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DEVELOPING A RANKING SYSTEM OF UNIVERSITIES IN THE REPUBLIC OF BULGARIA

Comparative analysis of leading university ranking methodologies

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Chapter 1. Comparative and critical analysis of leading ranking systems

During the past few years, ranking development has turned into a subject of increasing research interest. Comparative analyses appeared on the market, the largest being those by Van Dyke and Usher and Savino (Van Dyke 2005; Usher and Savino 2006). Van Dyke draws a comparison among ten ranking systems, and Usher and Savino – among nineteen. The authors' general conclusion is that ranking systems do differ substantially in their goals, scopes, methodologies, types and reliability of the data used. Those differences have reached such a level that no two systems are alike. There are even some where none of the indicators coincide (Usher and Savino 2007: 28). What is particularly important is that they *are based on different definitions of university education quality*.

1.1. Common features of rankings around the world

- All rankings claim to be rating universities by quality ("The best universities", "The good British universities", "Top 100", etc.). None of them however offers a definition of this term. It is obvious though that educational services have different qualities depending on various specific needs, and those qualities do not always correlate with each other.
- There is no mutually shared understanding of the term "university education quality": it varies from quality assessment by students, through expert communities, to employers; it also varies when compared to different objective and subjective features: from university budgets, through material and informational security, to assessment of scientific and professional realization.
- Isolated attempts at reviewing world practice in this field, which we have no reason to consider exhaustive, have covered close to 50 university rankings. The total number of rankings around the world is larger by at least a few dozens. Their number is possible to exceed one hundred. In large developed countries, at least five famous university rankings coexist, and in the States their number is over ten. The number of used indicators is large too. Indicators included in the above mentioned rankings number more than sixty.
- As a rule, such rankings are developed and published by private and non-governmental sectors (mostly newspapers, magazines or institutes), most often as a section in university application manuals. The only such ranking developed by a governmental institution that we managed to find was commissioned by the Higher Education Commission of Pakistan in 2006. Rankings produced by universities or university associations have not been registered so far, except for two in China. That does not exclude the possibility of university managements taking them into consideration.



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- National rankings – as well as global rankings – show some relative similarity in the top standings, but considerable differences in the rest of the list where in certain indicators otherwise low ranked universities get close to and even surpass leading universities' ratings.
- The most popular rankings – those commissioned and published by certain newspapers and magazines – provide complex assessment of all university features, and offer unified rankings by quality. Often, these publications are accompanied by rankings by separate components which make part of ratings composition.
- In rarer cases – mostly in rankings' web versions – more detailed subrankings are offered for separate majors/fields. This is rare because of the significantly greater volume of information that should be collected to develop such specific subrankings (In 2009 for example, the *US News and World Report* published eleven rankings of specialized colleges and programmes. The index components differed dramatically: the business ranking included data of graduates' employment; the law schools ranking featured students' opinions and ratings; four of them were based solely on peer review. It is interesting that information categories used in the ranking have been selected not so much for any certain proximity to the researched characteristics, but rather as an attempt to see if the empirical data could be received from all universities in the respective group.)
- In USA, Great Britain, Germany, France, Poland and elsewhere, the explosive increase in the number of rankings and their vast differences have naturally bred disputes about rankings' results, methodologies and good faith. Striving to overcome those tensions – sometimes even conflicts – ranking institutions have headed towards enhancing the used methodology and making it more transparent, as well as to maintaining more systematic contacts with the academic community. There is a general understanding that any ranking needs perfecting. Here is just one example: up until last year, the weight of the 'faculty to students ratio' indicator was 20% of a university's total rating in *The Times* newspaper ranking. In the ranking published at the end of September 2010, this indicator does not feature at all.
- If we review the way used indicators relate to the term 'quality of education', we shall come across certain gradation:
 - Rankings are *abundant* in indicators referring to conditions, prerequisites or consequences of an education of possibly good quality. Such indicators are lecture hall sizes, number of books in libraries, number of students graduating on time, number of faculty, number of students per faculty member, volume of educational activity, awards, citations, faculty titles and ranks, selectivity of admission, students' achievements prior to enrolling, number of international students, etc. The list is completed by "contribution to society", "reputation", and "international faculty".



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- *Very often* indicators are used to measure scientific activity and its results, although a very small percentage of students participate in it.
- *Too often* indicators include students' ratings of the educational process and their evaluation of its relevance to their future professional realization.
- *Rarely* are indicators included, that are related to educational achievements upon admission and during the educational process. An example of these would be external tests commissioned by some British universities. Also a rare exception is the existence of the 'Teaching assessment' component, extracted from the reports of the governmental Quality Assurance Agency for Higher Education (the Agency's method comprises on-site inspection).
- *Exceptions are those indicators* that directly reflect the quality of educational results, regardless of what our understanding of those would be: either an external independent assessment of graduates' knowledge and skills, or graduates' professional realization. The 'salary/income after graduation' component is rarely used, mostly by separate business majors, medicine and law, in the US and Great Britain. Moreover, the information used most often comprises subjective confessions or data from HR agencies which do not provide explanation of how they have acquired the data, quoting commercial secret.

Hence, certain unexpected regularity is at hand: the closer in meaning is an indicator to the 'quality of education' term, the smaller the probability that it be included in typical university rankings.

1.2. Main lines of criticism to ranking systems

Ranking systems are subjected to heavy criticism by representatives of different social groups, but mostly by the academic community. The belief that the purpose of all that criticism is not to reject but rather to improve them, has been gaining ground in both society and the academic community (Dill and Soo 2005; Van Dyke 2005; Marginson and van der Wende 2007; van der Wende 2008, Mapping Diversity 2008).

In general, university rankings are criticized for the following:

- *Ignoring diversity among higher education institutions from a viewpoint of their missions, goals and structures.*

It is generally assumed that by default, ranking systems turn a certain type of higher institution into the norm – namely, the research university focused on natural sciences – thus fostering its prestige for the sake of other kinds of higher education institutions. Examples of these are technical and professional universities that have long history and traditions in countries such as



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Germany (Fachhochschulen), Finland, Switzerland and France, and are some of the most prestigious universities there (Marginson & van der Wende 2007: 58).

- *All rankings are limited*

Any ranking system, just like any measurement of educational results for that matter, has its limitations which are predetermined by the selection of indicators and their weights. Holistic rankings are described as "chimeras", because they are unable to cover all purposes of universities, so striving to develop those rankings is related to methodological anomalies. Any ranking that defines indicators and establishes a common quality index, actually imposes a one-size-fits-all definition of quality over the whole diversity of institutions of higher education (Usher and Savino 2007: 25). Attempts to expand the scope of the term on the other hand, and to weigh different qualities, results in losing the sense of making rankings at all.

- *Arbitrary nature of the weights of the separate indicators*

Different ranking systems use different weights of the separate indicators when creating the common index. There are no mutually agreed upon criteria of determining those weights, and they depend on the people who develop the rankings. It is common not to have any argumentation of the weights of the separate indicators. Hardly ever is it mentioned what expert procedure has been used to determine them. Components and weights in one and the same country could vary greatly. So can the motivation behind them.

In the UK for example, the *Times* index used in 2004, attributes the Teaching Assessment component with weight of 23%, while *The Guardian* gives it 65%. In Germany too, the rankings of *Spiegel* and *Stern* attribute different weights to public opinion and students' professional realization for example, obviously influenced by the magazines' different ideological attitude. Here is why it is believed that composite indexes "put a stroke in the wheel and undermine validity" (Marginson & van der Wende 2007: 58; Dill & Soo 2005: 506).

- *Underappreciation and inadequate indicators for rating educational process and its results.*

Usually, ranking systems spare little time on the educational process, not actually measuring the added value of the educational process. Indicators used to assess the quality of education – students' selection, scientific productivity – are problematic (Marginson & van der Wende 2007: 59).

- *The halo effect*

Surveys that measure higher institutions' image (prestige) only reproduce universities' already well-established prestige, regardless of their actual accomplishments. Well-known renowned



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universities recreate the halo effect. A notorious example is a US survey among students, where Princeton University was ranked among the top 10 law schools, considering that the university hasn't got one (Marginson & van der Wende 2007: 59).

- *Ignoring the "mass paradox"*

The effect of the "mass paradox" is fully ignored: what is in the interest of all separate individuals may not be in the interest of all of them brought together. Even if the best major were possible to be established and declared, it would probably attract more students than it has the capacity to educate, and would thus result in inevitable drop in quality standards. In the same way, when knowledge is applied in practice, over-supply of labour in attractive and lucrative professions occurs at certain periods resulting in graduates' not being able to find the jobs they had expected to. In other words, a certain kind of choice that is obviously successful may turn into the victim of its own success. Here is why, any advice as to choice of major and university should include a forecast of the long-term and mid-term deficit or surplus in certain majors or more general fields. An indicator like this does not exist in the rankings known to us.

- *Problematic validity and accuracy of the rating*

Considering that higher education quality in rankings is treated as a measurable trait, it is logical that there is a requirement this measurement be carried out in compliance with the criteria applied in social sciences. The two main requirements to measurement are validity and accuracy (also called respectively construction validity and rating validity). Validity means measuring what we are saying to be measuring. Measuring is a way to acquire information about something that we do not have direct access to using something else that is more accessible. The "accessibility" motive fully dominates over the "validity" motive in the methodologies that we analyzed. All those informations differ by being easily and quickly accessible by open sources, and are available about all or almost all higher schools. Such statistics is most commonly gathered by state institutions. The more relevant the indicators become however, the more information gathering requires that universities participate too, and all of them. For example, internal evaluations of success are carried out everywhere. Universities however have little motivation to be cooperative when it comes to making alternative parallel rating on criteria that are the same for all higher institutions, considering that such a rating would place them in competition to all others. They would be interested in comparative information, but that which will be published causes them an institutional immune reaction.



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A second problem that complex rankings ignore is how difficult it is to talk about unified quality of higher education. Bringing together several opposite features, we risk to not validly rank any of them.

Rating accuracy is an issue too, even in the most famous of rankings. *The Times Higher Education Supplement* creates half its index based on peer review by sending a letter to 190,000 experts asking them to point out the 30 best universities in their fields. The figure sounds imposing, but it is just 1% (1,600 people) of addressees who respond. This is a typical case of self-selected sample that is inevitably deformed by systematic mistakes. For example, respondents to the *Times* letter might be expected to include oversampled people with a positive attitude towards Great Britain (because they have studied there or for another reason). Such people may be expected to more often provide positive evaluation of British universities. The validity issue of two of the most popular international rankings of scientific work: those of the Shanghai Institute of Higher Education and of *The Times*, is the subject of a special research by a group of scientists (Ioannidis et al. 2007). Following a thorough review, the scientists grant 22 out of 28 rankings with either bad or low grade of ranking validity. Their conclusion is: *"Present day's international rankings reflect a naïve desire to summarize in a convenient way processes that are very interesting to research, but still exceptionally complicated."*

Chapter 2. Trends in ranking systems development

In response to users' reactions, and especially to their criticism, ranking "producers" constantly perfect their methodologies and higher education quality indicators. The ongoing change in used methodologies reflects the dynamics in today's social environment, which result in dynamics in requirements to and expectations from higher education. An inside look at the development of the first ranking system, that of the *U.S. News & World Report*, shows that the changes it has undergone are the result of the effects and "scandals" its functioning has caused in society (Sanoff 2007).

The accumulated experience and analyses of used ranking systems allow for several trends to be outlined.

2.1. Insitutionalisation of the ranking development process

Ever since its first appearance, some of the most famous university rankings comprise media products, as far as they are initiated and carried out by influential newspapers and magazines: *The U.S. News*, *The Guardian*, *The Times*, *Spiegel*, *Stern*, etc. After 2000 however, a clear trend came to



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the fore of institutionalising the ranking development process. This trend reflects two rather different facts:

- 1) University rankings are neither intellectual exercises nor a neutral occupation, but rather powerful instruments to impact large groups of people and institutions;
- 2) Developing reliable and truthful ranking systems is an exceptionally complicated theoretical and methodological task that requires systematic work by professionals, rather than campaign efforts.

These are some of the institutions that were established to the purpose of developing university rankings, or that pay special attention to this activity:

- Centre for Higher Education Development (CHE), Germany
- International Observatory on Academic Ranking and Excellence, USA
- Center for College Affordability and Productivity, USA
- Institute for Higher Education Policy, USA
- Center for Higher Education Policy Studies (CHEPS), The Netherlands
- Academic Ranking and Rating Agency, Slovak Republic

It is especially important that the process of institutionalising the development of university rankings has not only an organisational side to it (establishing various institutions), but also a professional-cognitive aspect. We could add here a rarely raised argument that when developing and maintaining university ranking systems interweaving practical and theoretical aspects would largely result not only in defining public attitudes, but also in constantly updating ranking platforms of any kinds: from banks and companies to sporting bets. This is about defining common principles in rankings development. In 2004, the UNESCO European Centre for Higher Education and the Institute for Higher Education Policy, Washington created the International Ranking Expert Group to the purpose of analysing the methodological problems of ranking developing. The results of their work are the Berlin Principles of Ranking Higher Education Institutions published in 2006 (Berlin Principles... 2006).

2.2. From national to global rankings

Rankings have originated as an assessment instrument for higher education institutions that develop a certain national higher education system. Today too, most rankings are national by scope. Higher education's mass call and globalization processes around the world have created a need of unified comparative rankings of universities in all countries.



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The first global university ranking was produced in 2003 by the Institute of Higher Education with the Shanghai Jiao Tong University. It is based on scientific achievements assessment, using five indicators of various weights.

The second global ranking is that of the *Times Higher*, and was published in 2004. It strives to be a holistic ranking, not limiting itself to institutions' scientific work only. It is based around the notion that for a higher education university to be considered one, it should include at least two large academic fields: natural sciences, biomedicine, engineering and information technologies, social sciences, arts and humanitarian studies. Institutions that do not meet these requirements are not included in the ranking. This leaves behind many renowned specialized schools like medical and business schools. When making the common index of higher schools, both qualitative data received through surveys and quantitative data are used.

2.3. Towards diversification of information sources

Different ranking systems rely on different kinds of information and data received from different sources. Some rankings, like that of the Shanghai Institute of Higher Education for example, use only objective data (number of publications, number of citations, number of Nobel laureates). Most rankings include student opinion survey data or peer review. There has been a trend during the past few years of ranking systems diversifying their sources of information and simultaneously using different sources: surveys, data from independent sources, data from the universities themselves.

2.4. From "ready-made" to interactive rankings

For two decades, developing university rankings was the work of its initiators who provided the wide public and the academic community with ready-made products made and shaped according to those initiators' own ideas of what universities' functions are, and what higher education quality means. The approach where ranking users – also education users – are attracted as active participants in the creation of the various rankings, has been growing more and more popular though. In this way, as an addition to, or even instead of "ready-made" products, technologies used in this approach provide each user with a possibility to "produce" a do-it-for-yourself ranking using indicators that match their interests, expectations and requirements of higher education. Those rankings are automatically generated online drawing from a database compiled in accordance with users' individual preferences and views. Users choose weight coefficients of the separate components, and receive a custom ranking that is close to their needs and ideas of high-quality education and future professional success. Today, similar interactive (custom) ranking systems are being developed by *The Guardian*, *The US News & World Report*, *The Centre for Higher Education Development*, and *Forbes Magazine*,



Spiegel, and more. Without a doubt, custom rankings play an important role for both the personal and public orientation, and open the traditionally closed educational system to various users and interests.

2.5. Towards formulating common principles and requirements to ranking systems development.

Rankings' massive popularity has created a public need of some sort of mutually agreed upon standards of research or at least of disclosing ranking methodologies. However, so far, only a series of recommendations has been achieved by publishers and researchers, which series is known as the Berlin Principles of University Ranking. The Berlin Principles (Berlin Principles...2006) shape up a position regarding both the place and role of rankings as a university rating instrument, and as the methodological requirements to be observed when making those rankings. Most rankings are too general and of recommending nature. *From a viewpoint of developing politics in higher education*, four of them however do deserve priority attention. First, this is the understanding that rankings should be seen only as one of the methods to evaluate universities' practices and results. The second principle is the requirement that institutions' diversity be taken into consideration, keeping in mind the differences in their missions and goals. The third principle works with the assumption that rankings may have different objectives. The fourth concerns the ever increasing transparency of educational systems in their higher segment: way of financing; projects publicity; development of its employees; practical applicability of research, etc.

During the past years, various science groups and researchers have drawn attention to the boom in rankings, and have intervened with arguments hinted by social sciences' methodologies of working with data. The university rankings "industry" is more and more on the verge of methodological reflex, as evidenced by the growing transparency of data collection methods; publishing of index construction algorithms; publishing of statistical indications of considerable differences between ranks; and reducing the share of obviously irrelevant indicators. Although ranking development practices do not yet meet the criteria usually posed to scientific researches, there already exists unity of thought that they should abide by.

The main criteria for assessing rankings are: validity, relevance, scope, reliability, accessibility (Dill & Soo 2005: 504-519; Mapping Diversity 2008: 9).

- *Validity (see p.8)*

For a ranking system to be valid, it should provide a possibility to measure what is claimed to be measured, and not necessarily that for which information is easily accessible. (For example,



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bibliometrical data about specialized editions or number of Nobel prize winners. The first indicator discriminates against universities from non-English speaking countries. The second one discriminates against higher schools where "Nobel" sciences are not broadly covered unlike, say, mathematics, biology, zoology, geology, technics, architecture, linguistics, psychology, management, sociology, history, philosophy, etc. Both indicators discriminate against universities focusing on applied sciences.)

- *Relevance, significance*

This is about information provided by rankings meeting the needs of the broadest circle of higher education "clients" – students. This is about not presenting rankings of universities as a whole, but providing information by separate majors, because "*rankings based on data about the university as a whole not only twist practices in the separate fields, but fail to secure the information students look for the most.*" (Dill & Soo 2005: 514).

- *Scope*

Rankings are evaluated based on the degree to which their indicators refer to the main dimensions of academic quality.

- *Reliability and accuracy*

In this case, subject to assessment are methods of collecting information and forming researched aggregates, as well as the preciseness and validity of initial data processing methods; the reproduction and sustainability in time of the received values.

- *Understandability, accessibility*

This criterion measures the degree to which a certain ranking explains the methodology used, and how understandable and accessible to a broad range of users it is.

2.6. The European Perspective

The establishing of the European Higher Education Area and the development of the Bologna Process triggered processes of convergence and proximity of the different national higher education systems. A series of research however shows that there are considerable differences remaining among the different countries, and that there are parallel processes of harmonization and diversification running too (Witte 2006, van der Wende 2008). In a number of countries, higher education diversification is viewed as a condition to expand access to higher education (especially in regard to the so-called untraditional students: of older age or former drop-outs). Policies are therefore being adopted to intentionally stimulate diversification (van der Wende 2008: 52). It is to be noted that the European Commission also acknowledges diversification as one of the main factors, together with institutional autonomy, of enhancing the quality of higher education and expanding its accessibility (EU 2003).



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In the European Commission's Communication from 2005, "uniformity" and "over-regulation" are described as the "bottlenecks" of European higher education. *"European higher education is and needs to remain diverse with respect to languages, culture, systems and traditions. At the same time, sufficient compatibility between the different national regulations is indispensable,"* the EC argues. (Communication from the Commission, 2005: 6).

Led by a policy of building a European Higher Education Area, and stimulated by the relatively poor ranking of European universities in two global rankings, the European Commission has undertaken a large-scale initiative to develop a European ranking system. The contest to develop the system was won by CHERPA: Consortium for Higher Education and Research Performance Assessment, where the leading members are the Centre for Higher Education Development (Germany), and The Center for Higher Education Policy Studies (The Netherlands).

The European Commission's objective is to create a new, multidimensional global university ranking to include all kinds of higher education institutions in Europe and around the world, and to allow for comparison of similar institutions on institutional and programme level. The approach is to only compare those institutions that are similar and comparable with regard to their missions and structures. The ranking will be based on a preliminary universities ranking. The key prerequisite is that *"rankings are only valid with regard to defined groups of comparable institutions"*, so classification is seen as a prerequisite for making rankings (van der Wende 2008: 50). Steps have already been undertaken on European level, thanks to the work on a special project for developing a European classification of higher education institutions. The project's objective is to make a U-Map of universities' diversity, and to set out what dimensions should be used to position universities on the map. (<http://www.u-map.eu/>)

The development of the ranking system is considered a complicated task that cannot and should not be rushed to completion despite all experience in the field. Here is why, an institutional level ranking will be developed based on two higher education aspects: internationalization and regional development involvement. Two rankings on programme level will also be developed: for business and for engineering. The ranking will be based on the Centre for Higher Education and Development (CHE) approach rejecting the possibility of creating aggregate rankings that attribute different weights to the separate indicators. It is believed that such rankings hide the differences among the various higher schools, and do not acknowledge different stakeholders' interests, while not presenting any convincing arguments of the selection of indicators' weights. Instead, a multi-dimensional approach is adopted where educational institutions are grouped in three groups instead of league tables (Mapping Diversity 2008: 9; <http://www.che-concept.de/cms/?getObject=302&getNewsID=983&getCB=309&getLang=en>).



Chapter 3: Rankings and public attitudes in Bulgaria

3.1. Summary of the Bulgarian experience

Several university rankings have grown in popularity during the past few years in Bulgaria. Most of them are reflected upon by the survey of the National Information and Documentation Centre.

The concept of a university ranking in Bulgaria as illustrated by a unrepresentative sample of some Bulgarian universities from 1999 – Sofia University "St. Kliment Ohridski", South-Western University "Neofit Rilski", Higher Technical University "Sts. Kiril and Metodiy", Plovdiv University "Paisiy Hilendarski", New Bulgarian University and The American University in Bulgaria – was first developed by D. Denkov in his study *"Something like a ranking of something like universities"* published in the "Kritika I humanism" journal, book 1, 2000. Most of the theses expressed there have been adopted in the most widely popularised ranking in this country, *"The Ranking of Bulgarian Universities"* (by Dimitar Denkov and Chavdar Naydenov) – 2004 and 2005-2007, carried out together with *24 Hours* daily, Association "Debati", and "BG-Chance" Foundation, in co-operation with *24 Hours*-daily which published the results of the rankings in several issues as well as in a separate publication.

The ranking used ratings by a representative sample of students about the quality of seminars in the three most important majors in their programmes; about the degree to which the curriculum was of importance to their future professional activity; accessibility and comprehensiveness of the teaching form; the educational and non-educational infrastructure. Students have also responded on frequency of lectures, seminars attendance, and student load in the respective majors. Expenses, motivation and ways of using free time have also been surveyed. In its second year, the ranking also included assessment by a faculty sample from all covered universities on teaching quality in their majors (at all universities except their own). The ranking features institutional data: budget, number of faculty, size of teaching premises, number of bed in dormitories per student, availability of student canteens, and daily needs expenses per student. An employers' ranking of students' professional realization is also added to this ranking. Rankings have been promulgated in the separate components of the cumulative index. Clarifications have been published on data collection methods and index construction. Four round tables have been held with representatives of universities, the business, and politicians discussing the ranking results and ways to fine-tune it.



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In 2004, *Trud*-daily published a university ranking together with that of *24 Hours*-daily. It was prepared by Kolyo Kolev (Mediana), and ranked universities based on students' comparisons between their own university and the rest, providing general evaluations of their satisfaction with education. In its essence, this is a ranking by prestige, and not by education quality, because very few students have direct experience of more than one university.

There is a ranking of business education in Bulgaria too, published by *Pari*-daily. No methodological clarifications about it were discovered in the Internet though.

Ranking of employers' assessment of universities was also prepared within the framework of the project '*Market evaluation of public and private investments in human capital formed within higher education degrees*'; authors: Maria Sotirova et al., Sofia, 2009, 'Trud I Kapital' publishing house.

3.2. Public expectations of university rankings

The very endeavor where a non-academic institution ranks a university or a higher education school is highly unusual to the Bulgarian public (and especially to the academic community). It is not by accident that the idea of higher education institutions rankings first grows in cultures of weak authoritarianism. In this sense, all attempts to justify the existence of such activity on native ground strive to strengthen its paternalistic features. Moreover, poor knowledge of international experience gives birth to local myths projecting biased preferences over scarce information. Rankings were spontaneously burdened with an expectation that they would be the only bases on which long-postponed management problems would be solved; that they should provide the basis for universities financing; that they can solve the deficit of highly qualified professionals in the economy, and other super tasks.

There is a tendency of idealizing some or other foreign rankings, and that creates the impression that those should only be transferred to Bulgaria and be applied here. For example, there is a persistent exaggerated presumption that all university rankings in Europe and the US are based on university graduates' salaries. In fact, just a browsing look at facts shows that this is only valid to separate business and medical majors in the US and UK.

Perhaps the most extreme manifestation of this peculiarity is setting as an exemplary ranking that of Shanghai University's Institute of Higher Education ("*Shanghai university's list is currently the only professionally developed ranking of higher education schools in the world,*" writes a certain author). This perception fails to acknowledge the fact that the ranking in question focuses fully on scientific and research accomplishments, and does not rate teaching process and its results at all. Its



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indicators make this clear: number of Nobel laureates who graduated from the respective university (10% weight); number of Nobel laureates employed at the university (20%), number of articles published in the US journal *Nature and Science* (20%), Science Citation Index (20%), and Social Sciences Citation Index (20%), and all of the above indicators divided by the number of faculty (10%). No other indicators. They are conveniently named "Education quality" (1), "Faculty quality" (2), "Research production" (3 and 4), "Productivity per faculty member" (5), but as seen, they only rate universities as purely scientific institutions. Apart from lacking validity, this ranking happens to be impossible to reproduce by other researchers on the basis of the announced methodology and the starting raw data (see Florian Răzvan V.).

Yet another myth describes rankings in Western countries as unvaried within separate countries. It is envisaged that rankings development be commissioned to employers' organisations, or to special state or non-governmental service. It is being stated that rankings in each country are "formalised" and not using "subjective" data. More specifically: "it is not known that clashing rankings of universities exist in one and the same country [...] In general, all rankings are formalised and considered the authority for the certain country." (Hristova, 2006). This not reality, however: in large countries like USA, UK, and Germany, there are several university rankings running simultaneously, differing in their methodologies and results. The various rankings are being developed at different initiatives, mostly as part of some famous publications. It is only in the last few years that the abundance of rankings resulted in most developers' readiness to at least agree upon certain standards of methodology publication.

The critical attitude towards rankings is also related to insufficient knowledge of sample surveys methodology. It has been speculated that the differences between several rankings made in Bulgaria were due to *"the different subjective assessments provided by polled students and faculty"*. The subjective nature of individual data cannot be the reason for deviations from the aggregate indicators beyond the permitted error of the sample. Objective indicators of subjective qualities and conditions may in principle be stable enough as well as reproducible. That is exactly what provides the basis for tests developed to measure psychological capabilities, scholastic aptitude, public opinion surveys, etc. It is being argued that a sample of 2,500 people does not show anything about the ratings provided by 200,000 students, because *"an opinion given by 1% of respondents cannot be representative"* of the group. (Following this logic, pre-election samples should cover more than 60,000 citizens of age, and not the usual number of 1,000-1,200 people.) What is being neglected here is the fact that the ultimate sample is developed by a scientific methodology acknowledging analytical goals, permitted scholastic deviations of indicators, statistical qualities of divisions, and other factors.



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Our *media's* interest in university rankings is too sporadic. At least three factors could explain why:

- Rankings' limited target group. They are mostly of interest to applicant students, parents, academic managements. Despite being of high intensity, that interest covers groups of about 300,000 citizens, i.e. just 5% of the population of age. That is the case in developed countries too.

- Local media's peculiar style of competing with each other. Once a campaign is launched by a certain medium, it is by default denied and disclaimed by the rest, or just gets ignored. Here is why it is mainly the medium which has commissioned the making of a certain ranking and which has published it, that writes about it, together with several marginal or specialized editions.

- It is mostly the written media that are interested in the rankings, and their influence has diminished tangibly due to the ever increasing impact of electronic media, including the Internet.

Chapter 4. Main conclusions of the analysis regarding the task of developing a ranking system of Bulgarian universities.

4.1. Need of developing a new ranking system of universities in Bulgaria.

Amidst the ever increasing mass appeal of higher education, applicant students become more and more diverse both in relation to their preliminary preparation and to their interests, expectations and requirements of higher education schools. At the same time, there is no thorough and reliable information in this country to assist applicant students in making an informed choice. Neither applicant students, nor the wide public have any clear idea of the quality and education conditions in more than a few of our over fifty universities. The information available from universities and professional fields accreditation is not widely accessible, and what is more important, it is too general and unfocused.

As it already transpired, rankings published in Bulgaria so far have been produced by different teams using different methodologies, which does not allow either for registering changes at universities, or for drawing reliable comparisons among them. That establishes a need of developing a methodology to assess university education periodically, either annually or every two years, acknowledging both positive and negative trends. That would allow applicant students as thorough information about educational processes and results as possible, and would help them get beyond different universities' prestige, because most students are interested not so much in "which the best university is", but "which the best major for me is" (Dill & Soo 2005: 515).



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It is necessary that a ranking system be developed to meet and serve the interests of several social groups and institutions:

- Universities' "clients": students;
- Universities themselves and the academic community;
- Users of universities' "product": employers;
- Institutions developing higher education policies: the Ministry of Education, Youth and Science, the National Accreditation and Evaluation Agency, the Rectors' Council.

Developing a ranking system would allow universities to evaluate themselves as compared to the rest in different aspects. It will stimulate the growth of a culture at universities to present and gather information that is relevant to the objectives of academic self-governance. At the same time, institutionalising the process of higher education quality rating would afford institutions developing higher education policies to base their decisions on fuller and more diverse information.

It should be explicitly stressed that the composition of a ranking's indicators changes dramatically depending on its purpose. For example, if the purpose is to make international comparison, that would impose narrowing entrance indicators to the lowest common denominator of the most popular and easily accessible features. (That explains why *The Times* uses far fewer indicators in its international index: apart from "peer review", there are just four more indicators). Indicators may be tailored to the ambitious student striving for success, but could also be directed towards the "postmodern" personality that puts self-expression and free time first. Some students may see education as an investment, while others just the opposite, as a process of consumption, i.e. independent life outside of their parents' home and control, amongst peers and educated people, where they could develop their personalities. In both cases, what is good for the former is largely not so good for the latter. A ranking's purpose could be to mostly aide education management. In this case, the ranking's composition depends on defining the Government's tasks. If its purpose is to monitor universities' development, then the requirement of comparison demands that from the very beginning indicators be constructed in a way not to be changed for years on end. A ranking could be used for benchmarking purposes: establishing the best parameters achieved on the basis of some indicators among competitive schools, after which management methods at the best one are studied and distributed to the rest. Rankings could be largely directed towards employers' needs too, whereas employers are by default interested in how quickly they could yield the highest possible profit from a new employee. However, a ranking could also be constructed for a considerable number of students that would choose more fundamental preparation promising longevity and flexibility. In other words, it is not just that a unified ranking does not exist; in today's conditions it is impossible for one to exist.



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Considering the movement towards full scope of higher education not only here but in developed countries too, the idea of a university's self-worth, it being the highest authority to only evaluate itself, fades away in the open educational services market where the client-user is front and centre. The introduction to the higher education system of a generation that seeks and finds information in the global web, calls for compliance with this never met before condition that fully changes both the media and the educational environment.

4.2. Composition prerequisites of the ranking system

Building a universities ranking system presupposes and is based upon either explicit or implicit answers to a series of theoretical and methodological questions.

A) Main theoretical questions:

- How are the main functions of higher education institutions defined?
- What kinds of higher education schools can be distinguished, and how are they determined?
- How is "quality of higher education" defined?

B) Main methodological questions:

- What is being compared: universities, professional fields or separate majors?
- What kind is the ranking: holistic (aggregate) or multi-dimensional?
- How are comparable units ordered: in a league table or in groups?
- Which are the indicators?
- How do the separate indicators "function": using different weights or without having attributed values? How and on what grounds are separate indicators' weights determined?
- What sources of information are used?

4.3. Starting features of the developed ranking system

In the conditions of a dynamically changing and open social environment, a static and undifferentiated definition of quality as an absolute common standard is inadequate. Modern realities require a more flexible understanding of quality whereas it is defined as correspondence with a certain goal, and is related to evidence of continuous perfecting. This understanding of quality is in tune with



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the task of developing various orientations of the degrees of higher education, as well as various profiles of the majors, as an instrument for enhanced adaptation to the constantly changing conditions on the labour market (Communication of the Conference of Higher Education Ministers, Berlin, 2003).

Within the present project, *quality of higher education* is understood as a complex feature of the university and its structural and academic units (faculties, departments, centres, professional fields, majors), which reflects the degree of funding secured for conducting the teaching and learning process and the scientific activity; their organization and exercising; their results, academic and public validity, and their prestige.

The understanding of quality defined herein presupposes the following *higher education evaluation criteria*:

- A) funding security (higher education entrance)
- B) way of implementing the processes of education and research (higher education processes);
- C) Results (higher education exit)
- D) Public and academic validity and prestige (overall characteristics of higher education).

Since higher education targets specific users, when assessing its quality their subjective views should in all cases be taken into account. This means that higher education quality will be measured *by objective and subjective indicators simultaneously*.

The multi-dimensional nature of quality does not mean it cannot have an integral rating, especially by certain majors and professional fields. It only means that it will have a limited, "controlled" validity. It also means that after its completion, it is imperative that the degree and limits of its applicability be studied in specifics, and be explained to the public. Weights for such a ranking could be drawn from data of applicant students' prevailing preferences, for example. This means that indicators of how young people rate various aspects of higher education and what importance they attribute to them should be included as indicators in empirical sociological surveys of applicant students' attitudes.

In compliance with the conclusions of the analysis of both Bulgarian and international experience in university ranking development, and acknowledging the trends in this process and its European dimensions, the team of experts has headed towards developing a ranking system that is:



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- *Multi-dimensional*: acknowledging all three of universities' main activities: education, scientific research, service to society.
- *Empirically sustained*: based both on objective data and subjective evaluations by higher education stakeholders (students and faculty), its users (employers will be required to assess both the qualities of different schools' graduates, and the market's requirements and all changes thereof), and a representative sample of university graduates from the last three years.
- *Diversified*: acknowledging diversity in the higher education system and its different levels (universities, faculties, professional fields, majors), and the existence of differentiation among universities from a viewpoint of their missions, goals and structures.
- *Interactive*: allowing for expression of the individual interests of its users: applicant students, students, employers, who turn from users of a ready-made product into active participants in its development. The ranking's main objective: leading the applicant student in their educational choice, is realized in the best possible way applying an individual online list of indicators that may be compiled in accordance with users' personal preferences. That to a great extent eliminates the issue of the quality's complexity and of indicators' plurality.
- *Flexible*: the system is structured in such a way as to feature possibilities of fine-tuning through complementing and updating its information. In other words, universities are to be seen not just as subjects of evaluation, but also as partners in a common cause: improving higher education quality and competitiveness.



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Application: Systematized information about rankings in different countries

U.S. News & World Report survey from 1983 is considered to be the first ranking of higher education schools. For a quarter of a century since then, developing various university rankings has turned into a broadly popular practice. Even the briefest look at ranking systems would clearly show however that they differ substantially from a view point of their understanding of higher education quality which forms their basis, and of the methodology and rating indicators that they use. Table 1 below illustrates the lack of similarity of criteria and higher education quality rating indicators.

Table 1
Number of indicators used in 10 ranking systems (Source: Van Dyke 2005: 113)

Ranking by	Faculty quality	Enrolled students quality	BA programmes quality	MA programmes quality	Resources	Stakeholders' opinion	Other	Total
Asiaweek	6	2	0	0	8	2	2	20
The Center	4	1	0	1	3	0	0	9
CHE/Stern	1	0	2	5	20	2	3	33
Good Guides	5	3	3	0	7	1	7	26
The Guardian	1	1	2	0	2	0	0	6
Maclean's	4	4	3	1	7	1	3	23
Melbourne Index	4	1	2	1	2	2	0	12
Perspektywy	2	0.5	0	0.5	10	2	2	17
The Times	2	1	3	0	3	0	0	
U.S. News	1	3	3	0	4	1	3	15
Total	30	16.5	18	8.5	66	11	20	170



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Hereinbelow we present systematized information, including from comparative perspective, of criteria, indicators and sources of information used in different ranking systems.

Table 2
Criteria, indicators and sources of information rused in 17 ranking systems (Source: Usher, Savino 2006: 42-53)

<i>Beginning Characteristics Indicator</i>	<i>Used By</i>	<i>Source</i>
Incoming grades	Macleans	University
Percentage with grades above a set limit	Macleans US News and World Report	University University
Performance on National standardized tests or benchmarks	Asiaweek Education18	University 3rd-party: JUPAS
	Financial Times	Government agency / 3rd-party: UCAS
	Guardian University Guide	Government agency / 3rd-party: UCAS
	Melbourne Institute	Government agency / 3rd-party : DEST
	Netbig	National entrance examination board
	Times Good University Guide	Government agency / 3rd-party: UCAS
	US News	University
	Wuhan	Unknown; presumed government / Jd-party
Student status	La Repubblica	Government agency / 3rd-party: MIUR
Admittance: selectivity, general	Asiaweek	University
Admittance: number of applications to places	Asiaweek Financial Times	University Government agency / 3rd-party: UCAS
	La Repubblica US News	Government agency / 3rd-party: MIUR University
Out-of-locality student percentage	Macleans	University
International student percentages	Financial Times Macleans Shanghai Institute of Educational Science	Government agency / 3rd-party: HESA University
	Times World	University
	Wuhan	Unknown; presumed university
Undergraduate students among all students: percentages	Netbig Wuhan	Unknown; presumed university
Ethnic diversity in student body	Guardian	University



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Learning Inputs - Staff Indicator	Used By	Source
Faculty/student ratio	Asiaweek	University
	Excelencia	Government agency / 3rd-party: Centro de Investigaciones Sociologicas
	Financial Times	Government agency / 3rd-party: HESA
	La Repubblica	Government agency / 3rd-party: MIUR
	Times Good University Guide	Government agency / 3rd-party: HESA
	Times World	University
	US News	University
	Wuhan	Unknown; presumed university
Social science faculty/student ratio	Melbourne	Government agency / 3rd-party: DEST
Science faculty / student ratio	Melbourne	Government agency / 3rd-party: DEST
Administrative staff/student ratio	Excelencia	Government agency / 3rd-party: Centro de Investigaciones Sociologicas
Staff /student ratio (regardless of division)	Guardian Netbig	Government agency / 3rd-party: HESA University ?
Course per teacher	La Repubblica	Government agency / 3rd-party: MIUR
Per-teacher university spending	Asiaweek	University
Faculty pay rates for tenured staff	Asiaweek US News	University University
Number of full-time/part-time faculty	Netbig US News	University? University
	Wuhan	Unknown; presumed university
Faculty with research projects	Wuhan	Unknown; presumed university
Class size differentiation	Maclean's US News	University University
Classes taught by tenured faculty	Maclean's	University
Exchange programmes hosted	La Repubblica	Government agency / 3rd-party: AgNaSoc
Number of classes 'actually taught'	La Repubblica	Government agency / 3rd-party: MIUR
% of international faculty (v faculty as a whole)	Times World	University
Aging and staff replacement / churn issues	La Repubblica	Government agency / 3rd-party: MIUR
Teaching quality: Faculty performance on standardised 3 rd -party	Education18 Financial Times	3rd-party : TLQPR Government agency / 3rd-party: QAA / HESA



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tests if given		
	Times Good University Guide	Government agency / 3rd-party : QAA / HESA
	US News	University
Teaching quality: Performance on 'own metrics	Guardian	Survey (cobbled together from QAA scores)
Teaching quality: Qualifications for teaching positions (PhDs, Master's, etc.)	Asiaweek Education18 Maclean's	University University University
	Netbig	University
	US News	University
Number of doctoral and Master's programmes	Asiaweek Netbig	University Unknown; presumed university
	Wuhan	Unknown; presumed university
Student efforts: Hours spent in class per student	La Repubblica	Government agency / 3rd-party: CNVSU
Student efforts: % student participation in exchange projects	La Repubblica	Government agency / 3rd-party: AgNaSoc

<i>Learning Inputs - Resources Indicator</i>	<i>Used By</i>	<i>Source</i>
Physical infrastructure: Number of lecture spaces	La Repubblica	Government agency / 3 rd -party: MIUR
Physical infrastructure: Library: Acquisitions per year	Maclean's	University
Physical infrastructure: Library : total volumes	Education18 Maclean's Netbig	University University Unknown
Physical infrastructure: Library: volumes per student	Maclean's	University
Physical infrastructure: Library: Yearly expenditures outside of acquisitions	Asiaweek Financial Times Maclean's	University Government agency / 3 rd -party:HESA University
Physical infrastructure: Internet bandwidth	Asiaweek	University
Physical infrastructure: Computerisation of library resources	Asiaweek Financial Times	University Government agency / 3 rd -party: HESA
	Times Good University Guide	Government agency / 3 rd -party: HESA
Funding and financial	Maclean's	University



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resources: Public funding total of institutional budget		
Funding and financial resources: Private funding total (including supporting foundations and charitable organisations)	Financial Times	Government agency / 3 rd -party: HESA
Funding and financial resources: Alumni support	Maclean US News	University University
Funding and financial resources: Student services	Maclean's	University
	Times Good University Guide	Government agency / 3 rd -party HESA
Funding and financial resources: Science grants	Maclean's	University
Funding and financial resources: Social sciences and humanities grants	Maclean's	University
Funding and financial resources: Expenditure	Guardian Shanghai Institute of Educational Science	Government agency / 3 rd -party: HESA
Funding and financial resources: Bursaries and scholarships disbursed by public/private bodies	La Repubblica Maclean's Shanghai Institute of Educational Science Wuhan	Government agency / 3 rd -party: MIUR University Unknown; presumed university or government agency/3 rd -party

<i>Learning Outputs Indicator</i>	<i>Used By</i>	<i>Source</i>
Academic performance	Guardian Shanghai Jiao Tong University	Government agency/ 3 rd -party, plus university (so-called 'value-added' measure)
	Times Good University Guide	Government agency/ 3 rd -party: HESA
	US News	University
Graduation rate: Undergraduates only	Guangdong Institute of Management Science	Unknown
	La Repubblica	
	Maclean's	University
	Melbourne Institute	Government agency/ 3 rd -party: DEST
	Wuhan	Unknown; presumed university
Graduation rate: Master's only	Guangdong Melbourne	Unknown Government agency/ 3 rd -party: DEST



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	Wuhan	Unknown; presumed university
Graduation rate:	Guangdong	Unknown
Doctoral students only	Melbourne	Government agency / 3rd-party: DEST
	Wuhan	Unknown; presumed university
Graduation rate:	Maclean's	University
International students		
Type of degree obtained	Financial Times	Government agency / 3rd-party: HESA
Retention: 1st to 2nd year	La Repubblica	Government agency / 3rd-party: CNVSV
	Maclean's	University
	Melbourne Institute	Government agency/ 3rd-party: DEST
	US News	University

<i>Final Outcomes Indicator</i>	<i>Used By</i>	<i>Source</i>
Work status	Financial Times	Government agency/ 3rd-party : HESA
	Guardian	Government agency/ 3rd-party : HESA
	Times Good University Guide	Government agency/ 3rd-party : HESA
	Wuhan	Unknown; presumed survey or government agency/ 3rd-party
Further/professional education	Financial Times	Government agency/ 3rd-party : HESA
	Melbourne	Survey/government agency / 3rd-party: DEST

<i>Research Indicator</i>	<i>Used By</i>	<i>Source</i>
Research staff: numbers or percentage of research personnel (ie, as opposed to teaching staff)	La Repubblica Melbourne	Government agency/ 3rd-party - there is some suggestion on researchers' part that this data is obsolete: DEST
	Wuhan	Unknown; presumed government agency / 3rd-party
Academic quality of research	CUAA Financial Times	Unknown HEFC, Northern Ireland Higher Education Council (NIHEC), SHEFC
	Melbourne	3rd-party : DEST , ESI (lab & non-lab)/ University - administered survey of postgraduates
	Times Good University Guide	
Awards: International	Shanghai Jiao Tong	
	Wuhan	Unknown; presumed government agency/ 3rd-party
Awards: National	Guangdong La Repubblica	Unknown; presumed government agency/ 3rd-party
	Netbig	Government agency/ 3 rd -party



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	Wuhan	Unknown; presumed government agency / 3 rd -party
Awards: Regional (ie, state/provincial or within national borders)	Guangdong	Unknown; presumed government agency / 3 rd -party
Citations: Science-oriented indices (ie., the Science Citation Index; refers to natural sciences, engineering and other related fields)	Guangdong Melbourne Shanghai Jiao Tong	Unknown; presumed government agency / 3 rd -party: CSCD (China), SCI, Nature, Science 3 rd -party: Non-lab ESI
	Wuhan	3 rd -party: SCI, CSTPC
Citations: Social science-oriented indices (ie., the Social Science Citation Index, and not the humanities)	Melbourne	3 rd -party: Non-lab ESI
	Shanghai Jiao Tong	3 rd -party
Citations: 'Highly cited' (as determined by Thomson-ISI)	Melbourne Shanghai Jiao Tong	3 rd -party: Non-lab ESI
	Wuhan	3 rd -party: ISI-related indices
Citations: Other	Asiaweek Shanghai Jiao Tong	3 rd -party 3 rd -party
	Times World	3 rd -party
	Wuhan	3 rd -party : CSTPC, CSSCI, SCI, SSCI & AHCI
Publications: Nature and Science (not quite the same as 'highly- cited' above)	Guangdong	Unknown; presumed government agency / 3 rd -party -Nature and Science
Publications: Published papers in science-oriented indices (ie., the Science Citation Index)	Guangdong Melbourne	Unknown 3 rd -party: Lab ESI
	Netbig	3 rd -party: SCI, Engineering Index
	Wuhan	3 rd -party: CSTPC, SCI
Publications: Published in social science-oriented indices (ie., the Social Science Citation Index)	Melbourne Netbig	3 rd -party: Non-lab ESI 3 rd -party: SSCI
Publications: Published papers in other indices	Asiaweek Education18	3 rd -party 3 rd -party: RGC
	Wuhan	3 rd -party: AHCI and others not described fully
Publications: Books (other)	Asiaweek	3 rd -party
Research budget:	Asiaweek	University



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including grants	Financial Times	Government agency / 3rd-party: RAE 2001
Research budget: Expenditure (undefined)	Wuhan	Unknown; presumed survey or university
Research budget : Total number of grants and projects	Education18	3rd-party: RGC
	Wuhan	Government agency/ 3rd-party: NSF(c) and NSSF(c)
Patents	Guangdong	Unknown
	Wuhan	Unknown; presumed government agency / 3rd-party
Number of research- based chairs per institution	Netbig Wuhan	Government agency/ 3rd-party Unknown; presumed government agency / 3rd-party
Number of research- based/affiliated research institutions, centres for studies, etc	La Repubblica Netbig Wuhan	Government agency / 3rd-party Unknown; presumed university
Other output	Guangdong	Unknown
	Wuhan	Unknown

<i>Reputation Indicator</i>	<i>Used By</i>	<i>Source</i>
Among students/graduates	Melbourne	Survey
Among academics	Asiaweek	Survey
	Education18	Survey
	Netbig	Survey
	Times World	Survey
	US News	Survey
	Wuhan	Survey
Among general society / business sector / others outside direct connection to university	Education Maclean's Melbourn Wuhan	Survey Survey Survey Survey

Table 3
Criteria, indicators and their weights used in 5 ranking systems (Источник: Dill & Soo 2005: 500-502)

	GUG (Australia) (by institution and subject)	The Guardian (by subject)	Maclean s (Canada) (by institution)	The Times (UK) (by institution)	USNWR (US) (by institutio n)
INPUT	<i>(No overall ranking)</i>	15%	60%	50%	37%
Faculty	Student/staff ratio	Student/staff ratio (6%)	% PhDs (3%)	Student/staff ratio (9%)	Student/st aff ratio (1%)



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	% PhDs		National awards (3%)	Research assessment (14%)	Faculty salary (7%)
	Research Grants		Grants (11%)		% PhDs (3%)
					Full-time faculty (1%)
Students	Students ranked in top decile nationally		Avge. high school grades (11%)	Avge. A and AS levels (9%)	SAT/ACT tests (6%)
	Minimum entrance Scores		% top (25%) in high school 3%		% top 10% in high school (5%)
	Various measures of student diversity(e.g. # international students, % external, part-time, indigenous, non-English speaking, male/female students)		Out-of-province (1.5%)		Acceptance rate (2%)
			% International students (1.5%)		Enrollment rate (2%)
			National academic awards (3%)		
Financial resources and facilities	Non-government earnings	Per student spending (9%)	Per student spending (3%) Student services (4%) Student Scholarships Facilities spending (4%) Library (12%) (# of volumes, volumes per student, % of total budget)		Per student spending (10%)
PROCESS		65%	17%	23%	8%
Teaching	Graduate rating of teaching quality and acquisition of	Teaching assessment (65%)	Class-size (14%) First year classes taught by	Teaching assessment (23%)	Class size (8%)



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	generic skills in 30 fields of study		tenured or tenure track professors (3%)		
OUTPUT		15%	7%	27%	30%
Satisfaction Graduation	Graduate satisfaction with courses of study		Alumni giving rate (5%) Graduation rate (2%)	Graduation rate (9%)	Alumni giving rate (5%) Graduation rate (16%) Freshmen retention (4%)
"Value-added"	First and upper-second degrees (students who entered with score more highly) (9%)				Adjusted graduation Rate (5%) (controlled for spending and student aptitude)
Learning progress			First and upper second degrees (9%)		
Employment / Job prospects	Job prospects (6%)		Job prospects (95)		
REPUTATION		6%	15%	0%	25%
	Student demand, research grant success, and international ranking	Demand among high achieving students	Survey of school guidance counselors, university officials, and organization heads		Survey of university presidents, provosts, and deans of admission
* Percentages represent weights assigned to performance indicators in rankings calculation. Percentages may not sum to 100% because of rounding.					

Table 4
 Criteria and indicators used in 10 ranking systems (Source: Van Dyke 2005)

Criterion	Indicators
<i>Quality of academic staff</i> <i>Research</i>	Publications Citations Conference presentations Research income



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	Research grants "Research Performance"
<i>Quality of academic staff Prestige</i>	Membership in Academies Significant faculty awards Academic degrees held Teaching quality
<i>Quality of academic staff Other academic measures</i>	Proportion of full-time faculty Undergraduate classes taught by tenured or tenure-track, professors
<i>Quality of incoming students</i>	Score on national entrance exam/ High school performance Minimum cut-off scores required for entry University acceptance rate Demand for places Geographic diversity
<i>Quality of undergraduate programmes</i>	Degree classification (Honours, etc) National academic awards won by students Graduates who go on to get PhDs /enrol in further study Graduation/retention/ attrition rate Unemployment rate of graduates Student - faculty contact Contact between students Value-added score
<i>Quality of graduate programmes</i>	MA's /PhDs awarded International students Pass/fail rate on professional exams Preparation for post-degree career
<i>Other student measures</i>	Student acceptance rate Number/proportion of graduate students Diversity of student body (other than geographic) Number of required classes
<i>Resources: student and staff support Library</i>	Library size Number of journals Library - currency of collection Library – spending
<i>Resources: student and staff support Computers/IT</i>	Computers/IT spending Number of public computers and connection points Internet bandwidth Comprehensiveness of electronic support
<i>Resources: student and staff support Facilities/Infrastructure</i>	Facilities spending Seats: students ratio Number of classrooms/labs/workstations, etc
<i>Resources: student and staff support Student support: academic</i>	Scholarships and bursaries: percent of budget spent on Student: faculty ratio Comprehensiveness of academic services/support E-learning Courses offered
<i>Resources: student and staff support Student support: non-academic</i>	Student services: Percent of budget spent on Number of residential spaces



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	Job/career services/counseling Extracurricular activities Comprehensiveness of life support services Total spending per student
<i>Resources: student and staff support</i> <i>Staff support</i>	Laboratory spending Media equipment Total spending per academic staff Faculty pay Number of postdoctoral appointments supported
<i>Resources: student and staff support</i> <i>Revenue/assets</i>	Size of university endowment/investment activities Annual giving Student fees Other institutional measures Class size Entry flexibility Comprehensiveness of life support services Time to degree
<i>Other measures</i>	Cost of living/general information on city/town General information on university
<i>Stakeholder opinion</i>	Academics Employers Students

Table 5
Indicators and their weights used in the Center for College Affordability and Productivity ranking

Indicator	Weight 2008	Weight 2009
Students' satisfaction with the teaching and learning process	25%	25%
Successful professional career after graduation:		
- Graduates included in the 2008 edition of <i>Who's Who in America</i>	12,5%	12,5%
- Graduates' salaries	12,5%	12,5%
Probability of completing education in 4 years	16 2/3%	16 2/3%
Average indebtedness of students for 4 years	16 2/3%	20%
Students' awards for scientific achievements	8 1/3%	8 1/3%
Faculty's awards for scientific achievements	8 1/3%	5%

The following two important changes were introduced to the 2009 ranking, in which *Forbes* and CCAP hold great pride:



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§ Best Values Rankings – ranking measuring not just the quality, but also the cost of education;

§ Do-it-yourself-ranking – creating an Internet platform that allows users to make their own rankings in accordance with their individual preferences and rating of the various indicators' significance.

Tables 6.1. and 6.2.

Indicators and their weights used in *The Times Higher* ranking

As shown by the next two tables, in 2010, *The Times* significantly changed its higher education quality indicators.

6.1.

Indicator	Weight 2004-2009
Rating by the academic community	40%
Rating by the world's largest employers	10%
Share of international faculty	5%
Share of international students	5%
Faculty to students ratio	20%
Number of citations per faculty member	20%

6.2.

Indicator	Weight 2010
Teaching and learning process <ul style="list-style-type: none"> - Rating by the academic community – 15% - PhD theses per faculty member – 6% - Number of students per faculty member – 4,5% - Income per faculty member – 2,25% - PhDs granted against BAs granted - 2,25% 	30%
Scientific activity <ul style="list-style-type: none"> - Rating by the academic community – 19,5% - Funds available for scientific activity - 5,25% - Number of articles per scientist – 4,5% - Public funds for scientific activity out of all funds for scientific activity – 0,75% 	30%



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International index - Share of international faculty – 3% - Share of international students – 2%	5%
Innovations	2,5%
Number of citations per article	32,5%

Table 7
Principles in developing the Centre for Higher Education and Development ranking system
(Source: Berghoff at al 2008: 8-10)

<ul style="list-style-type: none"> No aggregation of individual indicators or an overall score for an entire HEI but a subject-related presentation of results.
<ul style="list-style-type: none"> No weighed overall score for the research performance of a faculty but a consideration of each indicator separately.
<ul style="list-style-type: none"> No league table and ranks but profiles of research-intensive HEIs.

These principles include a discipline-oriented and multi-aspect approach; refusal to compare universities as a whole, and acknowledging students' heterogeneous preferences. Based on the ratings received, higher education institutions are grouped in three large clusters without attributing individual ranking to any of them.

Table 8
Indicators used by CHE to rate scientific activity (Source: Berghoff at al 2008: 11-12)

Indicator	Indicator description
Number of publications in the web of science (1997 – 2004) <i>The "size" indicator</i>	This is the number of publications found in the web of science with a query by institution and subject: biology, chemistry, mathematics, and physics, with the publishing year from 1997 to 2004.
Citations (normalized to the international standard) <i>The "reception" indicator</i>	This indicator compares the average number of citations received by the papers of a research unit (CPP) with its international reference value, namely corresponding the field based mean citation score (FCSm) by calculating the ratio. It



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	was developed by Anthony van Raan and the CWTS as a measure for the visibility of a department compared to an international standard. Self-citations are excluded in the calculation of the ratio to prevent the ratio from being affected by divergent self-citation behaviour.
Outstanding researchers <i>The "lighthouse" indicator</i>	This indicator identifies institutions with outstanding researchers. Only researchers that are still teaching at the specific institution are counted. Thomson Scientific provides a list of "Highly Cited Researchers," each of whom are among the 250 most cited researchers for their published articles within a specific time period. ⁶ In addition, Nobel prize winners and field medallists in mathematics were taken into account.
Number of projects in the Marie Curie programme⁷ <i>The "European dimension" indicator</i>	This indicator measures European activity. The Sixth Framework Programme's Human Resources and Mobility (HRM) activity is largely based on the financing of training and Basic Methodology mobility activities for researchers. These activities, known as the Marie Curie Actions, are aimed at the development and transfer of research competencies, the consolidation and widening of researchers' career prospects, and the promotion of excellence in European research. Six activity lines were taken into account relative to their financial impact and availability

Table 9
 Dimensions and indicators used to classify European universities (source: Mapping Diversity 2008: 75)

Dimensions	Indicators
1. Types of degrees offered	1a: highest level of degree program offered 1b: number of qualifications granted in each type of degree program
2: Range of subjects offered	2a: number of subject areas covered by an institution using the UNESCO/ISCED subject areas
3: Orientation of degrees	3a: the number of programs leading to certified/regulated professions as a % of the total number



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	of programs 3b: the number of programs offered that answer to a particular demand from the labour market or professions (as % of the total number of programs)
4: Involvement in lifelong learning	4a: number of adult learners as a % of total number of students by type of degree
5: Research intensiveness	5a: number of peer reviewed publications per the academic staff 5b: the ISI based citation indicator, also known as the 'crown indicator'
6: Innovation intensiveness	6a: the number of start-up firms) 6b: the number of patent applications filed 6c: the annual licensing income 6d: the revenues from privately funded research contracts as a % of total research revenues
7: International orientation: teaching and staff	7a: the number of degree seeking students with a foreign nationality, as % of total enrolment 7b: the number of incoming students in European exchange programs, as % of total enrolment 7c: the number of students sent out in European exchange programs 7d: international staff members as % of total number of staff Members 7e number of program offered abroad 7f: the number of students in joint degree programmes as a % of total enrolment
8: International orientation: research	8a: the institution's financial turn-over in European research programs as % of total financial research turn-over 8b: the importance of international sources of income
9: Size	9a: number of students enrolled (headcount) 9b: number of staff members employed
10: Mode of delivery	10a: number of distance learning programs as % of total number of programs 10b: number of part-time programs as % of total number of programs 10c: number of part-time students as of total number of students
11: Public/private character	11a: income from (competitive and non-



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	competitive) government funding as a % of total revenues 11b: income from tuition fees as % of total income
12: Legal status	12a: legal status
13: Cultural engagement	13a: number of official concerts and performances (co)-organised by the institution 13b: number of official exhibitions (co)-organised by the institution
14: Regional engagement	14a: annual turnover in EU structural funds as % of total turnover 14b: number of graduates remaining in the region as % of total number of graduates 14c: number of extracurricular courses offered for regional labour Market 14d: importance of local/regional income sources 14f: the number of partnerships with business and industry

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