AESIS

sbarc | spark, Cardiff University | 18-20 October 2023

Welcome to the last day of the 7th international AESIS conference on

Societal Impact of Social Science, Humanities, and Arts

iwa

UKRI Research England

UKRI Economic and Social Research Council

UKRI Arts and Humanities Research Council

Cardiff University / Prifysgol Caerdydd

hefcw Cyngor Cyllido Addysg Uwch Cymru Higher Education Funding Council for Wales

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WIN Wales Innovation Network Rhwydwaith Arloesi Cymru

University of South Wales Prifysgol De Cymru

The Learned Society of Wales / Cymdeithas Ddysgedig Cymru

impactservices

Words of Welcome

Conference Chair

Claire Gorrara

Dean, Research & Innovation, College of Arts,

Humanities and Social Sciences, Cardiff University,

United Kingdom

Friday, October 20

Plenary Opening

Melanie Knetsch

Dariusz Aksamit

Isabel Maria Casimiro

Friday, October 20

Melanie Knetsch

Deputy Director, Impact & Innovation, Economic and Social Research Council, United Kingdom

"The importance of interdisciplinary collaboration: reflections from a funder"

UK Research and Innovation

The importance of interdisciplinary collaboration: reflections from a funder

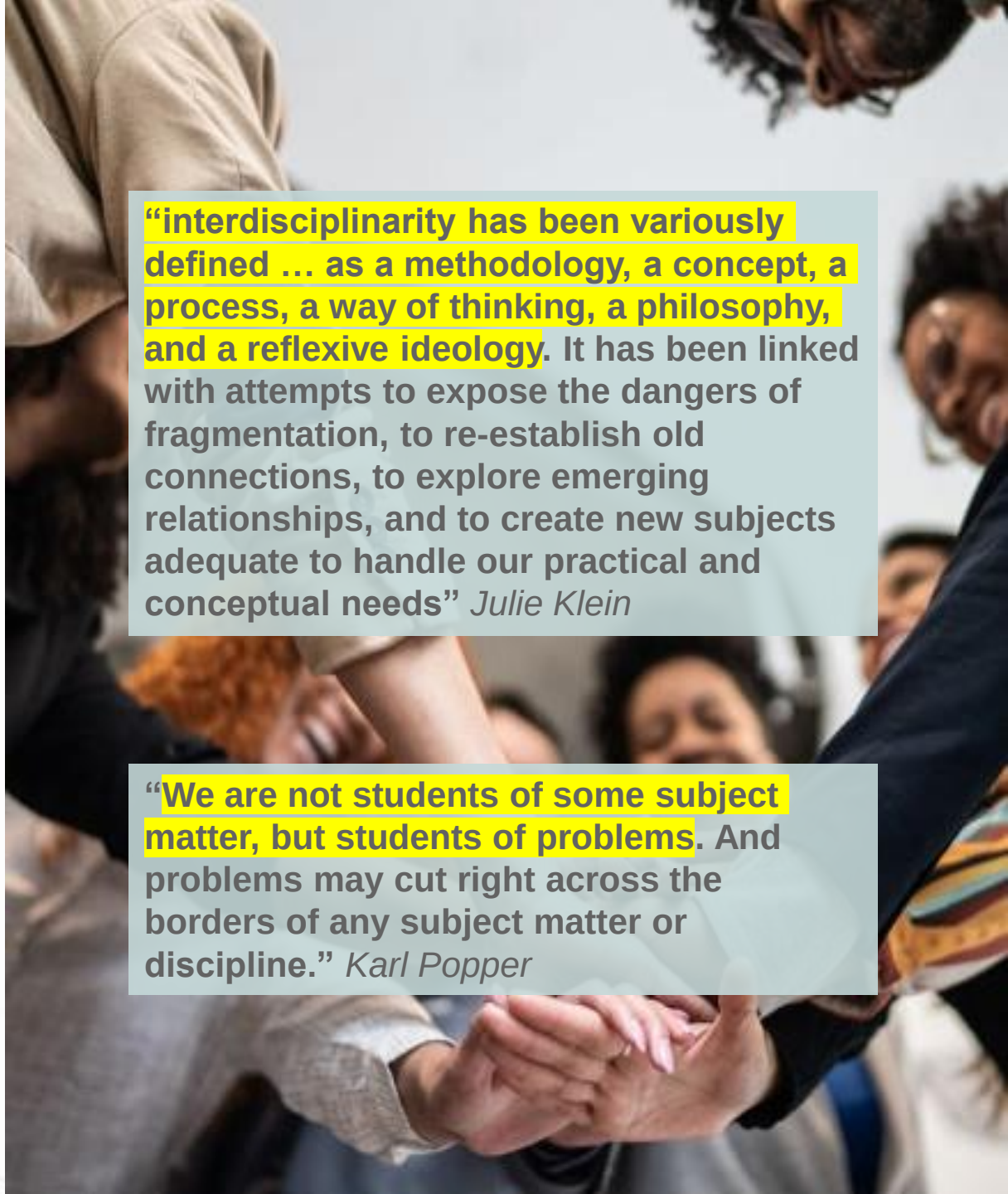
Melanie Knetsch

What do we mean?

- Wide range of definitions within academia and policy communities (transdisciplinarity/ interdisciplinarity/ multidisciplinarity)
- Common feature of inter & trans is the aim to "transform concrete situations and approach complex problems" (Vienni-Baptista)
- Whatever the label: key research questions do not follow disciplinarity boundaries AND require researchers to work with stakeholders beyond academia, with a focus on real world application
- But – it is important to agree what is meant in the development of activities at the start
- I will be using the term interdisciplinary in its broad definition

UK Research and Innovation

J Klein (1990), Interdisciplinarity; history, theory and practice
K Popper (1963), Conjectures and refutations: the growth of scientific knowledge
Foundations of Interdisciplinary and Transdisciplinary Research - A Reader, Edited by Bianca Vienni-Baptista, Isabel Fletcher and Catherine Lyall

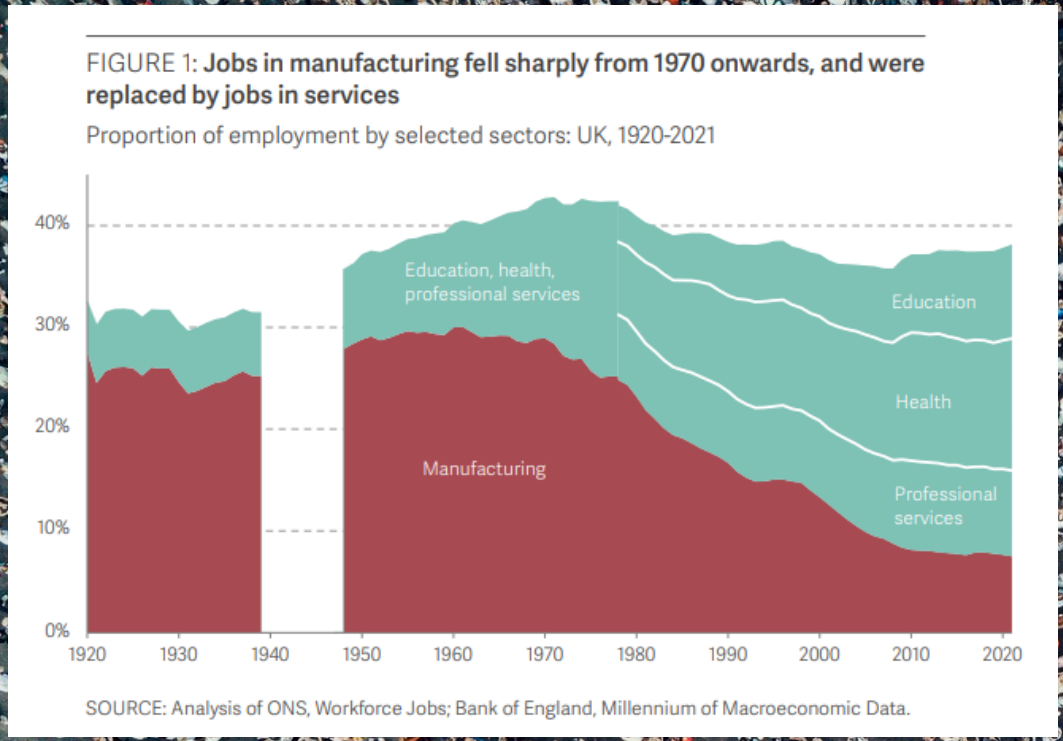


"interdisciplinarity has been variously defined … as a methodology, a concept, a process, a way of thinking, a philosophy, and a reflexive ideology. It has been linked with attempts to expose the dangers of fragmentation, to re-establish old connections, to explore emerging relationships, and to create new subjects adequate to handle our practical and conceptual needs" *Julie Klein*

"We are not students of some subject matter, but students of problems. And problems may cut right across the borders of any subject matter or discipline." *Karl Popper*

Setting the scene

- The move from an industrial focussed to a services economy, allied with technological transformation, is framing areas of research needs
- The rate of technological, societal and environmental change
- Leads to the need to understand people, and the relationship between society, economy, government & technology
- Disciplinary collaborations are a key means of addressing complex national or global challenges
- R&I is an ecosystem: various components to coalesce



"Global problems do not come in neat packages: the stresses of transnational migration present questions for international lawyers, transport experts and conflict analysts alike, and the impacts of water scarcity equally call on civil engineers, anthropologists, natural hazard specialists and policy makers." (Nature)

UK Research and Innovation

N Cominetti et al, Changing jobs?: Change in the UK labour market and the role of worker mobility, The Economy 2030 Inquiry, 2021

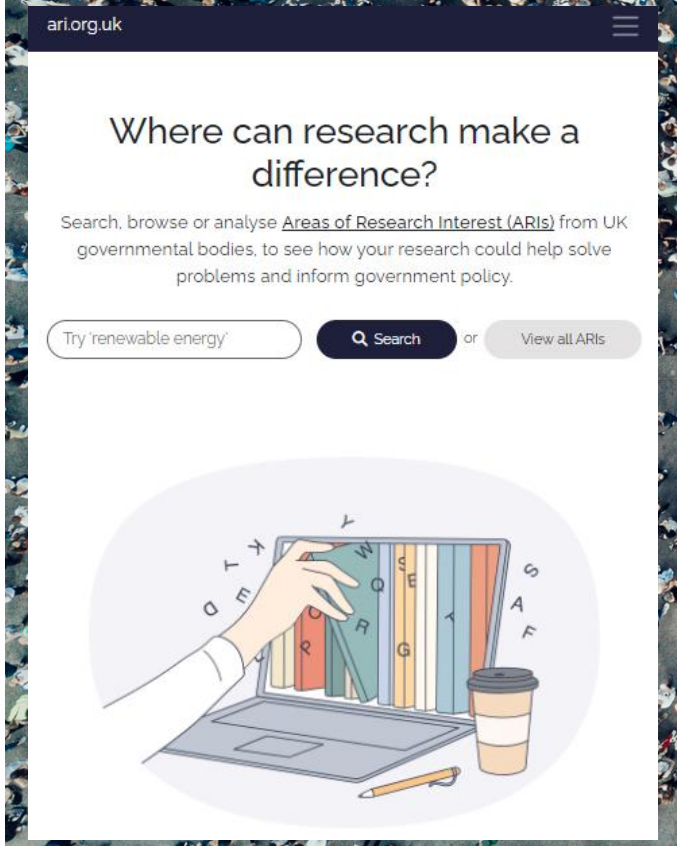
Interrogating interdisciplinarity (nature.com)

The importance of Arts, Humanities and Social Sciences

- All challenges have a ‘human’ element in them; AHSS disciplines by their nature focus on this
  - Readiness levels; human factors/the human condition; adoption; skills needs; ethics and responsibilities
- Methods and approaches often focus on the context of the challenge, barriers, opportunities, reframe the questions/assumptions/imagine different futures = local and global
- Understanding data is also a key need
- Links with different communities

UK Research and Innovation

"Most companies that we spoke to predict that more and deeper cross-disciplinary working will be needed in the future. This usually includes the need for traditional ‘science’ (STEM) disciplines to work in teams with social scientists who can understand the science substance but also bring knowledge about regulation, social and geo-spatial networks, and human behaviour together at various stages to inform strategies and product development. This was true in digital products or other services, and in industrial companies." (AcSS, Vital Business)



Sir, In pitting the creative arts against Stem subjects, Laura Freeman reinforces a false dichotomy that serves neither community well. Such a simplistic division fails to reflect the awesome creativity associated with engineering innovation or the extent to which those working in the creative arts rely on technology, engineering and science for inspiration, partnership and to bring their visions to life. We should instead champion collaboration between different disciplines and make common cause in arguing against the UK’s tendency to promote early narrow specialisation. We need people from all disciplines to have at least basic technological capital, and a technical workforce that can communicate, collaborate and engage with the users of technology, if we are to provide inclusive benefits for society, whether they have measurable economic outcomes or not.

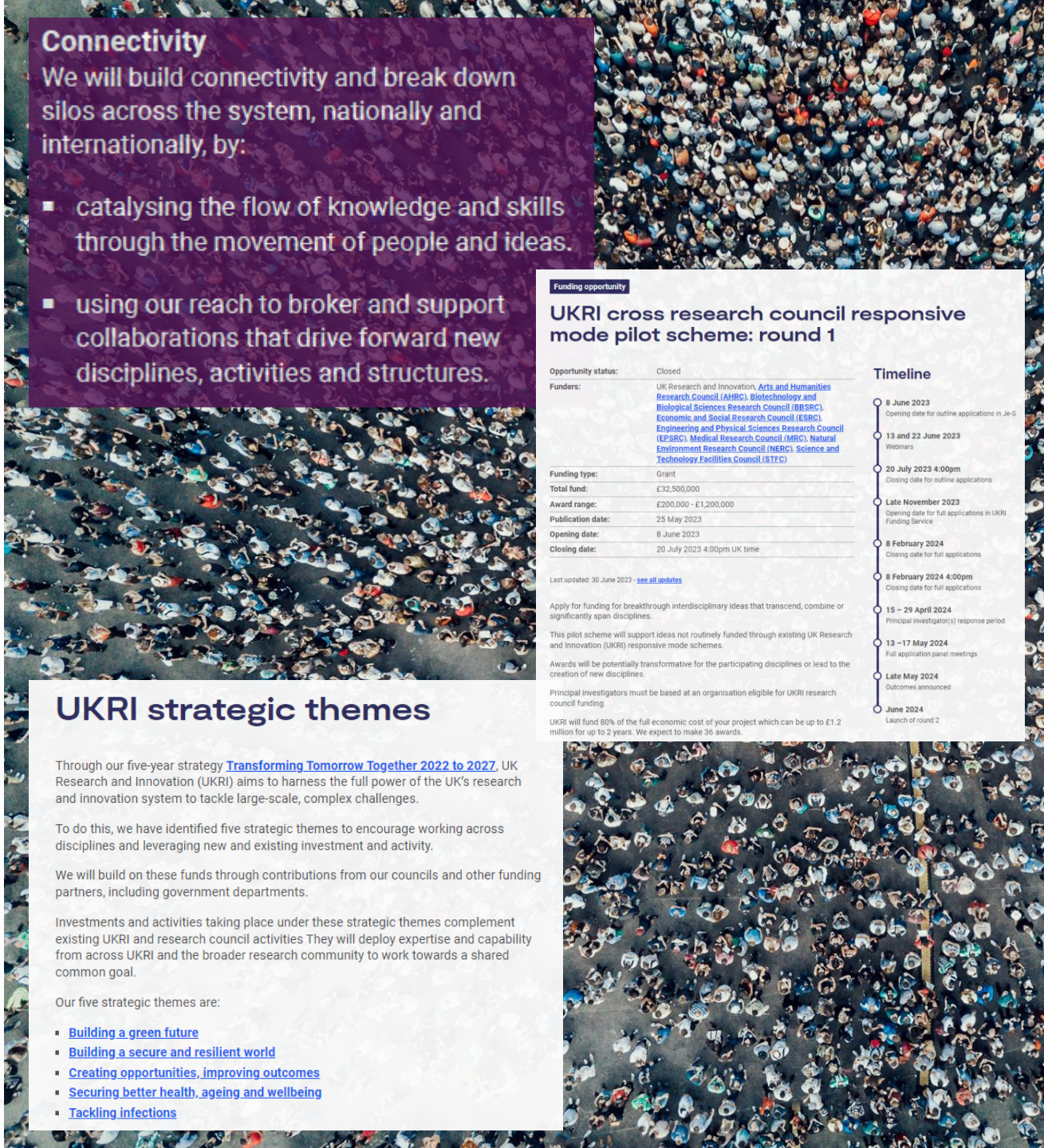
Dr Hayaatun Sillem
CEO, Royal Academy of Engineering

Vital-Business.pdf (acss.org.uk)
The Times 5/7/23
www.ari.org.uk

The role of UKRI

- UKRI Strategy emphasis on **connectivity** as a key principle for change
- Support for cross-disciplinary working in relation to **talent & skills development**: CDTs, DTPs and Collective Talent Funding
- New cross research council **responsive mode pilot** for interdisciplinary research
- **Cross-UKRI strategic themes**, to encourage support wide range of interdisciplinary cross-council investments & improving understanding of UKRI's existing investment portfolio
- **Challenge focussed funding** has had join up of disciplines with sectors/industry/policy

UK Research and Innovation



Practical approaches

Ambition to incentivise activities that span disciplines

Range of tools:

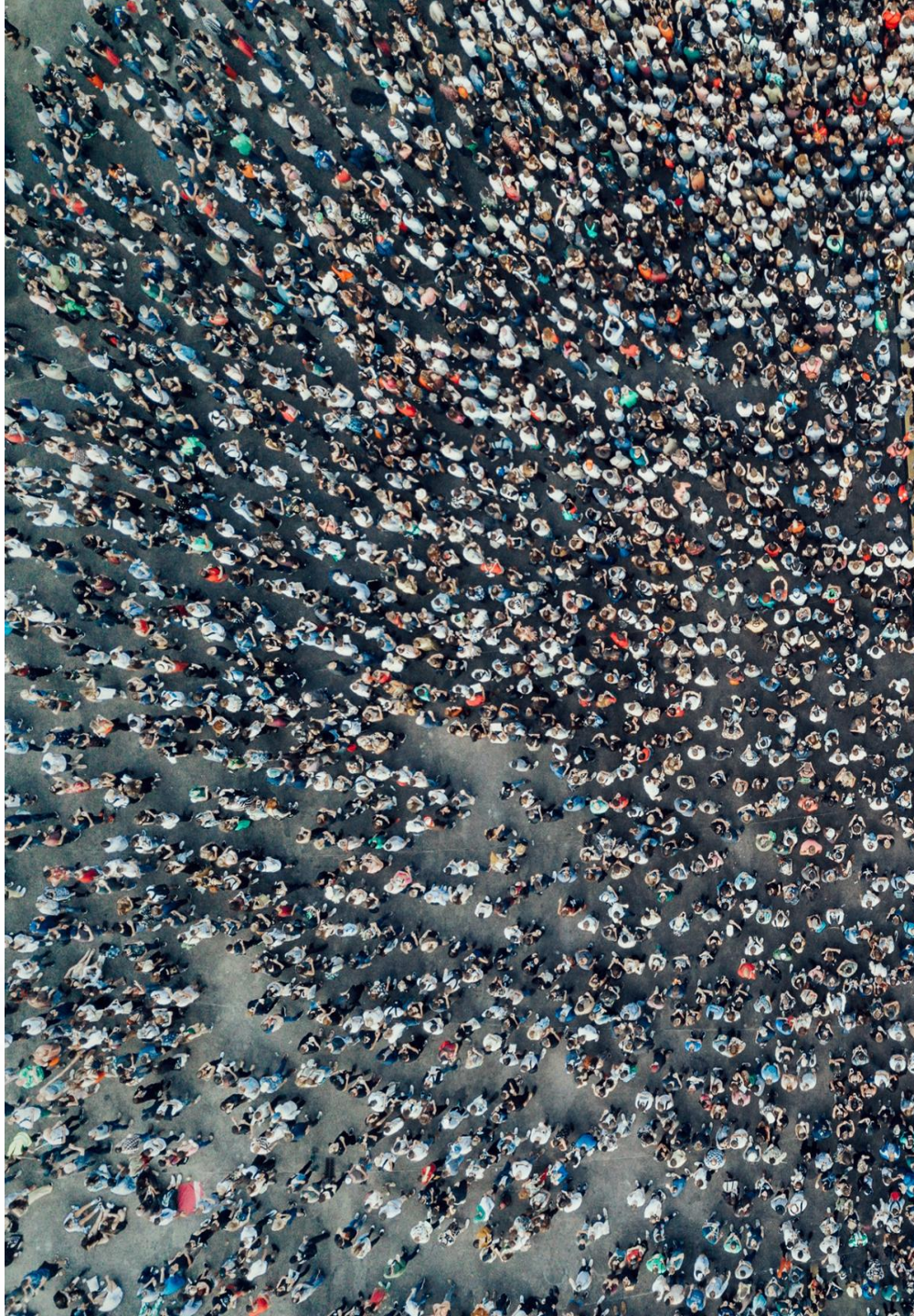
- How we scope the area, who we engage with
- Call documents: inclusive language
- Reviewers: how we are upskilling reviewers; who the reviewers are; getting 'experts' who have been part of this before; non academics experts
- How we engage the community before the closing dates
- Non-traditional ways of funding: sandpits; Network+, adoption accelerators; clusters
- Rewarding and recognising
- UKRI interdisciplinary pilot call **– learning** from this, including the approach to reviewers and panels

UK Research and Innovation

Final thought: Are we entrepreneurial?

- Evidence base – shows AHSS doing a lot of disciplinary collaboration
- *In new/challenge driven areas, are we clear of our added value? Are we articulating it?*
    - Is AHSS an afterthought – or are we inserting ourselves? When are we connecting? What relationships have we got?
- How to bring the university components together – what works? What role do they use to bring people together that UKRI can build on? (professional services, departments/people)
- Are we sharing the evidence of what works and as a community are we clear what it leads to

UK Research and Innovation



Friday, October 20

Dariusz Aksamit

Head of Council, March for Science Foundation, Poland

"We need you" - transition from STEM to STEAM"

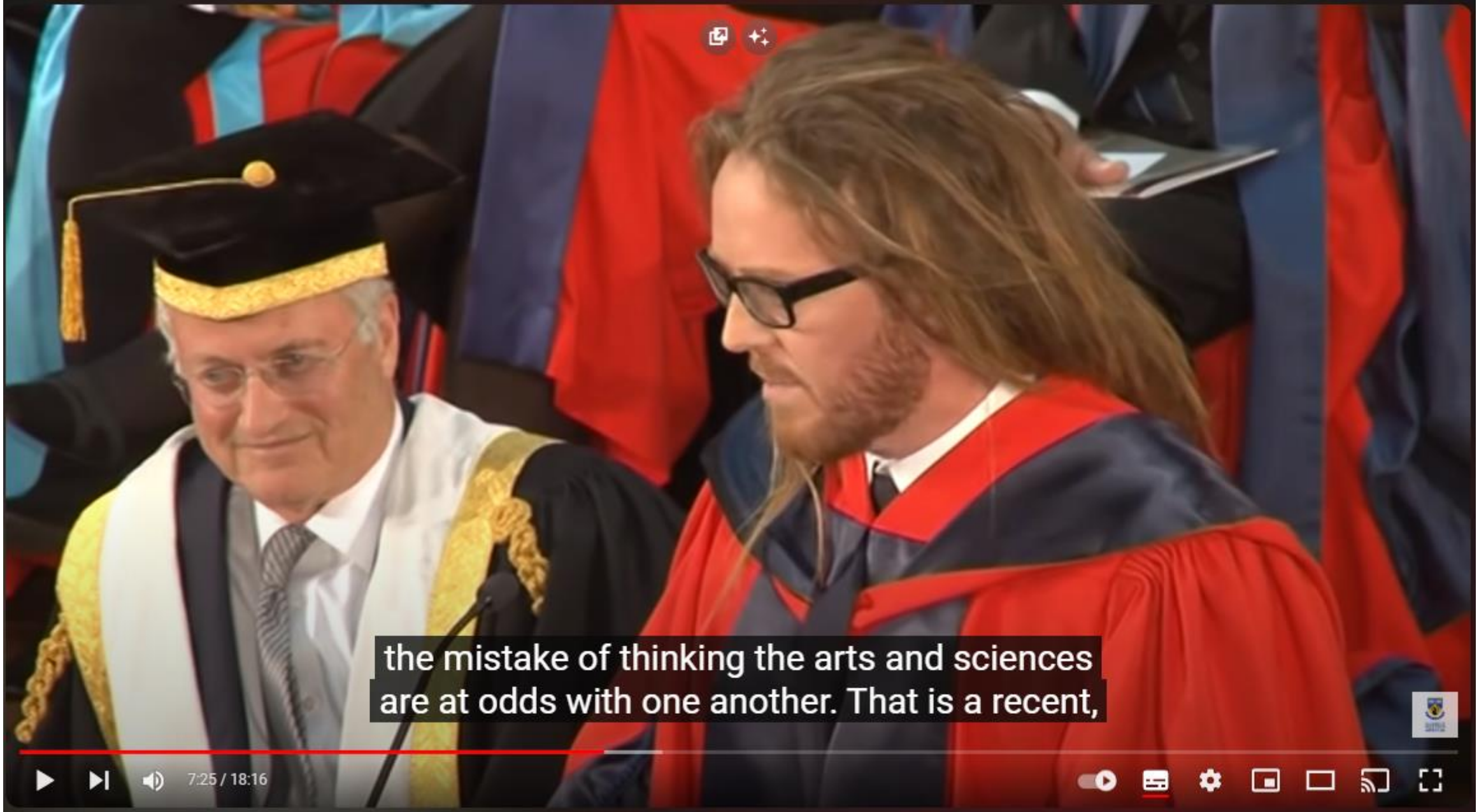
“We need you”
Transition from STEM to STEAM

Dariusz Aksamit

March for Science Foundation

Warsaw University of Technology, Faculty of Physics

Akademeia High School



9 Life Lessons - Tim Minchin UWA Address

The University of Western Australia
16,9 tys. subskrybentów

Subskrybuj

54 tys. | Udostępnij | Pobierz | Klip | Zapisz | ...

https://youtu.be/yoEezZD71sc?si=m1rvzK_ZiG7Xm20n

“Please don’t make the mistake of thinking the arts and science are at odds with one another.
That is a recent, stupid and damaging idea.
You don’t have to be unscientific to make a beautiful art (…).
You don’t need to be superstitious to be a poet.
You don’t need to hate GM technology to care about the beauty of the planet.
You don’t have to claim a soul to promote compassion.
Science is not a body of knowledge nor a belief system (…)
The arts and sciences need to work together to improve how knowledge is communicated.
(…)
Be pro-stuff, not just anti-stuff

Do the arts or humanities need natural sciences?

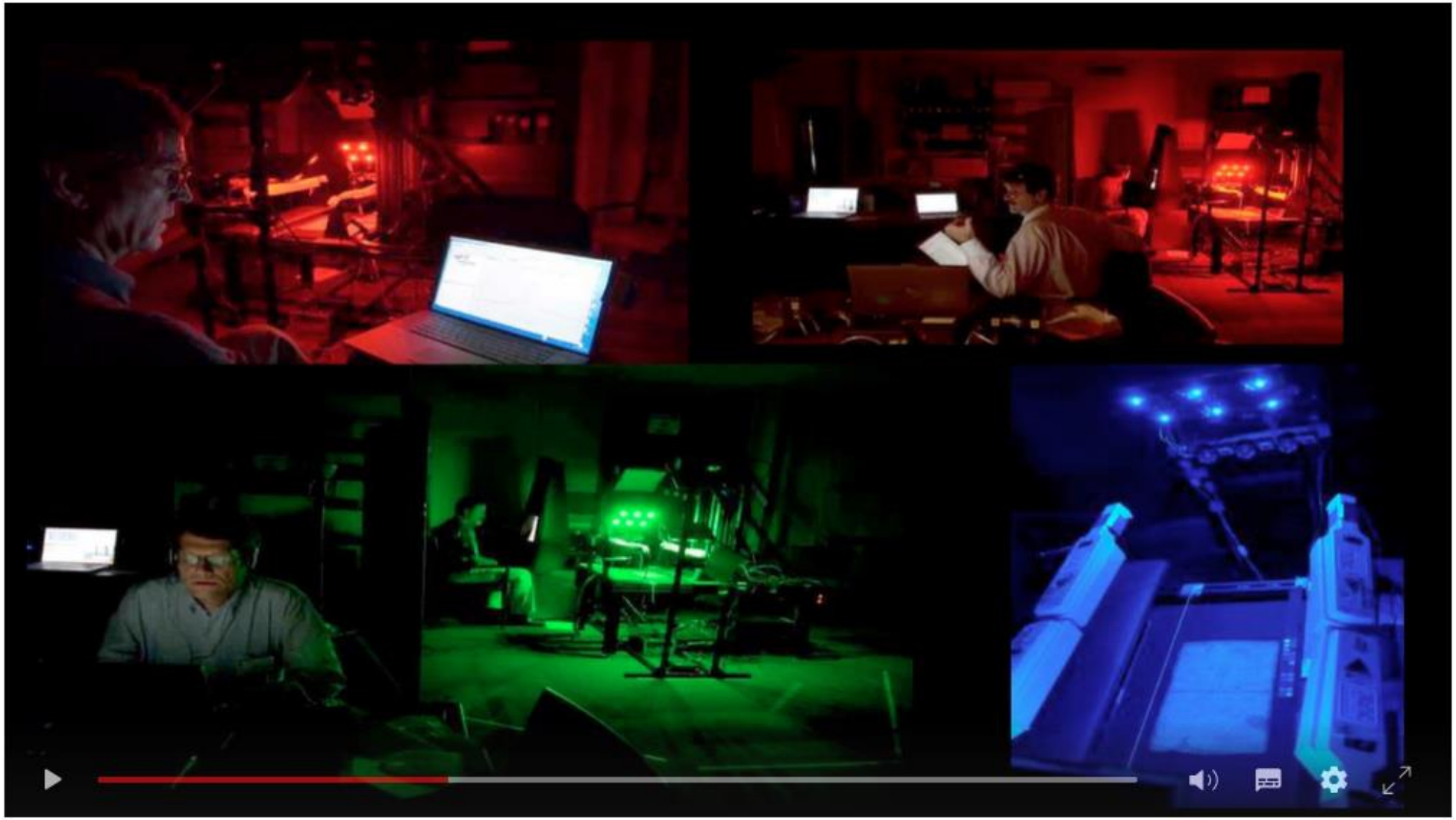
William Noel Director, Kislak Center for Special Collections, Rare Books and Manuscripts

Revealing the lost codex of Archimedes

1,100,261 views | William Noel | TEDxSummit • April 2012

https://www.ted.com/talks/william_noel_revealing_the_lost_codex_of_archimedes?language=en

William Noel [Director, Kislak Center for Special Collections, Rare Books and Manuscripts]



Revealing the lost codex of Archimedes

1,100,261 views | William Noel | TEDxSummit • April 2012

https://www.ted.com/talks/william_noel_revealing_the_lost_codex_of_archimedes?language=en

Do the natural sciences need arts and humanities?

Waste Isolation Pilot Plant

From Wikipedia, the free encyclopedia

Coordinates: 32°22′18″N 103°47′37″W

The **Waste Isolation Pilot Plant**, or **WIPP**, is the world's third deep geological repository (after Germany's Repository for radioactive waste Morsleben and the Schacht Asse II salt mine) licensed to store transuranic radioactive waste for 10,000 years. The storage rooms at the WIPP are 2,150 feet (660 m) underground in a salt formation of the Delaware Basin. The waste is from the research and production of United States nuclear weapons only.[1][2] The plant started operation in 1999, and the project is estimated to cost $19 billion in total.[3]

It is located approximately 26 miles (42 km) east of Carlsbad, New Mexico, in eastern Eddy County, in an area known as the southeastern New Mexico nuclear corridor, which also includes the National Enrichment Facility near Eunice, New Mexico, the Waste Control Specialists low-level waste disposal facility just over the state line near Andrews, Texas, and the International Isotopes, Inc. facility to be built near Eunice, New Mexico.[4]

Various mishaps at the plant in 2014 brought focus to the problem of what to do with the growing backlog of waste and whether or not WIPP would be a safe repository.[5] The 2014 incidents involved a waste explosion and airborne release of radiological material that exposed 21 plant workers to small doses of radiation that were within safety limits.[6]

History [edit]

Waste Isolation Pilot Plant

Seal of the Waste Isolation Pilot Plant

WIPP, a geological repository for radioactive waste

“A team of engineers and scientists had designed containers that could store low-level transuranic waste safely for an estimated 10,000 years.

But even in the best of circumstances—that is, with no interference on the part of future humans—that would leave 14,000 years of unprotected toxicity.

In the possible absence of any known human language, some universal warning system would have to be developed, as the DOE realized.”

https://www.jstor.org/stable/215659?origin=crossref

LANDSCAPE PERMANENCE AND NUCLEAR WARNINGS

MARTIN J. PASQUALETTI

ABSTRACT. From the perspective of a human lifetime, the hazards of some nuclear wastes are permanent, so the warnings we place at contaminated nuclear sites must be permanent too. I address questions of how best to provide one hundred centuries of public warning at the first facility for permanent disposal, the Waste Isolation Pilot Plant in New Mexico. Scenarios of intrusion developed to guide the design of warning markers predicted that most of the changes in the area will be social and cultural. Because blatant and permanent markers will increase, not reduce, the probability of inadvertent intrusion, the most appropriate warning is a "landscape of illusion." Such a landscape needs not permanent surface markers but underground warning devices beneath a soft surface marker. No warning can guarantee deterrence for 10,000 years, however. *Keywords: landscape, nuclear waste, Waste Isolation Pilot Plant.*

No review of the planet's environmental account books can overlook the blatant and accelerating loss of natural landscapes. Just as obvious is the widespread desire to

https://daily.jstor.org/can-we-use-art-to-warn-future-humans-about-radioactive-waste

https://www.ricomet.eu

RICOMET 2023

9th International Conference on Social Sciences and Humanities in Ionising Radiation Research

SPECIAL SESSIONS

Social Sciences and Humanities in the field of:

- Decommissioning
- Nuclear energy futures
- Radon and NORM
- Medical applications
- Opportunities and needs in radiation protection

OPEN TOPICS

Any abstracts dealing with societal aspects in various applications of ionising radiation.

RadoNorm

Managing risks from radon and NORM

Who needs who when discussing…

…climate change?!

https://agupubs.onlinelibrary.wiley.com/doi/pdfdirect/10.1029/2019GB006170

Global Biogeochemical Cycles

COMMISSIONED MANUSCRIPT
10.1029/2019GB006170

Changes to Carbon Isotopes in Atmospheric CO_2 Over the Industrial Era and Into the Future

Heather Graven[1,2], **Ralph F. Keeling**[3], **and Joeri Rogelj**[2,4]

[1]Department of Physics, Imperial College London, London, UK, [2]Grantham Institute for Climate Change and the Environment, Imperial College London, London, UK, [3]Scripps Institution of Oceanography, University of California, San Diego, La Jolla, CA, USA, [4]ENE Program, International Institute for Applied Systems Analysis, Laxenburg, Austria

Key Points:
- Carbon isotopes, ^{14}C and ^{13}C, in atmospheric CO_2 are changing in response to fossil fuel emissions and other human activities
- Future simulations using different SSPs show continued changes in isotopic ratios that depend on fossil fuel emissions and, for ^{13}C, BECCS
- Applications using atmospheric ^{14}C and ^{13}C in studies of the carbon cycle or other fields will be affected by future changes

Supporting Information:
- Supporting Information S1
- Table S1
- Table S2

Abstract In this "Grand Challenges" paper, we review how the carbon isotopic composition of atmospheric CO_2 has changed since the Industrial Revolution due to human activities and their influence on the natural carbon cycle, and we provide new estimates of possible future changes for a range of scenarios. Emissions of CO_2 from fossil fuel combustion and land use change reduce the ratio of $^{13}C/^{12}C$ in atmospheric CO_2 ($\delta^{13}CO_2$). This is because ^{12}C is preferentially assimilated during photosynthesis and $\delta^{13}C$ in plant-derived carbon in terrestrial ecosystems and fossil fuels is lower than atmospheric $\delta^{13}CO_2$. Emissions of CO_2 from fossil fuel combustion also reduce the ratio of $^{14}C/C$ in atmospheric CO_2 ($\Delta^{14}CO_2$) because ^{14}C is absent in million-year-old fossil fuels, which have been stored for much longer than the radioactive decay time of ^{14}C. Atmospheric $\Delta^{14}CO_2$ rapidly increased in the 1950s to 1960s because of ^{14}C produced during nuclear bomb testing. The resulting trends in $\delta^{13}C$ and $\Delta^{14}C$ in atmospheric CO_2 are influenced not only by these human emissions but also by natural carbon exchanges that mix carbon

https://www.independent.co.uk/climate-change/news/phone-electric-vehicle-congo-cobalt-mine-b2277665.html

https://brill.com/display/book/9789004471818/BP000024.xml

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Chapter 9 Toward a Transdisciplinary, Justice-Centered Pedagogy of Climate Change

Open Access

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In: Curriculum and Learning for Climate Action

Author: Vandana Singh

Type: Chapter

Pages: 169–187

DOI: https://doi.org/10.1163/9789004471818_010

Abstract/Excerpt Full Text PDF

1 Introduction

The climate crisis presents formidable challenges of transdisciplinarity, complexity, and vast spatial and temporal scales. It is no wonder, then, that modern industrial civilization's emphasis on short-term, linear thinking, atomism and reductionism – aspects that are inevitably reflected in the educational mainstream – render us unable to conceptualize, let alone mitigate, climate change and its attendant ills. Climate change is also a crisis of ethics and justice, disproportionately affecting those who are least responsible for it, including the poor, people of color, the Global South, Indigenous people, and the young. Justice is therefore central to the social-ecological complex of crises that includes, and is exacerbated by, climate change (Levy & Patz, 2015; Robinson, 2019). Indeed, it has been pointed out that a sustainable future is not possible without social justice and equity (IPCC, 2018).

CHAPTER 9

Toward a Transdisciplinary, Justice-Centered Pedagogy of Climate Change

Vandana Singh

Abstract

Along with scientific and technical open questions, climate change presents unique epistemological, sociological, psychological, and ethical challenges, including climate justice. These are reflected in the education sector as well, manifesting as roadblocks and barriers at both the macro level and in the microcosm of the classroom. The failure of the education sector to take on the climate challenge is deeply problematic, since effective climate education can be a crucial component of climate mitigation. This chapter presents a re-conceptualization of the climate crisis at the intersection of science, society, ethics, justice, economics, philosophy and history of science that seeks to overcome the above-mentioned barriers. Drawing from a close study of the implementation of this framework in an undergraduate physics classroom for non-science majors over nearly a decade, I articulate four dimensions of an effective pedagogy of climate change: the scientific-technological, the transdisciplinary, the epistemological and the psycho-social. Three transdisciplinary "meta-concepts" constitute the foundation of this approach, utilized in the classroom via repeated use of visual tools. Student responses indicate that this still-developing framework has promise in the classroom and beyond.

Keywords

education for sustainable development – transdisciplinary – climate change – pedagogy – higher education

stem

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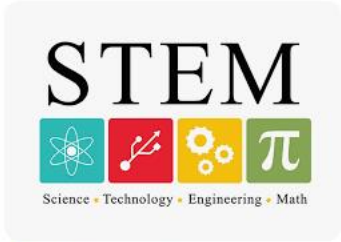
What is STEM – Science Technology ...



U.S. Embassy Prague
U.S. Embassy Focuses on Science ...

CodeWizardsHQ
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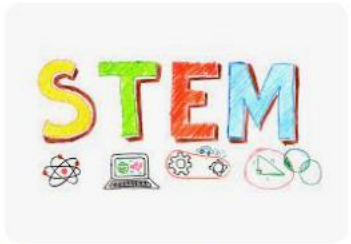
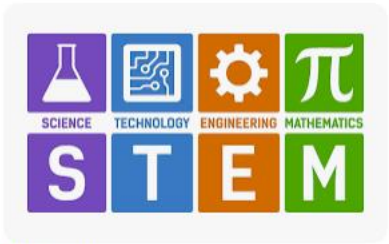
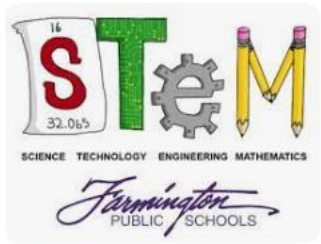


Northeast Ohio Parent
Science, Technology, Engineering and...



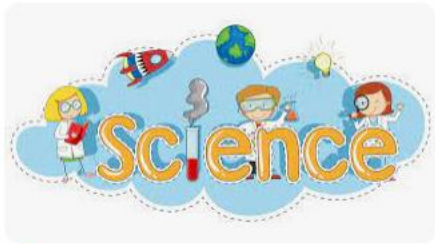
World Atlas
What Is STEM Education? - WorldAtlas



Farmington Public Schools
STEM (Science, Technology, Engin...

Bureau of Labor Statistics
mathematics (STEM) occ...

National Science Foundation
STEM Education Advisory Panel announc...

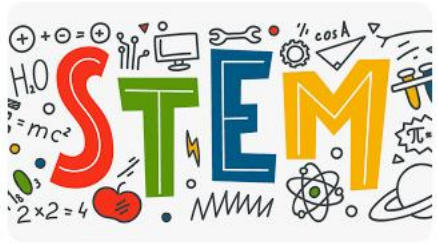


Stem Learning
Why Is STEM Education So Important ...

Facebook
STEM stands for scienc...

icse.eu
ICSE – International Centre for Stem ...

Conserve Wildlife Foundation of New Jersey
Wildlife Conservation ...



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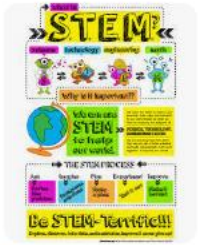

Science Demo Guy
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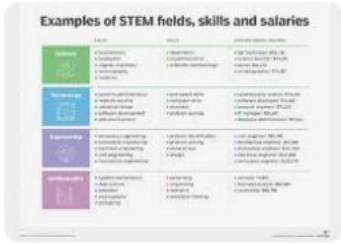
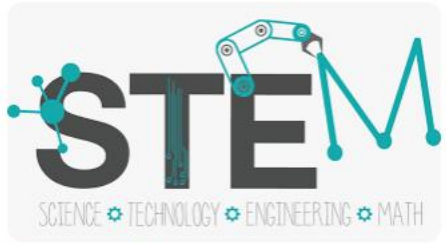


TechTarget
What is STEM?

Science Demo Guy
What is STEM, reall...



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STEM Years 9-10 - Warrawong High School

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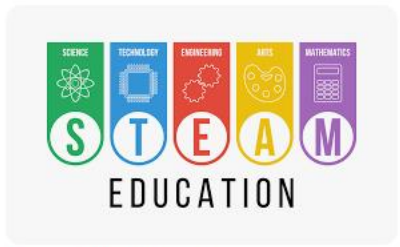

The Government of Japan
Combining STEAM Education with Playful ...

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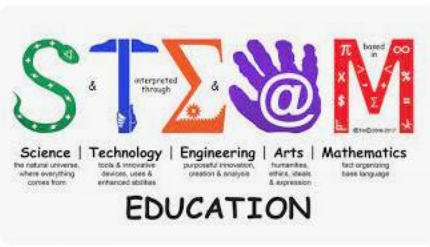
What is STEAM Education and Why Is It ...

Home | Hong Kong Baptist University Affiliated School ...
STEAM Education | Hong Kong Baptist ...

iSpace School
iSpace School | STEAM Education



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STEAM Education and Its Significance ...

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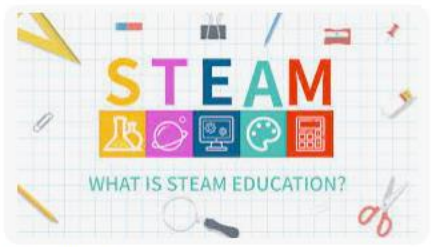
What is STEAM Education?...



Elecfreaks
What is STEAM education? - Blog

Edkwery
STEAM Education As A Parent ...

PLASTEAM ERASMUS+ project
What is STEAM education? – PLASTEAM ...

Bellarmine University
What Is STEAM Education? Enhancing ST...

STEAM 교육 - 한국과학창의재단
About STEAM | STEAM 교육

EU NEIGHBOURS east
eTwinning: new STEAM project kit for ...

Dreamstime
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STEAM | Hurt/Battelle Memorial Library

STEAM Education
About STEAM – ST...

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Education Concept Stock Illustration ...

MDR Education
educators form STEM STEAM workforce ...

Tinkerly
What Is STEM Education ...

SCIENCE GAME JAM

Twój ruch, nauko.

SGJ inspiruje i pomaga twórcom popularnonaukowych gier planszowych.

Zobacz gotowe projekty SGJ

Działeczka

Kto najlepiej zarządzi odziedziczoną po dziadku działką?

Więcej...

Space Farmer

Czy twoje warzywa dolecą do wszystkich potrzebujących?

Więcej...

Impulsacja

Zostańcie cichymi bohaterami walki o zdrowy mózg!

Więcej...

https://www.dramaticpublishing.com/radium-girls

https://link.springer.com/book/10.1007/978-3-030-96829-8

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Radium Girls

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Product Code: R72000

Full-length Play

Drama

Cast size: 4 to 5m., 5w., with doubling. May be expanded to 30 or more.

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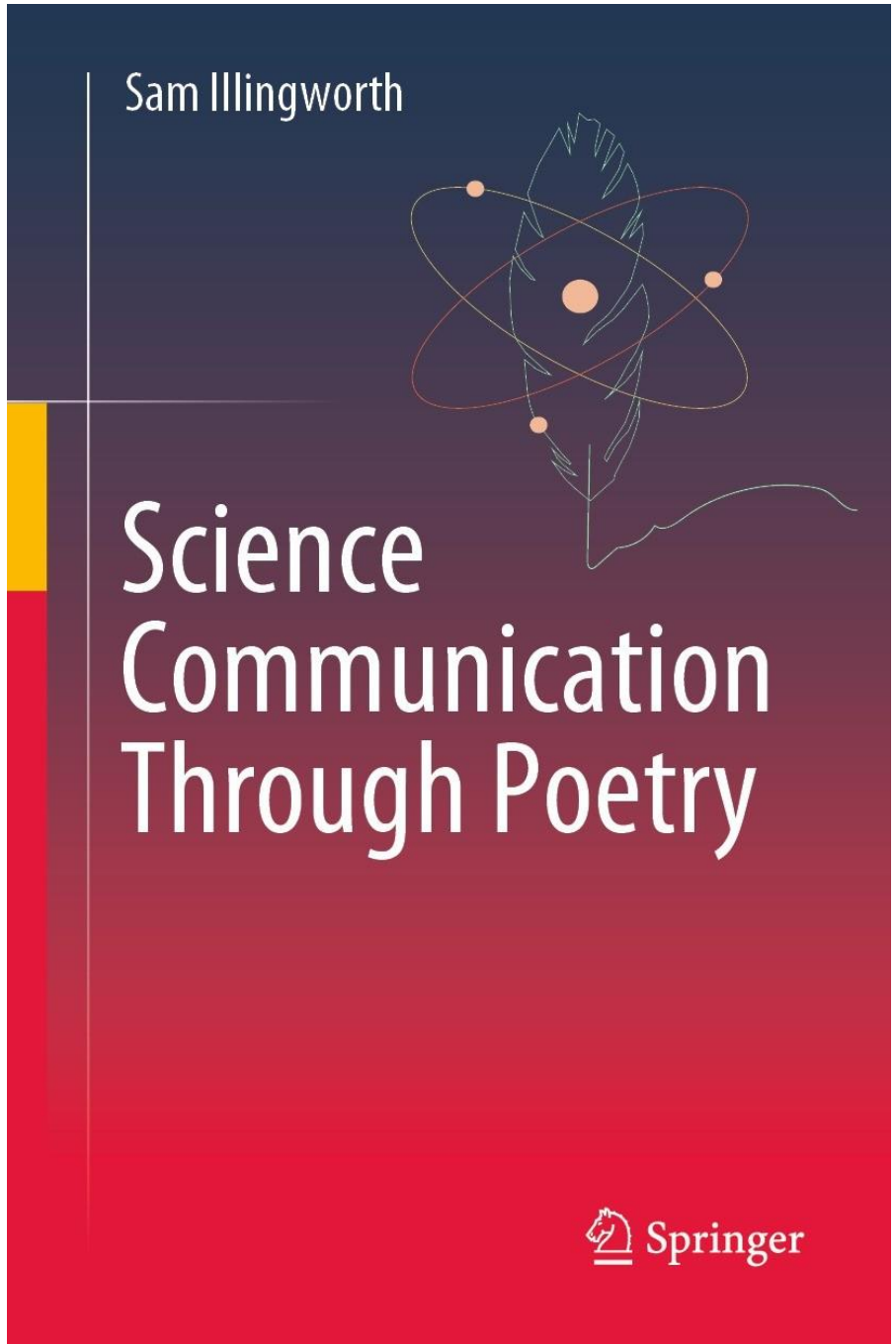

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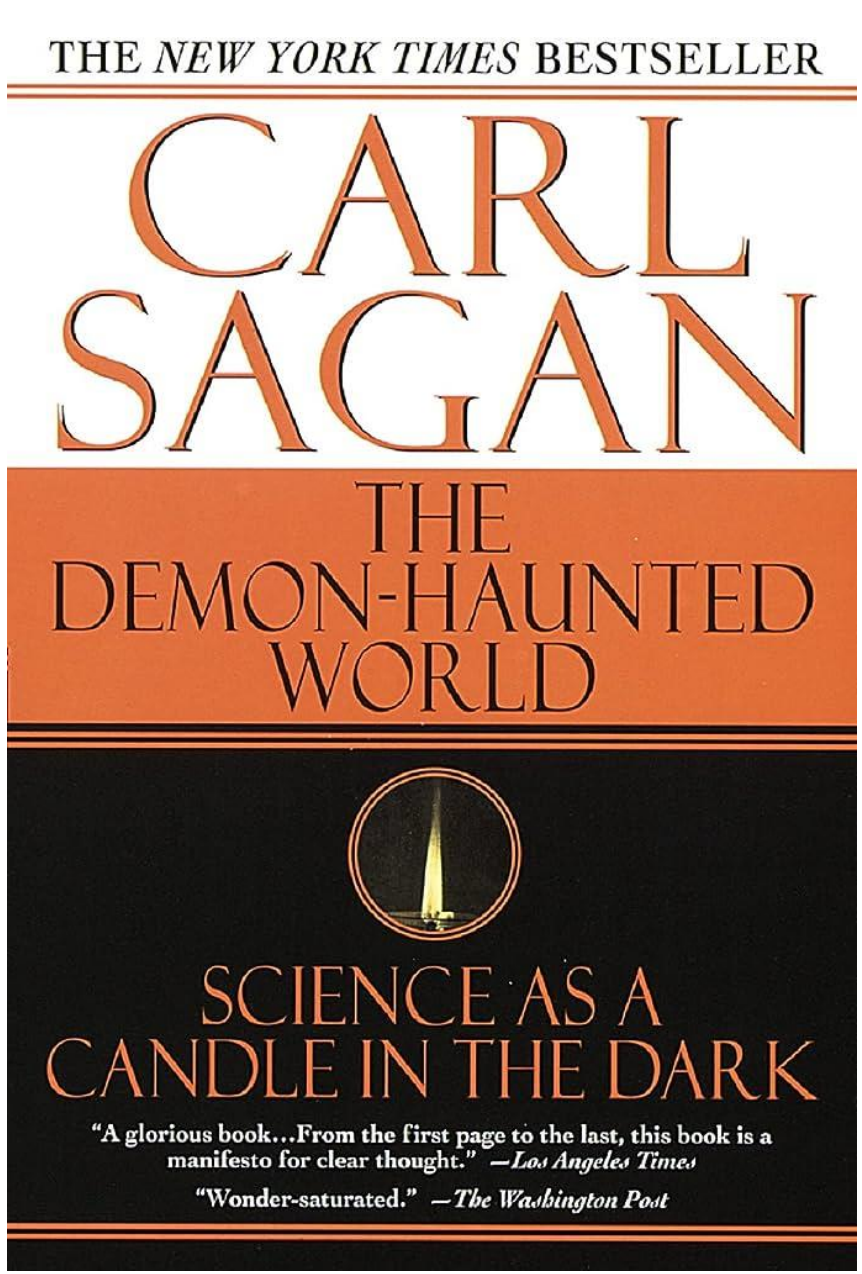
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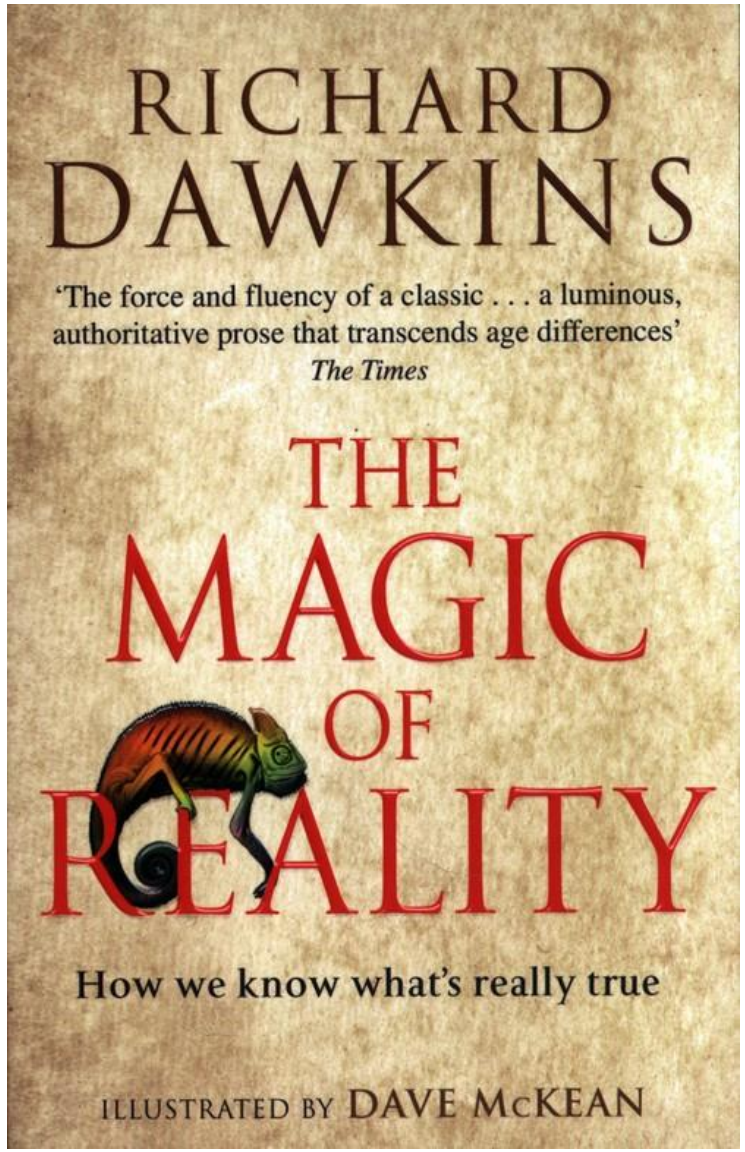
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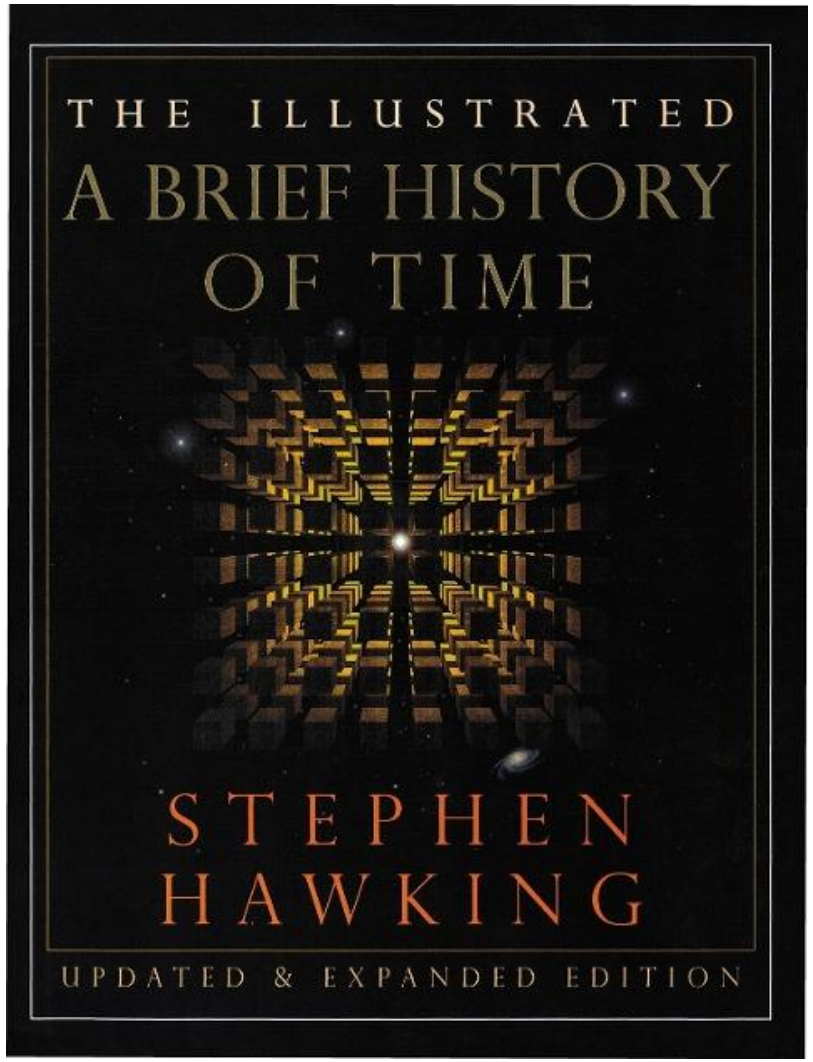
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Isabel Maria Casimiro (virtual)

CODESRIA, Dakar, Mozambique

Friday, October 20

Panel Discussion

Chaired by Claire Gorrara

Melanie Knetsch

Dariusz Aksamit

Isabel Maria Casimiro

Closing Remarks by AESIS

Thank You!

iwa

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