



Global Trends in AI and Ethics-can society and research mutually benefit from engagement?

September 2018- Maria de Kleijn
SVP Analytic Services



IN A CHANGING WORLD...



TECHNOLOGICAL
CHANGE



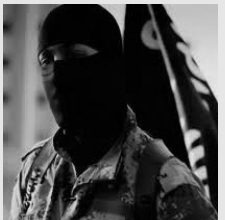
UNEVEN
ECONOMIC
GROWTH



CLIMATE
CHANGE AND
SUSTAINABILITY



POPULATION
CHANGE



POLITICAL
CHANGE AND
MULTI POLARITY



GLOBALISATION
AND MIGRATION

GAME CHANGERS



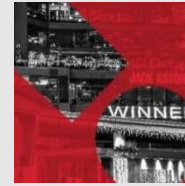
... EIGHT GLOBAL TRENDS



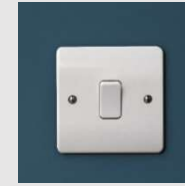
CRISIS OF
THE ELITES



UNCERTAINTY IS
THE NEW NORMAL



BATTLE FOR
ATTENTION



SIMPLICITY
AND CONTROL



RISE AND RISE
OF TRADITION



GENERATION
STRAINS



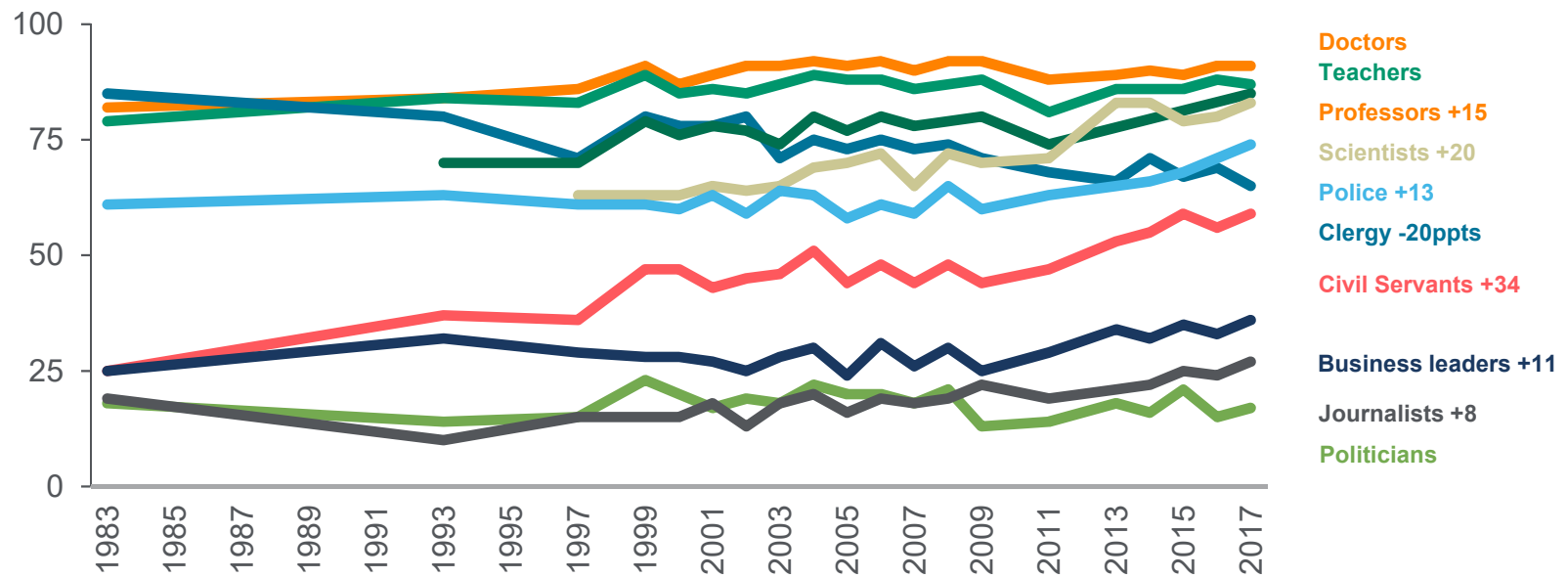
HEALTHIER
WORLD



OPTIMISM
DIVIDE

But more trust in scientists and other “experts”

% trust to tell the truth:



Base: c. 1,000 British adults aged 15+ per year

Source: Ipsos MORI/Unbound

What can we learn from other experiences

- Genetically Modified Organisms
- Geoengineering
- Stem Cells
- Human fertilisation/cloning
- Nanotechnology
- Synthetic Biology.....

Responsible Innovation

A transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view to the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products

CEO (2016)?



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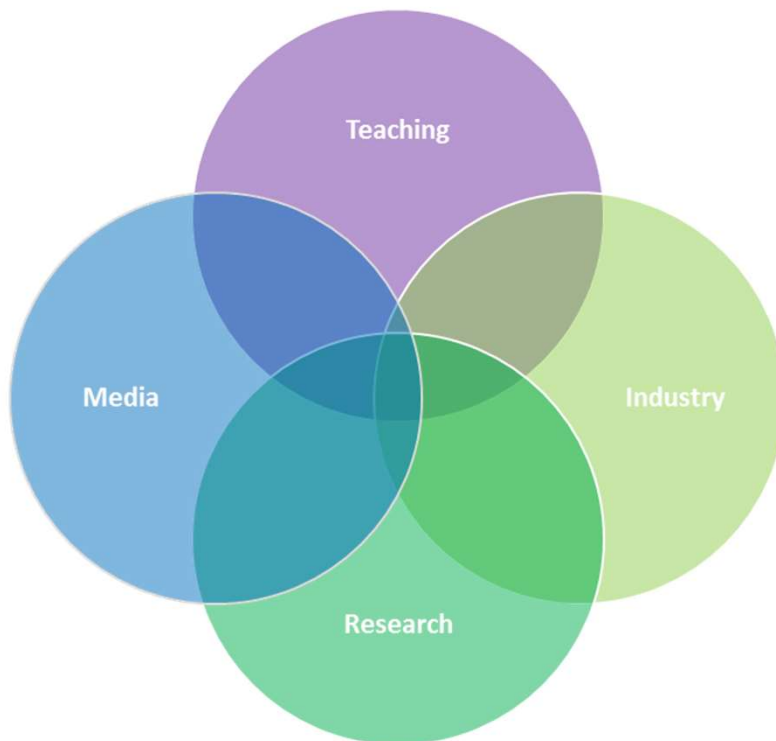


CEO (2018)?



The Elsevier AI report- under development

Starting point: no single definition of AI, nor a world leading ontology



We asked ourselves

- How far do different sectors' – research, education, media, technology - views on AI overlap and where are they different?
- Could we use this information to bottom-up 'scope' AI in a way that is both inclusive, and drawing out the essence?

First finding: very little overlap in vocabulary



TEACHING – provide *foundational knowledge*

- Breadth of AI fields and –types covering general **approaches and architectures** as well as **specific** tools supporting AI problems and **Knowledge representation**



INDUSTRY: *functional and application aspects of AI*

- High overlap with Teaching; strong focus on references to **biological** models and approaches; differentiation between **software and hardware** components and control/ simulation; emphasize of technical terms, like **chaos, fuzzy** and approaches with uncertainty



RESEARCH: *AI theory and approaches*

- Focus on recent trends and research potential, like Neural networks

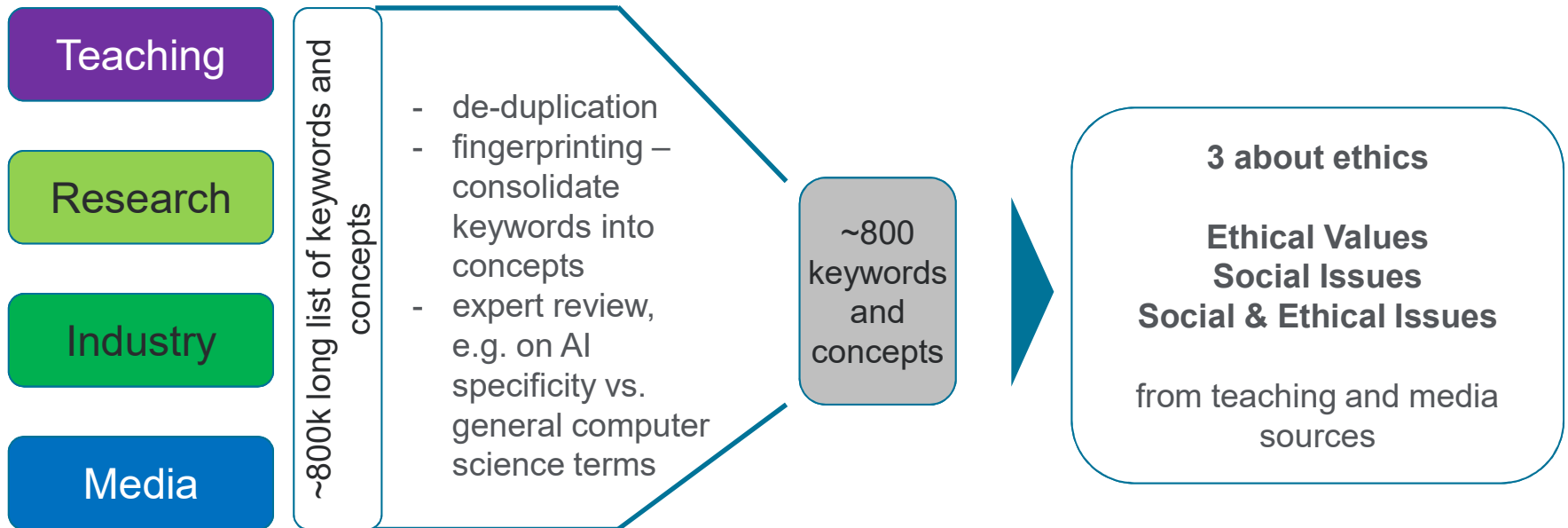


MEDIA: Let application examples speak, how *AI affects society + society's reaction to AI*

- Public perception using many applications, like alexa, Watson and dealing much stronger with AI as “own personality”

Ethics-related keywords are not prominent in AI

Mining sources



Sources and details: see backup

Source: Elsevier's AI report, 2018 – internal pre-study

What did experts say about this?

“research into ethics in AI is done by Law or philosophy departments, not by AI researchers”

“Only very recently have we begun to include these considerations in our daily work”

“I understand that you find it in education, often this is simply (government) mandated”

Ethics-related topics seem on the rise in recent AI conferences

Key AI conferences 2018	
AAAI	Artificial intelligence
AAMAS	Multi-agent systems
ACL	NLP
CVPR	Computer Vision
ICAPS	Automated planning and scheduling
ICLR	Learning Representations
ICRA	Robotics and Automation
ICML	Machine learning
IROS	Intelligent Robots
IJCAI	Artificial Intelligence
KR	Knowledge representation
NIPS	Neural Info Processing
UAI	Uncertainty in AI

326 additional keywords...
22 about ethics

10 direct Ethics & AI keywords, e.g.

- Trustable AI
- Explainable AI
- Values in multi-agent systems
- robotics ethics

12 indirect or related Ethics & AI keywords, e.g.

- Belief-Desire-Intention models
- Logics for normative systems
- Human-aware planning
- Agents competing against humans

Some early observations

- AI has potential to impact on many aspects of the society.
- It has potential great benefit; as seen by growing investments globally, if the innovations are handled responsibly
- Is the lack of overlap between the vocabularies used in technology, research, media and education surprising?
- Will the societal impact of AI in different regions, be influenced by public opinion?
- In our report we will focus on AI in China, US and EU – Publication Dec 2018
- For more information – please visit www.elsevier.com/connect/ai-resource-center



Thank you

And thanks to Orbit who are working with us on the AI Programme.



