3rd 1994 Group UK Research Conference London

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How can the UK continue to excel in research on an international stage:

a role for the REF?

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Why do we Excel?

Freedom – with responsibility

- Education – research-led, not training provides not just innovation but employees with critical skills
- Funding – grants, not contracts
- Goals – not business led

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Examples from the Past

Pure research

Newton (planetary motion): calculus
Darwin (beetles, finches): evolution
Crick (protein structure): double helix

Applied Research

Stephenson: steam engine (not improving horse drawn carriages)
Snow: public health (not cure; prevent)

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Freedom - with Responsibility

QR been a key driver in providing this freedom (education, funding, goals). Others are trying to imitate.

Universities do not have a right to QR – if we do not use it wisely it will be given to others (ie directly to business)

Message 1: We lose QR, and therefore damage these freedoms, at our peril – and the UK's. We must distribute it wisely.

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QR as a driver
Physics at Durham

Physics is strategically important for UK
(not just for physics but for
a quantitative education)

Durham University and PPARC (STFC)
Co-investment in Cosmology and Particle Physics

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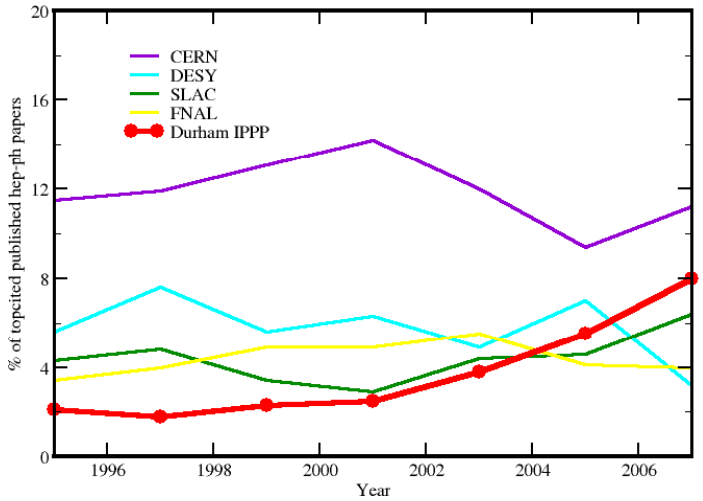
IPPP and ICC

UK a major international player



INSTITUTIONAL RANKINGS IN SPACE SCIENCES

Data provided by Thomson Reuters from its Essential Science Indicators, 1 January 1998-30 June 2008

Institution	Papers	Citations	Citations per paper	Institution	Papers	Citations	Citations per paper
1 Institute for Advanced Study, Princeton	614	26,610	43.34	11 University of California, Santa Cruz	1,576	44,184	28.04
2 Princeton University	1,674	66,380	39.65	12 University of Cambridge	2,879	78,415	27.24
3 University of Chicago	1,401	50,254	35.87	13 University of California, Berkeley	3,447	93,107	27.01
4 University of Durham	1,119	39,263	35.09	14 Ohio State University	1,034	27,746	26.83
5 Carnegie Institute for Science, Washington	1,139	38,535	33.83	15 University of Michigan	1,458	93,107	26.56
6 University of Washington, Seattle	1,110	34,106	30.73	16 California Institute of Technology, Pasadena	4,989	129,863	26.03
7 United States Navy	1,209	34,838	28.82	17 University of Hawaii	1,761	45,795	26.01
8 Space Telescope Science Institute, Baltimore	2,830	80,833	28.56	18 Johns Hopkins University, Baltimore	2,882	73,996	25.68
9 Pennsylvania State University State College	1,549	44,803	28.56	19 Harvard-Smithsonian Center for Astrophysics	4,654	107,290	23.05
10 Australian National University, Canberra	1,029	29,122	28.30	20 University of Arizona, Tucson	3,328	76,222	22.90

The data above were extracted from the Essential Science Indicators database of Thomson Reuters. This

sciences). For papers with multiple institutional addresses, each institution receives full, not fractional, citation

IPPP and ICC

"The IPPP has put the UK on the map in theoretical particle physics more than it had been in a long time before."

National impact
Business Innovation
Recruitment of the best from around the world
Business Investment
Outreach

Workshops
Jan 05 – Sep 08

QR as a driver
(Social Science, Science and Humanities)

Institute of Hazard and Risk Research

Security politics and border control (Olympic authorities)
Sichuan Earthquake and landslide predictions
(Chinese Government and Boulby)
Global Flood Risk and climate change (Insurers)
Niger/Nigeria Border (oil wars)
Java mud slides

If QR essential we need a fit-for-purpose process for distribution

Message 2: We must have an RAE/REF – so lets get on with it rather than fretting about detail

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What should REF look like?
Forgotten facts

RAE/REF is not an assessment of Universities excellence or otherwise. It is not a formulaic way of helping VC's to decide where to invest/disinvest. It is way of distributing QR to best effect

Message 3: QR is a block grant to a University, not hypothecated to disciplines. The level of detail and effort needs to reflect this, not issues of league tables or as a surrogate measure of excellence of individual disciplines/departments

QR is not reward for past performance but is an investment to stimulate new research.

Message 4: QR should not be given to every University or Department which has done a bit of good research – it must be used strategically or the sector will lose it

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What should REF look like?

Forgotten facts

QR is to stimulate innovative research: not support development which industry could do better itself

Message 5: We must recognise the difference between innovative research and business-facing development.

- **QR must support innovation which industry cannot do itself rather than support development which industry should be doing for itself (otherwise why not give it to industry directly?)**

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What should REF look like?
Forgotten facts

Business and public sector need humanities and social science research, as well as science (eg IHRR, energy; GM foods; medical humanities). These are areas industry can rarely support itself

Much of the best innovation and research requires multi and interdisciplinary interactions.

Research Intensity critical

Critical mass essential for effective Tech Transfer offices

Message 6: QR should be directed strategically to where it can do most good – ie. where there is significant critical mass, interactivity and research intensity

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REF

How do we improve on RAE 2009?

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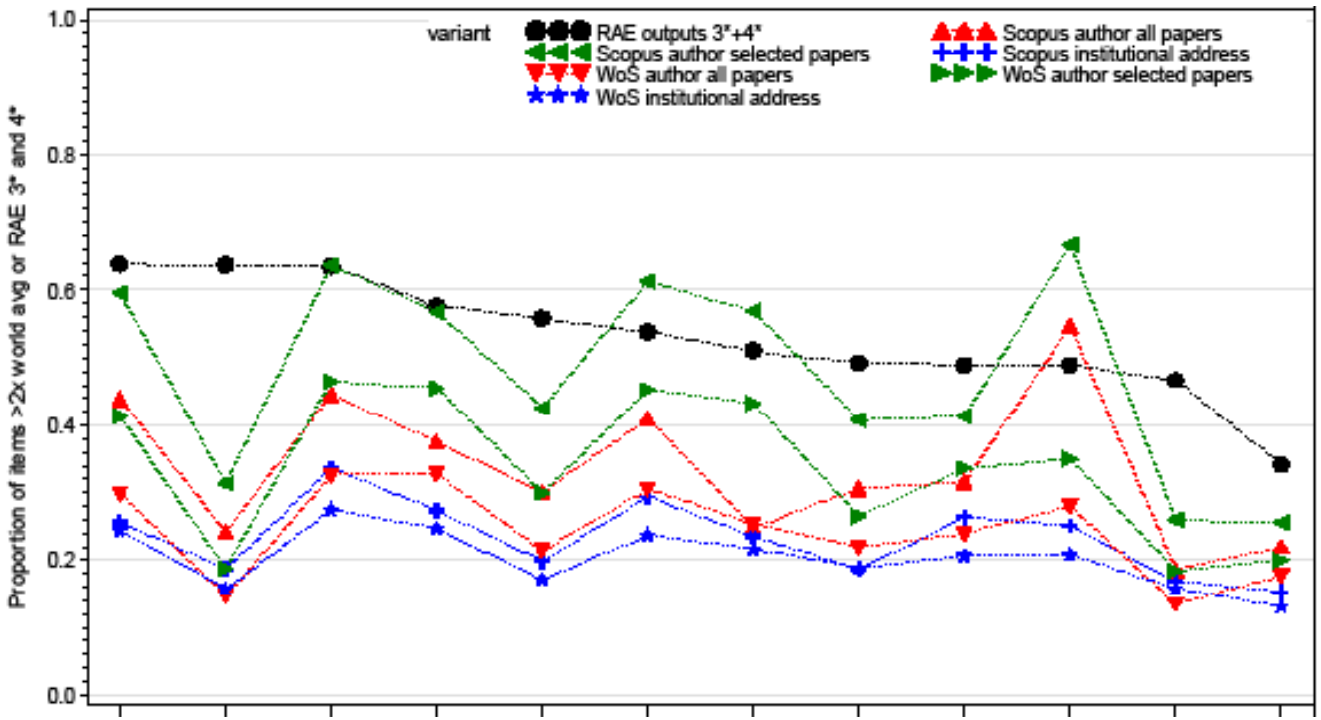
Metrics alone will not work



- tendency to flatten the distribution of outcomes relative to the RAE outcome,
- huge variability between UoAs about the extent to which the citation outcomes correlate with the RAE scores at all
- divide disciplines ie Geography, which mix science and social science

Suggested Principles for REF

Decide and get on with it – make it simple

- **Mix of metrics and expert review**
- **Reflect where true innovation (not simply business development) can best be delivered**
- **High level lump sum – so no need for 'perfect' and distorting break down to disciplines**
- **Support critical intensity and interdisciplinarity – threshold for receipt (at University level, not discipline level)**
- **Make simple and transparent but not necessarily egalitarian – ie. do not let academic penchant for absolute 'fairness' mean that we spend far more time and resource being fair than is appropriate given the sums being distributed**

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Message from the Duke of Wellington to the Foreign Office
(Written from Central Spain in August 1812)

Gentlemen:
Whilst marching from Portugal, my officers have been diligently complying with your requests which have been sent from London to Lisbon and thence by dispatch rider to our headquarters.

We have enumerated our saddles, bridles, tents and tent poles, and all manner of sundry items for which His Majesty's Government holds me accountable. I have dispatched reports on the character, wit and spleen of every officer. Each item and every farthing has been accounted for, with two regrettable exceptions for which I beg your indulgence.

Unfortunately, the sum of one shilling and ninepence remains unaccounted for in one infantry battalion's petty cash and there has been a hideous confusion as to the number of jars of raspberry jam issued to one cavalry regiment during a sandstorm in western Spain. The reprehensible carelessness may be related to the pressure of circumstance, since we are at war with France, a fact which may come as a bit of a surprise to you gentlemen in Whitehall.

This brings me to my present purpose, which is to request elucidation of my instructions from His Majesty's Government so that I may better understand why I am dragging an army over these barren plains. I construe that perforce it must be one of two alternative duties as given below. I shall pursue either one with the best of my ability but I cannot do both:

To train an army of uniformed British clerks in Spain for the benefit of the accountants and copy-boys in London. Or, perchance to see to it that the forces of Napoleon are driven out of Spain.

Your most obedient servant,
WELLINGTON

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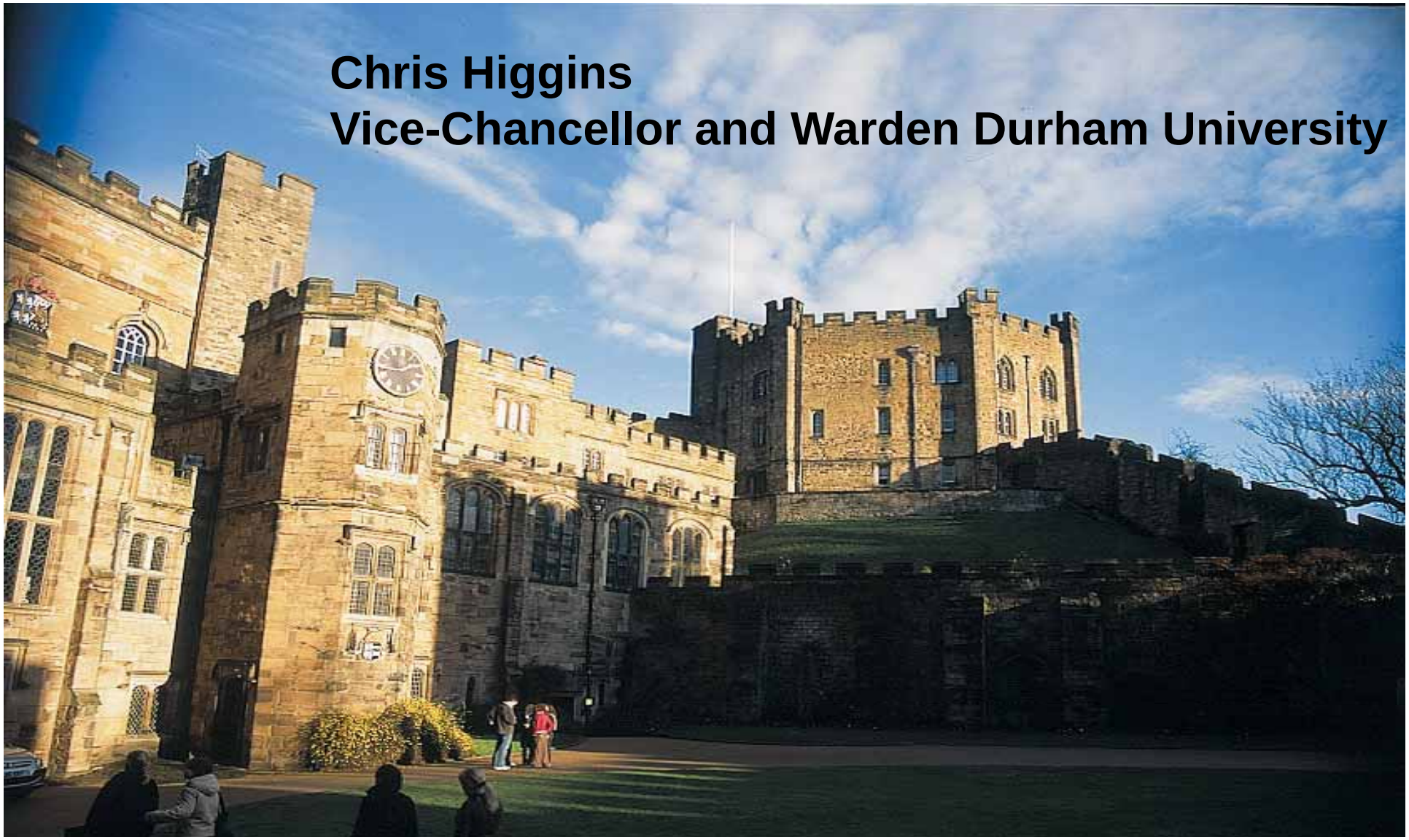

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