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The Impact of Research

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PVC Research and Innovation



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The protean concept of “impact”

Measuring *impact of past research* –
HEFCE’s REF agenda

Facilitating *future impact* – RCUK
pathways to impact



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HEFCE/RCUK/BIS need to convince HM
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Engaging wider society with importance of research



The protean concept of “impact”

Asserting enduring mission of HE to carry out research of high *public value*, and to realise that value

Measuring *impact of past research* –
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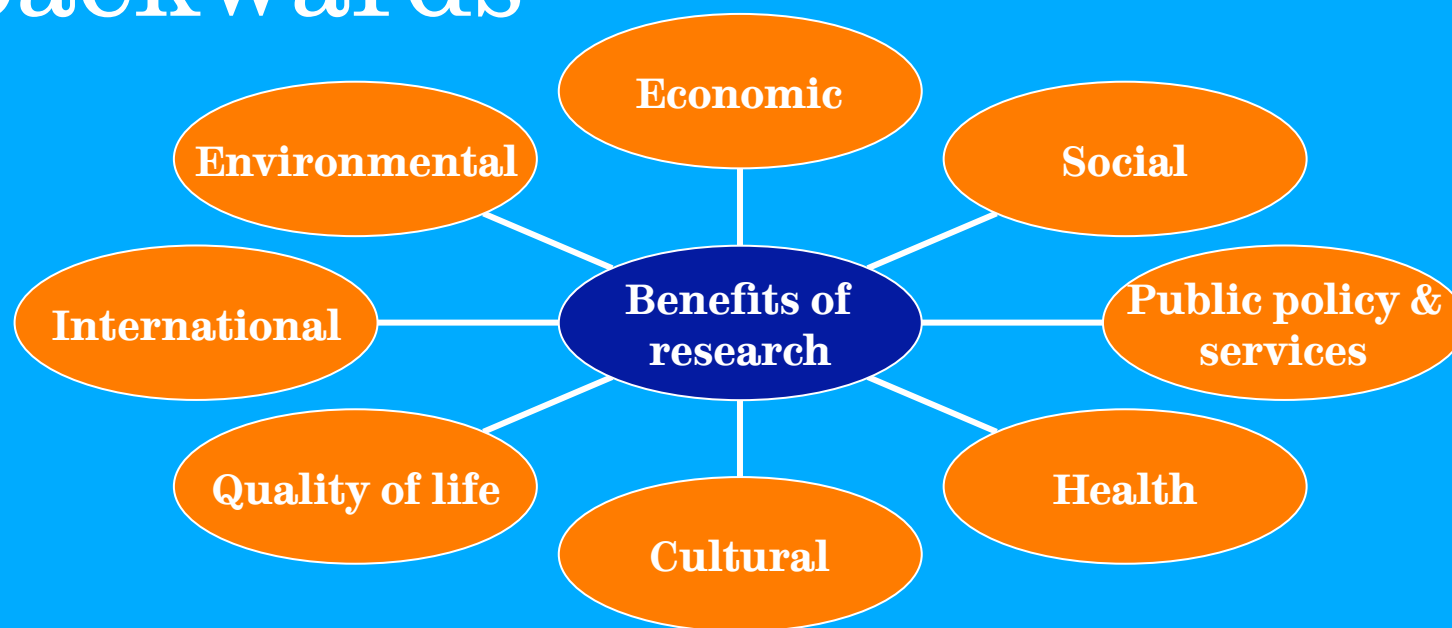
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HEFCE – impact looking backwards



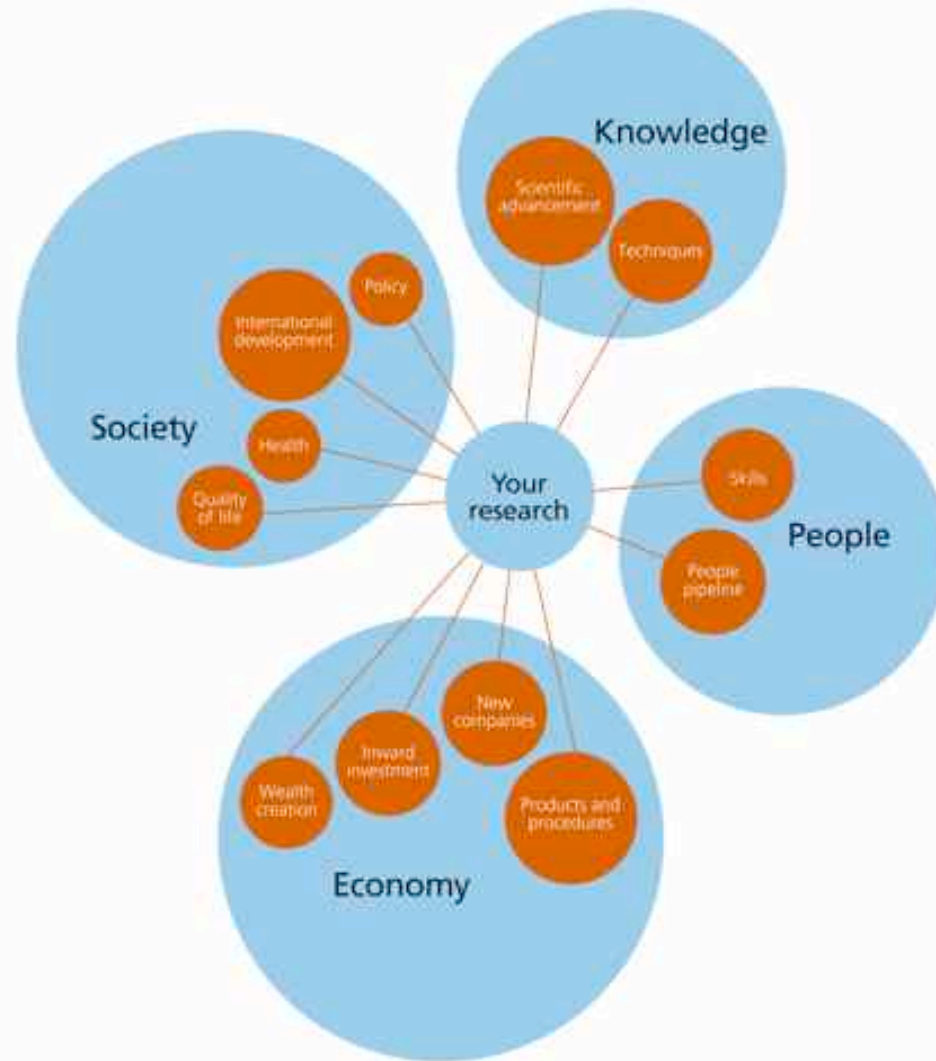


HEFCE REF Impact Pilot

- Due to complete Autumn 2010
- Submissions
 - An impact statement for the UoA, with overview and quantitative indicators
 - Case studies illustrating specific examples of impact (one per ten staff).
- Likely Issues
 - Timescales
 - Capturing impact when the users are outside HE



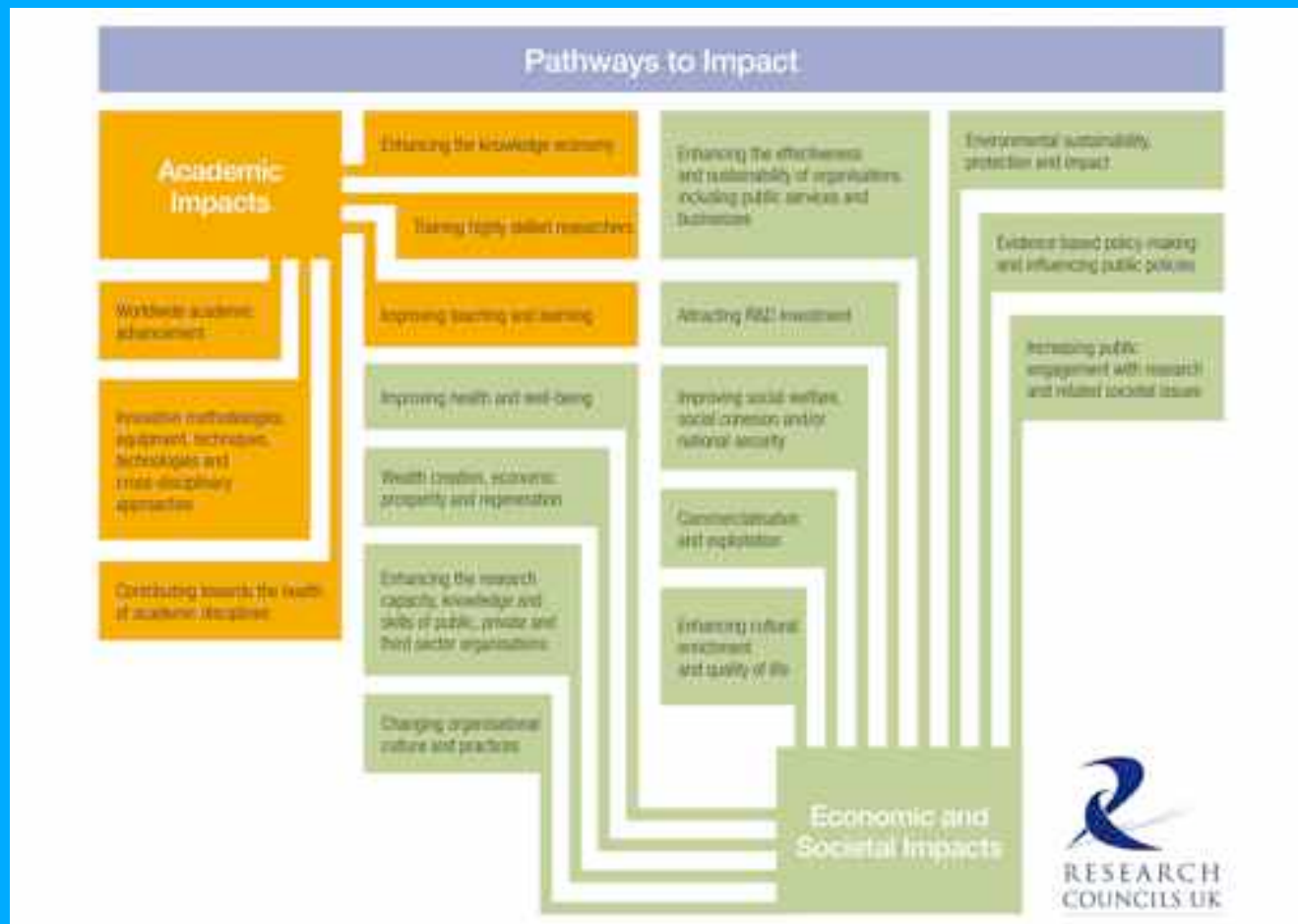
EPSRC's view of impact



Not about doing more
applied research...
But about thinking why
our research matters



RCUK Pathways to Impact





Predicting the future?

- *“RCUK do not expect applicants to be able to predict the impact of their research”*
- *“the purpose of Pathways to Impact is to encourage applicants to explore, from the outset, who could potentially benefit from their work in the longer term, and consider what could be done to increase the chances of their research reaching those beneficiaries.”*



What does the Minister think?

- *“The surprising paths which serendipity takes us down is a major reason why we need to think harder about impact. There is no perfect way to assess impact, even looking backwards at what has happened. I appreciate why scientists are wary, which is why I’m announcing today a one-year delay to the implementation of the Research Excellence Framework, to figure out whether there is a method of assessing impact which is sound and which is acceptable to the academic community. This longer timescale will enable HEFCE, its devolved counterparts, and ministers to make full use of the pilot impact assessment exercise which concludes in the Autumn, and then to consider whether it can be refined. “*
- David Willetts, speech at RI, 9 July 2010



What does the Treasury think?

- Impact = ££££s
- Need robust evidence base for assertions of the monetary value of investments in research

What's happening elsewhere? – USA's Star Metrics

Science and Technology in America's Reinvestment – Measuring the Effect of Research on Innovation, Competitiveness and Science

Phase I: Standardised measures of direct impacts.

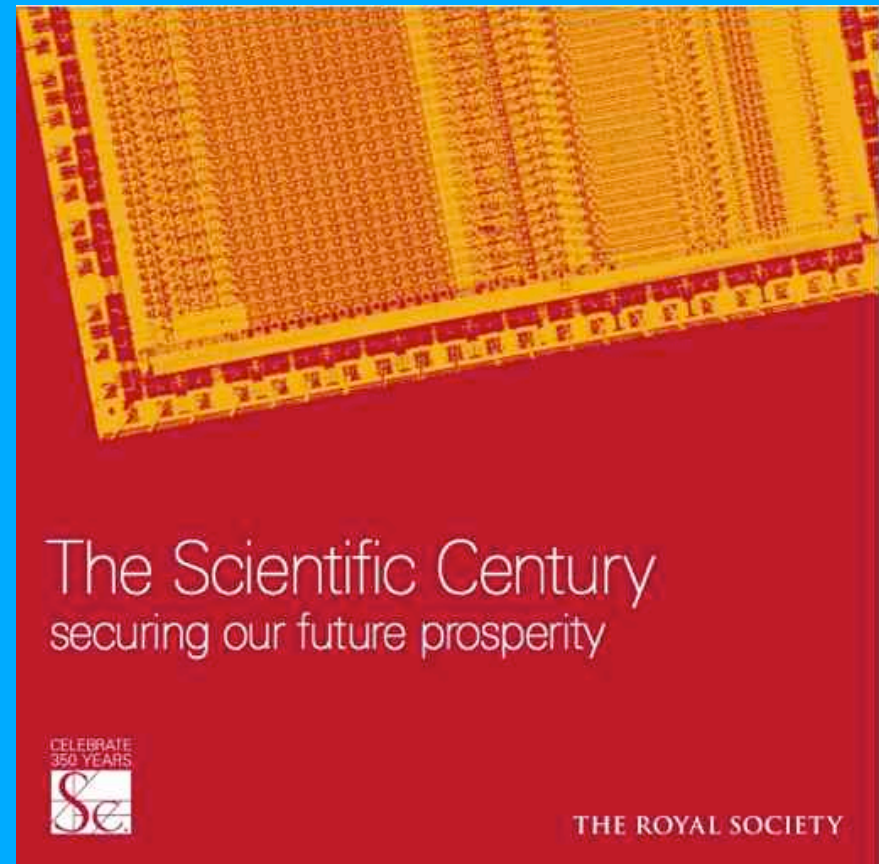
Phase II: Measures of impact of federal science investment

- Economic growth (through patents, firm start ups and other measures),
- Workforce outcomes (through student mobility and employment),
- Scientific knowledge (such as publications and citations)
- Social outcomes (such as health and environment)



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Building an evidence base - *The Scientific Century*





How does fundamental research lead to economic growth?

“Science: The Endless Frontier”, Vannevar Bush, 1945



“Linear model” of innovation

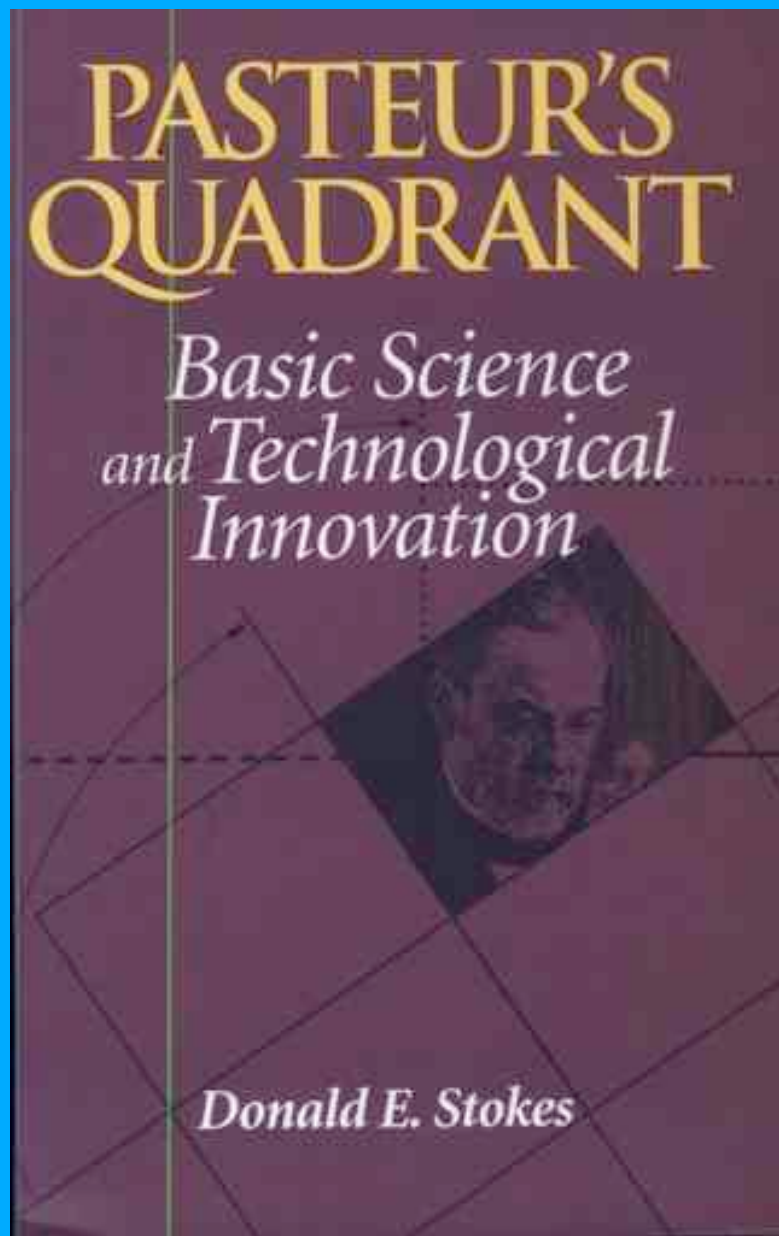


Against the Linear Model..

- *“The previous government appeared to think of innovation as if it were a sausage machine. You're supposed to put money into university-based scientific research, which leads to patents and then spinout companies that secure venture capital backing....The world does not work like this as often as you might think. ”*
- *“There are many other ways of harvesting benefits from research. But the benefits are real.”*
- David Willetts, speech at RI, 9 July 2010



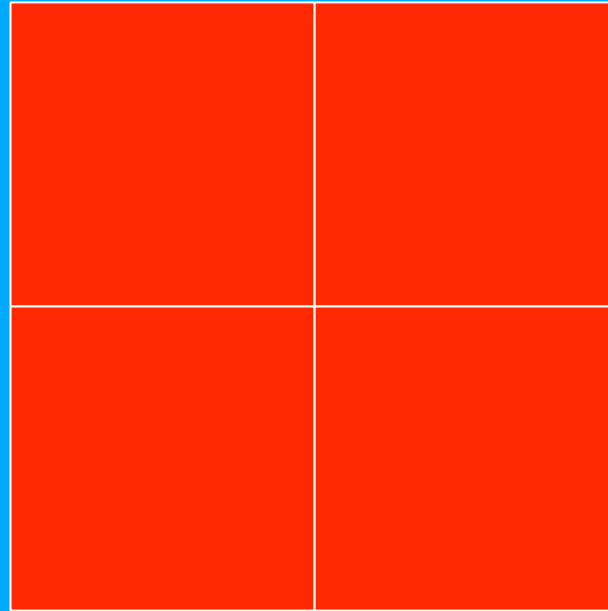
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Pasteur's quadrant

Fundamental
Understanding?



Considerations of use?

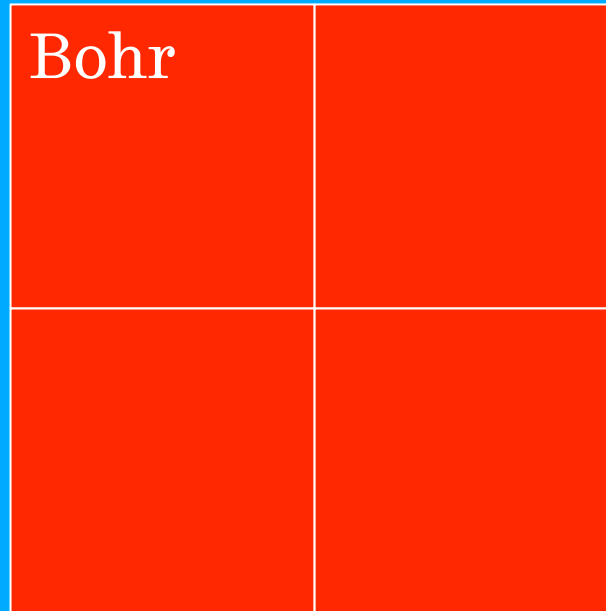


Pasteur's quadrant

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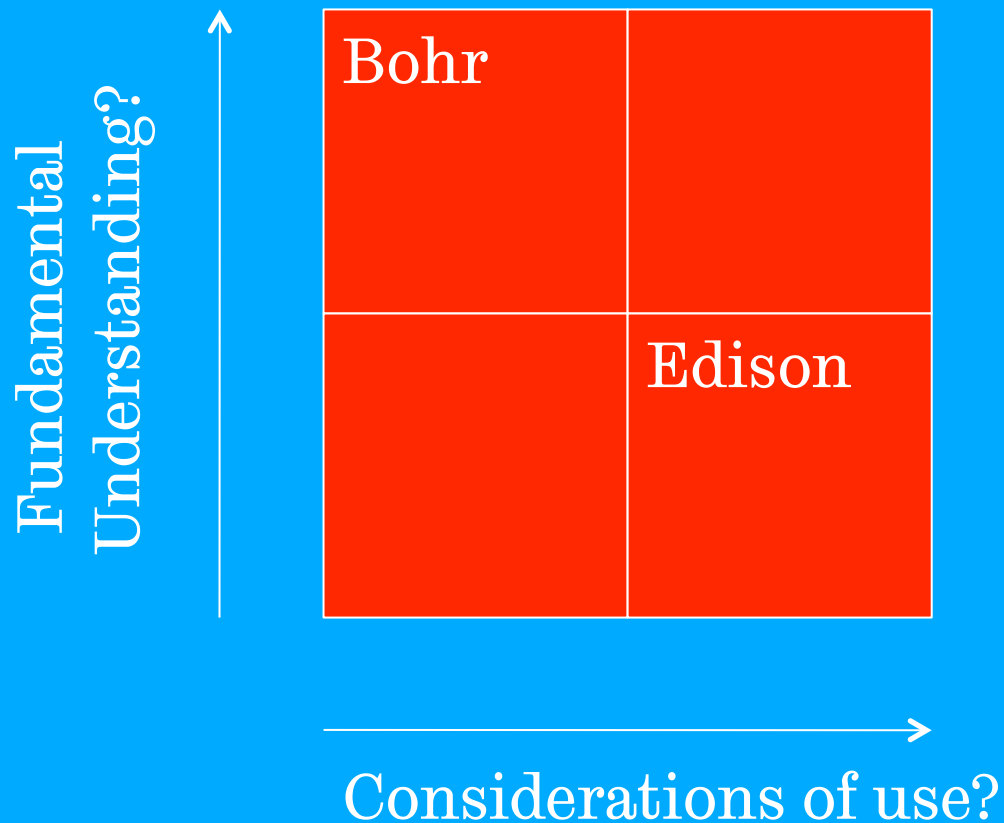
Bohr



Considerations of use?



Pasteur's quadrant





Pasteur's quadrant

Fundamental
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Bohr

Pasteur

Edison



Considerations of use?



Pasteur's quadrant

Fundamental
Understanding?



Bohr

Pasteur

Cable*

Edison



Considerations of use?

** "there is no justification
for taxpayers money being
used to support research
which is neither
commercially useful nor
theoretically outstanding."
Vince Cable, 8 Sept 2010,
QMUL*



Most academics
choose Bohr or Edison
over Pasteur in
classifying their own
work

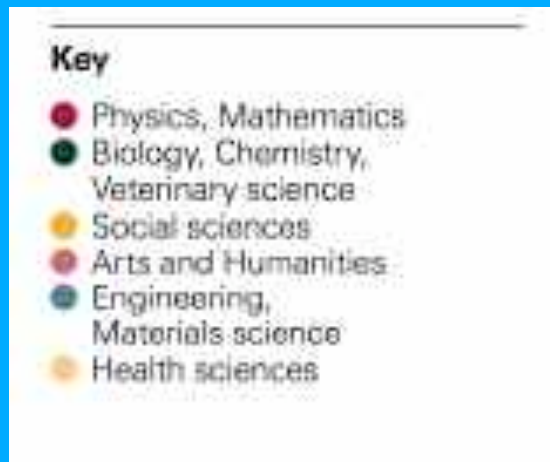
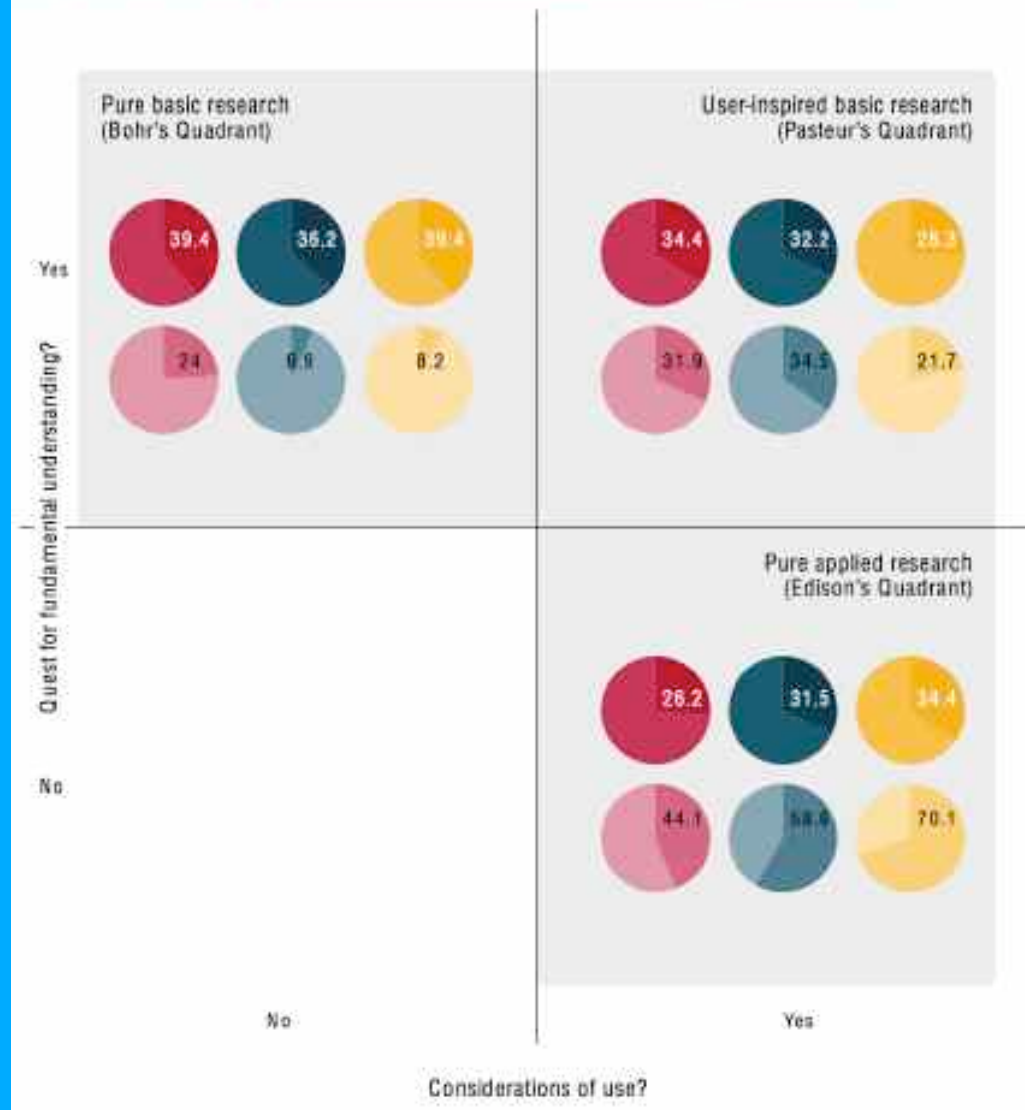


Figure 1.8 How UK academics classify their own work⁴²



Abreu et al, UK Innovation Research Centre 2009



Absorptive capacity

- *I think that the answer is that we need enough good science so we have the capacity to tackle a new problem, to react effectively to scientific breakthroughs however or wherever they may arise,*
- *...in advanced scientific fields, it is often necessary to conduct leading-edge research in order to understand, assimilate and exploit the leading-edge research of others. It is this absorptive capacity which is crucial.*
- *... foreign companies cite the quality of the public research base as one of the main reasons for locating their own internationally mobile R&D here.*
- David Willetts, speech at RI, 9 July 2010



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Another, broader, framing of “impact”

- Who, ultimately, do we work for?
- Not HEFCE, not RCUK, not even HM Treasury...
- ...but the public at large
- We need to work in partnership to realise the *public value* of the research we do

We need to
infuse the
culture and
practice of
science with a
new set of social
possibilities



The Public Value of Science

Or how to ensure that science
really matters

James Wilsdon
Brian Wynne
Jack Stilgoe



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How much of this is new?

Public Value

Widening participation

Regional innovation agenda

Health and well-being

National economic impact

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THE PROPOSED UNIVERSITY BUILDING.

**You should support the
University because:—**

1. The UNIVERSITY will be for the people.
2. The UNIVERSITY will bring the highest education within the reach of the child of the working man.
3. The UNIVERSITY will help the local industries.
4. The UNIVERSITY will be the centre where the treatment of accidents and diseases will be studied.
5. SHEFFIELD is the only large City in England without a University. Sheffield cannot afford to remain in this position.
6. The UNIVERSITY will not only benefit this district, it will assist the nation in its trade competition with other nations.

*Ask at your works or shop for a copy of the Pamphlet on the
University Movement.*

1905
fund-
raising
poster



Conclusions

- Impact – not straightforward to define or measure
- But we need to demonstrate the public value of research
- We still need a better understanding of innovation
- Universities should focus on their enduring missions and values