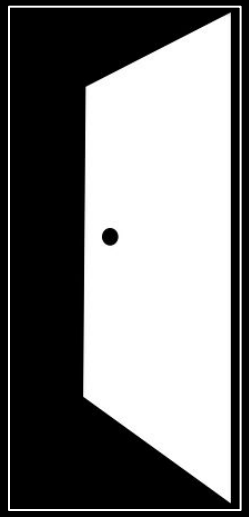
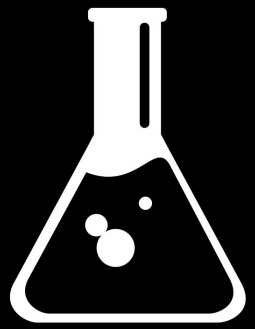
Reflections on virtue and identity in an “open science revolution”

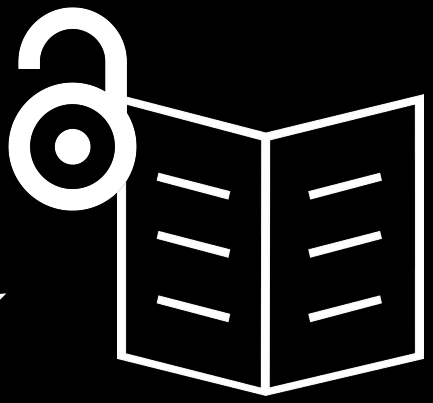


Rosalind Attenborough
Science, Technology and Innovation Studies
University of Edinburgh

My perspective



First qualified *in* science (biology)



Worked for an open access science journal

To studies *of* science and openness

Taking a step back...

What is the meaning of “open” in science?

Why is it so important *now*?

What is at stake during this time of change?

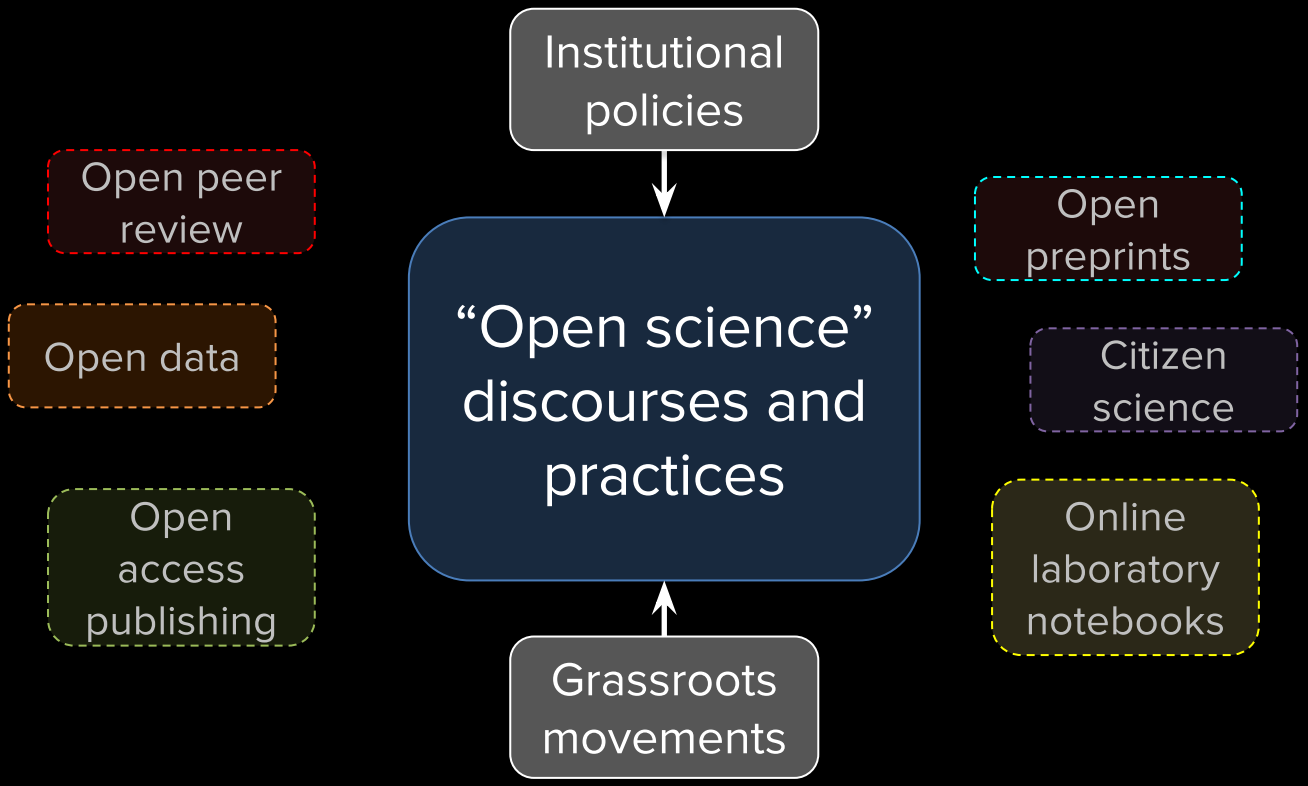
Outline

1. Narratives and meanings of scientific openness
2. My analytical frame: epistemic virtue
3. Empirical insights from my pilot study

21st century “open science”

“There is scarcely a scientist who has not stumbled upon the term ‘Open Science’ of late and there is hardly a scientific conference where the word and its meaning are not discussed in some form or other.” (Fecher and Friesike, 2014, p. 17)

21st century “open science”



Traditional, functional openness

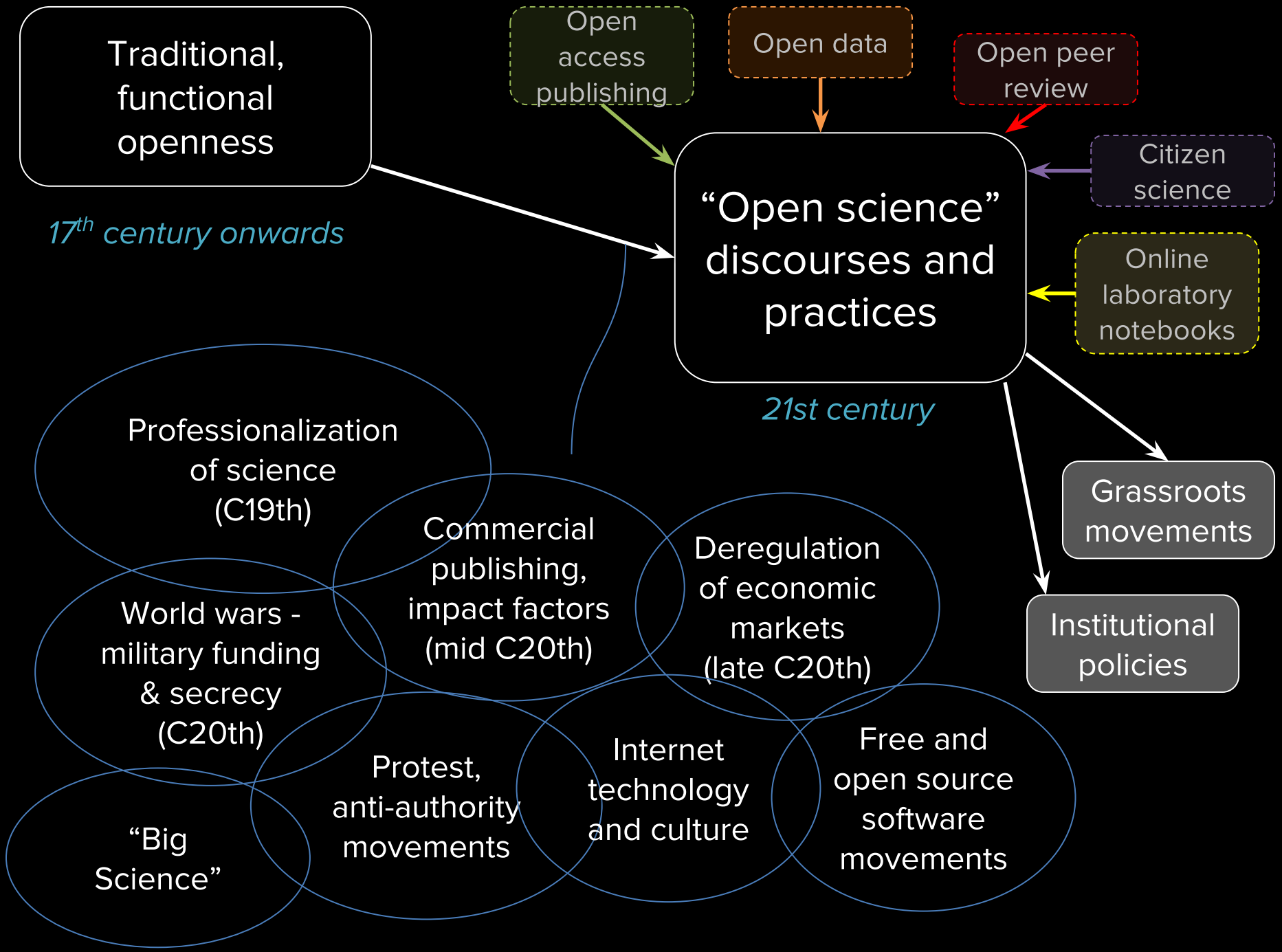
"Much of the remarkable growth of scientific understanding in recent centuries is due to open practices;
open communication and deliberation sit at the heart of scientific practice." (The Royal Society, 2012, p. 13; referencing Polanyi, 1962)

"The substantive findings of science are a product of social collaboration and are assigned to the community...Secrecy is the antithesis of this norm [communism]; full and open communication is its enactment." (Merton, 1973, pp. 273-4)

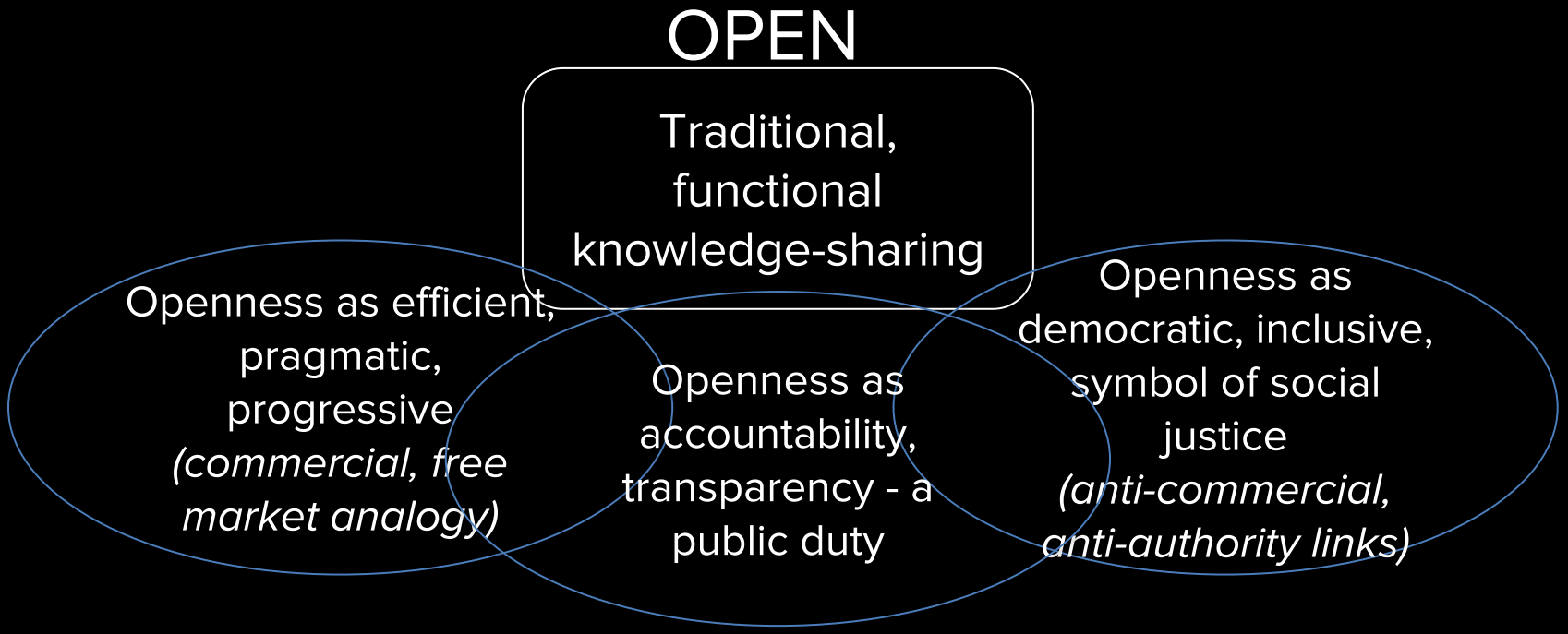
"If I have seen further, it is by standing on the shoulders of giants." (Newton, 1675)

Old and new narratives of openness

Traditional, functional openness	Openness is essential to and characteristic of science	"...open communication and deliberation sit at the heart of scientific practice" (The Royal Society, 2012, p. 13)
21st century "open science"	Openness is essential to and characteristic of science, **but science needs to be more open**	"...much of today's scientific practice falls short of the ideals of intelligent openness." (The Royal Society, 2012, p. 16)


Traditional, functional openness
17th century onwards
Open access publishing
Open data
Open peer review
Citizen science
Online laboratory notebooks
"Open science" discourses and practices
21st century
Grassroots movements
Institutional policies
Professionalization of science (C19th)
Commercial publishing, impact factors (mid C20th)
Deregulation of economic markets (late C20th)
World wars - military funding & secrecy (C20th)
"Big Science"
Protest, anti-authority movements
Internet technology and culture
Free and open source software movements

21st century scientific “open”-ness represents a new confluence of meanings



21st century scientific “open”-ness represents a new confluence of meanings...

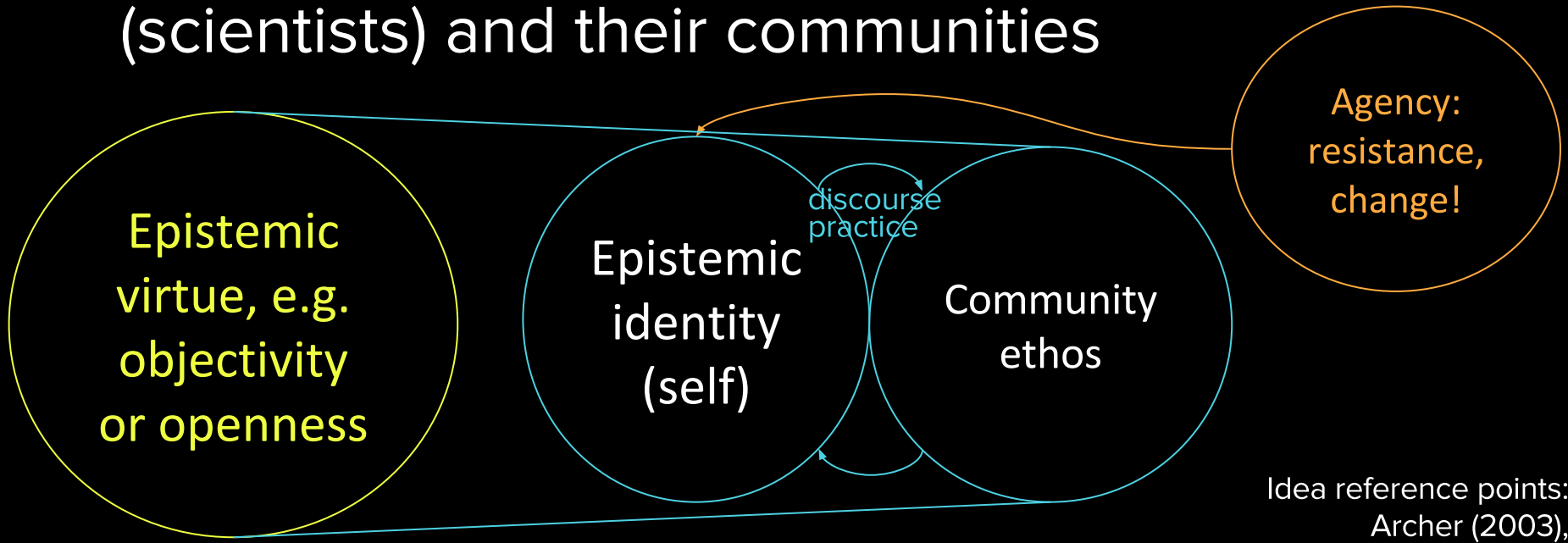
...and thus “open” has become a powerful flexible term for what is good and desirable in science.

My analytical perspective: epistemic virtue and identity

- Moralised epistemology: a virtue *"preached and practiced in order to know the world"* (Daston & Galison, 2007, p. 39)
- Example: objectivity

My analytical perspective: epistemic virtue and identity

- Arises contingently and is subject to change
- *Expressed* and *shaped by* epistemic subjects (scientists) and their communities



Idea reference points:
Archer (2003),
Bulpin & Molyneux-Hodgson (2013),
Daston & Galison (2007)

My analytical perspective: epistemic virtue and identity

- Aim: to be *sensitive* to this framing
  - Explore insights and validity
- Acknowledges scientists as agents of change (or resistance to change)

Pilot study insight

- Semi-structured interviews with biologists

Traditional (1)	Reactive / strategic (5)	Proactive (1)
“Traditionally science has always been open within universities. I mean, maybe access is a problem, but if you just email or ask someone and they will send you the stuff. Traditional academic freedom would demand it, it was always open.” *Tends not to identify with new “open science” narrative.*	“The pre-publishing, you want to be as secretive as possible, post-publishing you want to be as talkative about it as you can.” “I don't think you can expect…especially if you've got, like me, a small group…expect that we should just as soon as we get an idea [we] put it out there…”	“…it's enabled us to do some things that other groups haven't done…I think that's been very successful. So I think openness is good…I basically have been pushing this within our group for a long time…” *Strongly identifies with new “open science” narrative.*

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Thank you!

MSc + PhD supervisors:
Dr Niki Vermeulen (Edinburgh)
Dr James Mittra (Edinburgh)

Previous MSc supervisor:
Prof Brian Balmer (UCL)

Pilot study participants

Helpful discussions with colleagues & advisors

You, the audience!

Discussion question:

Will the “open science revolution” change what it means to do *good* (i.e. epistemically virtuous) science?