Understanding the Dynamics of the Shanghai Ranking

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Atlantic Research Center for Information and Communication Technologies

Northern Institute
Charles Darwin University
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Outline of the Talk

- Who cares about rankings?
- Shanghai Ranking (ARWU), Why?
- Dynamics of the Shanghai Ranking.
- Social Sciences in the ARWU.
- ARWU as a benchmarking tool
- Australian Universities in ARWU and the Times Higher Education Ranking.
Impact of the Shanghai Ranking

- German’s perception of its universities was shattered with the first release of the SJT rankings in 2003 (Hazelkorn)

- Exzellenzinitiative, 2005 (€1.9b) to reclaim Germany’s historic leadership position in research (Chambers).
Indicateurs de la recherche sur les regroupements universitaires

- Regroupements universitaires
- Effectifs de chercheurs et financements
- Effectifs d'étudiants et thèses

SOURCES : ORGANISMES DE RECHERCHE, MINISTÈRE DE L'ÉDUCATION NATIONALE - INFOGRAPHIE EUGÉNIE DUMAS
Rankings will not evaporate

• All current university rankings are flawed to some extent; most, fundamentally, but rankings are here to stay, and it is therefore worth the time and effort to get them right (Alan Gilbert, 2007).
The Shanghai ranking conundrum

• Irreproducibility of the Shanghai Academic ranking results (Scientometrics, 2005).

• A simple calculation shows that merging the universities in Paris that are mainly oriented towards 'hard sciences' and Medicine, would lead to an institution that would roughly be at the level of Harvard (Famous diatribe published in Scientometrics in 2009).
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“For each indicator, the highest scoring institution is assigned a score of 100, and other institutions are calculated as a percentage of the top score”.

The statement arguably points to a linear relationship between absolute and relative (to the highest achiever) scores.

Unfortunately, nothing seems to be linear in ARWU😊
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score = 100 \sqrt{\frac{pts}{H}}
Dynamics of a scoring system

When improvements become more difficult (easier) closer to the maximum performance ever achieved, a progressive (regressive) scoring table should reward improvement with relatively larger (shorter) increments at the highest levels of performance.
ARWU scores evolution 2005-2015
The PUB Indicator

• **PUB**: Number of articles indexed in the SCI-Expanded and the SSCI on the previous year.

• A special weight of two was introduced for articles indexed in the Social Science Citation Index.
Special weight applied to SSCI papers:

- **oc**: Papers listed only in the SCIE.
- **cs**: Papers listed both in SCIE and SSCI.
- **os**: Papers listed only in SSCI.

The weighting scheme could be one of the two extremes: (1,1,2) or (1,2,2), or be rather “special”.

**It is indeed special: (1,1.5,2)**
Social Science in ARWU 2015: the language divide
We are not that different

NUMBER OF RESEARCH UNIVERSITIES vs GDP

\[ R^2 = 0.90 \]
## Comparative Analysis of Higher Education Systems

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And yet we are different
HIGHER EDUCATION SYSTEMS: THE RANKING

R² = 0.58

FIRST QUARTILE AVERAGE

USA

ZAF

FRANCE

KOREA

Netherlands

UK

CHINA

Japan

CZECHIA

HUNGARY

SOUTH AFRICA

SPAIN

TUNISIA

SINGAPORE

BELGIUM

CANADA

AUSTRIA

NORWAY

SWEDE

HONG KONG

FINLAND

ITALY

ISRAEL

TURKEY

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Conclusion

• We now understand the dynamics of the Shanghai Ranking.
• Evidence based rankings may offer help as institutional benchmarking tools.
• Ignoring them is no longer an option for research universities.