

Should you believe in the Shanghai ranking?

上海

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Outline

- Academic Ranking of World Universities 2007
- Details of ranking methodology
- Some preliminary comments
- Some comments inspired from MCDM
- Conclusions

Shanghai Ranking



- Jiao Tong University in Shanghai
 - Institute of Higher Education
- Academic Ranking of World Universities (ARWU)
- 500 universities worldwide ranked annually (in August)
 - since 2003 (2007 is the 5th edition)
 - <http://www.arwu.org/ranking.htm>
- Applied MCDM
- Context
 - Globalization
 - New institutions
 - Increased mobility of students and staff
 - Increased competition

Top 20 World



Rank	Institution	Country	Alumni	Award	HiCi	N&S	SCI	Pty	Score
1	Harvard Univ	USA	100	100	100	100	100	73	100
2	Stanford Univ	USA	42	78,7	86,1	69,6	70,3	65,7	73,7
3	Univ California - Berkeley	USA	72,5	77,1	67,9	72,9	69,2	52,6	71,9
4	Univ Cambridge	UK	93,6	91,5	54	58,2	65,4	65,1	71,6
5	Massachusetts Inst Tech (MIT)	USA	74,6	80,6	65,9	68,4	61,7	53,4	70,0
6	California Inst Tech	USA	55,5	69,1	58,4	67,6	50,3	100	66,4
7	Columbia Univ	USA	76	65,7	56,5	54,3	69,6	46,4	63,2
8	Princeton Univ	USA	62,3	80,4	59,3	42,9	46,5	58,9	59,5
9	Univ Chicago	USA	70,8	80,2	50,8	42,8	54,1	41,3	58,4
10	Univ Oxford	UK	60,3	57,9	46,3	52,3	65,4	44,7	56,4
11	Yale Univ	USA	50,9	43,6	57,9	57,2	63,2	48,9	55,9
12	Cornell Univ	USA	43,6	51,3	54,5	51,4	65,1	39,9	54,3
13	Univ California - Los Angeles	USA	25,6	42,8	57,4	49,1	75,9	35,5	52,6
14	Univ California - San Diego	USA	16,6	34	59,3	55,5	64,6	46,6	50,4
15	Univ Pennsylvania	USA	33,3	34,4	56,9	40,3	70,8	38,7	49,0
16	Univ Washington - Seattle	USA	27	31,8	52,4	49	74,1	27,4	48,2
17	Univ Wisconsin - Madison	USA	40,3	35,5	52,9	43,1	67,2	28,6	48,0
18	Univ California - San Francisco	USA	0	36,8	54	53,7	59,8	46,7	46,8
19	Johns Hopkins Univ	USA	48,1	27,8	41,3	50,9	67,9	24,7	46,1
20	Tokyo Univ	Japan	33,8	14,1	41,9	52,7	80,9	34	45,9

Top 20 Europe



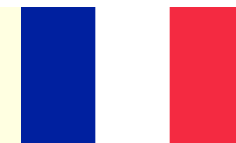
Rank	Institution	Country	Alumni	Award	HiCi	N&S	SCI	Pty	Score
4	Univ Cambridge	UK	93,6	91,5	54	58,2	65,4	65,1	71,6
10	Univ Oxford	UK	60,3	57,9	46,3	52,3	65,4	44,7	56,4
23	Imperial Coll London	UK	19,5	37,4	40,6	39,7	62,2	39,4	43,0
25	Univ Coll London	UK	28,8	32,2	38,5	42,9	63,2	33,8	42,8
27	Swiss Fed Inst Tech - Zurich	Switzerland	37,7	36,3	35,5	39,9	38,4	50,5	39,9
39	Univ Paris 06	France	38,4	23,6	23,4	27,2	54,2	33,5	33,8
42	Univ Utrecht	Netherlands	28,8	20,9	27,7	29,9	56,6	26,6	33,5
46	Univ Copenhagen	Denmark	28,8	24,2	25,7	25,2	51,4	31,7	32,2
48	Univ Manchester	UK	25,6	18,9	24,6	28,3	56,9	28,4	32,0
52	Univ Paris 11	France	31,3	39,1	14,8	20,4	44,8	30,8	30,9
53	Karolinska Inst Stockholm	Sweden	28,8	27,3	32,3	16,6	47	24,5	30,8
53	Univ Edinburgh	UK	21,2	16,7	26,7	34,2	47	29,3	30,8
53	Univ Munich	Germany	34,8	22,9	14,8	27,1	51,8	31,1	30,8
56	Tech Univ Munich	Germany	40,3	23,6	25,7	20,2	44,4	29,9	30,6
58	Univ Zurich	Switzerland	11,8	26,8	22,2	28,3	48,4	31,1	30,2
62	Univ Bristol	UK	10,2	17,9	29,6	26,7	47,3	32,8	29,4
65	Univ Heidelberg	Germany	18,6	27,2	18,2	22,8	48,7	29	28,9
66	Uppsala Univ	Sweden	24,3	32,2	12,8	23,6	49,1	21	28,8
69	Univ Oslo	Norway	24,3	33,4	18,2	16,8	42,5	27,9	28,2
71	Univ Leiden	Netherlands	23,5	15,5	28,7	20,9	45,2	28,2	28,0

Belgium

Rank	Institution	Country	Alumni	Award	HiCi	N&S	SCI	Pty	Score
102-150	Univ Ghent	Belgium	8,3	15,5	14,8	8,6	49,3	27,4	
102-150	Univ Leuven	Belgium	0	0	21	16,1	48,5	23,5	
102-150	Univ Libre Bruxelles	Belgium	20,4	18,9	12,8	13,9	31,4	26,4	
102-150	Univ Louvain	Belgium	13,2	13,6	16,6	12,9	41,5	26,6	
203-304	Univ Antwerp	Belgium	0	0	12,8	14,3	32,8	25,1	
203-304	Univ Liege	Belgium	10,2	0	10,5	11	29,6	23,5	
305-402	Vrije Univ Brussel	Belgium	16,6	0	0	10	26,7	22,1	



France (Top 20 on 23)



Rank	Institution	Country	Alumni	Award	HiCi	N&S	SCI	Pty	Score
39	Univ Paris 06	France	38,4	23,6	23,4	27,2	54,2	33,5	33,8
52	Univ Paris 11	France	31,3	39,1	14,8	20,4	44,8	30,8	30,9
83	<i>Ecole Normale Super Paris</i>	<i>France</i>	<i>48,5</i>	<i>31,6</i>	<i>12,8</i>	<i>16,8</i>	<i>25,8</i>	<i>25,8</i>	<i>25,5</i>
99	Univ Strasbourg 1	France	27,6	22,5	16,6	18,5	32,8	22,9	23,8
102-150	Univ Paris 07	France	17,1	13,8	14,8	19,1	35	20,9	
151-202	Univ Grenoble 1	France	0	15,5	10,5	16	33,6	18,8	
151-202	Univ Paris 05	France	15,1	12	10,5	13,4	32,5	18,1	
203-304	<i>Ecole Polytechnique</i>	<i>France</i>	<i>21,2</i>	<i>0</i>	<i>7,4</i>	<i>14,4</i>	<i>29,6</i>	<i>16,6</i>	
203-304	Univ Lyon 1	France	14,4	0	0	13,7	37,7	18,6	
203-304	Univ Mediterranee	France	0	0	14,8	17,7	26,1	15,7	
203-304	Univ Montpellier 2	France	13,2	0	12,8	17,3	31,3	17,6	
203-304	Univ Toulouse 3	France	0	6,3	0	17,2	32,9	17	
305-402	<i>Ecole Natl Super Mines - Paris</i>	<i>France</i>	<i>17,6</i>	<i>25,3</i>	<i>0</i>	<i>3,5</i>	<i>10,2</i>	<i>13,6</i>	
305-402	<i>Ecole Super Phys & Chem Industry</i>	<i>France</i>	<i>10,2</i>	<i>18,9</i>	<i>0</i>	<i>11</i>	<i>17,2</i>	<i>13</i>	
305-402	Univ Aix Marseille 1	France	8,3	0	7,4	9,3	22,9	11,9	
305-402	Univ Bordeaux 1	France	8,3	0	12,8	9,4	27,6	14,6	
305-402	Univ Nancy 1	France	14,4	18,9	0	2,2	24,6	14,7	
305-402	Univ Paris 09	France	0	26,8	7,4	0	10,5	13,4	
403-510	<i>Ecole Normale Super Lyon</i>	<i>France</i>	<i>0</i>	<i>0</i>	<i>7,4</i>	<i>10,1</i>	<i>19,8</i>	<i>10,6</i>	
403-510	Univ Bordeaux 2	France	0	0	7,4	9,2	22,3	11,4	

Impact of the Shanghai Ranking

- Huge impact in media

- World ranking
 - National pride



- Huge impact in the academic world

- Web pages of many Universities (www.ubc.ca/global/index.html)
- Objectives of some Universities

- Future impacts likely to be even larger

- Understand its strengths and weaknesses

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一级指标	二 级 指 标	代 码	权 重
教育质量	获诺贝尔奖和菲尔兹奖的校友的折合数	Alumni	10%
教师质量	获诺贝尔科学奖和菲尔兹奖的教师的折合数	Award	20%
	各学科领域被引用率最高的教师数量	HiCi	20%
科研成果	平均每年发表在 Nature 和 Science 刊物上的论文折合数	N&S*	20%
	被科学引文索引（SCIE）和社会科学引文索引（SSCI）收录的论文数量	SCI	20%
师均表现	上述五项指标得分的师均数量	Size	10%

* 对纯粹的文科大学，不考虑N&S指标，其权重按相应比例分解到其它指标中。

Who are they?

- Ranking group: Team of four persons + Ms students
- Held by Nian Cai Liu (Chemist)
- No particular knowledge in bibliometry
- No exterior funding



Aim and method

- Assess the “academic or research performance” of Universities
 - Assess gap between Chinese and “World Class” Universities
- Using 6 criteria organized in 4 domains
 - Quality of education (1)
 - Quality of faculty (2)
 - Research output (2)
 - Productivity (1)
- Ranking
 - Normalization and Weighted sum

Selections of Universities

- “World Class Universities”
- 2000 Institutions scanned
- 500 Institutions ranked
 - First 100 ranked
 - Others: ranked by groups of 50 then 100



Quality of education (1/6)

- Number of alumni having received

- Nobel Prize (Literature and Peace excluded, Economics included)
- Fields medal (every four years)



- Alumni

- Person having obtained a Bachelor, a Master or a Doctorate in the Institution (Post-doc is not taken into account)

- Weights

- Date of receipt
 - 100% in 1991-2001, 90% in 1981-1990, ..., 10% in 1901-1910
- Prize given to more than one person

Quality of faculty (2/6)

- Number of academic staff having received a Nobel Prize or a Fields medal
 - Staff: member of the academic personnel of the Institution *at the time of the announcement*
- Same weights as before
 - Date of receipt
 - Prize given to several persons
 - Multiple affiliations



Highly Cited Researchers (3/6)

- Number of Highly Cited researchers in the 21 categories used by ISI among academic staff
 - 250 names in each category
 - Period of reference: last 20 years



Papers in *Nature* & *Science* (4/6)

- Number of papers published in *Nature* & *Science*
 - Period of reference: last 5 years
 - Articles only (vs. letters, commentaries, etc.)
 - Weights for multiple authors
 - 100% for corresponding author
 - 50% for first author
 - 25% for second author
 - 10% for all other authors
- Criterion “not taken into account” for institutions specialized in Social Sciences (ex: LSE)



Articles indexed by ISI (5/6)

- Total number of articles indexed by ISI (SCI, SSCI, AHCI) in the previous year authored by academic staff
 - Articles only (vs. letters, book reviews, etc.)
 - Special weight (2) given to articles in SSCI and AHCI



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Productivity (6/6)

- “Total score of the above five indicators divided by the number of Full Time Equivalent (FTE) academic staff”
- Ignored when the number of FTE academic staff could not be obtained

Data collected on the Web

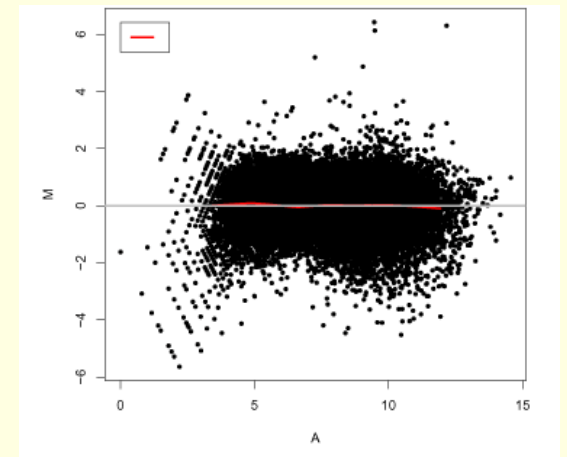
- Sources

- www.nobelprize.org
- www.mathunion.org/medals
- www.isiknowledge.com
- www.isihighlycited.com

- Data not checked by Institutions
- Raw data not made available

Normalization

- On each criterion, the highest scoring institution received 100 (Harvard U for all criteria, except Productivity)
- Other institutions are normalized on a 0–100 scale
- “Adjustments” when there are “distorting effects”
 - Not further specified (Florian, 2006)



Weights

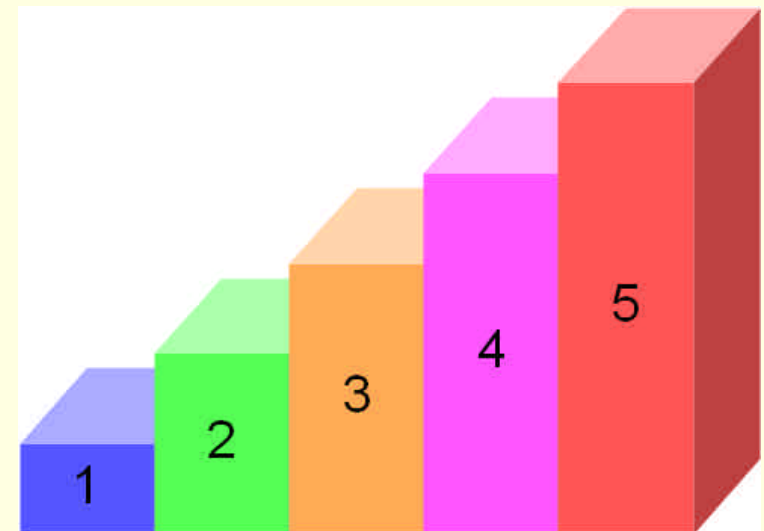
- Quality of education: 10%
- Quality of Faculty: 20%
- Highly Cited: 20%
- *Nature & Science*: 20%
- SCI 20%
- Productivity: 10%



- No particular justification for these weights
- They invite you to suggest other weights on their page

Global score

- Weighted sum of the normalized scores using the above weights
 - Normalization of the results in order to give 100 to the best scoring institution (Harvard U)



Top 20 World



Rank	Institution	Country	Alumni	Award	HiCi	N&S	SCI	Size	Score
1	Harvard Univ	USA	100	100	100	100	100	73	100
2	Stanford Univ	USA	42	78,7	86,1	69,6	70,3	65,7	73,7
3	Univ California - Berkeley	USA	72,5	77,1	67,9	72,9	69,2	52,6	71,9
4	<i>Univ Cambridge</i>	<i>UK</i>	<i>93,6</i>	<i>91,5</i>	<i>54</i>	<i>58,2</i>	<i>65,4</i>	<i>65,1</i>	<i>71,6</i>
5	Massachusetts Inst Tech (MIT)	USA	74,6	80,6	65,9	68,4	61,7	53,4	70,0
6	California Inst Tech	USA	55,5	69,1	58,4	67,6	50,3	100	66,4
7	Columbia Univ	USA	76	65,7	56,5	54,3	69,6	46,4	63,2
8	Princeton Univ	USA	62,3	80,4	59,3	42,9	46,5	58,9	59,5
9	Univ Chicago	USA	70,8	80,2	50,8	42,8	54,1	41,3	58,4
10	<i>Univ Oxford</i>	<i>UK</i>	<i>60,3</i>	<i>57,9</i>	<i>46,3</i>	<i>52,3</i>	<i>65,4</i>	<i>44,7</i>	<i>56,4</i>
11	Yale Univ	USA	50,9	43,6	57,9	57,2	63,2	48,9	55,9
12	Cornell Univ	USA	43,6	51,3	54,5	51,4	65,1	39,9	54,3
13	Univ California - Los Angeles	USA	25,6	42,8	57,4	49,1	75,9	35,5	52,6
14	Univ California - San Diego	USA	16,6	34	59,3	55,5	64,6	46,6	50,4
15	Univ Pennsylvania	USA	33,3	34,4	56,9	40,3	70,8	38,7	49,0
16	Univ Washington - Seattle	USA	27	31,8	52,4	49	74,1	27,4	48,2
17	Univ Wisconsin - Madison	USA	40,3	35,5	52,9	43,1	67,2	28,6	48,0
18	Univ California - San Francisco	USA	0	36,8	54	53,7	59,8	46,7	46,8
19	Johns Hopkins Univ	USA	48,1	27,8	41,3	50,9	67,9	24,7	46,1
20	<i>Tokyo Univ</i>	<i>Japan</i>	<i>33,8</i>	<i>14,1</i>	<i>41,9</i>	<i>52,7</i>	<i>80,9</i>	<i>34</i>	<i>45,9</i>

What the authors say

- *“carefully selected objective criteria”*
- *“based on internationally comparable data that everyone can check”*
- *“no subjective measures were taken”*

A large, bold, black graphic of a double quotation mark, rendered in a slightly stylized, rounded font. It has a subtle drop shadow effect, giving it a three-dimensional appearance as if it's floating above the background.

Quotes to Remember . . .

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Numerous Changes over Time

■ 2004

- Quality of education introduced with weight 10%
- Fields medals added to Nobel prizes
- Weight of Productivity reduced to 10%
 - Rationale for weights: equal weights at the beginning in 2003

■ 2005

- N&S neutralized for SHS Institutions
- Arts & Humanities Index added
- Weight of 2 for articles indexed in SSCI and AHCI

■ “*Continuous improvement*”

■ Impossibility to interpret changes in ranking

Time periods

- Nobel and Fields: 100 years (with declining weights)
 - Highly Cited: 20 years
 - *Nature & Science*: 5 years
 - CI: 1 year
-
- Rationale for such varying time periods is quite unclear
 - Research potential vs. Prestige?
 - Newcomers have very little hope

Varying number of criteria

- 4 or 5 or 6 criteria:
- 4 for institutions in SHS without information on size
- 5 for institutions in SHS with information on size
- 5 for institutions not in SHS without information on size (not the same as above)
- 6 for institutions not in SHS with information on size

- No information on
 - The source of information for FTE academic staff
 - The institutions for which the information is available
 - The decision to categorize an Institution as SHS

Two criteria linked with Nobel and Fields

- Time weighting is completely arbitrary
 - 100% in 1991-2001, 90% in 1981-1990, ..., 10% in 1901-1910
- For Faculty, prizes are attributed to institutions at the time of reception
 - Most often not the institution in which research was conducted!
 - What is exactly a member of the academic staff?
- Change of names / of configuration
 - University of Berlin (Humbolt vs. Free University)



French Nobel prizes



- Henri Moissan (Chem, 1906), Gabriel Lippmann (Physics, 1908), Marie Curie (Chem, 1911), Charles Richet (Med, 1913), Jean Perrin (Physics, 1925)
 - Sorbonne University
- Louis de Broglie (Physics, 1929)
 - Sorbonne University & Institut Henri Poincaré
- Karl Braun (Physics, 1909)
 - Strasbourg University
- Pierre Curie (Physics, 1903)
 - École municipale de physique et de chimie industrielle
- Victor Grignard (Chem, 1912)
 - Nancy University
- Paul Sabatier (Chem, 1912)
 - Toulouse University
- Louis Néel (Physics, 1970)
 - University of Grenoble
- Jean Dausset (Med, 1980)
 - Université de Paris
- Jean-Marie Lehn (Chem, 1987)
 - Université Louis Pasteur & Collège de France
- Georges Charpak (Physics, 1992)
 - ESPC and CERN
- Pierre-Gilles de Gennes (Physics, 1991)
 - Collège de France
- Claude Cohen-Tannoudji (Physics 1997)
 - Collège de France & École Normale Supérieure

Difficult decisions have to be taken that require a very good knowledge of the country

Highly Cited researchers

- Complete reliance on the ISI database
 - Definition of 21 categories for Highly Cited
 - 250 names in each category
 - Period: 20 years
 - Mainly “old boys”



Highly Cited: 21 categories

- Agricultural Sciences
- Engineering
- Neuroscience
- ***Biology & Biochemistry***
- Geosciences
- ***Pharmacology***
- Chemistry
- ***Immunology***
- Physics
- ***Clinical Medicine***
- Materials Science
- Plant & Animal Science
- Computer Science
- Mathematics
- Psychology / Psychiatry
- Ecology / Environment
- ***Microbiology***
- Social Sciences, General
- Economics & Business
- ***Molecular Biology & Genetics***
- Space Sciences



ISI HighlyCited.com™

Does not seem very well balanced...

Number of journals in each category

■ Space Sciences:	57
■ Immunology:	120
■
■ Plant & Animal Science:	887
■ Engineering:	977
■ Social Sciences, General:	1299
■ Clinical Medicine:	1305



Nature & Science

- All papers do not have the same weight
 - The more authors the better!
 - Weighting scheme for multiple authors is completely arbitrary
- Why count papers instead of measuring impact?
 - As in most journals, citations are concentrated on a small number of papers



Articles indexed by ISI

- Complete reliance on the ISI database
- Attribution of papers is often quite problematic
 - Free University of Brussels: VUB vs. ULB
 - “*Institutions or research organizations affiliated to a university are treated according to their own expression in the author affiliation of an article*”, which seems unacceptable
- Weight of 2 for articles in SSCI/AHCI is completely arbitrary



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Articles indexed by ISI

- There are many other indices than the “Numbers of papers indexed by ISI”
 - Impact: Citations
 - Impact with field / size normalization

Size effect

- All criteria except the last one are highly correlated with the size of the institution
 - Authors view this as a strong point of the ranking
 - But this is also the sign that “big is made beautiful”
- For many institutions below the first ones, two or three criteria are almost always zero (no Nobel Prize and Fields medal, very few Highly Cited researchers)
 - For those institutions the criterion *Nature & Science* offers very little variability
 - Almost anything is based on articles indexed by ISI for universities beyond the top ones

Null Scores

Means (% null)	Score on Alumni	Score on Award	Score on HiCi	Score on N&S	Score on SCI
100-200	8,76 (49%)	4,42 (73%)	17,29 (STD=6,5) (2%)	17,32 (STD=5,3) (0%)	40,87 (STD=8)
200-300	4,70 (70%)	1,36 (92%)	10,83 (STD=5,8) (16%)	12,23 (STD=4) (0%)	34,45 (STD=6,5)
300-400	3,07 (79%)	1,86 (89%)	7,52 (STD=5,1) (26%)	8,12 (STD=3,6) (1%)	28,13 (STD=6,5)
400-500	1,10 (93%)	0,18 (99%)	5,29 (STD=4,5) (39%)	6,57 (STD=3) (5%)	25,02 (STD=5)

Interpretation of global score

- A ranking mixing *production* (Nobel, HiCi, *N&S*, ISI) and *productivity* is really hard to justify and interpret!
 - Global score: $a[\text{Production}] + (1-a)[\text{Productivity}]$
- Ranking countries w.r.t. their “wealth”
 - $a[\text{GDP}] + (1-a)[\text{GDP per capita}]$
 - ... with GDP per capita not available for some countries

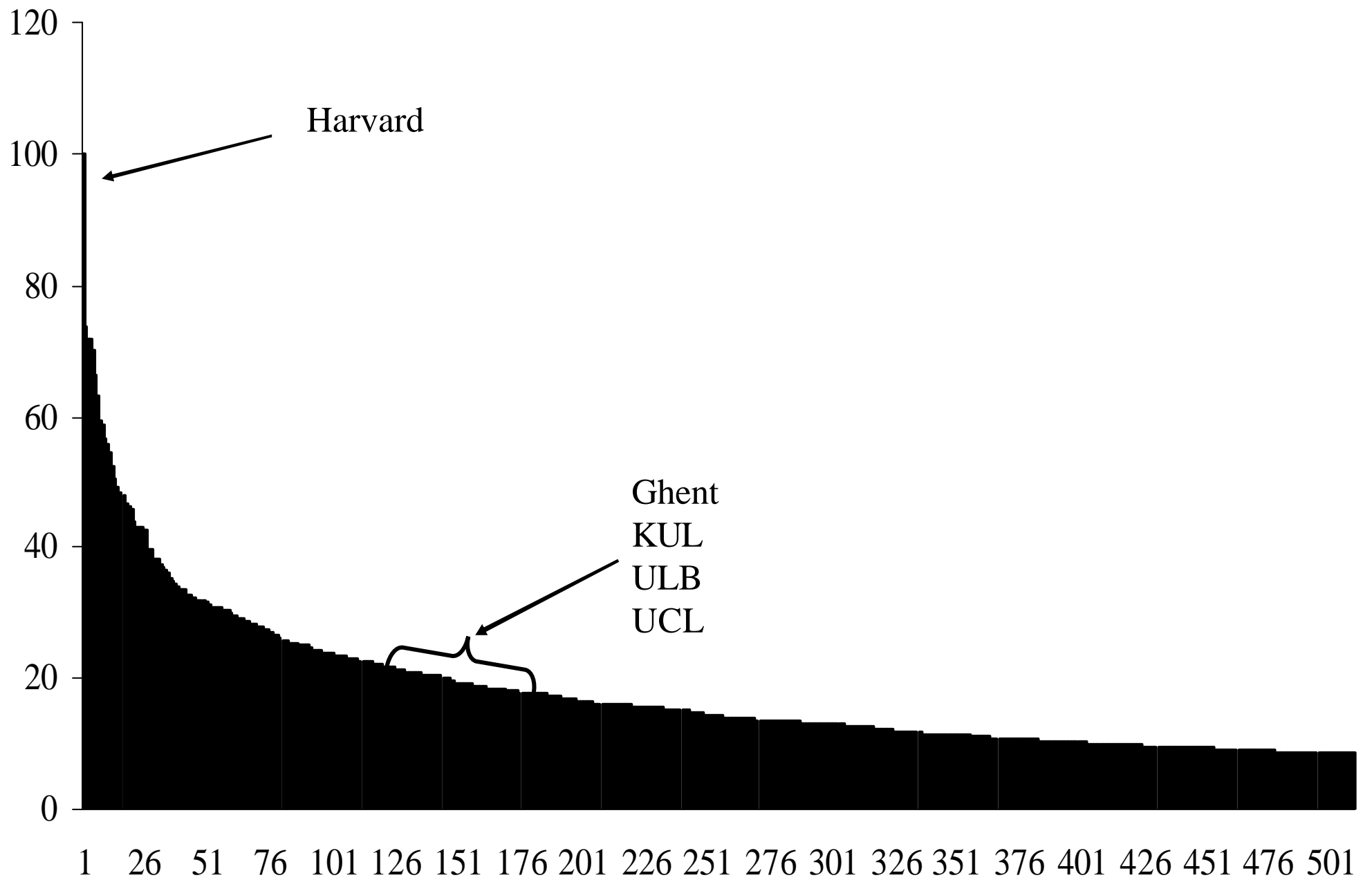
Summary of Preliminary Comments

- *“carefully selected objective criteria”*
 - All criteria except one are highly correlated with size
 - Selection seems to have been based mainly on availability
 - No open discussion on this point
- *“based on internationally comparable data that everyone can check”*
 - Raw data is not available
 - Adjustments are made but are not documented
 - Many important micro-decisions have to be taken but are not documented
- *“no subjective measures were taken”*
 - Weights and other coefficients are completely arbitrary
 - The definition of each of the criteria implies many subjective parameters

Global scores

- Criteria chosen mainly because of availability
- Many arbitrary parameters
- Many micro-decisions that are not documented
- Global scores
 - What reliability?
 - What validity?
 - No robustness analysis wrt to these many sources of arbitrariness





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Aggregation technique is *flawed*

- Weights and Normalization should obviously be linked
 - In a weighted sum, weights are “scaling constants” that should depend on the underlying scales (km vs. cm)
 - Because normalization changes each year, weights should change every year to take this constraint into account
- With constant weights, the aggregation technique violates Independence from Irrelevant Alternatives
 - $A > B$ or $B > A$ depends on the evaluations of C !
 - If I am weak on some criterion, I wish that Harvard improves on this criterion, since this will reduce its weight!



	(50%) C1	(50%) C2	Normalized C1	Normalized C2	<i>New Score</i>
<i>A</i>	1600	500	100	100	100
<i>B</i>	1120	175	70	35	52,5
<i>C</i>	400	370	25	74	49,5
<i>D</i>	1600	45	100	9	54,5
<i>E</i>	880	240	55	48	51,5
<i>F</i>	160	435	10	87	48,5
<i>G</i>	1360	110	85	22	53,5
<i>H</i>	640	305	40	61	50,5

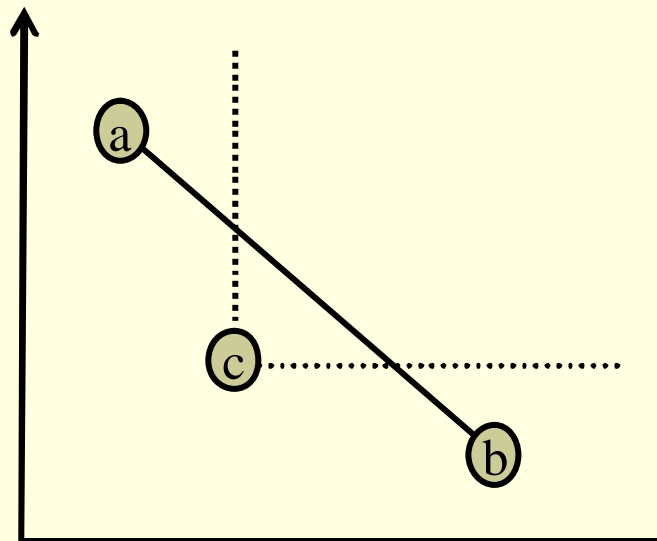
$A > F > C > H > E > B > G > D$

$A > D > G > B > E > H > C > F$



Aggregation technique is poor

- Weighted sum is *not* a very attractive way to aggregate
 - Linearity hypothesis
 - Compensation
 - Unsupported efficient solutions



Neglected Structuring issues

- What is the purpose of the model?
- What is the definition of the objects to be evaluated?
- How to structure objectives?
- How to achieve a “consistent family of criteria”?
- How to take uncertainty, imprecision, inaccurate definition into account?



What is a “university”?



- May be clear in some institutional contexts...
- ...Much less clear in others
- (Extreme) Example: France
 - Public *Universités* (with a long and complex history: names, split)
 - Public and private *Grandes écoles* that are very specific (size, recruitment)
 - Public and private Research Institutes: CNRS, INSERM, CEA, INRA, INRIA, Institut Pasteur...
 - In 2005, the Shanghai ranking included the *Collège de France*, a “university” having zero students and granting no diploma!



COLLÈGE
DE FRANCE
—1530—

What is a “good” university?



- No explicit definition of a *World Class University*
- Only “excellence in research” is taken into account
 - Only *some* research outputs are measured
 - patents, books, PhD, etc.
 - Using *very particular measures*
 - number vs. impact
 - Ignoring inputs
 - Tuition, Funding, Housing, Library, Campus
 - Ignoring Institutional constraints
 - Governance, Hiring / Firing, Salaries, Non-academic staff

Implicit definition that is used

- Large, old institution with no institutional change
- Having a single, simple name
 - No diacritical signs, a name in English
- Speaking only English
- With no research institute around
- Having much freedom in recruiting/firing staff



More or less the definition of the Ivy League

Facts (2006) about Harvard U

- Budget: 3 000 000 000 USD (> GDP Laos)
 - Sponsored Research: 621 700 000 USD
 - 2 520 Academic Staff
 - 8 811 Non academic staff
 - 20 114 students (3 576 PhD students)
 - Tuition: 30 275 USD / year
 - Full Tuition: 43 655 USD / year
 - Library has 15 826 570 volumes



What to rank and why?

- Who will be the potential users of the ranking?
 - Students / Families
 - Ranking of programs (taking tuition fees into account)
 - Recruiters
 - Ranking of programs
 - Deans / rectors
 - Strengths and weaknesses w.r.t. to similar institutions
 - Governments
 - Efficient use of resources at a national level
- Why rank “universities” and not programs or nations?
- To whom can this be useful?
 - except media and lazy political decision makers...



Why rank on an annual basis?

- Academic time tends to be rather slow
- Variations in ranking from one year to another are most likely to be attributed to
 - Changes in the rules
 - Random effects



Good practice

- Producers of rankings should allow ranked institutions to check data and react
 - Minimal condition for validity
- Producers of rankings should expect manipulations from evaluated institutions and anticipate them
 - Manipulations cannot be suppressed
 - The producer of the ranking should anticipate the most damaging or dramatic ones



Simple manipulations for deans / rectors

- Get rid of all Humanities & Law
- Get rid of all Social & Human Sciences except (maybe) Psychology and Economics
- Use this money to buy “research groups” in laboratory sciences
 - Academia as a professional sport...



Simple manipulations for governments

- Give strong incentives to merge
 - [Paris 6 + Paris 11] ranked between MIT and Caltech
 - [Paris 6 + Paris 11 + Paris 5] between Harvard and Stanford
 - [Paris 6 + Paris 11 + Paris 5 + Paris 7] tied with Harvard
 - Bingo!
 - [KUL + UCL] would be a top Institution in the ranking
- Merge research institutes within universities
 - CNRS, INSERM, Institut Pasteur, Max Planck, CNR, etc.

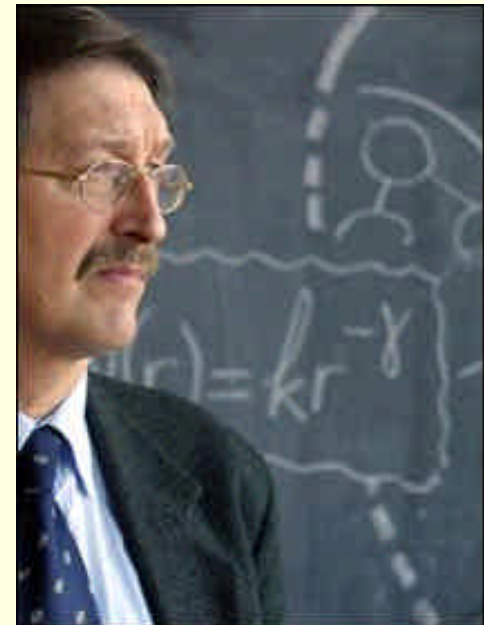


Outline

- Academic Ranking of World Universities 2007
- Details of ranking methodology
- Some preliminary comments
- Some comments inspired from MCDM
- **Conclusions**

Anthony van Raan (2005), Leiden

- *“From the above considerations we conclude that the Shanghai ranking should not be used for evaluation purposes, even not for benchmarking.”*
- *“The most serious problem of these rankings is that they are considered as ‘quasi-evaluations’ of the universities considered. This is absolutely unacceptable.”*
 - Mainly based on bibliometric considerations



Our conclusions

- Adding an MCDM view can only strengthen the radical views of Anthony van Raan on Shanghai
- It does not seem unfair to say that Shanghai is a *poorly conceived quick and dirty exercise with no value whatsoever*
 - « *Un guide d'achat chinois qui a mal tourné* »
 - Ph. Vincke in *Le Soir*, 22-23 Sept 2007



What can we do about it?

- Stop being naïve:
 - “Who is the best teacher in this room?”
 - “What is the best wine in the world?”
 - “What is the best university in the world?”
- All these questions are nonsensical unless the problem is structured more in depth
 - User with given objectives
 - Purpose and Use
 - Careful selection of criteria
 - Meaningful normalization and aggregation
- Stop using the free “publicity” offered by rankings
- Lobby in our institution in order to ignore them

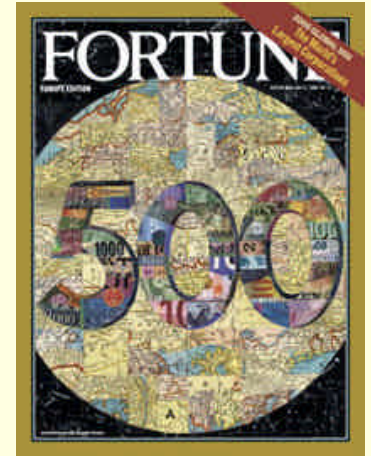
Countering Shanghai

- In spite of criticisms... it is likely that they will not stop
- The Shanghai ranking contains
 - An implicit definition of what a University is (should be)
 - An implicit definition of the rôle of a University in Society
- Dilute the effects of the Shanghai ranking by creating alternative rankings
 - *Many* alternative rankings are needed



Example: École des Mines, 2007

- Number of alumni being CEOs of Fortune Top 500
 - Data publicly available
- Many important problems
 - Huge time lag
 - Cultural habits (network effects)
 - Industrial concentration
- But... vastly different from Shanghai
 - Top 10:
 - Harvard > Tokyo U > Stanford > École Polytechnique > HEC (Paris) > U Penn > MIT > Science Po > ENA > École des Mines
 - 3 (ENA, Science Po, HEC) not even mentioned in Shanghai top 500
- This is *extremely useful* in spite of the many problems (not much more serious than the ones raised by Shanghai)



Hope from the EU?

- EU has a *huge* responsibility
- (Continental) Europe has many old renowned Institutions
- Richness: Cultural / Political / Language differences
 - All elements that are rather detrimental in Shanghai...
- EU has to set up its own ranking system(s)
 - It should definitely not accept ranking imposed from outside (China or UK)

