

# Knowledge as Public Property:

## the Societal Relevance of Scientific Research

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### INTRODUCTION

- role models are important
- Austin Bradford Hill
- pioneer of medical statistics, inventor of RCT and medical ethics
- fundamental research is essential
- applied research: 'proof of the pudding'

OECD 2



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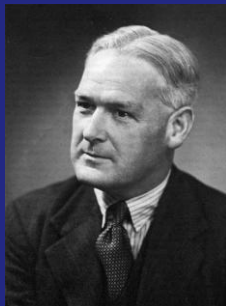
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### FOUR CORE QUESTIONS

- why did you start?
- what did you do?
- what answer did you get?
- and what does it mean anyway?



OECD 3



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**MESSAGE**

- researchers should reflect on the societal relevance of their work
- universities should report in terms of concrete indicators of societal relevance

**CONTENT**

- quality and relevance
- scientific quality
- societal relevance
- challenges

OECD 4



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**EXAMPLE: back support belts**



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**EXAMPLE: back support belts**



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**EXAMPLE: back support belts**

- prevention of back injuries
- large RCT among baggage handlers: negative
- USA: compulsory back support belts?
- JAMA 1998; 297: 1789 – 94 → scientific quality
- citation in US House of Representatives → societal impact

OECD 7



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**QUALITY AND RELEVANCE**

- are both important
- two separate goals of research
- moderately positive correlation
- bad research is never relevant
- quality: valid and precise knowledge
- relevance: will the results make a difference?

OECD 8



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**QUALITY AND RELEVANCE**

- also at issue for fundamental research
- relevance is difficult to predict
- causal attribution is difficult
- Are we doing the right things?
- And are we doing them right?

OECD 9



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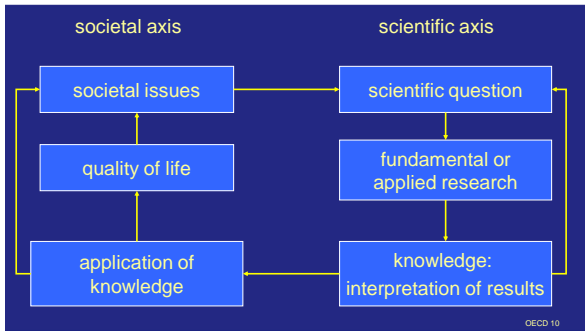
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## QUALITY AND RELEVANCE




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## SCIENTIFIC QUALITY

- Standard Evaluation Protocol
- Research Examination Exercise
- external and internal budget allocation
- strong focus on publications, citations and grants
- but large differences between disciplines

OECD 11




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## EXAMPLE: bibliometric analysis

UMC	Publications	Citations per Publications (CPP)	CPP/FCSm
UMC a	9,034	15	1.59
UMC b	11,886	15	1.59
VUmc	7,711	14	1.52
UMC c	8,800	12	1.48
UMC d	8,837	15	1.44
UMC e	8,885	14	1.43
UMC f	9,023	12	1.27
UMC g	6,431	10	1.21
<b>TOTAL</b>	<b>59,644</b>	<b>13</b>	<b>1.40</b>

OECD 12




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## LIMITATIONS OF CITATION SCORES

- unidimensional: VU University Amsterdam at #5 in Europe on Leiden Ranking
- dominated by natural sciences (including medical research)
- looking back 4 – 8 years
- absolute scores difficult to interpret

OECD 13




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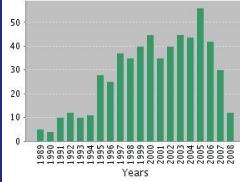
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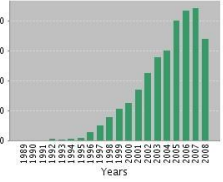
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## EXAMPLE: H-INDEX

Published Items in Each Year



Citations in Each Year



Results found: 568  
 Sum of the Times Cited: 15,192  
 Average Citations per Item: 26.75  
 H-index: 68

OECD 14




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## EXAMPLE: H-INDEX

<input type="checkbox"/>	66. Title: Fall-risk screening test: A prospective study on predictors for falls in co... Author(s): Tromp AM, Pluijm SMP, Smit JH, et al. Source: <i>JOURNAL OF CLINICAL EPIDEMIOLOGY</i> Volume: 54 Issue: 8 Pp:	68	8.50
<input type="checkbox"/>	67. Title: Ultrasound therapy for musculoskeletal disorders: A systems... Author(s): van der Windt DAM, van der Heijden CMC, van den Ber... Source: <i>PAIN</i> Volume: 81 Issue: 3 Pages: 257-274 Published:	68	8.80
<input checked="" type="checkbox"/>	68. Title: Microalbuminuria is strongly associated with NIDDM... Author(s): Jager A, Kostense PJ, Nijpels O, et al. Source: <i>DIABETOLOGIA</i> Volume: 41 Issue: 6 Pages: 67	69	6.18
<input type="checkbox"/>	69. Title: Self-monitoring of blood glucose in patients w... Author(s): Weischen LMC, Heine RJ, Bloemendaal F Source: <i>DIABETES CARE</i> Volume: 28 Issue: 6	64	16.00
<input type="checkbox"/>	70. Title: Increased central artery stiffness in... Author(s): Schram MT, Hennis RMA, van D... Source: <i>HYPERTENSION</i> Volume: 43 I	63	12.60

OECD 15




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## HERITAGE RESEARCH



VU university amsterdam 

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## SOCIETAL RELEVANCE

- difficult to find good indicators for scientific quality
- challenge is much larger for societal relevance
- emerging field, plenty room for discussion
- prospective versus retrospective judgement
- mission statement as criterion?
- level of aggregation: project, individual, programme, institution?

OECD 16

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## SOCIETAL RELEVANCE

- examples from health sciences
- transferable to natural sciences, and social sciences and humanities
- aim: improving public health and healthcare
- outcome measures: life expectancy and quality of life
- many factors determine whether potential impact is indeed realized
- better to focus on indicators at product or process level

OECD 17

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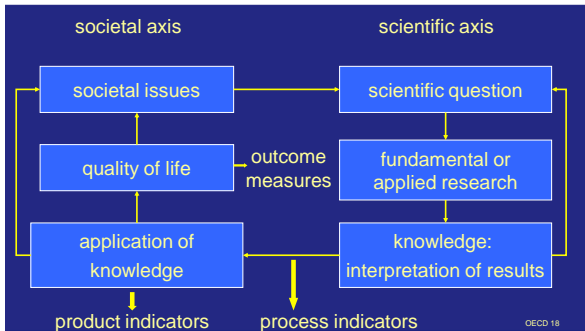
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## QUALITY AND RELEVANCE



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## INDICATORS OF SOCIAL-CULTURAL VALUE

- PRODUCTS:
- professional publications
  - lay publications
  - guidelines or policy documents
  - service, method, technology
- OECD 19



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## DEMENTIA CARE SUPPORT CENTRES



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## INDICATORS OF SOCIAL-CULTURAL VALUE

- PROCESSES:
- committees in professional or public domain
  - continuing education
  - public information services
  - public opinion or political decision making

OECD 20



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## INDICATORS OF ECONOMICAL VALUE

- PRODUCTS:
- patents
  - intellectual property
  - start-up company
- PROCESSES:
- committees in commercial domain

OECD 21



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## UNIVERSAL SPECTACLES



Prof. Luis Walter Alvarez



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## CHALLENGES

- validity of indicators (for different fields)
- level of detail
- relative importance (weighing)
- role for content analysis
- role for stakeholders

OECD 22



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## CHALLENGES

- balance between curiosity-driven research and expected societal relevance (utility)
- expected societal relevance as a compass
- indicators should be valid, easy to measure and difficult to manipulate
- role models are important (Societal Impact Award)

OECD 23



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## CORE QUESTIONS FOR ACADEMIA

- Are we doing the right things?
- Are we doing them right?
- And what does it mean anyway?

OECD 24



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