts to 35 000 PLN (about 8 000 EUR) over 5 years, which is the price of a mid–class car[69]. Candidates coming from poorer families, usually inhabiting smaller cities and towns, who finish mediocre or weak high schools, have to pay for their studies. Thus, Poland has experienced a caricature of democratic access that is socially unfair.

The time for changes is at hand, and the restructuring of funding for education should be introduced to coincide with the necessary change in operating part–time programmes. Introducing the ECTS system as uniform criteria, the fulfilment of which grants the student a diploma would result in the equalisation of degree requirements and slowly reduce the "attractiveness" of part–time education. Poland would greatly benefit from the introduction of (outlined in the following chapter) system where the state funds the first year for all candidates, regardless of their chosen institution and mode of study or the funding of first two years for full–time students. State support for academic operations in state universities totalled 1 billion EUR, which is enough to fund the first two years for all current Polish students. What would be left is the rethinking of the scholarship system, the widening of which would allow students from poorer families to study all the way to graduation.

The most controversial issue is the creation of appropriate conditions that allow young, gifted academics and scientists to quickly gain organisational and scientific independence. The current systemic solutions—created to this day by the very people they regulate, i.e. the professors, rather than developed by politicians—have created a system beneficial only to the professor caste. Certain solutions can be viewed by an outside observer as shocking, for example in the evaluation of an institution, its quality and right to award scientific titles, as well as the ability to conduct specific educational programmes. Doctorate holders are completely ignored. Only the number of professors is seen as a valid measure of "academic maturity". Yet, we all know that the structure of a university should

69 *Szkoły wyższe i ich finanse...*, op. cit. p. 6.

resemble a rhomboid and that, due to the need for intensive contacts with the students, it is the MA and PhD holders that shape the quality of education in a given institution. Certain solutions regarding the awarding of scientific titles can be easily compared to "hooded tribunals" with their anonymous evaluations, lack of a higher control authority, in this case a state institution that is part of the professor self–governance structure that awards habilitations and professorships. The Polish system desperately needs to raise the requirements for doctorates and remove the awarding of habilitations and professorships from state hands. The professorship would be solely tied to the post in a given institution. We can also consider the awarding of "nominal professorships" as a reward for the activities of the most talented academics and scientists. Such a solution, when combined with a clear system of competition for professor posts would not only shorten the time in which young and gifted scientists and academics could hold independent posts in universities, but would also increase the interest in science, while limiting the "brain drain" that is so dangerous to any nation as it looses the most gifted when they travel abroad to work in foreign institutions.

The simultaneous introduction of all proposed changes would be best. Democratic funding for all 1st year students, coupled with partial funding for part–time studies, would increase competitiveness between institutions, which in turn would bring about a qualitative improvement in offered programmes. Competition would force institutions to improve the quality of their staff, while the funding system would enable the best universities to develop their infrastructure, allowing for the acceptance of increased student numbers. Unification of graduation requirements, regardless of study mode, would definitely increase the average level of education for part–time students. The legal changes would activate a multi–dimensional process of quality improvement across the entire Polish higher education system and a simultaneous collapse of the weakest and development of the strongest institutions.

4.5. SUMMARY

* The development of Polish higher education is one of the most visible and positive results of the systemic change that occurred after 1989. A shift in social priorities and increased demand for educated employees in the new free–market economy, combined with extensive entrepreneurial activity by the academic sector resulted in a fourfold increase in student numbers over 13 years and the emergence of a private education sector that currently educates almost a third of all students.

* Polish higher education is still riddled with approaches that inhibit growth and the ability of Poland to gain a competitive advantage in our globalising world. The negative ones include: Constitutional declaration about the right to a free higher education for all students without the possibility of providing funding for all candidates, excessive academic autonomy, overly extended academic career paths that forces the most gifted away from working in higher education, the domination of the "professor corporation". 2004 can become the breakthrough year, but the decision will belong to politicians, who can improve developmental opportunities of science and education or enforce the return of state university monopoly, when they finalise the new Higher Education Law.

* The author proposes a radical reform of Polish higher education via:
  - Equalisation of access to public funds used to cover tuition for all institutions;
  - Shortening of the time necessary for academic, scientific and organisational independence by abandoning the "habilitated doctor" title and the state–awarded professorship;
  - Legal equalisation of part–time and full–time programmes and the mandatory introduction of the ECTS system.

5. The university as a development tool

5.1. FIVE PROPOSITIONS FOR DEVELOPMENT AND COMPETITION

We should return to the primary question posed by the EU Commission's Communiqué from 5th February 2003: what should be done for the European higher education system to become the world reference? The issue calls forth a second crucial question: what mechanisms (other than increasing public expenditure to 3% GDP) have to be activated across the EU for scientific research to develop and to multiply its economic application. In a wider context: how should education and scientific research be utilised to increase the EU's competitive potential and assure long–term developmental prospects in the globalised and increasingly competitive world. Such questions are the EU's "to be or not to be", i.e. "to be" a partner in the future competitive yet also cooperating world or "not to be" and become an increasingly marginalised part of the world. We can also rephrase the question: will the tools that powered Europe's ascendance—the institutions of the University and scientific research—still serve Europe's development or will they be taken over by increasingly innovative and entrepreneurial competitors? An analysis of EU documents, coupled with the author's knowledge about higher education and science lead to the question: is there not enough signals that the current system has become useless as it doesn't create any adequate corrective or developmental mechanisms? We can debate whether the current system serves the fulfilment of own needs of universities and research centres as institutions and of people employed within them, instead of serving the current and future interests of European citizens.

Before new solutions are outlined, we must state the fundamental (mainly political) propositions that form the basis of outlined proposals.

Proposition I

The democratic access to higher education doctrine is demoralising and leads to massive wastage of public funds and serves primarily to protect the interests of higher education employees. Higher education is currently the most important personal investment, while the effect—wide access to education—can best be acquired via other methods in a more effective manner.

Proposition II

The aim of catching up to the US in terms of scientific research and higher education, as voiced by the EU, needs to be more specific and the final objective ought to be attained via two stages:

— Stage 1: halting the marginalisation—the continuing distancing from European science and higher education by their American equivalents.
— Stage 2: initiation of new developmental mechanisms, which will facilitate bridging the gap.

Proposition III

We can safely state that raising public expenditure to 3% GDP for scientific research and funding for higher education, so desired by EU authorities, will not assure predicted results, if the process is denied any systemic changes, that will out–step the scientific and education areas.

Proposition IV

There is a need to change the approach to higher education and scientific research and to treat them as important elements of our everyday lives and the most important personal and national investment in the future. Universities and research institutes have to function effectively and efficiently, just like normal enterprises that exist in the economy. The argument outlined to this point combined with the analysis of current global leaders allows us to state a proposition opposing current practices of most European nations. We propose a radical change of mechanisms of higher education funding on national levels towards a policy of public fund concentration and support for the best. The present–day EU policy in respect of scientific research and higher education development seems justified, seeing that it focuses on attempting to bring forth important processes and behaviours, like increases of staff and student mobility, increased linkages between university and its surrounding environment, concentration of research in developing areas, etc. Yet, formal funding used in supporting "centres and networks of excellence" (as outlined in the 6th Framework[70]) are limited and inadequate for building a policy of supporting leaders, and will not take the place of a policy (or its absence) on the level of EU member states.

[70] EU 6th Framework, http://europa.eu.int/comm/research/fp6/index_en.html

Proposition V

The primary driving force behind the Knowledge–based Society and Economy in the EU can only come from the best scientists and academics, top universities, the best faculties and research institutes or top–class research teams. Only they, be that institutions or people, can become the future world reference.

The primary precondition to achieving success is rather simple, yet extremely difficult to realise—the concentration of resources on the level of EU member states and institutions, which will allow for supporting the best and selection of those who might become top–class in the future. Such a policy would have to function for 15–20 years for visible and measurable effects to emerge. The situation is further complicated by the global economic "innovation game" and such scientific achievements that can decide about future changes in relative positions of national economies. Measurable, or even accelerated economic development usually begins with the emergence of new achievement in an area of research considered marginal until that moment. "Breakthrough innovations" have traditionally occurred outside standard universities or scientific institutions. A correctly formulated system of funding development ought to focus not only on top–class people or teams in working areas considered to be important today, but also be able to find and support people or teams working in areas that will be important in the future. Lack of procedures for seeking innovators and the appropriate funding for currently marginal research is one of the primary weaknesses of the European higher education and scientific system. That is also why many of the most promising young European scientists, unable to get their ideas through the decision–making structures, choose to work in American research institutes or universities.

Europe lacks the tradition of and procedures for, both on EU and member state level, awarding research grants to individuals–an outstanding scientist with a well–motivated and credible research project that could be conducted with a research team (from all over the world) chosen by the applicant based on the awarded funds. Top–class scientists and not entire bureaucratised and slow institutions will be the leaders of change in our fast changing and competitive world.

5.2. EFFECTIVE USE OF PUBLIC FUNDS

The funding of education from public funds is an important issue. Europe, dominated by state universities, promotes tuition–free access. This approach

results in major wastage of public funds—it is enough to mention once again the 40% dropout rate or the considerable extension of time spent in university.

A secure funding system weakens the innovativeness and entrepreneurialism of academic authorities. In a situation where the most pressing task is assuring high wages for university employees, any activities requiring high programme quality or effective use of public funds must be of secondary importance. In certain cases efficiency–oriented activities might bring about a fall in wages, therefore they will never gain the acceptance of faculty.

The slowdown of economic development (if not stagnation) increasingly present in rich EU nations and the ever–present threat of retirement responsibilities means that even the richest nations limit the size of public funds intended for higher education. For the first time in decades people are asking the question: is the retention of universal and free higher education in Europe possible? Is it even desirable?

Continued maintenance of free access to higher education for all, without considering the effects of study is not only ineffective but, in the present fiscal environment, even impossible to uphold even in the richest European nations. The simple introduction of tuition will ease the burdens for only a few years if done without introducing mechanisms for qualitative improvements and improving the financial effectiveness of study. Such a solution resembles a "tax" collected from each student, but might reduce the number of dropouts, as those who considered university to be a asylum of sorts (extending time to employment, escaping unemployment, etc.) will no longer be interested, as well as shortening the average time–to–graduation. Yet, the introduction of national tuition will not activate a crucial mechanism—the competition between institutions and faculties fighting for student numbers necessary for development or survival. Introducing a fee at the 500 EUR per semester level, when compared to the average wage or social benefit, is rather symbolic seeing that university income generated from tuition will rise by a few percent.

According to the author, the primary problem facing Europe is the change in approach towards the entire scientific and education sector, even a shift in the philosophy of education. The traditional, historic approach carries a fundamental weakness of European higher education and scientific research. Pragmatic Americans have abandoned claims to the cultural or civilisational missions awaiting universities, rather they have adapted to the changing reality and began offering specific study opportunities and evaluate their programmes and their financial effectiveness. The US education system is extremely differentiated: common state universities and elite private institutions, the commonality of 1st level degrees and a clearly smaller number of people undertaking Master's programmes. Americans create countless programmes, aimed at a wide

variety of customers, on one hand assuring accessibility to higher education and its differentiation and on the other, through an extensively developed scholarship system, able to discover the most promising students and most innovative scientists. For such a solution to exist, it is crucial to treat higher education and science as an important (if not the key) engine of economic development that brings about social development yet simultaneously creates the national and corporate competitive potential. Changing the philosophy of education cannot simply focus on the use of terms like education industry or scientific research industry (even without the apostrophes), rather it should be about the change in approach to universities and research institutions, not only in the minds of politicians and institution managers, but also in the minds of the entire society as well as the staff.

We can cite hundreds of scientific articles, reports and analyses outlining the dominance of US universities and the causes for that state, yet that will not change the situation of European universities. EU society and politicians must accept the threat of gradual marginalisation and comprehend that without superhuman endeavours there is no chance of catching up with the US, not to mention overtaking it. We need not spectacular actions, rather we require effective, well–planned actions that leave plenty of room for individual and group entrepreneurship and innovation. When analysing the greatest civilisational, economic and scientific achievements we can easily see that proverbial "companies founded in a garage" often achieved the most valuable results on the peripheries of the system. At present, the funding system for science and education kills and destroys individuality and unusual solutions. Europe desperately needs a system that will identify and motivate individualities, talent and enhance the role of innovators. Solely "adding money to the pot" will improve nothing as most of the additional funds will be wasted and sucked into the administrative black hole present in most universities and research institutes. We can categorically state, that the goal of becoming the world reference by European science and education, when denied extraordinary solutions, will be a dream not only in 2010 but also in 2025 and beyond.

A major threat comes from the perception dominant in the thinking of EU and national politicians and administrators, that problems related to the development of higher education and science can be dealt with in a top–down, administrative manner and the results will depend solely on the sheer quantity of dedicated funds. Unfortunately, many academic communities believe in the same myth that everything depends on the amount of money passed from public sources to the academic and scientific sectors. There are quite a few studies that point in the opposite direction and it is enough to recall the fact that public expenditure on higher education is identical in the US and Europe (nearly

1.1–1.2%GDP), while the results are diametrically different. The same occurs with the utilisation of funding for scientific research, where the US never went beyond the 3% GDP threshold intended for R&D.

One of the positive differentials of American higher education and science is the breadth of institutional solutions, functioning and funding systems coupled with the broadness of the programme offer and its level, and the variety of customers for which they are created. The solutions are united by one thing—elasticity and adaptability to the needs of the appropriate market segment. The American system is characterised by a systemic ability for identifying the best alumni and scientists and generating results, especially in scientific research and innovation. We can draw a single conclusion—it would be advisable for the EU to adopt identical solutions. The differentiation of national educational and scientific solutions is a positive factor, and it is national governments, directly interested in developing their own societies that should initiate the necessary intra–state changes. EU authorities should be tasked with creating a system for identifying the best institutions and individuals and creating financial foundations for maximising the results of work by individual scientists, research teams, Faculties or entire universities. Such a system cannot grow out of the current solutions (European programmes) or from a sheer increase in funding, seeing that the current EU budget consists of member–state donations on the 1% GDP threshold.

A major threat facing EU authorities and member state governments is the fact that the debate about the future of science and education is often focused on issues seen from the perspective of educational or scientific institutions instead of from the perspective of national and societal interest, seen in the medium– and long–term.

5.3. THREE ROADS OF DEVELOPMENT OF HIGHER EDUCATION

There are three possible routes to attaining by European universities the world reference:

- Road 1: the longest but easiest and probably the safest—of gradual, small changes in the existing system, or rather in the existing state systems.
- Road 2: attempts at mimicking the leaders and a resulting transplantation of American solutions onto European soil.
- Road 3: leap ahead and the search for new solutions and their large–scale implementation.

Each of the proposed routes has its strong and weak sides.

Road 1 is undoubtedly the safest and doesn't destroy social order, but is characterised by one, major fault—attaining the world reference will never be achieved.

Most nations and the majority of academic communities for political and ambition–related reasons will reject Road 2—with anti–Americanism being a vital force. Countries that focus on pragmatism might benefit, once they decide to implement the best American solutions. Its weakness is that the introduction of American solutions would upset the interests of many professional groups, including those of the "professor corporation". Sheer transplantation of American higher education solutions would be pointless—changes must also occur in the surrounding environment, seeing that active surroundings, an economy that enforces constant development and utilising innovation are vital building blocks for the success of American universities. Additionally, the university recruitment process (especially to the top–ranked institutions) is very selective and brings in only the very best and talented individuals, which when combined with the demands placed upon students during their study makes the diploma of a top–ranked university very valuable and gives it a considerable role in defining the graduate's career path. Europe in general, with the exception of several private business institutions (for example Oxford, Cambridge in the UK and the French ENA) doesn't trust diplomas.

We are therefore left with Road 3—the toughest, most difficult and dangerous, as the introduction of new solutions always carries the greatest risks. But, according to the author, it is the only path, which might realise (if properly implemented) the goal set by the EU Commission within a 20–25 year timeframe.

The continuing demographic changes that are challenging Europe have a positive consequence in the area of higher education—with falling student intakes any increases in funding can be dedicated for structural and systemic changes, instead of funding the costly development of material infrastructure.

The proposals outlined below are intended for the national level and are more of the framework type, as they should be adapted to the various educational systems present in EU member states.

From a rational perspective, EU higher education shouldn't be uniform. Education, especially its final stage—higher education—should remain an important area for inter–state competitiveness. Individual governments are most interested in fostering the development of national Intellectual Capital that is the most important form of capital, which can assure competitive advantage on the EU and global level.

The two Roads outlined below are focused on increasing the potential of higher education, taking under consideration certain aspects of scientific

research, but in no way are they complete and detailed proposals. The notion of transplanting the American system in its entirety has been forgone.

5.4. ROAD 1: CHANGES THAT CORRECT THE PRESENT SYSTEM

The current system of democratic access to free education has failed due to several reasons: financial, as it is extremely expensive; political, as it doesn't generate the necessary factors responsible for attaining competitive advantage; social, as access to higher education is available to 50% of each age group, usually the wealthier, better motivated and talented segment while those that never enter the university carry the financial burden. A correction of the present system is therefore necessary.

If we want to retain the basic right of democratic access to higher education it would be beneficial to retain a tuition–free 1st year for everyone who wants to study and passes the entry criteria set by appropriate governmental authorities and those of each university. Private institutions would be included, and would receive funds from the state budget covering an average cost of study per student multiplied by the number of students.

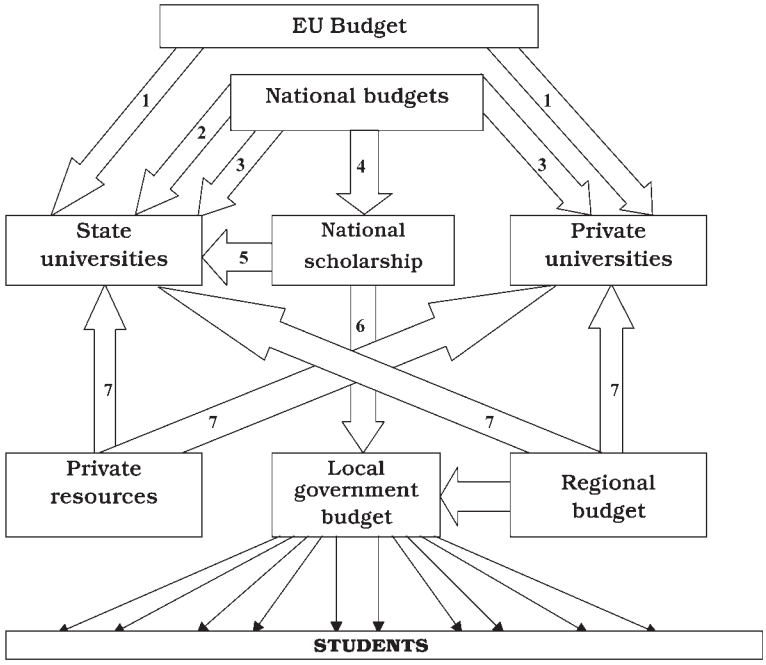
From the 2nd year, all students, including those in state universities would pay their tuition that would be set at a level, which would at least partially recoup costs incurred by each institution, for example 500 EUR per semester, as is currently being proposed in Germany. State authorities would continue to support the existence of state universities, utilising part of the added income from student population–wide tuition to boost the scholarship system.

It is important to tie scholarship awards to the student's promotion into the next year, while people repeating a given year ought to be funding a major share of their tuition. The state scholarship system should consist of two clearly different sections: one located on the local level of town or parish, where students could receive social scholarships addressed to the poor, allowing them to cover most of the tuition but also associated costs like housing, books and food, while the second would be located on the level of academic institutions and be differentiated and depend on the sum passed from state funds but also from private donations. The university scholarship fund should reward good study results regardless of the student's wealth, therefore enhancing the motivation for the most gifted and motivated students to achieve top–class grades. Students in private universities would benefit from a tuition–free 1st year, funded by the state, and from access to social scholarships regardless of the year of study. The overall system is presented in Figure 5.

Such a system would fulfil several important roles:

— Continued assuring of democratic access to higher education, yet simultaneously demanding increased effectiveness;
— Assuring additional social protection for students from poor families;
— By taking over the funding for all 1st year students, including those in private education, would create increased motivation to create new institutions and increase competition between existing ones;
— Would generate additional resources—tuitions, additional fees for repeating the year—which would allow universities to increase the quality of their programmes.

Figure 5. The theoretical outline of higher education functioning



1. Scientific research funds.
2. Operational funds.
3. Funding for the 1st year of study.
4. Funding for the national scholarship system.
5. Scholarships for good study results.
6. State budget resources for social scholarships for students.
7. Additional resources—private and regional.

→ Individual social scholarships.

We can assume that individual nations, especially the wealthy ones, when analysing their financial resources would make decisions regarding the possible extension of tuition–free studies even until the third year. Yet, such benefits should be available to those who progress naturally onto following years of study. The system should enforce the rule that the primary task of state universities for which they receive funding is student education. An additional task for university staff should be following the most recent developments in scientific research in their discipline. Funding for research should come from separate sources, primarily from the EU.

It is important that universities gain the right to introduce additional fees for study, with the exception of the 1st year. Such additional sums would result in the emergence of leading universities, under assault from extreme numbers of candidates, which would be able to create financial reserves to foster the emergence of new and initiate the qualitative enhancement of existing programmes.

Improving financial performance, combined with creating a system of motivation for timely completion of studies and selecting and motivating of the best students, is crucial for strengthening European higher education but isn't enough. An important aspect of American university success is the professional management system, whose importance increases with the size of the institution. In the most successful Central and Eastern European private universities, the rejection of the classical model of academic autonomy was combined with professional management. Such a model should be proposed to all state universities, but not as a top–down regulation, rather as an alternative. When proper competitive mechanisms are brought in, certain faculty members will comprehend the opportunities and embrace the new system, as increased managerial efficiency will assure the proper flow of any additional funds into personal research or salary increases.

Professional management limits faculty privileges, especially of professors, and reduces the role of academics and scientists in the selection of the Rector. It is therefore necessary to create new mechanisms for state universities, but we can turn to American state universities or British institutions. The Board of Trustees that supervises operations for the Founder, which in the case of state–owned institutions means the state, regional or city governments, play a crucial role. A well–structured Board can draw in new resources, both public and private and eases long–term planning while strategically restricting the influence of particular interest groups, which usually focus on short–term objectives.

Comparative data on sources of funding for European and American institutions illustrate the major weakness of the continental system—minute

funding from private sources (0.2% EU GDP)[71] . The introduction of general tuition will slightly increase the percentage of private funds, yet we have to expect that the quantity of new resources will not be staggering, as tuition will be limited by social acceptance. What is needed is a system of tax discount and motivation for donating funds to universities, enabling universities to realise tasks that exceed standard ones, which are funded from the state or regional budget. At the present, most European institutions lack adequate financial resources, and their assets are limited to land, buildings and equipment. American institutions, especially the leading and well–known ones, possess assets worth billions that came from private donations by the institution's alumni, foundations, financial institutions or companies. This wealth is multiplied, for example by the use of special investment funds, and allows for long–term activity planning, effectively limiting the risk resulting from temporary declines in student intakes or the lowering of federal or state funding.

Europe should also use the American system of cooperation with industry. One of the primary tasks of the new system would be coercing the emergence of increasingly innovative, entrepreneurial and active behaviours by university academic and scientific staff in two major areas: pursuit of funding for personal research and cooperation with companies, financial institutions or NGO's. Currently, the majority of European scientists expect the nation, via the university, will fund their personal research. They receive easy to get, even if inadequate, funding and aren't interested in pursuing additional funds outside their institution. Of course, Basic Science and non–applicable research have to be treated differently.

Cooperation with industry is a difficult area, the EU Commission Communiqué highlights the weakness prevalent across Europe, as the area is difficult to define and the tools needed for intensified cooperation with industry are hard to create. The majority of scientists employed in universities, even in the area of applied science, are not interested in cooperating with companies, even in terms of introducing their own scientific inventions into the economy. Undefined "others" should do it. On the other hand, many of the research results are obtained in a form not ready for immediate industrial implementation. Europe is left with creating a series of tools, as one might not be enough, which will stimulate both scientists and companies to quickly implement new solutions and innovations into commercial practice. Such a tool is the company's potential profit from the implementation of a new invention, which is often accompanied by sizeable risk that may eliminate small firms. Yet, company interest must be stimulated by tax breaks for companies investing in new technologies or

[71] In: Banaszkiewicz, M., (1998), Badania uniwersyteckie... op.cit. p. 13–31; Kozłowski, J., (2002), Amerykański cud naukowo–technologiczny, *Forum Akademickie*, nr 9–10 p. 87.

innovations or by discounts for special high–risk investment funds that focus on implementation or spin–off companies. It seems that another good tool, although effective only in the long–term, would be the introduction of competitive bids from universities for scientific research. If we assume that each nation owns only several universities/faculties that focus on research, while all the others concentrate on teaching, the research entities would automatically search for top–class scientists that would bring in measurable benefits. We have to remember that most groundbreaking inventions occurred on the periphery or completely outside traditional scientific institutions and universities. So, the employment system should know how to identity and select extremely talented individuals and innovators and create for them appropriate working conditions, even if they require location outside official structures.

Increasingly higher barriers to entry for new companies pose one of the most difficult challenges to innovation implementation. The lowering of labour costs for 2–3 years for a company introducing new technologies or products should motivate some entrepreneurs and scientists to create new spin–off ventures.

5.5. ROAD 3: THE SEARCH FOR NEW SOLUTIONS

The outlined proposal is a combination of conservative analysis of past times in higher education combined with an entrepreneurial search for new solutions.

We can categorically state that today's education, accustomed to educating 40–50% of each age group, is something completely different from the previous academic world that educated only national elites. The old system had two major advantages: candidate selection and the teacher–student relationship. So, instead of raising the overall level of the entire education system, maybe it would be beneficial to improve its most valuable segment. Science and education are by definition undemocratic, and truly gifted people have a distinct advantage at the very beginning. Yet, such people are needed by society and it is in the society's interest to educate an elite that will later serve the state and its citizens. If that concept is sensible, then the entire society should carry the burden of educating the elites.

In the system outlined below, the author attempts to combine the best American solutions with European values.

Fundamental assumptions of the proposed new higher education system are as follows:

1. The state, through various agencies creates and effective system for university evaluation, that is an extension of today's top–class accreditation

organisations[72] like AACSB or EQIS.

2. As a result of the evaluation process, a national ranking of top faculties or schools emerges, highlighting schools that educate on specific programmes, able to educate in an individual manner while accepting the Master–Apprentice relationship.
3. Appropriate government bodies create a list of socially–necessary jobs that decide about the society's quality of life and the effective functioning of state institutions: doctors, teachers, governmental and local administrators, justice, police and the military. These are professions where competencies are important and scientific areas that will define the future: biology, physics and mathematics. Governmental bodies also outline the annual requirements for each of those professions.
4. Based on in–depth analysis, the government orders the education of students on selected Faculties/universities at a very high level, entirely free (the state carries the burden), despite costs that are several times higher than on standard programmes.
5. Selected universities open entry competitions for 5–year programmes and accept the best candidates in numbers matching the limits set by the government. Continued presence on these programmes is guaranteed solely by a high or very high average grade (possibly even 4.5 on the 0–5 scale). Alongside free study, the student receives a scholarship covering additional costs like housing, book purchases and academic equipment.
6. Universities selected by the government receive funds for accepted students for "competency" programmes lasting 5 years, yet each year there is a public verification process of elite–creating institutions. Universities or Faculties that lower their standards will be denied follow–on contracts, while their place is taken by new entities that have raised their education standards to the appropriate level. This system assures competitiveness and enforces the sustaining or enhancement of educational quality. Governmental contracts for elite education are signed with institutions regardless of their status, i.e. private or state–owned.
7. Selected universities organise appropriate entry exams (although for a much smaller number of places) for the 2nd year, identifying gifted individuals, who either weren't accepted onto the 1st year or didn't even participate in the entry process onto the 1st year, yet decided to undertake such demanding studies after experiencing "conventional" 1st year education in the remaining, average institutions.

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72 Geuna, A., Martin, B. R., (2001), *University Research Evaluation and Funding: An International Comparison*, electronic document: http://www.sussex.ac.uk/spru/publications/imprint/sewps/sewp71/sewp71.pdf

8. The government decides about the scale of competency–based special scholarships based on current demand and financial resources. We can assume that such scholarships will cover 5% of all students accepted onto the 1st year in most nations to 10% in the richest countries. This approach is based on the solutions applied in French Grand–Ecole's, but doesn't freeze the process into an elite–educating programme, seeing that places are accessible only after passing a stringent selection process. Five faculties/universities leading in each teaching area would function within this system, allowing for the dispersion of "special" students amongst them so that a monopoly never arises at a single institution.
9. The remaining 95% candidates study for free during the 1st year, which retains the principle of democratic access to higher education. Individual institutions define intake limits and set entry criteria, for example additional entry exams.
10. From their 2nd year, all students learning on normal terms pay tuition whose minimal amount is defined by the government and the maximum amount by the university, taking under consideration the real costs of study on a specific programme or faculty. The government transfers to all universities (private and state–owned) a standard amount of funds per student, via an "education coupon" or by an algorithm, as well as covering the operational costs of state universities like investments, renovations, fixed and administrative costs, and internal research. When retaking a year, students pay a much higher tuition, which ought to cover the full cost of studying.
11. Just like in Road 1, the government transfers funds to local governments for social scholarships and to education institutions resources for academic achievement scholarships.
12. Appropriate governmental units, teamed with institutions representing higher education (for example Rector Conferences) select the universities/faculties best suited to operate doctoral programmes and order, via a contract, a specific number of doctoral studies for an agreed number of students. The doctoral studies are entirely funded by the state and attended by no less than 2% of each age group. The selected universities/faculties advertise the entry criteria. Doctoral students, besides their tuition, also receive a substantial scholarship, for example a doubling of the average national wage, which allows them to cover the necessary costs of study but also function in society (by having and being able to support a family, etc).
13. The state relaxes legal regulations related to higher education, permitting the acceptance of a professional management system, limitation of academic autonomy or even a conscious privatisation of a state university that is supported by the institution authorities and staff. The conditions for obtaining the right to award scientific titles are tightened. The aim of all

new regulatory solutions should be the reduction of entry barriers for new entities wishing to enter the higher education sector, combined with a conscious raising of standards related to academic, scientific and professional titles, which will lead to quality improvements in most universities, not just the top ones.

14. A vital part of the new system will be played by the high school graduation exam—a unified exam across all of the EU, with the retention of natural differentiation between the various national education systems. A European High School Diploma would set the necessary criteria for acceptance into university in any EU member states, which would be an important aspect of the tuition–free 1st year, accepted by most countries. A pan–European Diploma would give national education authorities a valuable tool for analysing teaching quality in individual high schools.
15. The new system would allow for the relaxation of currently prevailing unity of education and conduct of scientific research. The new system would strengthen scientific research in institutions and faculties permitted to operate doctoral and special programmes and research would be state funded. Other institutions would require their academic staff to fulfil their contractual obligations solely by teaching, while conducting research in other institutions—research institutes, corporate scientific centres or a small enterprise. When evaluating the achievements of staff, the university would analyse his scientific achievements—quantity and quality of scientific publications, patents or implementations, regardless of the host institution in which they were conducted.
16. The funding of research conducted by a university employee should come from resources located on five levels:
    - European funds (EU budget), accessible to individual scientists and entire teams, which will be aimed at top–class and world leaders. Funds should amount to no less than 20 billion EUR per annum.
    - National funds, accessible in the form of grants awarded in open competitions or in the form of research contracted out to particular scientists or research teams.
    - Special funds from the government for scientific development—investment, purchase of scientific equipment, additional funds for Basic Research—offered to institutions conducting doctoral and special "competency" programmes, regardless of their nature (public or private).
    - National or regional government funds for supporting internal research by state university, the size of which would be limited to "re–creative"[73]

[73] Research focused on keeping pace with groundbreaking scientific developments from across the world, where original research is replicated.

research in applied sciences and research in areas of civilisation and culture.
— Internally generated funds gained by the institutions from donations or earned profits from investment funds.

5.6. A COMMENTARY TO THE PROPOSAL: IS A LEAP AHEAD POSSIBLE?

The proposed system has been barely outlined, as it is impossible to prepare a ready–made solution without considering the specific solutions present in individual EU member states. Different solutions will have to be applied in Germany, the UK and Poland to achieve the desired results.

The primary assumption behind this system is general deregulation, especially in areas where systemic solutions have thwarted development and quality improvements, while simultaneously creating new, clear and comprehensible and precise criteria that will allow universities or faculties to enter the "special league"—the prestigious group of education institutions allowed to offer doctoral and special competency programmes. Those institutions will be equipped with additional resources permitting them to educate students at the highest possible level, with a return to the Master–Apprentice approach on the higher years (4^{th} and 5^{th}) of competency studies and across the entire span of the doctoral programme.

There is no avoiding the fact that the above–mentioned proposals favour and demand the introduction of competition into the higher education sector and denying state universities their traditional safety, that usually results in laziness and a slowdown in the qualitative improvement process.

The openness of the system, characterised by the opportunity of entering the "special league", or the European Ivy League, when partnered with the flow of funds after the student, will only bring about notable qualitative improvements after several years. The system also lowers entry barriers.

Those that see the state system as an appropriate tool for dealing with the future are advised to consider the American or Polish achievements and ponder upon why in the US the private institutions are trend and standard setters.

It seems that Europe has ignored the organisational and financial potential or religious associations and NGO's. Some leading American private universities like Georgetown or DePaul University were founded by the Catholic Church. DePaul possesses one of the most advanced and innovative Computer Science Faculties in the US. Competition from private institutions, like the 252 present in Poland today, can bring additional benefits by raising the quality of state universities, which when faced with the mounting challenge and diminishing student numbers, are forced to upgrade their standards. Such examples show

the value of considering notable systemic support for private higher education institutions in Europe.

Working towards raising the standard of European universities, we have to recreate the entire system by introducing into the funding and supervision framework of new systemic tools and incentives that will motivate a large number of individuals, teams and entire universities to pursue innovations and quality–improving activities, all leading to a constant competitive battle for supremacy. Proposed systemic solutions should stimulate the creation of private universities that, often functioning in niche areas, would introduce into the entire system a breath of fresh air via new solutions and innovative operations. Some state universities should be motivated to seek unique organisational solutions, better suited to today's times.

Rather difficult, yet necessary, is creating the system of competence–related licensing where the state grants the right to award scientific and professional titles, combined with the emergence of a ranking system of Faculties and universities. A critic can simply state that such a solution is unrealistic because an objective evaluation of education or research is impossible to achieve, and the resulting selection/promotion of universities into the "special league" will result in irregularities, extra–systemic activities or corruption. Yet, the cold brutality is: without stringent quality improvement systems, attaining the world reference is nigh on impossible. Logically, the accreditation and licensing system needs transparent criteria and rules of behaviour, stability for institutions preparing long–term strategic plans that cannot be surprised by speedy and unexpected regulation, priority or criteria changes. The system shouldn't be compulsory, so if there will be schools willing to educate without awarding state–sanctioned titles and exist without public funding, then they should be permitted to function, as they can enrich the overall system with unique programmes for which there will be social demand.

The accreditation and licensing system should feature fixed rules, forming the minimal requirements for obtaining appropriate clearances, and a large area permissive to original solutions. Granting the right to award a specific title should not be solely based on the number of academics and scientists employed in the applying institutions, for example the number of professors, but also consider the standards of teaching and study combined with the realisation of required minima set for the particular programme. Accreditation standards, if the institution ranking is to emerge from them, have to consider the number and level of scientific and academic staff, their practical experience, an objective evaluation of programme standards and realisation, but also the professional preparation of alumni, their career paths and the labour market absorption rates for the particular discipline.

European education is challenged by low demand for programmes and areas of study like mathematics, physics and biology that are necessary for today's and tomorrow's economy and for the education of primary and secondary school teachers. Such programmes, when conducted on an appropriate level are much more difficult and require increased effort than other study areas, and as a result many candidates, even those gifted, choose easier programmes. In a situation where tuition is compulsory, many students from poorer families might become interested in pursuing studies in tuition–free "deficit" areas. The modern economy assures additional motivation—with increased job mobility and retraining requirements, graduates of applied sciences might find it easier to progress out of their old job into the new one and acquire new, job–specific skills.

Doctoral studies must become a crucial part of the new system. Over the last century, the average level of education rose by 1 level, so the percentage of doctorate holders present amongst us today ought to approach the number of MA holders who graduated a century ago. Completion of a doctoral programme means not only preparation for conducting independent research, but also the acquisition of analytical and synthetic thinking skills and in–depth knowledge in the specific discipline, i.e. skills necessary in multiple areas of the economy and society. Currently, many potential candidates are deterred from entering doctoral programmes due to their costs and related need to pull out from active employment at a time/age traditionally filled with intense activity. Many talented Europeans leave for American doctoral programmes, lured by good research conditions and the awarding institution's prestige and the opportunity to participate in research programmes that will cover tuition fees. The only way to increase research effectiveness is to create appropriate conditions that will motivate talented Europeans to stay on the Continent and create an irresistible offer to foreigners capable of undertaking doctoral studies at European institutions. The above–mentioned reasons bring about the radical nature of Road 3: not only tuition–free doctoral studies, but also the provision of high scholarships allowing the student to cover all costs and support a normal lifestyle, that often includes a family. The average costs of supporting a doctoral student must reach 50 000 EUR, so a group of 20 000 students will mean 1 billion EUR burden on the state budget—the sum is immense, but we can safely say that the creation of thousands of doctorate holders is the best investment a nation can make.

With progressing integration and the opening of European universities, a common standard–setting high school exam is necessary, as it creates a common high school graduate model and assures universal criteria for entry into higher education. Perhaps the European diploma could be modelled on the International High School Diploma already in existence? The pan–European exam

would set common standards in subjects like mathematics, physics, biology, geography, even EU–specific or global knowledge. Individual nation states could add nation–specific subjects to the exam, but the common subjects would ease student mobility between European universities.

In the long run, inter–institution mobility should become a requirement, so that students on their 4th or 5th year would be required to have completed at least a semester of study at an institution located in a different European state.

It is important to assure the competitive nature of accepting the most talented non–European students onto doctoral programmes. Upon the acceptance of the new systemic solutions, we cannot expect EU member states to carry the burden of foreigner tuition–free education, which means that they will be denied access to the tuition–free 1st year and will not be liable for social scholarships awarded at the regional level. Yet, top–class universities should be interested in accepting the most gifted students, so they might have to utilise their own funds to provide gifted non–European students with appropriate study conditions. Scholarships can be awarded on the basis of average grades or introducing a system where 5–10% of the best students, regardless of their country of origin will study for free. Europe needs to retain gifted foreigners.

The acceptance of national education system differentiation as a positive characteristic means that specific and detailed EU regulations cannot define every area. What is needed in Europe is a shift in the philosophy of higher education and scientific research, where they are no longer treated as a problem to be temporarily dealt with by the governing group but rather are looked upon as the most effective investment in the development of future society and economy. Such an outlook will require the application of tools typical for economic endeavours.

Fundamental care for the level of higher education and scientific research should be retained by the state, whereas EU authorities should develop a wide selection of financial tools allowing for the support of top–class individuals, teams and entire institutions. To achieve notable results on the EU level in terms of quality and effectiveness improvements in science and education, the funds dedicated to higher education and research would have to be raised by one factor.

When discussing the future of European higher education, we have to remember about the demographic changes—in the EU 15 the group of 10–19 year olds has declined by 10 million over the last 30 years. A similar process is occurring in the candidate countries. Seeing that prognoses are showing that the number of candidates for higher education will continue to decline, the funds intended for higher education will be used for quality improvements on educational programmes offered by European institutions.

5.7. SUMMARY

A fundamental element of the proposed reform is a move away from free education and the introduction of a system where public funds follow the student to the institution of his study, utilising the educational coupon or algorithm. When combined with a tuition–free 1st year and the developed scholarship system it ensures an effective continuation of the democratic access rule, yet combined with notable financial effectiveness for the universities. An interesting *novum* is the introduction of tuition–free competency studies for 5% of the most gifted candidates that create professionals necessary for the state's proper functioning and crucial for the creation of the nation's competitive potential. Free doctoral studies should reduce the "brain drain" that is currently plaguing Europe.

* The chapter presents two proposals for the reform of the organisation and funding of European education. We can accept the validity of the five propositions made on the basis of analysing today's situation.
  - The democratic access to higher education doctrine, where the practice of tuition–free education in state universities is demoralising and leads to sizeable wastage of public funds.
  - The EU goal of catching up with the US has to be split into two phases: stopping the current progressing marginalisation and the creation of new solutions that will systematically reduce the distance to the US academic and scientific world.
  - Only increasing public funding for higher education and science will not assure the desired results, rather new solutions have to be introduced.
  - The philosophy of higher education has to change to the acceptance of university study as the greatest personal and national investment, which has to fulfil conventional effectiveness criteria.
  - The EU's engine of development has to come from top–class academics and institutions, research teams and faculties, top institutes and universities.

* Out of three possible Roads to realising the Commission's aims, the author prefers two Roads: one that introduces corrective changes into the present

system (Road 1) and one that proposes completely new solutions (Road 3).

* In the corrective proposal (Road 1) the primary requirement is the rejection of tuition–free studies. To retain democratic access, students are offered their 1st year tuition free, while the tuition for the remaining years is set at a level that covers only part of the true costs of study. The introduction of tuition would be matched by a national scholarship system for students from poor families (awarded by local authorities nearest to the place of residence) and for good study results that would be awarded by the universities but were sourced from public funds. Private institutions should also be covered by the provision of tuition–free 1st year, and would receive funds based on an algorithm related to the type of study offered and the number of students. A good way to improve effectiveness and quality in state universities is to introduce professional management systems in place of academic autonomy.

* The proposal leading to new solutions (Road 3) is much more complicated and breaks down many of the currently prevailing modes of operation. It gives primary importance to higher education as a crucial investment in the life of an individual and the future of the nation. The primary thrust of the proposal focuses on moving away from a mechanistic interpretation of democratic access to higher education and the restriction of tuition–free studies for a limited number of students (5–10%) to a limited number of programmes and professions important for the effective functioning of the nation and society.

* The proposal for new solutions can be summarised as:
  - Creation an effective system of university quality evaluation.
  - Based on the above–mentioned system, the emergence of a national ranking of top faculties and specialist schools.
  - Creation of a list of professions necessary for the effective functioning of nation and society and pro–development areas of science and the definition of average annual needs for cadres in those professions and areas.
  - Contracting out, on selected programmes in top universities educating on "competency programmes", the education of a predefined number of students, accepted upon passing entry exams, who will study tuition free.

— Introduction of additional exams after the 1st year to identify gifted students.
— The 1st year of study is tuition–free for all students, regardless of the institution's nature (private or public), yet each institution defines the tuition for the following years individually, with state universities having their minimal fees determined by national authorities.
— The introduction of tuition would be accompanied by a scholarship system based on social grounds and academic achievement.
— The nation funds doctoral programmes in selected institutions, which are accompanied by a motivational scholarship system for doctoral students.
— The state relaxes regulations covering higher education, allowing for the privatisation of state universities, the introduction of professional management, simultaneously tightening licensing criteria for the awarding of scientific titles and national diplomas.
— A pan–European high school Diploma is introduced, with a common core for all nations.
— Funding of scientific research is conducted on 5 levels:
  A. European (EU budget): funding for the best people and institutions.
  B. National: funding in the form of grants awarded in open competitions or in the form of research contracted out.
  C. National: funding offered to institutions conducting doctoral and special "competency" programmes, regardless of their nature (public or private).
  D. National or regional: funding for internal and "re–creative" research in state universities.
  E. Internal: funding generated by the institutions from donations or earned profits from investment funds.

* It is crucial to stress that any top–down solutions regarding higher education and scientific research, which might be handed down from EU authorities in the form of directives and inflexible regulations, would be disastrous. What is needed is an entire system of motivations and rewards, leaving as many solutions as possible in the hands of individual nations, regions and the universities.

PART III

6. Knowledge and the University: past, present and future

6.1. THE KNOWLEDGE ACCOMPANYING EUROPE

Knowledge is much older than the university and even science. It has accompanied Man forever, even if in the early stages it was of a purely utilitarian or secret nature, while always there was some knowledge about the possession of which we weren't entirely aware. The emergence of science as a way of arriving at the true nature of things and developing Truths is usually understood to have emerged with the Greek philosophers, although there were early attempts at scientific activity in ancient Egypt and China.

During the Middle Ages, knowledge was "stored" primarily in religious institutions, trade and craft guilds and was treated as an asset, that was professional in nature, and thus held secure from prying eyes. Certain knowledge, mainly of the utilitarian type, was present in local and regional communities, and its pool was constantly enhanced by diffusion of restricted knowledge from closed groupings or by the creation of new knowledge by trial and error—a specific set of unconscious experiments that at a certain point in time brought a positive result.

The university has been central to European development for over 900 years. Over 9 centuries of turmoil, alongside the basic societal building blocks of family and nation, only churches, schools and universities survived, highlighting the true value of the university as a European invention. In the firs period of university development the creation of new knowledge was a rarity. It is interesting that the first university emerged in Bologna from the organisational initiative of young people who wanted to study Roman Law, and the word "universitas" taken from that very law to describe an institution meant a legally–recognised association, a student corporation. It was the student "universitas", corporation or even guild that was given its own statute from the city of Bologna that allowed for the signing of contracts with professors, regulating student accommodation fees but also outlining the subjects to be taught or the length of the academic year. Professors were paid directly by the students[74] . According to our present knowledge, there was between 1 and 10 thousand students in Bologna in the 12th and 13th centuries. The French university in Paris materialised as a professor corporation. Strangely, in those times the demand for knowledge had already overtaken knowledge supply.

[74] Berman, H. J., (2003), *Law and Revolution II: The Impact of the Protestant Reformations on the Western Legal Tradition*, Cambridge, Mass: Belknap Press of Harvard University Press.

Universities had always faced competition, which in the Middle Ages took the form of "knight academies", noble houses or religious orders and later scientific associations. The first scientific revolution occurred when universities combined knowledge that to this point remained separated, for example mathematics, scholastics and local/regional utilitarian knowledge and a conversion of knowledge began—from closed to open, accessible to people who wanted to acquire knowledge but previously were denied access to it due to their social position or function. Schools, especially universities, created a new way of passing knowledge where "practicing under the Master" was replaced by free choice in terms of the area of knowledge to be mastered by the student.

The barriers to knowledge access were overcome several times in our history. The second occurred during the second half of the 18th century[75]. In that same period, the percentage of books printed in Latin fell dramatically in favour of books in national languages[76]. Historians argue that this phase of university formation occurred during the Enlightenment, when universities became the primary location for creation, accumulation storing and transfer of knowledge. We can safely say that the first phase of democratising access to knowledge occurred then.

The mobility and interest in the world, that characterised Europeans of the time, brought about the explosive development of knowledge and its dissemination. It is interesting that none of the other great civilisations outside Europe resulted

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75 It is worth quoting part of J. Kozłowski's book about the Załuski Library:
"Until the end of the 17th, and in the first decades of the 18th century, knowledge was considered to be valuable when it was taught in schools and universities, erudite, based on authorities and far removed from practical existential and social needs. Such knowledge, acquired only via long–term apprenticeships under professors, representatives of a closed, hierarchical system, and was considered to be available to the few–the sons of nobility and patricians. Scientists were not only the authors of many books, but their primary consumers, yet they were separated from people using only their national language by a custom– and soul–based void; the bookstores of he time carried mostly scientific titles and the booksellers functioned as intermediaries between the scientists.
In the 18th century, and especially its second half, the habit of constant reading was propagated and encompassed the middle classes alongside the scientists. The nature of publications changed, as they became smaller, format–wise, and lighter in tone, and were increasingly often written for a particular reason. Reader behaviour also changed: instead of repetitive consumption of limited titles, they now read briefly and once a multitude of volumes. Readership organisations emerged (societies, etc). Bookstore operations expanded. Instead of broad and large format books, readers reached for thinner, smaller, yet easier to handle, volumes. The age of constantly read books was ending. Newspapers became lighter and their level was lower–they contained less erudition, scholastics and theology and featured a wider range of subjects. The literary public widened and it was culturally receptive and socially active. The ideal of easily accessible and comprehensible knowledge became popular–of knowledge that would enable the sorting of Earthly matters in tune with the Reason–based postulates of the time. The void between scientists and non–scientists diminished, due to the rejection of Latin as the language of science and the cultural advancement of the middle classes. In: Kozłowski, J., (1986), *Szkice w Dziejach Biblioteki Załuskich*, Wrocław–Gdańsk: Zakład Narodowy im. Ossolińskich.

76 In 1650 Germany, 71% of all books were published in Latin, in 1740: 14% and in 1800: 4%. Witman, R., (1977), Soziale und Okonomische Voraussetzungen des Buch–und–Verlagswewen in der zweiten Halfe des 18. Jahrunderts, in: *Buch und Verlagwesen im 18. und 19. Jhr*, Berlin, p. 9.

in similar scientific progress and democratic access to knowledge. It seems that they were "inwardly focused" and closed civilisations, as illustrated by the Chinese Great Wall. The mobility of European academics and students that travelled between universities assured knowledge exchange and accumulation, eased scientific discourse, whose primary focus was answering the "why?" question and an ever popular questioning of "truths", previously considered to be unchanging. The social psyche equates the development of science with the institution of the university, but people who were keen on truth, if not accepted within those institutions, created alternative institutions like scientific societies, etc.

Until the mid 20th century, universities and the higher education institutions that followed in their footsteps were accessible to the select few. Formally open to anyone who fit specific criteria, yet the conditions and number of available places limited access. Their interaction with the outside world was also rather limited. All these characteristics brought about the perception of universities as isolated ivory towers, where life flows at a different pace and according to different rules than in the surrounding world. Outside observers thought that the life inside moved much more slowly.

6.2. CHANGES IN THE ACADEMIC WORLD

The next university revolution came in the second half of the 20th century, when the two primary aims of the university—conduct of scientific research and student education—were widened to include enhanced relationships and cooperation with the outside world. A paradox emerged. At a time when universities grew dramatically due to increases in student, academic and scientist numbers as well as the institution's material base, the university's social role declined, mainly due to the fact that increasingly, scientific research is conducted outside universities and that access to knowledge, even new, is much greater for those outside university frameworks.

Jamil Salmi and Adriaan Verspoor[77] characterise the changes that occurred into three groups:

- **Increased financial differentiation**: alongside income from student tuition, new forms were created—training courses for industry, industrial contracts, etc.;
- **Increased institutional differentiation**: emergence of continuous learning centres, for–profit universities, virtual institutions, etc.;

[77] Salmi, J., Verspoor, A., (1994), *Revitalising Higher Education*, Oxford, Tarrytown: Published for the IAU Press by Pergamon.

— **New management forms**: introduction of strategic planning, effectiveness measures, widened autonomy, etc.;

These transformations are often accompanied by new governmental policies towards higher education that focus on creating incentives rather than on direct management. Henry Etzkowitz and Andrew Webster[78] talk about the "second university revolution".

Many prominent academics question the need for increased interaction with the outside world, arguing that one of the primary tasks for the university is the accumulation, cataloguing, description and transformation of knowledge, even that currently deemed to be unnecessary. This task is at odds with the task of becoming a useful institution that keeps pace with the challenges of our everyday reality.

Within the discourse about the nature and role of the modern university, the term "universitas" is used to define the universal nature of science or of the teachers and the taught, seeing that they create a single university body, regardless of their discipline. J. Wyrozumski[79] argues that the university as an ideal and an institution has remained uniform, despite the explosive development of science in the 19th and 20th century that brought about the emergence of new scientific disciplines and of related research centres, institutes, laboratories, seminars, etc. The university still exists in its primary, institutional form, its identity still set firmly in tradition, often proudly and ostentatiously advertised outside. The traditional university concept retains an aura of superiority and alienation from the surrounding environment and accentuates the need for retaining a distance to current events, new theories or social phenomena. To those from the outside, the lack of engagement with the outside world was seen as the university's primary weakness, whereas those from the inside, usually the professors, saw it as an organic issue, allowing for the limitation of errors, even in the area of teaching.

There are three primary modes of education: the professional mode that prepares for employment, cultural mode that enables the acquisition of general, theoretical, national and global cultural capital and the methodical mode, which focuses on acquiring the methodology necessary for intellectual work or specific research techniques.

Depending on the relationship of those three modes in the education system, we can create a system that focuses increasingly upon knowledge and professional skills or general education, traditionally called "academic".

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78 Etzkowitz, H., Webster, A., (1995), Science as Intellectual Property, in: Jasanoff, S., *Handbook of Science and Technology Studies, Thousand* Oaks, Calif: Sage Publications.

79 Wyrozumski, J., (1998), Powszechność nauki w systemie uniwersyteckim dawniej i dzisiaj, in: Zytkowicz, H., (ed), *Idea Uniwersytetu u Schyłku Tysiąclecia*, Warszawa: Wydawnictwo Naukowe SCHOLAR, p. 18–21.

The term "university" is used in a variety of contexts—from the purest Humboldtian sense, i.e. a place where scientific seminars are conducted and the Master–Apprentice relationship exists, all the way to defining a specific higher education institution, which passed the stringent criteria for gaining the title of "university".

Over the centuries, universities were present in two primary areas, which created two sets of expectations and also created two sets of conditions for the employed professors[80]. On one hand there was an expectation of scientific research (as well as the transfer of knowledge and education of inheritors) and on the other of playing an important role in the surrounding national and regional community. Universities are by their very nature cosmopolitan, yet they've always had an important role in the description and widening of everything that forms the widely understood national culture or regional identity. The university understood as a community of scientists can, and many claim that it should be, a centre for deliberations regarding the state of the nation and the nature of national culture. Simultaneously, it should be a centre for opinion–making expressions, and a defender of national tradition or the voice of a national community. Finally, it might become the centre for researching the national essence in its widest possible context. In every European country we can easily point out several universities that, due to their date of creation or positioning (usually in the capital) are important to the nation, more influential and can affect public opinion than other institutions. Their role in researching and developing national culture is much greater that that of others, yet it is enough to substitute the term "nation" with "region" to highlight the importance that every university can play in the development of its near or larger region.

Universities, considered by most politicians and experts to be a national asset, were and often are cosmopolitan institutions, as the nature of science conducted inside is of a trans–national nature as is the language of scientific discourse—in historical times it was Latin, and now English. It seems reasonable to assume that in a society, which uses the Internet for communication and knowledge acquisition, the geographical source of generated knowledge will be lost, so the importance of nation or state as the distinguishing characteristic of a university will be reduced if not negated. This trend will be especially characteristic for applied and related sciences, while much knowledge generated in the social sciences will remain geographically specific.

Alongside institutions considered to be cosmopolitan, there exist a great variety of local institutions focused almost exclusively on their closest surroundings and highlighting their localness.

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[80] Gościkowski, J., (1998), Funkcjonalność Uniwersytetu w Perspektywie Długiego Trwania, in: *Idea Uniwersytetu...*, ibid. p. 27–29.

The primary functions of a university include the creation of scientific knowledge, accumulation, selection, transformation and transfer of knowledge, the education of scientists and students, the co–creation or education of the professional class and of those that form the intellectual elite/aristocracy.

The modern world has witnessed the emergence of new more or less specialised universities that focus on the transformation and transfer of knowledge and the education of professionals.

6.3. WHAT IS AND WILL BE THE "EUROPE OF KNOWLEDGE"?

Increasingly, to understand the events occurring around us, we have to assume that the role of knowledge will continue to increase, and it will become the primary resource, whose creation, appropriate utilisation and transformation will decide about the success of companies and entire nations, and thus about the wealth of individuals and nations. As a result, increasingly we come across the term "Knowledge Society".

The EU Commission in its Communiqué wants to define the place and role of universities in the Europe of Knowledge. If that is the case, we have to properly define the term, as very often "Knowledge–Based Economy" and "Knowledge Society" are used interchangeably. Unfortunately, the terms are general, descriptive and imprecise, yet they remain fashionable. It is very difficult to define the "Europe of Knowledge" as it seems to be an illustration of the expectations and plans created by European politicians and experts, who analysed the American economic achievement of the 1990's and tied it to the utilisation of scientific research, technological and technical innovations by US companies. Most definitions of the Knowledge–Based Economy are descriptive—one of the few definitions that try to provide measurable values comes from the OECD[81] : in US firms fixed assets have been reduced to 20% of company value, while the rest is made up of human capital and immeasurable assets like logos, know–how, specialised software, databases, etc. We can debate the level of human capital and immeasurable assets—whether 80% or maybe just 50%—but the definition allows us to debate facts. F. Kodama[82] argues that since the mid–1980's R&D investments have outgrown capital investments, which signals a dramatic transformation in the very nature of industry that is symbolised by the metamorphosis of the production company. When R&D surpasses capital investments, the company ceases to be solely a production facility and begins to produce knowledge. Rather than being based on sheer R&D expenditure, the

81 OECD, (2000), *The Creative Society in the 21st Century*, Paris: OECD, p. 47–49.

82 Kodama, F., (1995), *Emerging patterns of Innovation: Sources of Japan's Technological Edge*, Boston: Harvard Business School Press, p. 5.

process is mainly the result of increased expenditure on IT in the production processes, which allow for fast, easy and thus cheap change of production parameters without the need for purchasing new production equipment. In those companies that see themselves as world leaders, the primary goal is increasing R&D expenditure.

If we take the OECD report standards, then the European Union economy as a whole, in both its current and soon–to–be–expanded form, is not based on knowledge, but we can safely assume that the threshold will be passed within a decade or so. What remains is the question of whether the "Europe of Knowledge" is something more than a Europe where the "Knowledge–Based Economy" dominates. We can assume that the Communiqué authors, when using the "Europe of Knowledge" term, were thinking about two elements: "Knowledge–Based Economy" and society, where the dominant role will be played by "knowledge workers"—the professionals.

The global transformation is stimulated by the development of data transfer and access techniques, information and the democratisation of access to knowledge. If we accept Roman Galar's[83] theory about the evolutionary nature of societal changes then, in the era of information transfer acceleration and easier formation of global culture via electronic carriers, we have to look upon the university as a place that would primarily protect and transfer the cultural, custom and technical code (verified by real–life practices) necessary for Mankind's further evolutionary development. This retentive behaviour allows for the creation of conditions for the organisation of societies within the cultural image of the world through the shaping of student competencies and character. Within this concept the societal role of university resembles a peculiar vacuum cleaner with a set of filters that sucks in created, modified and exchanged knowledge and then segregates it via the comparison against a set of prevalent codes and passes on to its students.

The number of knowledge creation centres in modern society has grown—alongside universities and state research institutes there exist research centres of small and large companies, independent research centres, think tanks, scientific societies and professional corporations, an immense number and variety of social groups, and all the international organisations (like UN, UNESCO, OECD or the World Bank) that are extremely effective in knowledge standardisation. All these entities create so much knowledge that the primary challenge is one of selection and easing of access to necessary data.

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83 Galar, R., Uniwersytet Jako Narzędzie Adaptacji Cywilizacyjnych, in: *Idea Uniwersytetu...*, op.cit, p.123–125: "Mankind as a species achieved evolutionary success via the activation of extra–genetic mechanisms of information passing information [...]" and " Information crucial for long–term survival is codified in the norms, ethics, cultural traditions and technology solutions, and has to be passed in undisturbed manner (or as close to the original as possible) from generation to generation [...]".

It is important to consider the university's product: how do we equip our alumni, what is the true "value added" offered by universities. The logical answer is that the fundamental product is knowledge passed on to students. Yet, thousands of institutions educate students based on similar programmes, syllabi or even using the same textbooks, yet the market value and the personal characteristics of their alumni differ dramatically. In each country we can name a longer or shorter list of well–educating institutions. Static knowledge, even the ability to think in scientific terms is a crucial, yet inadequate element of higher education. We have to add what S. Kwiatkowski[84] defines as "intellectual product" and openly state that, in our universities, we are selling dreams about the student's future, creating their postures and equipping them with skills necessary for increasing personal potential, which will allow them to achieve positions that were previously inaccessible. The author's experience shows clearly that the ability to pass on to students a belief in oneself, the courage to tackle unknown obstacles and an intellectual zeal are important in today's education. These characteristics are formed in the continuous interaction between faculty and school authorities and their audience—the students. Such processes form the building blocks of alumni from top universities who are easily recognisable on the labour market.

The greater the school's effectiveness, the greater the "value added" in each of its alumni and the stronger and broader the intellectual product contained within the minds of the alumni.

We can safely assume that the development of the Knowledge–Based Society and Economy will stimulate the demand for new qualifications, skills and postures, that cannot be created by traditional institutions, especially the largest ones. The university crisis, which is so often analysed, is based on the inability to deliver alumni who are appropriately prepared to face the new reality. Yet, this unsatisfied demand offers an immense opportunity for new institutions or to those already in existence that saw an opportunity to reposition themselves through satisfying those needs.

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84 Kwiatkowski, S., (2003), Institutions of Higher Learning–Mindful or Mindless of yesterday Changes and Future Challenges? in: Kwiatkowski, S., Sadlak, J., (eds), *Knowledge Café for Intellectual Entrepreneurship Through Higher Education*, Warszawa: Leon Koźmiński Academy of Entrepreneurship and Management, p. 43–55. See also: Kwiatkowski, S., (2001), Szkoły Wyższe–przykład organizacji nieinteligentnych, in: *Tworzenie Organizacji...*, Grajewska–Rychlik, H. (ed), Warszawa: Leon Koźmiński Academy of Entrepreneurship and Management, p. 209–234.

6.4. SUMMARY

* The university as an institution is undoubtedly one of the greatest achievements of European civilisation. The mobility and world interest of most Europeans powered the development of knowledge and universities.

* The second half of the 20th century witnessed the next university "revolution"—mass nature of higher education. The two traditional tasks of conducting science and education were joined by a third: connections and interaction with the outside world. Of course, universities were present in the two areas of expectations and demands placed upon the professors employed within the institutions: the expectation of conducting scientific research, transfer of knowledge and education of inheritors coupled with the demand for playing an important role in the surrounding national and regional community.

* The importance of knowledge is continuously growing and it is becoming the primary asset that can be utilised by a specific company or nation. This asset is much more important than investment capital, natural resources or technology. Increasingly, companies are metamorphosing from production companies into knowledge–creating companies.

* Modern times and future challenges force us to rethink the fundamental effects of universities: what powers top institutions and their alumni, what is the "value added" that is passed on to the student. We can safely assume that the development of the Knowledge–Based Society and Economy will stimulate the demand for new qualifications, skills and postures, that cannot be created by traditional institutions, especially the largest ones. Those schools, which foresee and correctly comprehend the character of coming times, will have the opportunity to become future leaders.

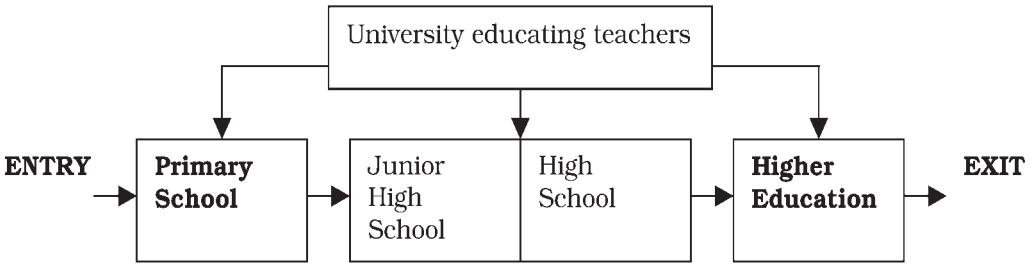
7. Education management in future knowledge societies

7.1. EDUCATIONAL PROCESS INTEGRITY

When debating the knowledge–based society, we have to consider the effectiveness of educating its future citizens. Only on the basis of an appropriate education philosophy, methods, education techniques, subjects, even textbooks, will the education system be capable of producing alumni who will be innovative and creative, competent in knowledge utilisation and transformation. When debating European education we cannot omit earlier stages, as higher education is only the final stage that lasts 3–5 out of the total 12–17 years spent in school. University studies from the student perspective are the culmination of a long–term educational process, yet faculty appreciate the earlier stages a student has undertaken, and how much evil they can wreak if conducted incorrectly.

For the entire system to be effective, all stages must be complementary. All the stages can be presented schematically with 3–4 adjoining segments: primary school, high school (realised as 1 or 2 stages) and higher education.

Figure 6. Stages of the education system



Of course, this system differs from nation to nation and at the high school level there are variations, like technical schools, semi–secondary education institutions, etc., but the overall premise is the same.

It is generally accepted that the effectiveness of a particular education system is defined by two major elements: the "entry point", i.e. primary school, and the "exit point", i.e. higher education institution. In a simplified, yet clear manner, the graph shows the influence that university has on all the other components, as it forms future teachers for all stages. The level of education is dependent upon teacher quality. Of course, other elements, especially the environment from

which prospective students come and their motivation, are also important[85]. The purpose of this book is not to analyse in–depth the various solutions applied in EU member states, that developed differing education systems, usually centred on tradition and specific educational needs. Yet, in an era of common globalisation and the progress of European integration it would be important to pose one question: does a European educational norm exist? The answer is simple: there isn't one. We can even go further and state openly: the education systems of EU member states are incompatible, which is very easy to illustrate. It is enough to move a student to another country, even if we ignore the language issues and focus solely on the programmes and values contained within them.

Young Europeans increasingly lose the awareness of common cultural roots, history and the role of Greek, Roman and Christian cultures on the formation of European nations and states. More and more university candidates are unaware of classical literature, even those titles without which Mankind would have been much poorer, while the readership of books and newspapers is constantly declining[86]. The global culture, especially the teenage pop culture, can be blamed for those appalling trends that challenge the common European mentality. One of the ways to deal with such threats would be to create a common culture canon, which could result from common European literature or a widened study of European history, which would allow for deeper understanding of European unity within the context of national and state differentiation.

Individual education systems should define in a similar if not identical manner the tasks posed to each of the education stages that, in a simplified manner, are presented below:

— At the primary school level: to teach independent thinking, while giving the pupil fundamental abilities: reading and writing and fundamentals of mathematics;
— At the high school level: to teach how to comprehend the world and abstract thinking while providing a wide overview of detailed knowledge allowing for independent understanding of events and processes occurring across the world;
— At the university level: to prepare the student to undertake employment and for active, independent life.

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85 An interesting analysis of the factors responsible for educational quality is contained with the research report: Bialecki, I., Haman, J., (2002), Program Międzynarodowej Oceny Umiejętności Uczniów OECD/PISA in: *Problemy Opiekunczo–Wychowacze,* nr. 3.

86 For thoughts on the nature of European identity and the complicated relationship between culture, education and globalisation read: Wojnar, I., Kubin, J., (1998), *Edukacja wobec wyzwań XXI wieku: zbiór studiów*, Komitet Prognoz "Polska w XXI wieku" przy Prezydium PAN, Warszawa: Dom Wydawniczy ELIPSA.

Primary schools are a crucial, if not deciding, stage of education. Mistakes made at this stage may be impossible to correct on following stages. Here, the approach to education is forged, and the attitude towards life and the surrounding world can be shaped—interest in the world, courage in asking questions, a desire to search for truth, the form and nature of things, interest in literature, etc. Logically, the selection process for first stage teachers should not be "negative", where teachers unable to find employment on higher stages of education, find their way into primary schools. Those teachers have to decide whether they will be only passing knowledge or teaching independent thinking and crucial skills that determine the effectiveness of the entire education process.

Any good higher education must, alongside its primary tasks of preparing the student for independent active life, also correct the errors made in earlier stages of education. Academic teachers working in popular institutions can see the qualitative end results of dozens if not hundreds of high schools and can create a national map filled with qualitatively weak and strong centres. A primary problem in high school education is the weak mathematical preparation of their graduates, while many candidates for higher education in the humanities and social sciences are weak in overall knowledge about the world or literature. As a result, universities, that want to prepare their students for awaiting challenges, must introduce corrective subjects into their programmes—for example additional mathematics courses or foreign language instruction.

The market success of Wyższa Szkoła Biznesu—National–Louis University in Nowy Sącz, Poland, was a result of the introduction of a wide–ranging and intensive foreign language programme that assured immediate employability of WSB–NLU alumni. In normal conditions, where the student moves through good lower stages, foreign language instruction should begin in primary school and finish in high school. In the case of Poland, this area of education was particularly ill managed in the past, and due to the lack of funds for public education, not a lot changed in the 1990's. As a result, proper knowledge of English was identified among only 20% of candidates for higher education. Many institutions simply argue that it is not their duty to supplement this crucial area of knowledge. WSB–NLU, acting against political unwillingness (with limits set for correct education on lower stages) and the inflexibility of state–owned educational institutions (that didn't notice the very problem of properly preparing for study), easily gained the distinction for its alumni on the labour market, where they stood out through their superior knowledge of English.

7.2. EDUCATION AT THE HIGHER STAGE

We should define the term "higher education" and here, once again, we ought to look towards the pragmatic Americans, who consider it to mean the 4–year undergraduate programme leading to the award of a Baccalaureate. Many European universities retain and uphold the 5–year programme leading to the award of an MSc or MA. The Bologna Declaration attempts to introduce the requirement for study separation into: undergraduate and graduate. Some European countries, like Germany and Poland, have created professional universities whose sole task was student education, preparing for work in a specific profession, while their programmes and systemic solutions inhibited progress onto the graduate phase. The aim was simple—to limit the state's financial burden by limiting the time of study to 3 years. This approach in Poland has resulted in the defeat of the government administration, as Polish society has not accepted undergraduate education with its Baccalaureate diploma, and we can safely say that 90% of all students will study for 5 years (depending on the programme) and emerge with the MSc/MA diploma.

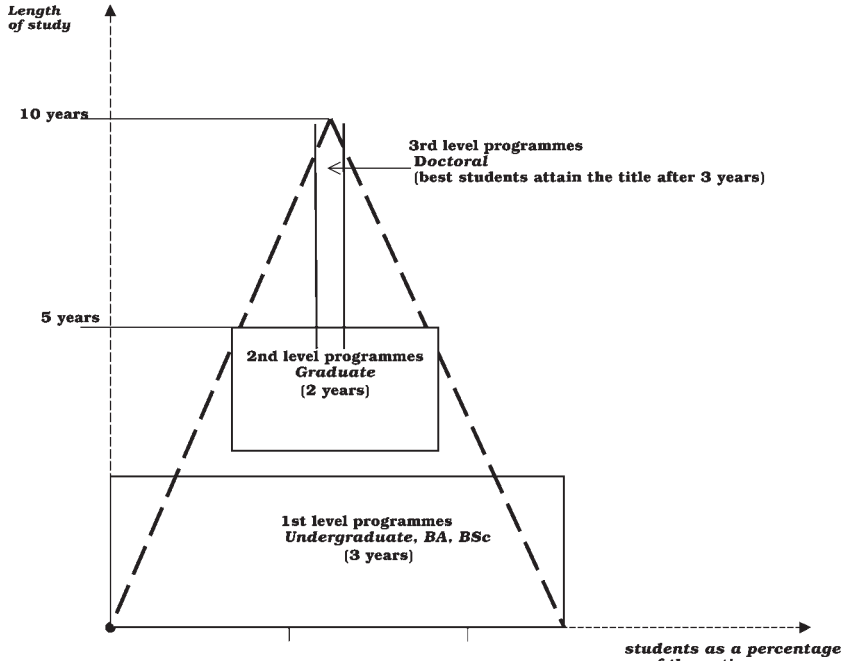
The issue of setting a pan–European standard of education is important for financial reasons as well as for the setting of diploma equality (equivalence) that will enable the comparison of professional qualifications within the overall European labour market.

If we consider the mass nature of higher education, it is possible to say that the present social position of a doctorate holder is similar to that of an MSc/MA holder a century ago. Assuming that doctoral programmes should retain their elitist status and be accessible to 1–2% of the age group, then for the next 40–50 years we can accept a 3–stage programme of higher education that might look like the simplified diagram in Figure 7.

If we assume that the students have a normal distribution of talents, motivations and study abilities, we can expect the following:

— Offering of 1st level studies to all applicants, i.e. around 50% of each year's population;
— Offering of 2nd level studies to those more gifted and hard working, i.e. around 20–30% of each age group;
— Offering of 3rd level studies to those most gifted and motivated, i.e. 1–2% of each year's population.

Figure 7. Division of tasks inside European higher education



Source: personal analysis.

The diagram above shows how the tasks inside European higher education can be "divided":

— Top research universities focus on 2nd and 3rd level education;
— Conventional universities focus on 1st and 2nd level education;
— Other institutions focus on 1st level education.

Increasing student mobility across Europe requires the definition of uniform criteria for entry onto the next year of study and level, which is extremely difficult due to the differentiation of national systems, combined with the qualitative differences between institutions in each nation. The ultimate aim should be a pan–European institution awarding higher education licenses and accrediting individual programmes and, as a result, evaluating quality. While the task of setting up this institution is very difficult, even more challenging will be the protection of this entity from excessive bureaucratisation of activity and formalisation of procedures. An alternative solution that is often raised is the notion that the labour market will evaluate university quality. Although the labour market does check institution quality, it does so with a large delay and not necessarily in the correct manner, as illustrated by cases where the national economic stagnation affects even the best alumni in their search for good jobs, and doesn't count all university leavers.

The author, who considers himself to be a liberal and often proposes ideas considered to be liberal, represents a traditional approach to the licensing system for university competence and quality assurance procedures. Because we are dealing with very delicate matter—humans—to limit the negative effects of higher education activity, i.e. the "sale of diplomas" or the transfer of so–called "negative knowledge"[87], we have to limit the number of weak institutions or faculties in large universities via the application if very specific criteria.

The criteria set before institutions should increase in severity with each level of education, with the most complex and tough ones required for the right to award doctorates. The practice in various nations differs, but we can observe a trend defined as "academic drift"—the tendency of institutions to copy the role and mission of prestige institutions[88]. This process can be observed in Polish higher education in both the private and public sectors. Left to itself, academic drift results in the fall in levels of education on graduate and post–graduate levels, if the licenses to conduct such programmes are awarded too easily.

Very often, 1st level studies are described as professional studies that prepare the student for employment, whereas the 2nd level prepares for academic work. Such definitions lead to the conclusion that the 1st level should be narrowly specialised, which is a mistake in the world of ever faster changing technologies, organisational methods, techniques and the need for speedy reorientation of entire companies towards the production of new goods or provision of services. Only a broad education, general where possible, combined with the creation of appropriate postures—willingness towards lifelong learning, creativity, flexibility of behaviour—can prepare the student to actively move within the global labour market. The specialisation of study should increase with the level—that is why doctoral programmes, especially those focused on applied research, are conducted in narrow disciplines.

To define the programme priorities in each university it is important to answer one question: what should the university offer to the young person undertaking higher education? The question is related to the age–long debate regarding the aims and means of higher education. Most people from the academic community, consider the higher education institutions, especially the university, to be the final stage of educational development, creating for the student an opportunity to attend lectures, laboratory classes, seminars and allow for debate with subject Masters, while the student is responsible for utilising the opportunity offered. The opposing view comes from the politicians who see the institutions as

87 Private discussions between the Author and prof. J. Dietl.

88 Clark, B. R., (1990), Is California the Model for OECD Futures? OECD Seminar, Berkley, quoted in: Wojcicka, M., (2001), Wyższe Szkolnictwo Zawodowe–Wyzwania i Zagrożenia, Dywersyfikacja w Szkolnictwie Wyższym, *Nauka i Szkolnictwo Wyższe*, 2/18, p. 7–23.

responsible for the creation of professionals prepared for employment upon graduation, while specific institutions (especially those offering professional programmes) should create specialists required by local labour markets.

The precise prediction of the needs of future labour markets, both local and regional, is a myth, yet its continued presence places false tasks before higher education. The opportunity for creating ready–made specialists for local and regional labour markets is limited to certain disciplines by ever increasing changes in the global economy, the shortening of developmental cycles in economic sectors and the transfer of work from production to services, that by definition are more individualised and evolving. Yet even in these limited areas, the role of external factors is immense.

7.3. WHAT CONSTITUTES VALUE ADDED IN A UNIVERSITY?

A higher education institution, especially the university, ought to equip its alumni with crucial skills and knowledge, while simultaneously forming the postures needed to deal with the ever–changing world. It should provide alumni with a set of "credit cards" or "life policies", the use of which will allow the person to utilise in an effective manner all the knowledge and skills gained at the university, and to adjust to a changing world. The most gifted should be able to change the surrounding world.

The difference between a good and average institution isn't solely created through better or worse programmes, nor the employment of leading lecturers and the application of interactive teaching methods—programmes and their content cannot be excessively differentiated and are very similar for top and average institutions. What clearly differentiates the university is the answer to the question: is the institution restricting its activities solely to teaching (even if conducted at top–class level) or is it focusing on the creation of student postures, attempting to enrich their personality with immaterial, difficult to define and quantify, yet clear and identifiable "value added". The size of lecture classes, quality of equipment defines the effects of institutional effort—such characteristics are important, but not crucial. Alongside the number of hours that each lecturer is accessible to the student, two additional factors are needed: for the lecturer to be an attractive/fascinating speaker for the student attending consultations and to have something to pass onto the listener. To foster such a result it is important to create an appropriate atmosphere where the students, alongside attending classes, passing exams (passing everything that is required for the award of a title and diploma), want to gain something more. The internal "opening" of an institution means the creation of a true academic environment, which unites students and staff, fostering the emergence of an atmosphere of

dialogue between the school and its students and one where the knowledge–seeking student is treated as a desired partner rather than an annoying bother. All the above–mentioned factors decide about the size of "value added", that often defines the success in life after graduation.

Alongside average universities, we can distinguish two other types: those focused on the professors and those focused on the students. In both cases we can list pathological institutions where the student is either shunned as an annoyance interrupting the process of scientific research, or where the student is led "by the hand", and all obstacles in his path are removed so that he can easily obtain the diploma. In both cases, the long–term effects will be negative. Yet, we can also find institutions that, through appropriate practices and the correct setting of mission and priorities, could foster the atmosphere where the student is treated as a partner, while creating and enforcing appropriate procedures and clear criteria that ensure high quality of the academic process.

The age–long debate whether the school should only teach or educate and form, is universal and extends from primary schools to tertiary–level in institutions. Yet it is strongest in institutions where the entry candidate is mature, already developed.

The debate has increased importance today. In the old days, even a century ago, only individuals truly gifted and motivated reached higher education. They usually had very specific plans for life after university and graduation from a university usually assured the realisation of their ambitions. Many wanted to engage in scientific conduct and became part of their universities. They knew, just like their present day highly gifted equivalents, how and where to find what they needed from the institution and "squeeze" it out for maximum benefit. Currently, alongside those gifted, we see countless less talented individuals who are unable to define their place in the surrounding environment. The conclusions here can be either: there is no avoiding the lowering of higher education standards in the era of mass democratic access or, when looked upon by an innovator, the situation lends itself to providing new challenges and requires the application of new methods to deal with the current problems.

A university positively focused on the student is one that sees its role as one of preparing the student for work and life in the surrounding world and to deal with the demands of a fast–changing reality. Everything else is secondary to this aim. Such institutions are desperately needed by current societies and their role will continue to increase in the future.

There are different ways of evaluating schools, and one of them is to classify them through the prism of gifted individuals they've educated, assuming that those gifted themselves have selected the school, so the concentration of competition laureates, award winners, etc., is the best measure of a school. Yet,

in today's times, just educating gifted individuals is not enough—the institution has to create mechanisms which will result in the attaining of high quality education by the average student and in the preparation for dealing effectively with the modern world. Such reformulation of the quality issue creates problems as it requires increased efforts by everyone engaged in the education process. The effectiveness of the national or European education system will be defined by their ability to prepare all graduates for life and work in the Knowledge–Based Society, rather than just the select, gifted few. To define the desired "value added" on the level of tertiary education we have to focus on the personality traits necessary for active functioning in the KBS (according to the author):

- Openness to the surrounding environment, interest in the world;
- Innovativeness, based on the willingness towards adjusting any solution, product or idea to the new reality;
- Courage in thought and action;
- Social activity;
- The ability to learn continuously, at all stages in life;
- Responsibility for words and actions.

When analysing the above–mentioned traits we see that they do not represent anything new, revolutionary. Universities in the Middle Ages were already working on shaping those very traits. The modern world desperately needs increasing numbers of professionals, yet the attainment of a position is determined not only by knowledge and professional skills, but also by positive personal qualities.

Only one of these is seen to fall under the auspices of the university—the acquisition of knowledge, yet it is all the others, and only when combined, that appropriately "equip" us to deal with life. Of course, all these traits appear and are formed in the young simultaneously via the influence of various factors—family, school, media, surrounding reality or books. But in the university, which is the final stage of preparation for real life, those traits can be strengthened or weakened/destroyed.

Such traits cannot be taught in the classroom, and setting a good example, even in the closest social grouping will not suffice. Various factors have to coincide and complement each other, including the intensity and quality of student life, as well as that outside the classroom. The full effect will never materialise if two worlds that comprise the academic reality are kept separate—the world of professors and the world of students. The greatest "value added" is generated in institutions where the students are allowed, even motivated, to attend lecturer activities or scientific seminars and where the lecturers directly participate in the activities of student organisations, while the administrative system allows the student to feel as part of a single body, rather than just a lone client.

Maximisation of "value added" occurs when the period of study coincides with the period of social and personal development.

The creation of an academic environment that maximises "value added" is not easy, as there is a natural tendency of academic and scientific staff to restrict the amount of time offered to students, combined with the fear of overly emotional engagement in the teaching process, all of which limits the time necessary for the conduct of scientific research. The institutional administration also tends towards bureaucratisation of all activities and treating students as annoying clients. Therefore, the creation of a university that focuses on the student and maximises "value added" is possible only in institutions that are managed in a professional manner, and done so at all levels within the organisation.

To maximise "value added" in given conditions, it is crucial to organise the institution so that it allows for:

— The individualisation of the student–school relationship;
— The existence of an appropriate set of procedures and behaviours enabling the selection of exceptionally gifted, creative and innovative students;
— The creation of conditions allowing all students to strengthen their individual talents and acquire new skills.

The entire education process has to be the result of two, completely different factors: on one hand, the realisation by the institution of the planned programme, standardisation of exam requirements and the quality of realised projects, theses that all come together for the awarding of a diploma and that guarantee the upholding of certain standards acceptable for the labour market. On the other hand there is a need for a period of self–realisation and self–development of individual students, which is a very individual process, yet possible to implement if the institution is fully prepared and offers a wide selection of extracurricular activities. Such activities often emerge as an idea of a single student, but if the institution developed appropriate structures and procedures, such initiatives remain active in the university even long after the initiator has left the institution. The activities do not have to focus solely on the acquisition of new knowledge or the widening of existing knowledge—they can also include group projects where students engage in hobby–related or sports activities. It is a good idea to permit students the organisation of large projects that require extensive teamwork: conferences, musicals, arts exhibits, etc.

It is crucial to personalise the school–student relationship, and the leading institutions, symbolised by UK universities, create a system of individual tutoring. This system can exist even in entities that have smaller resources. It can be assisted by a clear organisational structure and clear locations for the student–school administrations interface points. While the university's success depends on the realisation of specific programmes, the satisfaction of individual students

is primarily dependent upon the nature and quality of service and the atmosphere surrounding them.

Very good "value adding" results can come from focusing on leaders, that can be found in any institution—people who are active socially, open and keen to cooperate with others, who quickly become local leaders. Such people appear in all universities, yet many institutions have such rigid structures that they simply squash any individuality. The appropriate utilisation of such student leaders results in richness and intensity introduced into the student environment. Of course, it is easier to introduce such focus on leaders in smaller institutions that can, thanks to public funding or high tuition, dedicate funds for individual support and the enrichment of student life. Yet even in normal institutions such ideas can be realised—with the lecturer–student ratio rarely exceeding 1:20, a lecturer can cooperate with a dozen or more students over the academic year, assuming he exerts even a small amount of effort.

The next debate present in academic communities concerns the level of specialisation in higher education. Two opposing trends exist: increasing demand for highly specialised skills for the labour market and the need for a wide, flexible education helpful in dealing with the ever changing complexities of our everyday life and the metamorphosing economy. We already know that the concept of the "Enlightened Man", that played an important part in shaping our past in a time when the environment was stable and repetitive, has lost is value—it no longer matches individual aspirations, societal expectations nor civilisational needs. It resembles a "burnt–out volcano"[89]. The calls for the education of an Innovating Man are still unclear and offer a remote vision. We live at a time of the education gap, when one system still hasn't passed away and the next one hasn't been born. It is the primary dilemma of the intermediate–era[90].

There are and will be professions requiring in–depth professional knowledge from the very beginning, like medical doctors or computer programmers, yet there will be increasingly more professions where personal predispositions will be more important than the detailed knowledge that had been acquired. For example many leading managers have university diplomas far removed from the scientific area of management. As a result, there is a need to differentiate programmes that educate narrowly specialised professionals from those where a good, broad general education is the key. It is obvious that most people entering higher education have no clear idea for life nor a vision of a job optimal/ideal for the given individual, therefore the selection of a specialised programme would inhibit success rather than foster it. The offer of specialised programmes that manufacture "ready–made" professionals should be accompanied by an offering

89 Kozielecki, J., (1998), *Człowiek Wielowymiarowy*, Warszawa: Wydawnictwo Akademickie „Żak", p. 36.
90 ibid. p. 48.

of general programmes (clearly inter–Faculty) and of additional programmes and courses offering knowledge necessary for a specific post in a given company. The selection of general programmes is much safer for the candidate who hasn't yet identified the optimal future profession.

Education that prepares adults in specific professions or that refreshes specialised knowledge (for fast–changing areas, like IT) is becoming an important segment of higher education. In the USA it has been the fastest growing section of tertiary education. It has to be a properly defined and planned part of the education system in the Knowledge–Based Society. Knowledge acquired during university study becomes used and obsolete over the next 10–20 years and this phenomenon results in the emergence of what Peter Drucker calls "refreshment courses" for 40–year olds. Highly specialised courses or broader post–graduate programmes offered to people much older than the statistical student require increased organisation and different techniques that those applicable to normal university courses. They are usually organised on weekends or afternoons so that those in full–time employment can attend.

Due to the demographic changes in Europe and the potential future lowering of student numbers, continuous education for adults can easily become an opportunity to survive and thrive for many institutions (see Appendix 2, Table 15).

7.4. LEVELS OF KNOWLEDGE MANAGEMENT

When debating the issues surrounding knowledge management, we should focus on the clearly different levels of knowledge management in entire institutions or at the level of small or miniature teams. A completely different managerial horizon is experienced by someone who creates new schools or manages large educational institutions than by a team of scientists within the university. The Rector or President has to be loyal to the institution, while the fate of individual employees, even those important, has to be of secondary importance. First and foremost is the long–term security and development of the entire institution. A Dean faces different issues when running a large or small Faculty—as he knows most of all of his staff, many of which are his colleagues with whom he'd conducted research or teaching activities. His primary task is the organisation of studies on specific programmes. A scientist, leading a small group of fellow researchers, has still different tasks—the development of his personal area of research and the discipline it belongs to. The scientist is rarely loyal to the institution, seeing that his primary focus is the actual conduct of research, and he will move to a competitor when that institution offers better conditions for the pursuit of science.

What differentiates the top Rectors and Presidents, in other words the academic managers, is the ability to "conduct virtuoso performances on many instruments"—the ability to assure synergy between management of knowledge and people on various levels and in different locations of a given academic/ scientific institution. It is a difficult task, as academics and scientists form a very special type of human capital—highly educated, ambitious and individualistic. The acquisition of effects that maximise benefit to the entire institutions is rather difficult. A university cannot be subjected to industrial quality measurements and largely the institution's functioning is based on mutual understanding and trust, especially from scientists and academics. It is a complex task to provide balance between stability and repetitive nature of the academic process and the need to insert innovation and the selection of innovators into the overall institutional structure.

7.5. SUMMARY

* The debate about the future of European higher education is impossible without a holistic debate on the entire education system—even in primary and secondary schools. When thinking about the European higher education area, it is necessary to define a common educational canon, especially at the high school level. The primary school is a crucial if not deciding stage, at which the best teachers should be present.

* If we accept the natural spread of talents, motivation and the ability to learn in every generation of university applicants, then the 1st stage undergraduate programmes should be offered to 40–50% of each year's population, 2–year 2nd stage studies should be offered to 20–30% and doctoral programmes to 1–2%.

* The introduction of a transparent system of study and clearly increasing European student mobility requires uniform criteria for passing onto the next year. A good solution would be the creation of a European institution that would award licenses for study and accredit programmes and entire universities.

* In those institutions that focus on student education it is vital to create the maximum "value added" which differentiated the alumni of a given institution from all the others present on the labour market. According to the author, besides knowledge and skills for its application, it is necessary to equip a student with a set of personality traits vital for effective functioning in the future Knowledge–Based Society:
  - Openness to the surrounding environment, interest in the world;
  - Innovativeness, based on the willingness towards adjusting any solution, product or idea to the new reality;
  - Courage in thought and action;
  - Social activity;
  - The ability to learn continuously, at all stages in life;
  - Responsibility for words and actions.

The creation of such traits and postures is only possible in an institution where there exists a specific atmosphere that binds staff and students and that results in the individualisation of relations school–student and where certain procedures and behaviours exist that allow for the selection of the most gifted, talented and innovative students, yet simultaneously creating the conditions for all students to strengthen their individual talents and gain new skills.

Appendix 1

APP 1.1. STRUCTURE OF THE 5TH FEBRUARY 2003 EU COMMISSION COMMUNIQUÉ "THE ROLE OF UNIVERSITIES IN THE EUROPE OF KNOWLEDGE"

APP 1.2. QUESTIONS POSED IN THE 5TH FEBRUARY 2003 EU COMMISSION COMMUNIQUÉ (PAGES 11–20) REGARDING THE ATTAINMENT OF A WORLD REFERENCE

Communiqué, Section 5: "Making European universities a world reference"

5.1. ENSURING THAT THE EUROPEAN UNIVERSITIES HAVE SUFFICIENT AND SUSTAINABLE RESOURCES

5.1.1. Increasing and diversifying universities' income

Questions for the debate

— How can adequate public funding of universities be secured, given the budgetary constraints and the need to ensure democratic access?
— How can private donations be made more attractive, particularly from a tax and legal point of view?
— How can universities be given the necessary flexibility to allow them to take greater advantage of the booming market in services?

5.1.2. Using the available financial resources more effectively

Questions for the debate:

— How can the maintenance of democratic access to higher education be combined with a reduction in failure and dropout rates among students?
— How can a better match be achieved between supply of and demand for university qualifications on the labour market, through better guidance?
— Is there a case for levelling out the duration of courses for identical qualifications?
— How can the transparency of research costs in the universities be enhanced?

5.1.3. Applying scientific research results more effectively

Questions for the debate:

— How could it be made easier for universities and researchers to set up companies to apply the results of their research and to reap the benefits?
— Is there a way of encouraging the universities and researchers to identify, manage and make best use of the commercial potential of their research?
— What are the obstacles which today limit the realisation of this potential, whether legislative in nature or as regards intellectual property rights? How

can they be overcome, particularly in countries where the university is funded almost exclusively from the public purse?

5.2. CONSOLIDATING THE EXCELLENCE OF EUROPEAN UNIVERSITIES

5.2.1. Creating the right conditions for achieving excellence

Questions for the debate:

— How can the consensus be strengthened around the need to promote excellence in the universities in conditions, which make it possible to combine autonomy and management efficiency?

— Is there a way of encouraging the universities to manage themselves as efficiently as possible while taking due account simultaneously of their own requirements and the legitimate expectations of society in their regard?

— What are the steps which would make it possible to encourage an interdisciplinary approach in university work, and who should take them?

5.2.2. Developing European centres and networks of excellence

Questions for the debate:

— How can providers of university funds be encouraged to concentrate their efforts on excellence, particularly in the area of research, so as to attain a European critical mass, which can remain competitive in the international league?

— How should this excellence be organised and disseminated, whilst managing the impact of the steps taken on all institutions and research teams?

— How can the European Union contribute more and better to the development and maintenance of academic excellence in Europe?

5.2.3. Excellence in human resources

Questions for the debate:

— What steps could be taken to make scientific and technical studies and careers more attractive, and to strengthen the presence of women in research?

— How – and by whom– should the lack of career development opportunities following doctoral studies be addressed in Europe, and how could the independence of researchers in carrying out their tasks be fostered? What efforts could universities make in this regard, taking particular account of the needs of Europe as a whole?

— What ways are there of helping European universities to gain access to a pool of resources (students, teachers and researchers) having a European dimension, by removing obstacles to mobility?

5.3. BROADENING THE PERSPECTIVE OF EUROPEAN UNIVERSITIES

5.3.1. A broader international perspective

Questions for the debate:

— How can European universities be made more attractive to the best students and researchers from all over the world?

— In a context of increasing internationalisation of teaching and research, and of accreditation for professional purposes, how should the structures, study programmes and management methods of European universities be changed to help them retain or recover their competitiveness?

5.3.2. Local and regional development

Questions for the debate:

— In what areas and how could the universities contribute more to local and regional development?

— What ways are there of strengthening the development of centres of knowledge bringing together at regional level the various players involved in the production and transfer of knowledge?

— How can greater account be taken of the regional dimension in European research, education and training projects and programmes?

Appendix 2

Table 1. Unemployment in 2002 r. according to the level of education

	EU	Accession nations (a)	Poland	Germany	France	UK
Incomplete primary, primary, incomplete high school	9,8	18,3	26,5	15,3	10,6 (b)	8,7
Secondary, post-high school,	6,4	9,7	17,8	8,7	6,7 (b)	3,7
Higher	4,2	3,6	5,6	4,2	5,2 (b)	2,4

(a) Except Malta.
(b) 2003.
Source: EUROSTAT

Table 2. GDP growth

	2000	2001	2002	2003 (a)	2004 (a)	2005 (a)
EU	3,6	1,7	1,0	0,6	1,9	2,3
Accession nations	4,1	2,3	2,5	3,1	3,8	4,3
France	3,8	2,1	1,2	0,1	1,7	2,3
Germany	2,9	0,8	0,2	-0,1	1,6	1,8
UK	3,8	2,1	1,7	2,0	2,8	2,9
Poland	4,0	1,0	1,4	3,3	4,2	4,8
USA	3,7	0,5	2,2	3,1	3,8	3,3
Japan	2,8	0,4	-0,4	2,6	1,7	1,5

(a) Prognosis.
Source: EUROSTAT

Table 3. Change in GDP per citizen (EU 15 = 100)

	2000	2001	2002	2003 (a)	2004 (a)	2005 (a)
EU	100	100	100	100	100	100
Accession nations	45,7	46,4	47,3	48,7	49,6	50,7
France	103,8	104,8	104,6	103,5	103,1	103,0
Germany	102,0	100,5	99,6	99,2	99,1	98,6
UK	103,9	105,1	107,4	108,7	109,6	110,3
Poland	41,8	41,4	41,7	42,9	43,7	44,8
USA	142,4	139,5	137,4	139,2	140,4	140,8
Japan	106,1	104,3	100,8	102,4	102,4	101,7

(a) Prognosis.
Source: EUROSTAT

Table 4. Life expectancy prognoses

	1998		1999		2000		2001	
	Men	Women	Men	Women	Men	Women	Men	Women
EU	74,6	80,9	74,9	81,1	75,3	81,4	75,5	81,6
Accession nations	68,9	77,3	69,4	77,5	69,3 (a)	77,7 (a)	70,1	78,4
France	74,8	82,4	75,0	82,5	75,2	82,7	75,5	82,9
Germany	74,5	80,6	74,7	80,7	75,0	81,0	:	:
UK	74,8	79,7	75,0	79,8	75,5	80,2	78,3	80,4
Poland	68,9	77,3	68,2	77,2	69,7	77,9	70,2	78,3
USA	73,9	79,4	74,1	79,7	74,2	79,9	74,4	80,0
Japan	77,3	83,8	77,4	83,9	77,5	84,0	77,6	84,2

: Lack of data.
(a) Except Cyprus.
Source: EUROSTAT

Table 5. Age groups in the overall population

	0-14			15-24			25-49			50-64			65-79			80-		
	1991	2000	(a)	1991	2000	(a)	1991	2000	(a)	1991	2000	(a)	1991	2000	(a)	1991	2000	(a)
EU	18,2	16,8		14,8	12,4		35,4	37,0		16,9	17,5		11,2	12,6		3,5	3,7	
France	20,1	18,9		14,9	13,0		35,5	36,1		15,4	16,0		10,4	12,4		3,8	3,6	
Germany	16,2	15,7		13,4	11,1		36,4	38,0		19,0	19,0		11,2	12,7		3,8	3,6	
UK	19,1	19,0		14,5	12,2		35,3	36,2		15,4	16,9		12,0	11,6		3,7	4,0	
Poland	24,9	19,6		14,1	16,9		35,8	36,6		15,0	14,9		8,1	10,1		2,0	1,9	
USA	21,9	21,6		14,5	13,7		38,2	38,2		13,0	13,8		9,7	9,5		2,8	3,2	
Japan	17,7	15,4		15,6	14,0		35,6	35,5		18,6	19,5		10,1	12,2		2,5	3,3	

(a) Data for USA and Japan for 1997.
Source: EUROSTAT

Table 6. Natural growth (for 1 000 citizens)

	1991	2000
EU	1,5	1,0
France	4,1	4,0
Germany	-1,0	-0,9
UK	2,5	1,2
Poland	3,7	0,3
USA	:	5,5
Japan	:	1,8

: Lack of data.
Source: EUROSTAT

Table 7. Number of students in higher education institutions and their percentage in the overall pupil/student group for the academic year 1999/2000

	Number of students in 000's	Percentage
EU	12563	15
France	2015	14
Germany	2055	12
UK	2024	13
Poland	1580	16

Source: EUROSTAT after: *Key Data on Education in Europe 2002, Chapter F – 5*

Table 8. Percentage of people with a higher education in the 25–34 age group

	1991	2001
France	20	34
Germany	21	22
UK	19	29
Poland	:	15
USA	30	39

: Lack of data.
Source: Education at glance OECD Indicators 2002. Table A2.4.

Table 9. Public and private expenditure on higher education in selected countries (% GDP)

	2000			1995
	Public funds	Private funds	Overall	Overall
Finland	1,7	0,0	1,7	1,9
France	1,0	0,1	1,1	1,1
Germany	1,0	0,1	1,1	1,1
UK	0,7	0,3	1,0	1,2
Czech Rep.	0,8	0,1	0,9	1,0
Poland	0,8	:	0,8	0,9
USA	0,9	1,8	2,7	:

: Lack of data.
Source: Education at glance OECD Indicators 2002. Table B2. 1b

Table 10. Internet access: households (%)

	2001	2002	2003
EU	36,1	38,9	46,8
France	26,2	35,5	:
Germany	37,9	43,3	:
UK	26,5	49,7	55,1
Poland	7,7	10,7	:
USA	50,5	:	:

: Lack of data.
Source: EUROSTAT

Table 11. Internet access: companies (min. 10 employees) (%)

	2001	2002	2003
EU	70,3	79,7	84,2
France	58,0	:	:
Germany	82,8	83,9	:
UK	63,4	74,0	80,6
Poland	74,2	:	:
Japan	45,0	:	:

: Lack of data.
Source: EUROSTAT

Table 12. Higher education institutions and students in Poland

	Institutions				Students in 000's			
	1990/01	2000/01	2001/02	2002/03	1990/01	2000/01	2001/02	2002/03
Overall	112	310	344	377	403,8	1584,8	1718,7	1800,5
Universities	11	15	17	17	141,1	443,3	510,1	527,2
Higher technical schools	30	23	22	22	84,0	318,4	334,5	344,3
Higher farming schools	9	9	9	9	36,4	85,6	91,3	98,1
Higher economic schools	5	94	93	94	24,0	369,5	386,6	389,5
Higher pedagogy schools	10	19	17	17	47,6	148,3	134,1	138,9
Medical academies	12	10	10	10	38,7	29,5	32,8	37,7
Higher naval/ ocean schools	3	2	2	2	2,5	10,1	11,7	12,4
Physical education academies	6	6	6	6	14,6	22,2	23,0	23,7
Higher artistic schools	17	21	22	22	8,2	12,8	13,3	14,1
Higher theology schools	7	15	10	14	6,7	9,3	9,8	10,1
Higher professional schools	–	61	102	128	–	57,4	99,8	130,1
Schools belonging to the Defence Ministry (a) and the Ministry of Internal Affairsand Administration (b)	–	10	10	10	–	12,2	12,3	11,4
Others	2	25	24	26	4,1	66,2	59,3	63,0

(a) Until 1998 were shown as "higher technical schools".

(b) Until 1998 r. were shown as "higher technical schools" and/or "others".

Source: GUS, (2003), *Szkoły wyższe i ich finanse w 2002 roku*, Warszawa: GUS, p. XVI

Table 13. Students in Polish higher education (data for 30.11.2002)

	Overall	On programmes			
		Full-time	Part-time evening	Part-time weekend	Independent mode of study*
Overall	1800548	824196	80353	878198	17801
State institutions	1271728	706854	61900	498392	4582
Private institutions	528820	117342	18453	379806	13219

* Students learning independently outside the institution who only pass their exams at the university campus.

Source: GUS, (2003), *Szkoły wyższe i ich finanse w 2002 roku*, Warszawa: GUS, p. 2.

Table 14. Entry onto 1st year of full–time programmes

	Number of students on full-time programmes – 1st year	Percentage [%]
State universities	68 035	28,4
Private universities	2 360	1,0
Technical schools	63 375	26,5
Economic schools (including): State Private	26 099 7 324 18 775	11,0
Farming schools	16 251	6,8
Pedagogy schools	13 944	5,8
Higher "professional" schools* (including): State Private	28 952 18 903 10 049	12,1
Medical schools	6 988	2,9
Physical education schools	3 476	1,4
Arts schools	1 801	0,8
Others	7 981	3,3
All	239 262	100

* Institutions offering only undergraduate programmes.

Source: GUS, (2003), *Szkoły wyższe i ich finanse w 2002 roku*, Warszawa: GUS, p. 3.

Table 15. Percentage of the 25–64 age group in continuous education in 2002

	EU	Accession nations	France	Germany	UK	Poland
%	8,5	5,0	2,7	5,9	22,9	4,3

Source: EUROSTAT after: Communication from the Commission. *Education & Training 2010.* The success of the Lisbon Strategy hinges on urgent reforms, p. 24

Table 16. Foreign students learning in the USA in the academic year 2000–2001

Continent,	region,	country	Students
All			**547867**
Africa			**34217**
	East Africa		13516
	Central Africa		1859
	North Africa		5184
	South Africa		3304
	West Africa		10346
		Nigeria	320
Asia			**302058**
	East Asia		189371
		China	59939
		Hong Kong	7627
		Japan	46497
		South Korea	45685
		Taiwan	28566
	South and Central Asia		71765
		India	54664
		Pakistan	6948
	South-East Asia		40916
		Indonesia	11625
		Malaysia	7795
		Philippines	3139
		Singapore	4166
		Thailand	11187
Europe			**80584**
	Eastern Europe		27674
	Western Europe		52910
		France	7273
		Germany	10128
		Greece	2768
		Spain	4156
		UK	8139

Source: Institute of International Education, *Open Doors*, various years. (Latest edition copyright @ 2001 by the Institute of International Education).

Table 17. American students learning in Europe in 2001

Nation	Students
Austria	376
Belgium	186
Czech Rep.	57
Denmark	233
Finland	184
France	2371
Germany	3523
Hungary	360
Iceland	26
Ireland	1810
Italy	187
Luxembourg	15
Holland	243
Norway	295
Poland	339
Slovakia	8
Spain	464
Sweden	899
Switzerland	338
Turkey	20
UK	11771

Source: OECD
http://www.oecd.org/dataoecd/52/27/14645571.xls

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