Open Science

Rethinking the publication culture

Glenn Hampson
Program Director
Open Scholarship Initiative
For VI BRISPE Conference
October 28, 2021

Overview

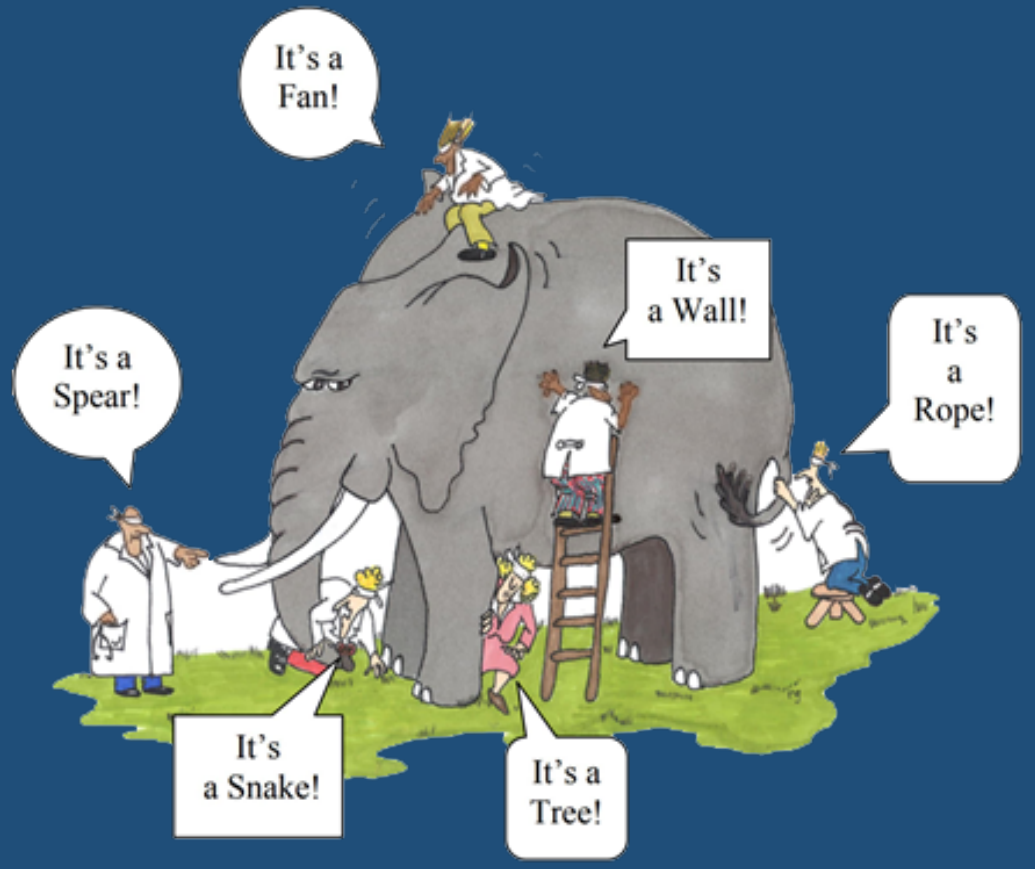
5 definitions that form the foundation for this topic

1

What is science communication?

HOW WE DEFINE IT DEPENDS ON OUR PERSPECTIVE

- **MANY PARTICIPANTS:** Individual researchers, research groups, journalists, IGOs, governments, universities, informal educators, tech transfer offices, industry, science writers, policy activists (NGOs), and more.
- **MANY SKILLSETS:** From subject-specific expert work like study design, study communication, grant writing, technical writing, and journal editing, to multidisciplinary work like media outreach, informatics, business development, and marketing.



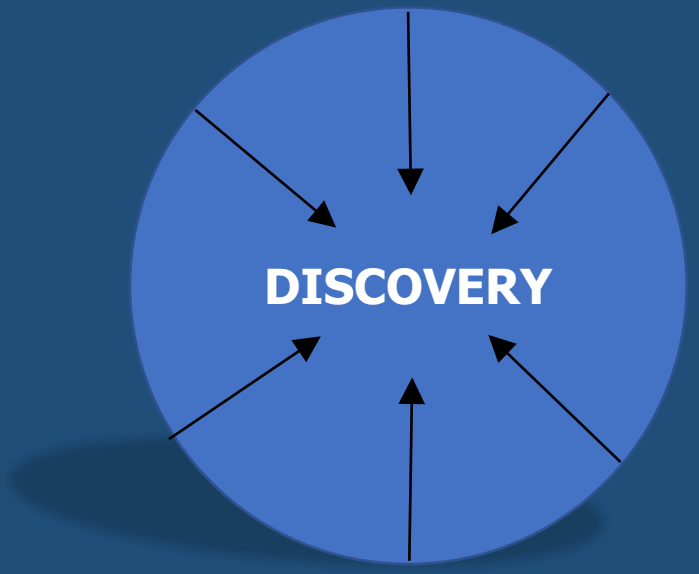
What is the goal?

THERE ARE MANY GOALS, IN FACT, SHAPED BY OUR NEEDS

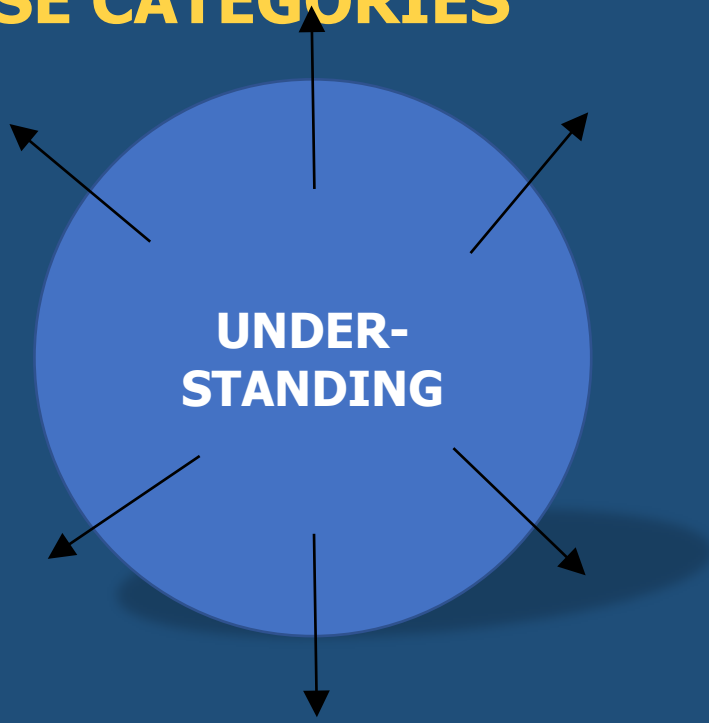
These goals include (but are not limited to) improving the readability and clarity of science, maintaining the integrity of important communication tools like journals, evolving these communication tools and publishing methods, improving collaboration and interdisciplinary engagement, improving openness and transparency in science (with an eye toward improving information access and reuse, and also improving reliability and replicability), improving science outreach and literacy, making issue advocacy and awareness more effective, improving policy development and compliance (e.g., vaccines), and more.

Two fundamentally different perspectives

MOST SCIENCE COMMUNICATION FALLS INTO THESE CATEGORIES



THERE AREN'T MANY SOLID CONNECTIONS EITHER WITHIN OR BETWEEN THESE TWO CATEGORIES. There are practitioner networks that share best practices and lessons of experience and issue recommendations. There IS NOT, however, widespread recognition (especially at the funder level) that all of this work involves the same basic activities, and would therefore benefit from being more connected.



GENERALLY INWARD-FOCUSED WORK like journal publishing, analysis, study support (e.g., grant writing), and tech transfer.

GENERALLY OUTWARD-FOCUSED WORK like science writing, STEM education, science marketing, issue advocacy and policy development.

2

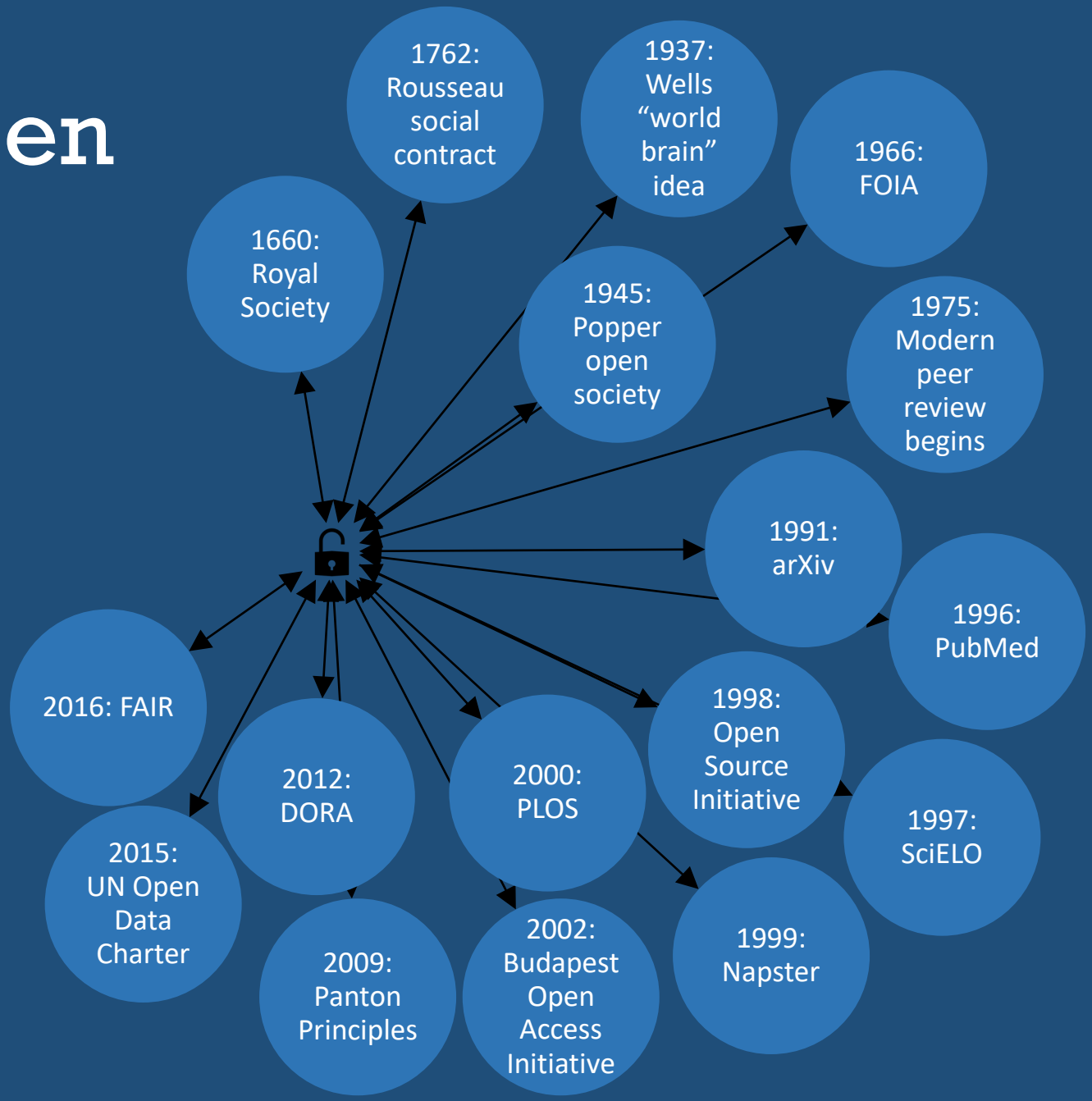
What is open?

There is no widely accepted definition. Added to this, there are several separate and distinct "open" movements, each with their own broad definitions.

OPEN	ACCESS
OPEN	DATA
OPEN	SOURCE/CODE
OPEN	SCIENCE
OPEN	GOVERNMENT
OPEN	EDUCATIONAL RESOURCES
OPEN	METHODS, PRACTICES

These different open movements have many different origins

All evolved for decades (even centuries) from many corners of many societies. Some were originally fueled by idealism, others by need or opportunity. There is no starting point for any single movements—this growth has been iterative and cumulative.



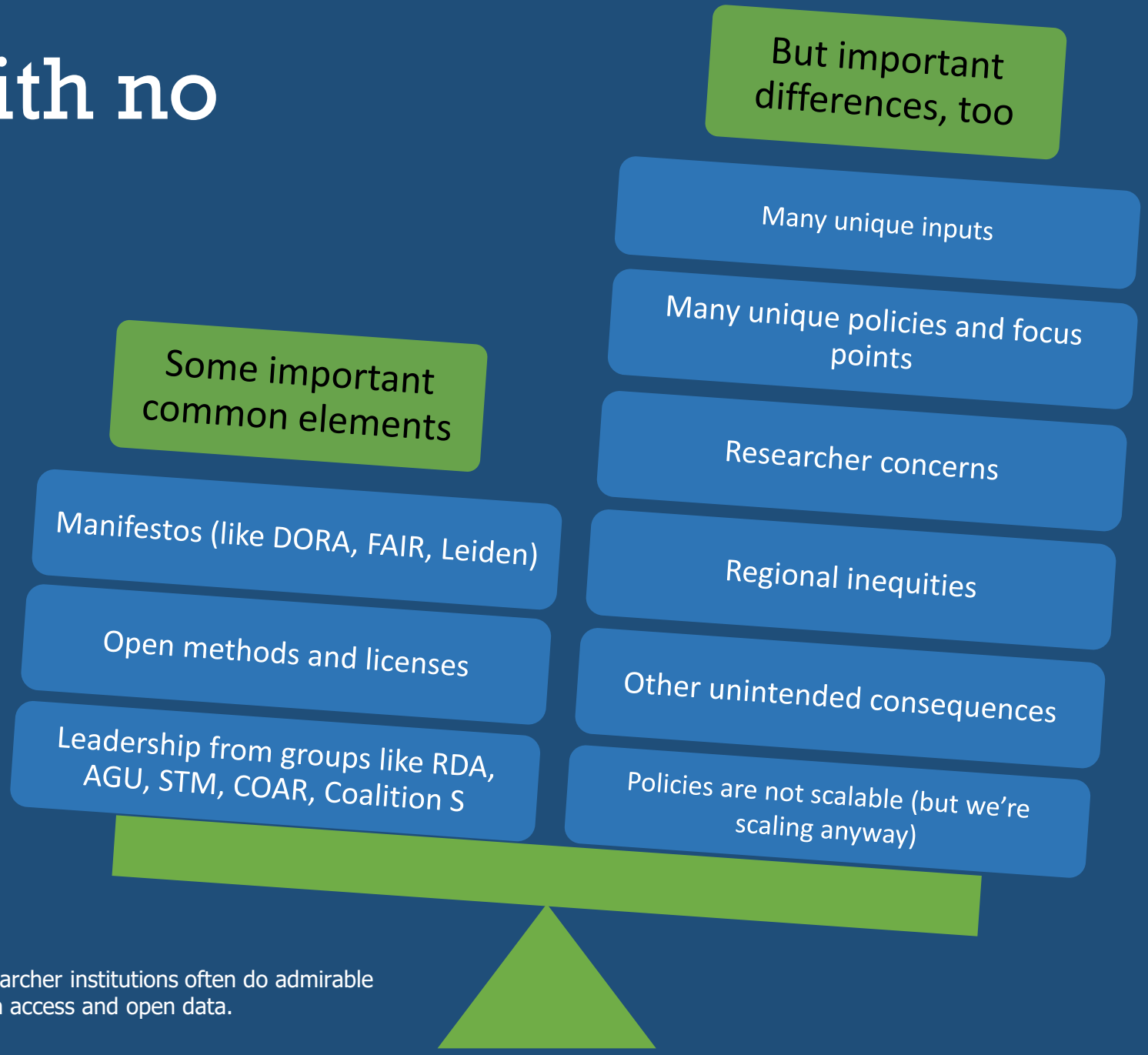
And over time, they all followed different evolutionary paths

Leaving them with no central focus

EVEN INTERNALLY

This array of open solutions can use similar methods and practices, but they are mostly similar in name only due to:*

- Many different inputs (definitions, goals, needs, perspectives, etc.)
- Many different focus points
- Researcher concerns
- Regional inequities and other unintended consequences, and
- Limited scalability and interoperability.



Exception: Large researcher institutions often do admirable work integrating open access and open data.

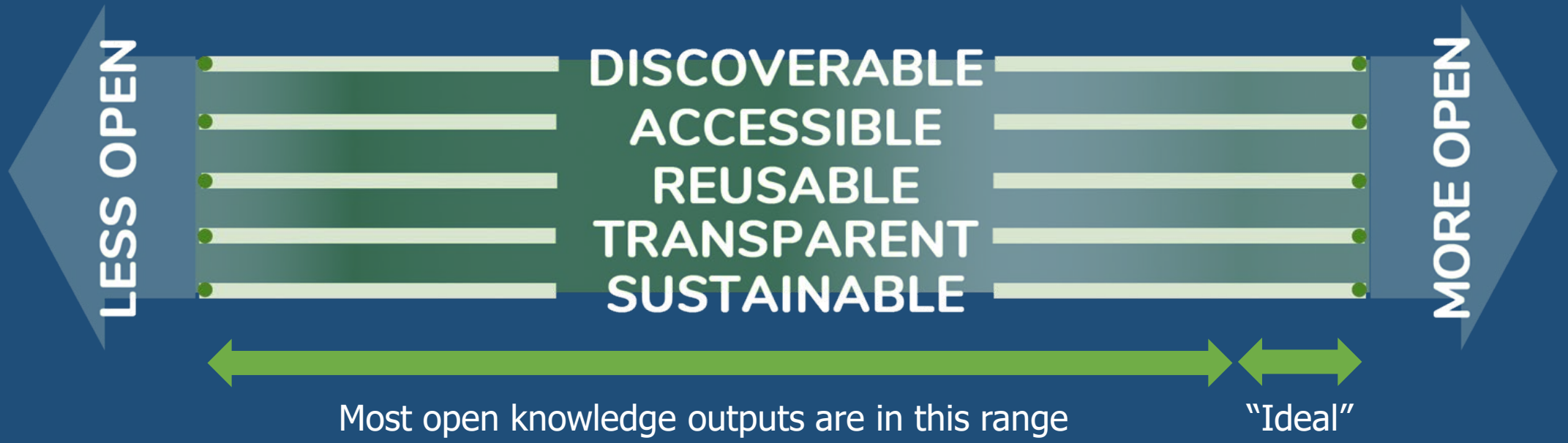
What do all these different ideas have in common?

1. The goal to share information more broadly, especially with the right audiences
2. The use of certain standard, accepted approaches (like journals, licensing, etc.), and
3. The realization over time that there are no one-size-fits-all definitions, methods or solutions.

Even within an open solutions community of practice like Open Access or Open Data.

Also, it's clear that "open" definitions and outcomes exist along a spectrum

DARTS: discoverability (indexed, identifiers?); accessibility (downloadable, timely and machine-readable?); reusability (technical and licensing barriers?); transparency (confident in provenance and accuracy of this information?); and sustainability (stable long-term solution?).



3

What is open science?

There is no widely accepted definition (surprise!). Generally, though, "open science" means:

- A philosophy focused on making science easier to find, use and share
- A philosophy focused on making science easier to verify (by including datasets, protocols, etc.)

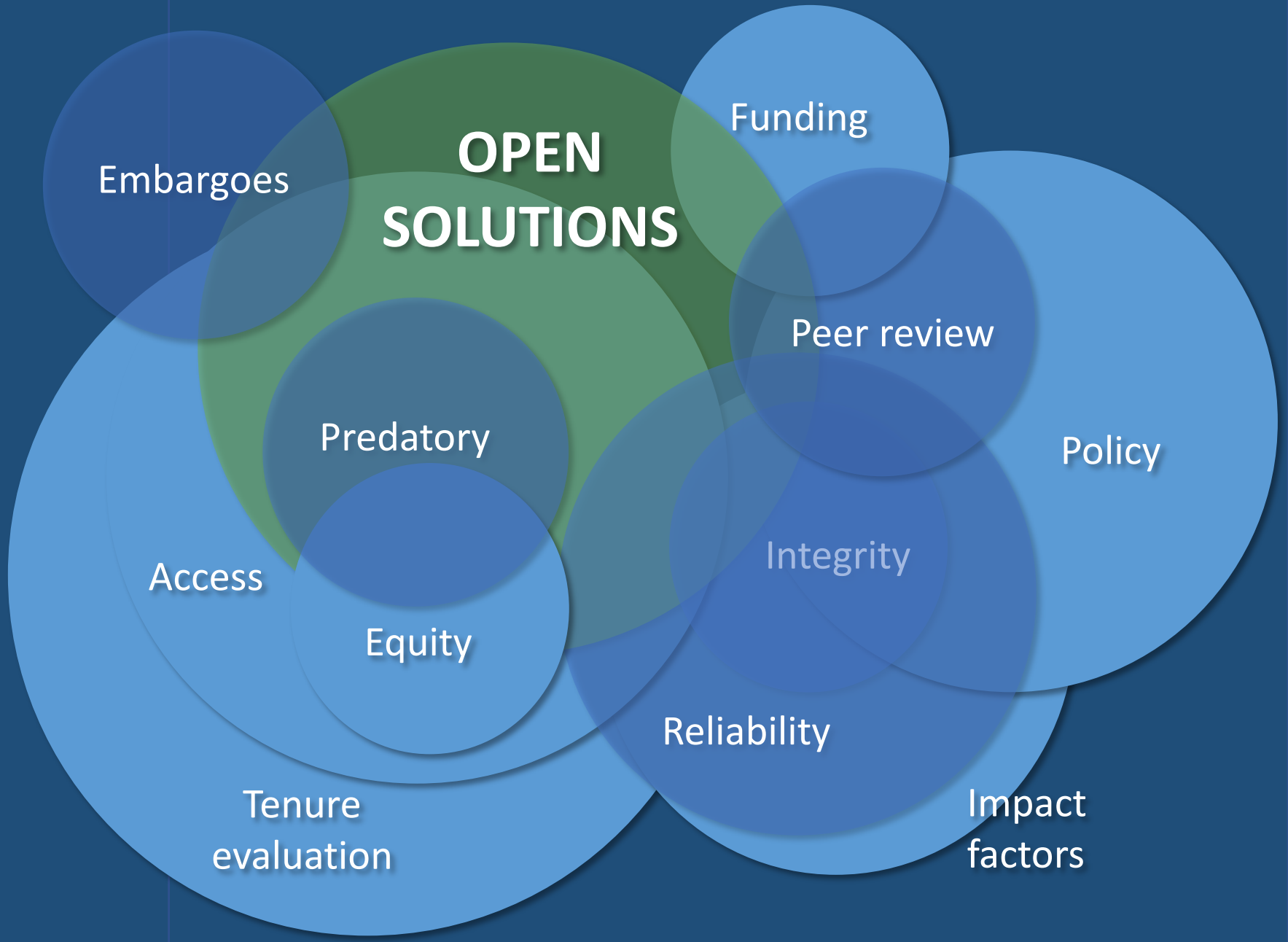
But in practice, this can mean lots of things, like:

- Collaboration between researchers in closed groups
- Sharing limited amounts of data, subject to constraints (only certain researchers, only certain data, etc.)

It does NOT mean the same thing to all researchers---e.g., open licenses, complete and immediate sharing of all data, social justice goals, and so on.

Importantly, open science is NOT a "cure-all"

There are many connected issues that need to be worked on in parallel. More "open science" might help with some of these issues, but open science alone is not the answer.



In truth, science itself is open

So, the term "open science" is a bit confusing because science needs to be open to succeed.

- The development of science in Europe in the 1500s was then (and remains today) COMPLETELY DEPENDENT on sharing information with other scientists so knowledge can be verified, and can grow
- How open is the question, as well as by what means, for what purposes.

4

What do we mean by publishing in today's world?

- What do we mean by publishing when it comes to science? Just print?
- What do we need from science publishing?
- What tools work best for different needs?
- How can "open publishing" help?

Fundamentally, we're concerned about sharing science knowledge

Some of the more important knowledge sharing practices throughout history include:

- Publishing in journals
- Private communications with other scientists
- Attending scientific meetings and conferences
- Joining scientific organizations
- Patents

The purposes of sharing vary

Science research has been shared for a number of reasons. Some of the more important ones include:

To get credit for a discovery

To advance a field of knowledge

To invite other scientists to verify findings

To make money from an invention

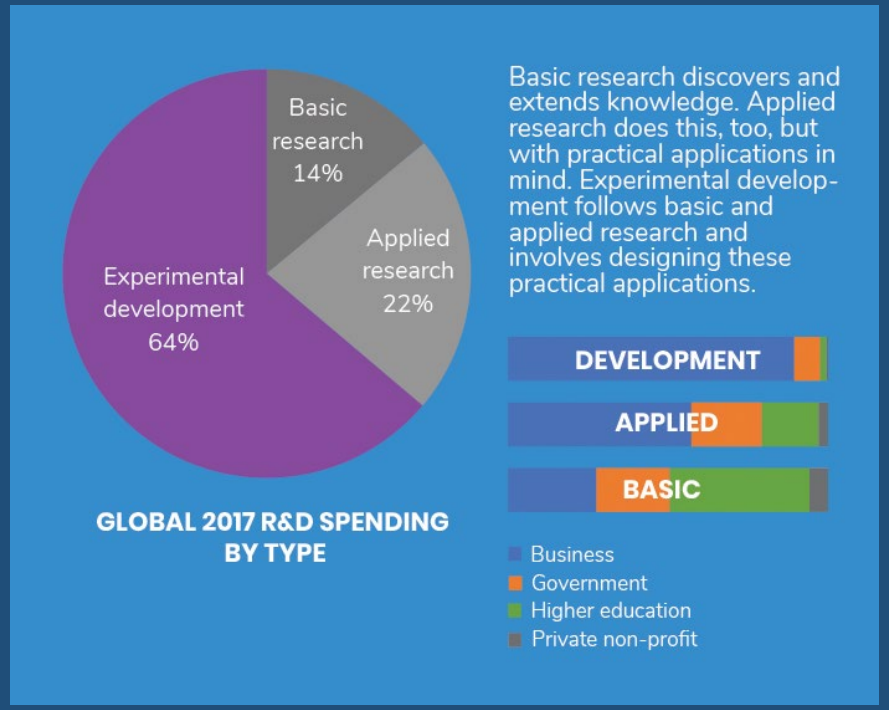
To improve lives

To improve academic reputation

Throughout time, though, publishing has been key

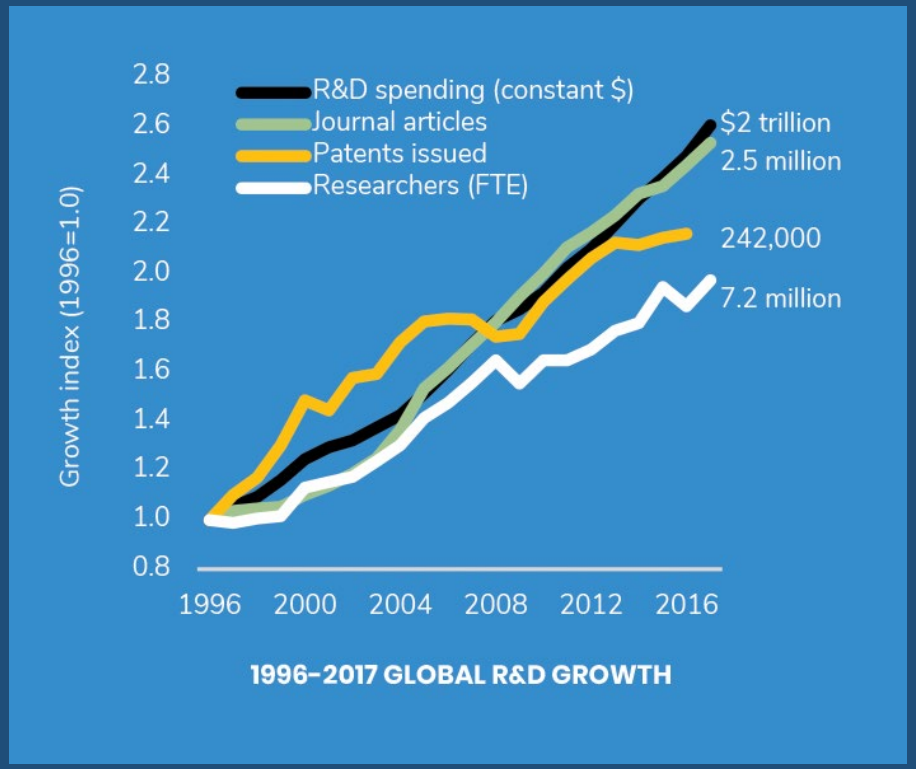
Publishing discoveries in science journals has, since the early 1800s, been the most widely-recognized way of sharing research.

However, this hasn't always been true for all researchers. Today, most research happens in private industry and this research is NOT published in journals (and is often NOT publicly available at all). Most of the research published in journals comes from university-based researchers, and involves basic research.



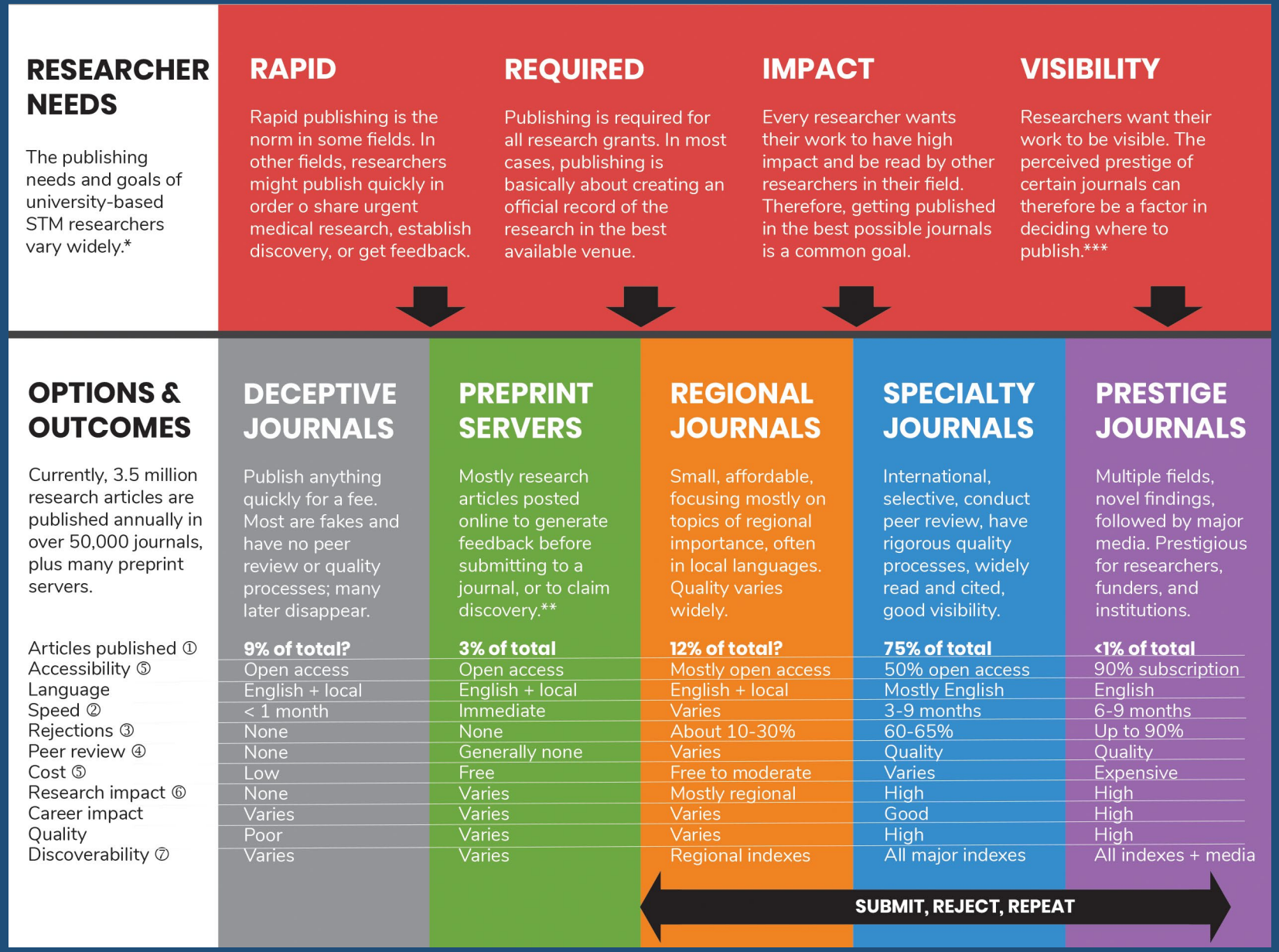
But publishing is growing

As R&D budgets have increased, science has splintered into more and more specializations, more researchers have been hired, and publishing technology has evolved, more and more journals have appeared---somewhere around 40,000 today (maybe even 90,000?). Today, over 3.5 million journal articles are published annually and the unique value of journals a gatekeeper of verifiable facts has been diminished.



Today, science publication formats vary widely

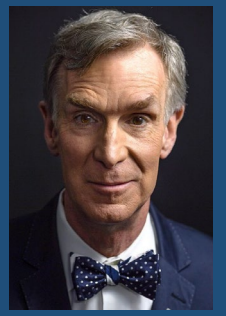
There are many different options available to researchers depending on their needs, perspectives, and resources. By far, most articles are published in good-quality "specialty" journals.



OSI Issue Brief 3. osiglobal.org

And what we expect from science communication writ large is changing

Whereas printed journal publications were at one time the gold standard, we now have grander ambitions, and more examples of best practices, and many more options.

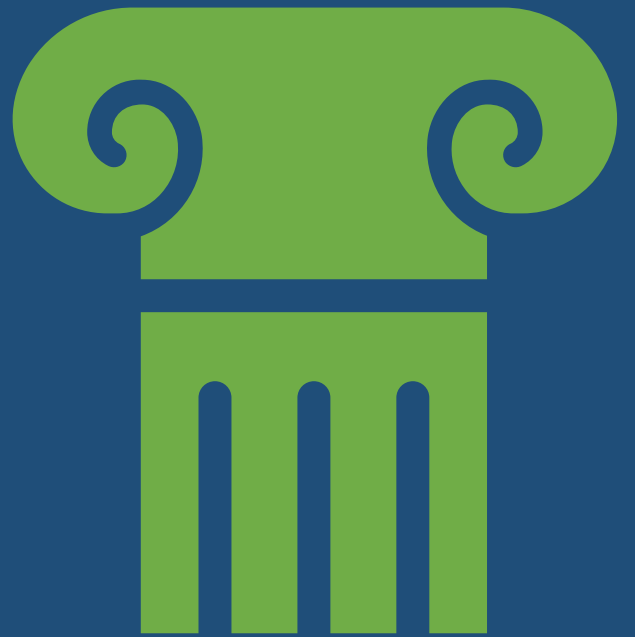


5

And finally, what exactly is the "publishing culture" in science?

More generally, this is actually the culture of communication in academia, not all science:

- Publishing in journals is a traditionally-accepted way of establishing discovery
- Publishing in high impact journals has grown over the last few decades in particular to be viewed as a status symbol, both by researcher and by tenure boards
- Being a prolific publisher is also looked upon favorably
- The prevailing attitude in most of research is that communication and publishing is a capstone activity---not a living part of the research ecosystem but an activity to be "finished with" by whatever means possible (to satisfy grant requirements) and then move on to the next project.



Perverse incentives

In academia (and especially STM), this has created perverse incentives that distort the publishing environment and create a vicious cycle:

Condition	Incentivized publishing behavior(s)
Publish as much as possible (because it helps tenure chances)	"Salami slice" your single paper into several papers; co-author anything, even if your contribution is minimal; publish anything anywhere, even substandard work
Aim for high impact	Try to publish in the biggest name journals. This leads to misuse and abuse of the impact factor in ranking journals, research, and researchers.
Use "citations" as a metric	Self-citations, citation rings, counting negative citations, etc.
Busy schedules	No time for reusability---data standards, connection between fields, etc.
Extreme focus on published work	Don't publish negative findings, don't do replicability studies
Secrecy and competition	Don't publish or share data until all the value has been extracted from it

So the questions, then…

- **Is this really what science is all about,** or is this the tail wagging the dog?
- How can this publication culture be changed (at least in science) or is this "publication culture" merely a reflection of "science culture"?
- Can it be changed?
- Should it be?
- Is open science the answer (or at least part of it)?

And before you reply…

Bear in mind that publishing is critical to science. ”If you don’t publish your experiment, it is exactly like not doing it at all.”* So, is this a situation where our communication solutions have created an entirely false and unnecessary culture in science, or have our communication solutions have simply distorted this culture and accentuated the less flattering parts? (And if so, where have we seen this happen before?)

Hint

*Fom Keith Yamomoto at OSI’s 2017 conference. Keith is the Special Advisor to the Chancellor for Science Policy and Strategy at UCLA.

Why open?

3 main reasons

1

Open has potential

THE HOPE IS THAT OPEN SOLUTIONS, DONE RIGHT, WILL LEAD TO:

- Increased reach and engagement
- Increased impact (in science and policy)
- Increased benefit to science*

* For instance, through improved visibility, replicability, and interoperability

This potential is the "Open Renaissance" ideal

IF WE DO THIS....

- **Clearly define and support open**
- **Make open solutions robust**, inclusive, broad, scalable and sustainable
- **Resolve connected issues** (e.g., impact factors)
- **Align incentives** so scholars embrace open because they want to
- **Make open simple and clear** so scholars know what it means and why they should do it
- **Create clear standards and guidelines**
- **Keep the marketplace competitive** so open products remain cutting edge
- **Integrate open repositories,** not just connect them
- **Standardize data**

THEN WE GET THIS....

- **The research ecosystem grows more powerful** (with more data, more connections, and more apps),
- **Innovation is catalyzed**
- **Widespread improvements happen in science.**
- **New fields and discoveries emerge** based on "connecting the dots" (thanks to data and repositories)
- **Funding efficiency improves**
- **Discovery accelerates**
- **The social impacts of science surpass today** (including science literacy, public policy, education, more)

These expectations are lofty, but they are based in history and experience

The history of communication has demonstrated that as communication technology improves, so too does the breadth and depth of what we're able to achieve with communication. Combined with this, science itself would not have been able to take hold without the development of the printing press so research could be widely shared. So, the potential for science to succeed even more with more advanced communication techniques is real.

2

Open solutions are “vectors”

We face many challenges where more information transparency and sharing is needed:

- Critical research (like vaccines and climate change)
- Looming problems (like water and food scarcity)
- Access equity and budget constraints
- Research progress. The US National Academies states that “the openness of data is…critical to the progress of science, stimulating innovation, enhancing reproducibility, and enabling new research questions.”*

*NAS. 2018. Open Science by Design. doi: 10.17226/25116

3

More open is inevitable

Open solutions are everywhere and they are pervasive:

- Which isn't to say these solutions are all benevolent (look no further than newspapers)
- But there is broad agreement among the leading thinkers in this space that we are at or near a unique period in history when we might be able to draw on our lessons of experience and work together to build a new and productive future for open where we can unite in common cause to realize the full potential of open.

Solutions

Here’s what we’ve come up with so far

Widely used approaches

- Research sharing principles (like FAIR, DORA and Leiden), best practices, networks, collaborations
- Open licensing (CC-BY and its variations in publishing, CC0 in data, and various licensing schemes for code)
- The growing push for more preprints (still only a fraction of the total, however)
- APCs---"author publishing charges"---instead of subscriptions
- Transformative agreements between publishers and university systems for "read and publish" and/or "publish and read" journal publishing arrangements instead of subscriptions
- Mandates (from governments, universities and funders for open licensing, limited embargo periods, data inclusion, etc.)
- Growing use of tools and systems to catalogue science and impacts, like Altmetric, Crossref (DOIs), Unpaywall, ORCID, and more.

GO FAIR

Altmetric

CC BY NC ND

Crossref

Plus global initiatives

- UNESCO's 2020-21 attempt to create a global framework for open science policy
- Plan S's attempt to create a one-size-fits all open solution for the world (Plan S is based in and applies almost exclusively to Europe at the moment)
- Broad advocacy and issue-specific work of many groups: SPARC, OA2020, OASPA, COAR, CODATA, RDA, WAME, more

And more

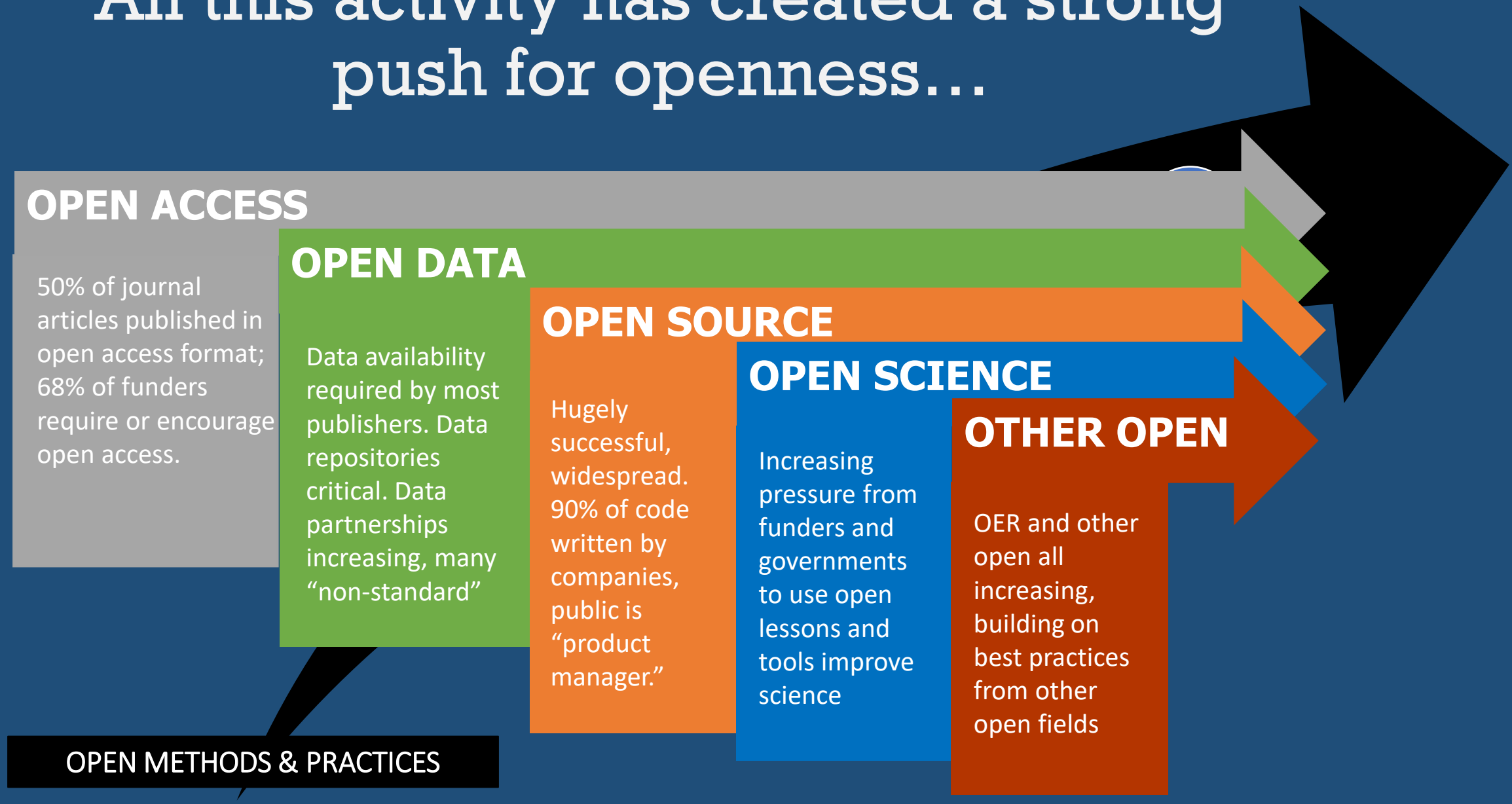
- SciELO's pioneering, groundbreaking, and highly successful work at creating sustainable and nearly universal open solutions for Brazil and much of South America.
- Center for Open Science (COS) preprint platform development work
- Work of libraries everywhere to highlight the need for open
- OSI's work to better understand open perspectives and develop common ground solutions
- Growing research collaboration networks (DataSpace, Sage Bionetworks, more)
- EU Science Cloud (on the horizon)
- Growing focus on data repository standards and interoperability

SciELO

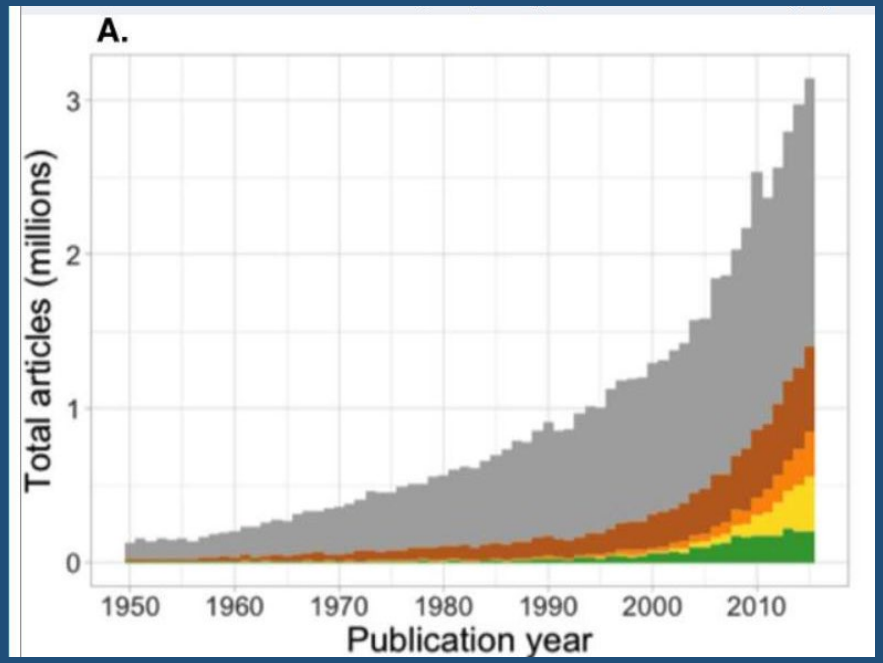
OSI

COS
CENTER FOR
OPEN SCIENCE

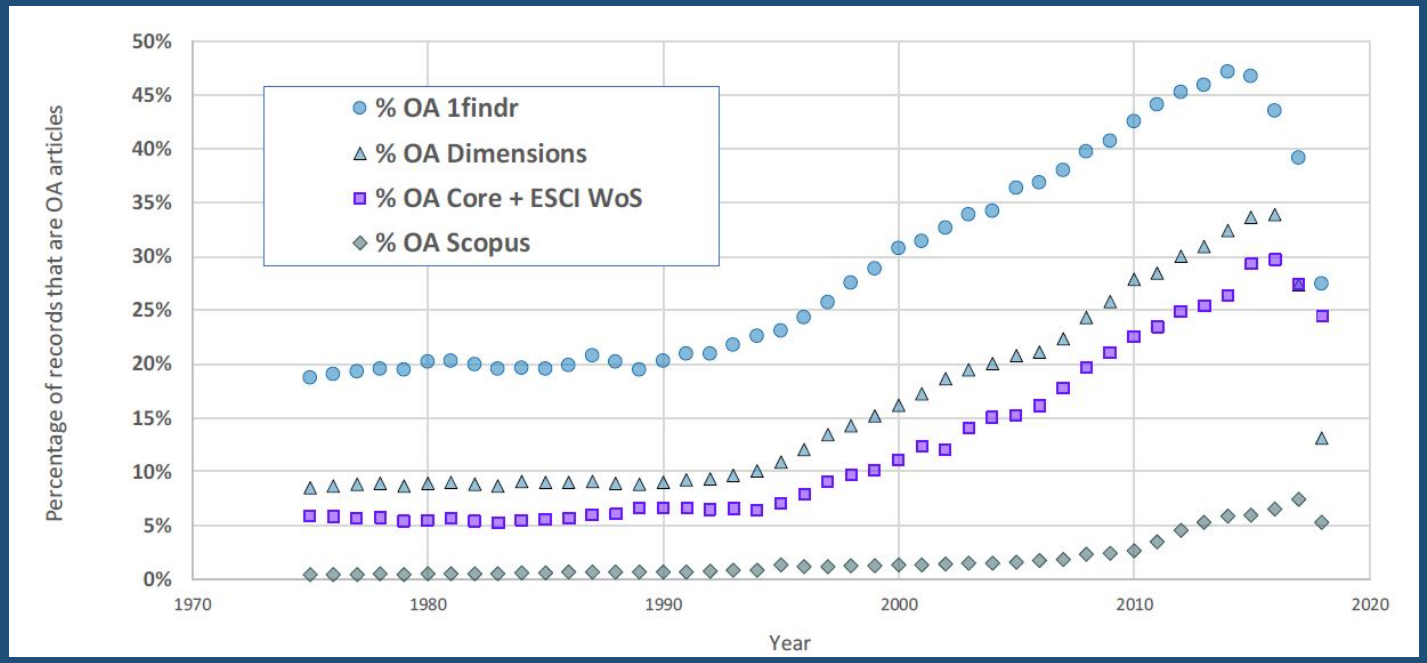
All this activity has created a strong push for openness…



OPEN ACCESS PUBLISHING GROWTH OVER TIME



Piwowar, H, J Priem, V Larivière, JP Alperin, L Mat-thias, B Norlander, A Farley, J West, and S Haust-ein. 2018. The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles. PeerJ 6:e4375



Archambault, E. 2018. Universalisation of OA scientific dissemination

It has also led to some unintended consequences

A lot of open advocacy is ideological, focused on implementing an "ideal" solution for open instead of recognizing the wide variety of needs, concerns, and solutions in research. This approach has:

- Created deep divisions in the open community
- Prevented the open community from working together on finding and funding broad, globally workable solutions.
- Forced a fracturing of the open solutions space, where China, India and the US have distinct open solutions that don't align with the EU, which doesn't align with open policies for Brazil, or Germany, or other countries and regions. What does this mean for the future of science access and collaboration?

SOME OTHER UNITENDED CONSEQUENCES OF OUR CURRENT POLICY TRAJECTORY

SUPPLY & DEMAND MISFIRES	• **Predatory publishing** is filling the demand for low-cost open publishing options • **Sci-Hub** is using university login credentials to steal copyrighted materials from publishers and offer this for free • **Most open policies do not require** that the official version of record be made open access---only the author's accepted manuscript. Official VORs are still mostly closed.
POLICY CONFLICTS	• **Numerous policy conflicts** are erupting, particularly between GDPR and open data • **STM-centric solutions** are driving the debate, with no real consideration for policies that work for the arts, humanities and social sciences. • **Preprints** (open access journal articles that generally aren't peer reviewed) are running into credibility problems. As a result, some critical science, as well as critical public policy, is experiencing an infodemic.
POLICY LOCK-IN	• **Transformative agreements** may end up calcifying our use of APC solutions (and thereby locking us into a solution that makes it harder for many researchers from lower resource regions and institutions to participate in science). The prices of some APCs have been skyrocketing lately, taking us from access barriers ("paywalls") to participation barriers ("playwalls").

What does all this mean?

1. Open movements are creating huge and diverse changes in the information landscape.
2. Many of these changes are good, but there are also significant oversights and consequences
3. We aren't capitalizing on the full potential of open

- Open efforts end up speaking past each other—our definitions and goals aren't the same
- One-size-fits-all reform efforts don't resonate or work with most of the world
- We don't see our common ground needs and perspectives, just the details of our policies and ideologies

Can we do better?

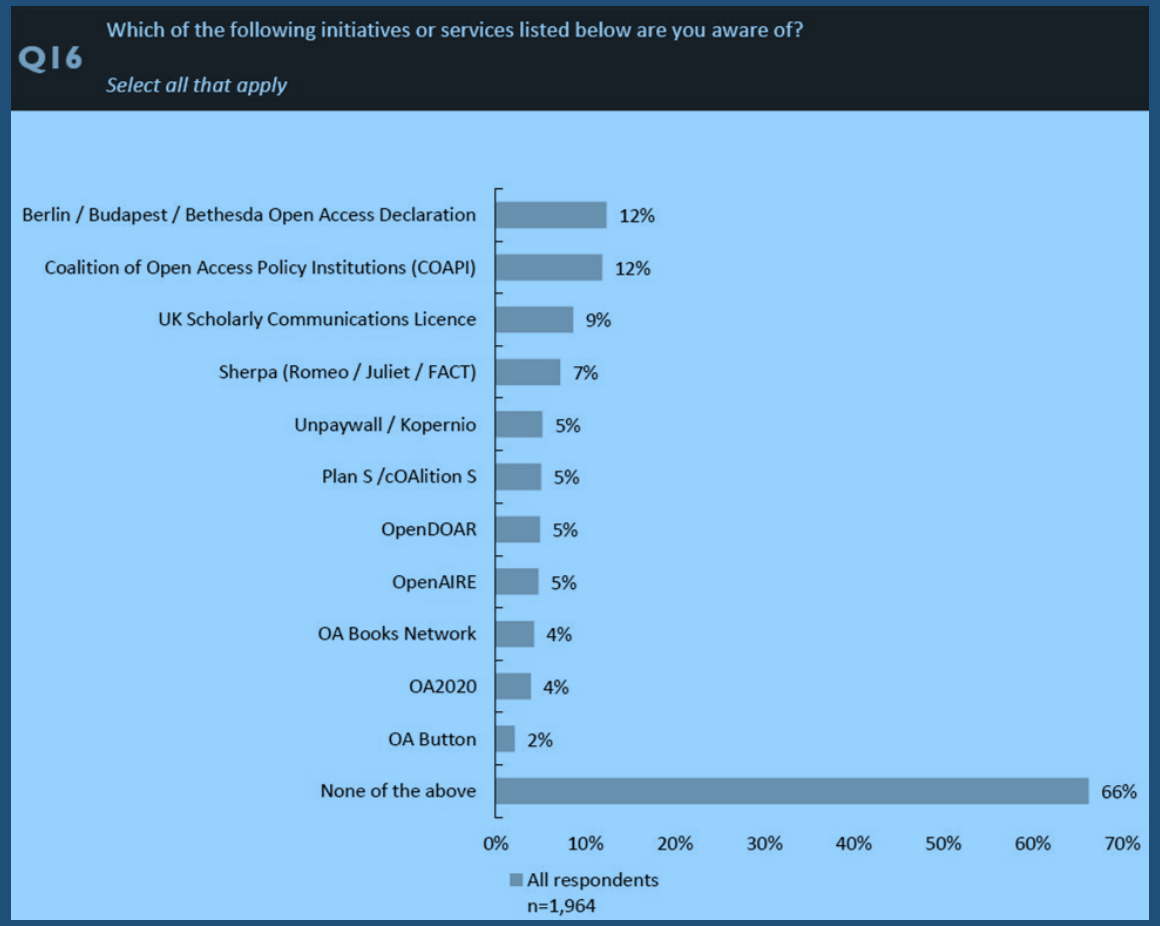
Analysis

Why isn’t everything open already? 5 reasons.

1

Awareness

In survey after survey, the overwhelming majority of scientists aren't aware of open details or of their open publishing options



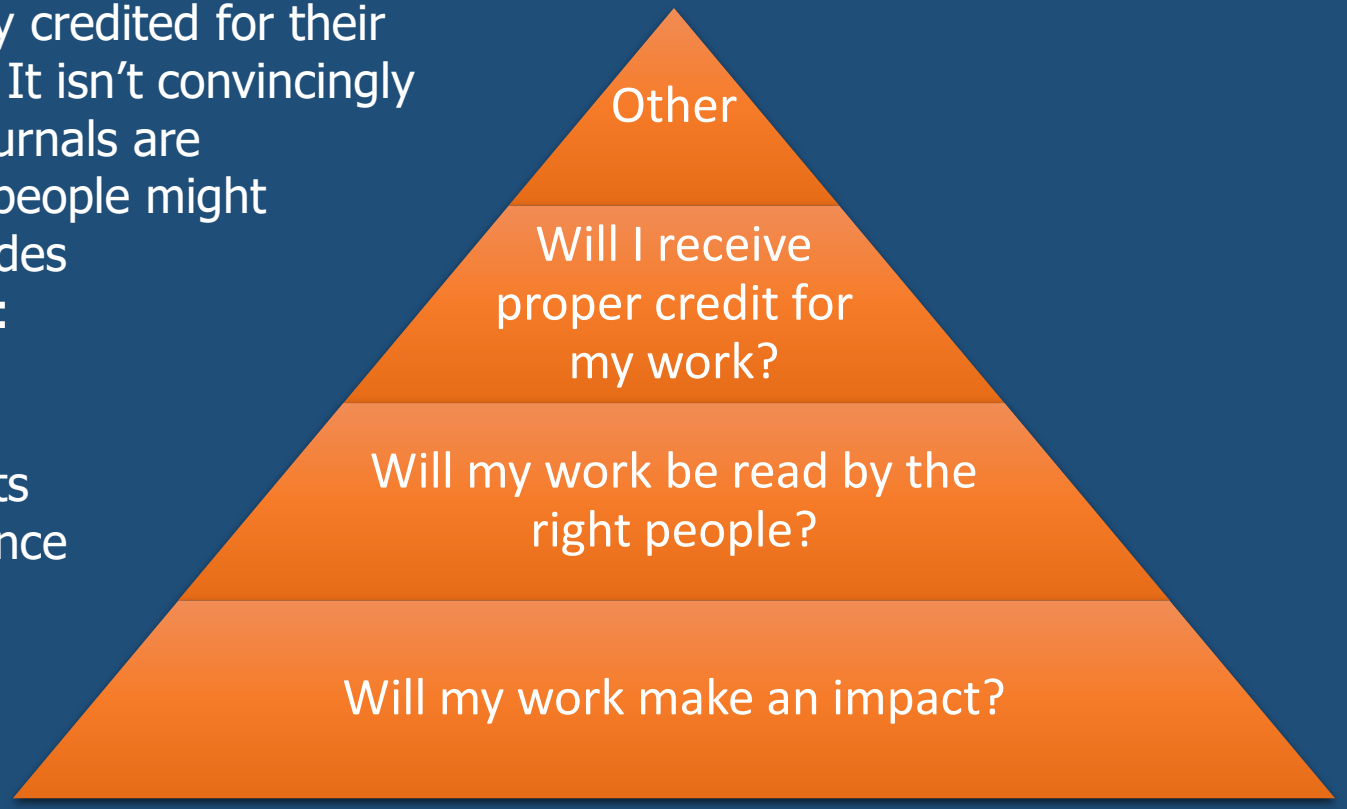
Taylor & Francis 2019 researcher survey

2

Concerns

Researchers want their work to have an impact in their field and on society. They also want career benefits—to be read by the right people in the right journals, and be properly credited for their work. Open is mostly neutral on all these points. It isn't convincingly great, but it isn't bad either. Most high impact journals are subscription-based, for example, but then more people might download open work. The "other" category includes concerns like how, as a group, researchers often:

- don't know much about the details of open
- are confused by open compliance requirements
- don't have time for complicated open compliance
- distrust that their openly licensed research will be used fairly and properly, and
- worry that their open discoveries will be "scooped."

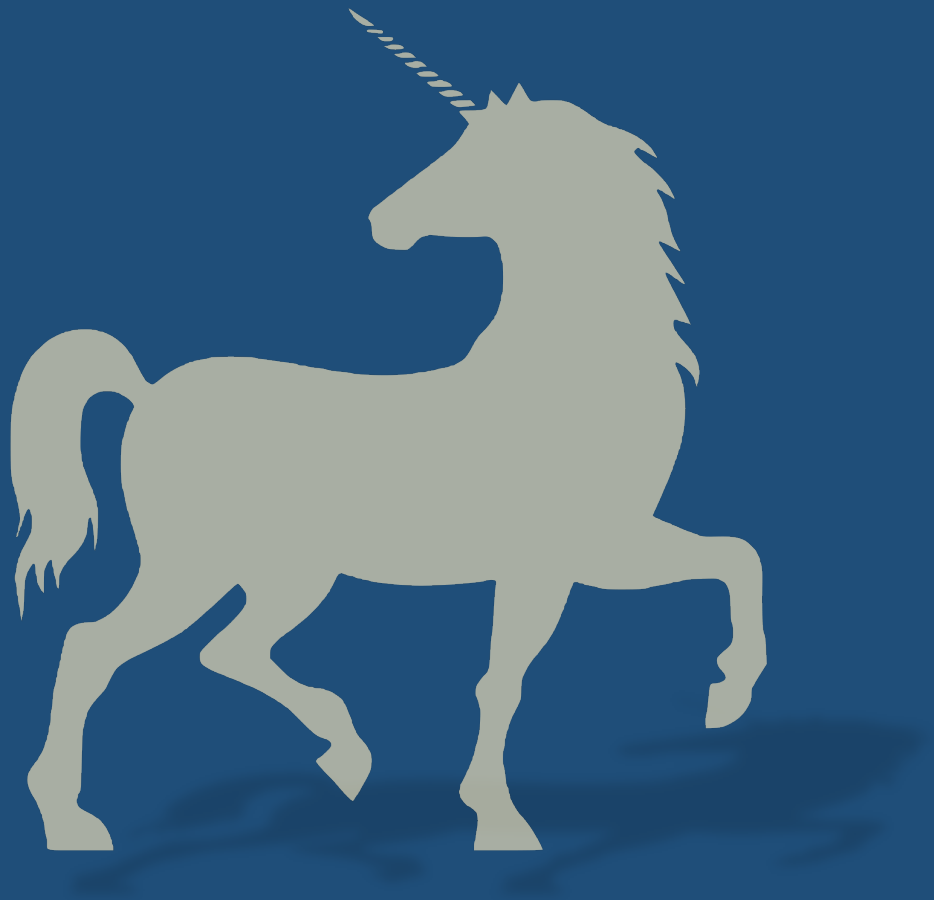


3

Scalability

The open solutions universe is a herd of unicorns, with wide variation in histories, motives, philosophies, structures, goals, stakeholders, rules, and policies, even within each open solutions community (like open access or open data).

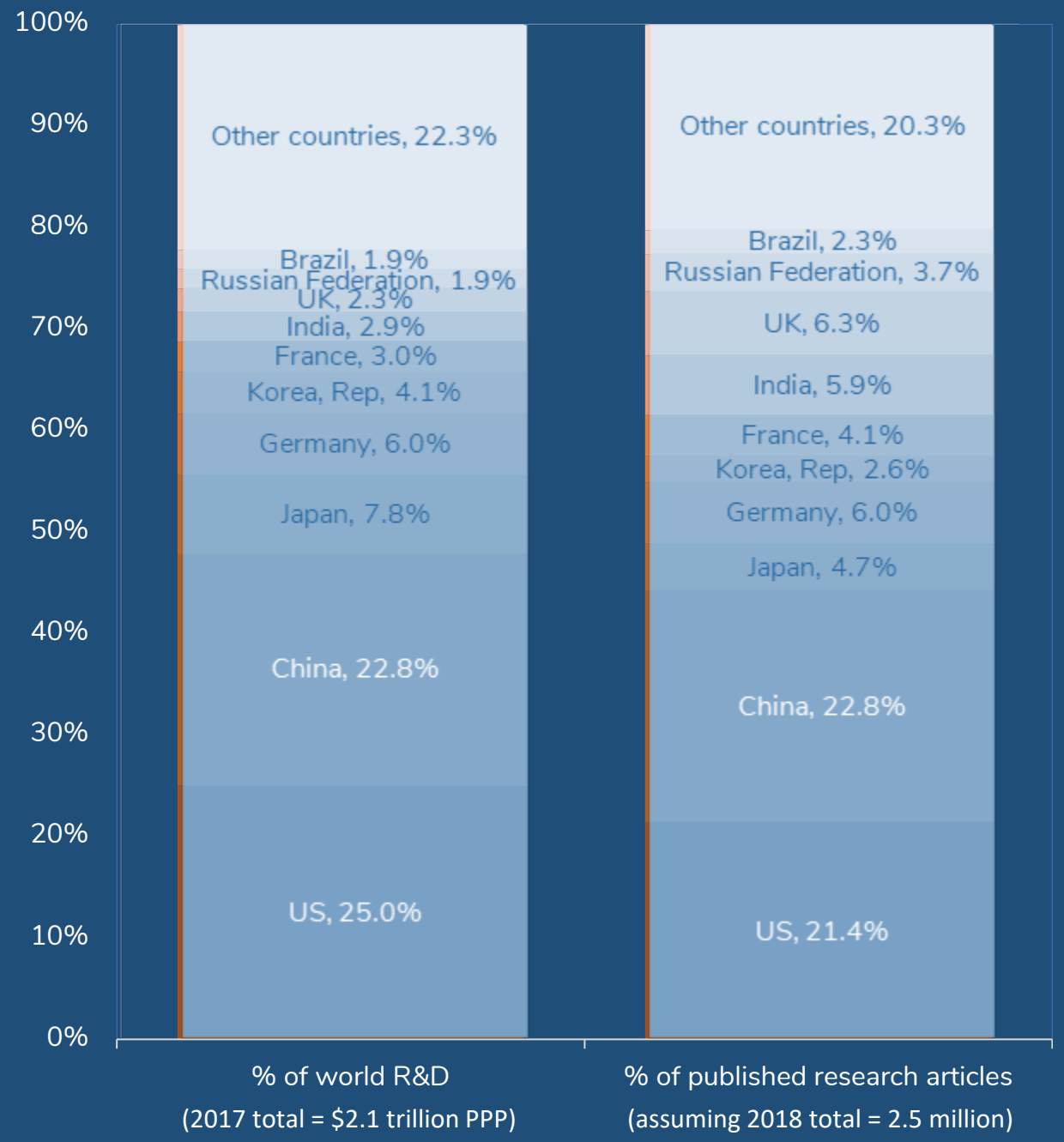
There are common elements (like licenses) but also many differences, which makes it hard to create ambitious, far reaching open policies (when, at the moment, open means different things to different people).



4

Regional differences

Most research and research publishing happens in the wealthiest countries. Over the past five years, funders in Europe and the US have been aggressively trying to roll out **one-size-fits-all** "author pays" (APC) policies for the whole world, but most of the world cannot afford and doesn't want these policies.



5

Evidence (or lack thereof)

In our push to adopt open policies, it's not altogether clear whether these policies are achieving the outcomes we want and need. For example:

- The evidence is unclear at the moment about whether open articles have a higher citation impact than subscription articles. They are definitely viewed more.
- Open solutions are definitely not saving us money---which is ironic because cost concerns were an original driving force behind the push for open access publishing
- Open access publishing is growing but only considering **ALL** kinds of open solutions. The strictest form of open---the "gold" kind being pushed by Plan S---has remained stuck at about 10% (or less) of the world's total open for the past 20 years. Other forms of open (green, CC-BY-NC-ND, etc.) and other solutions (like SciELO) are more popular and sustainable, but are not being pushed.

Rethinking

6 ways we can begin to improve open science and the publication culture in science

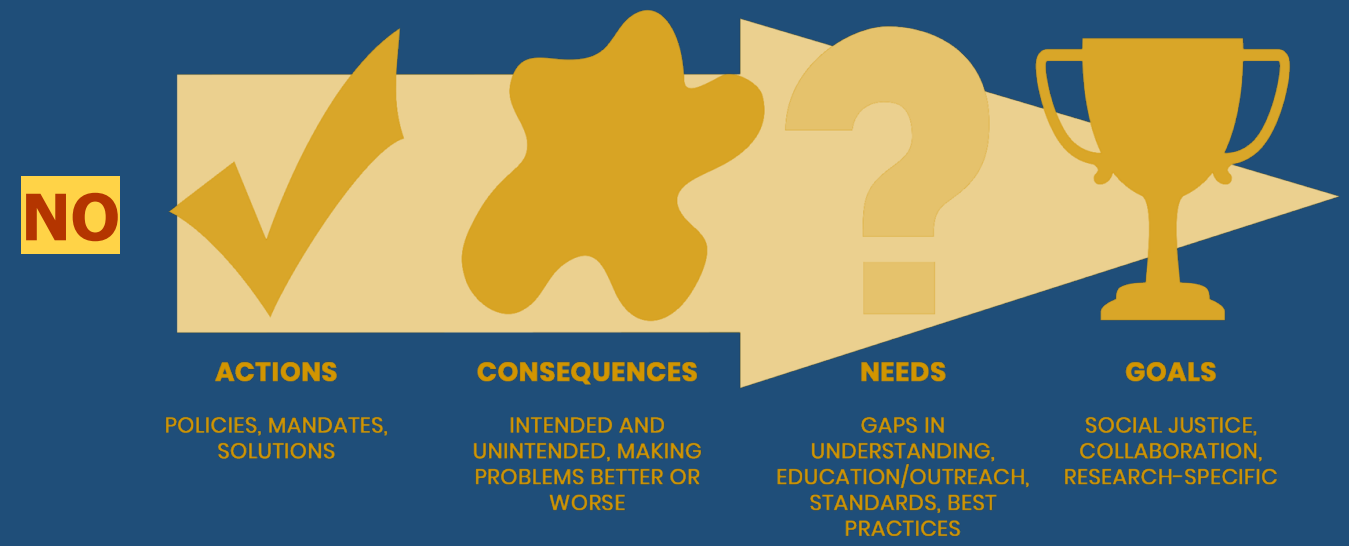
Overview

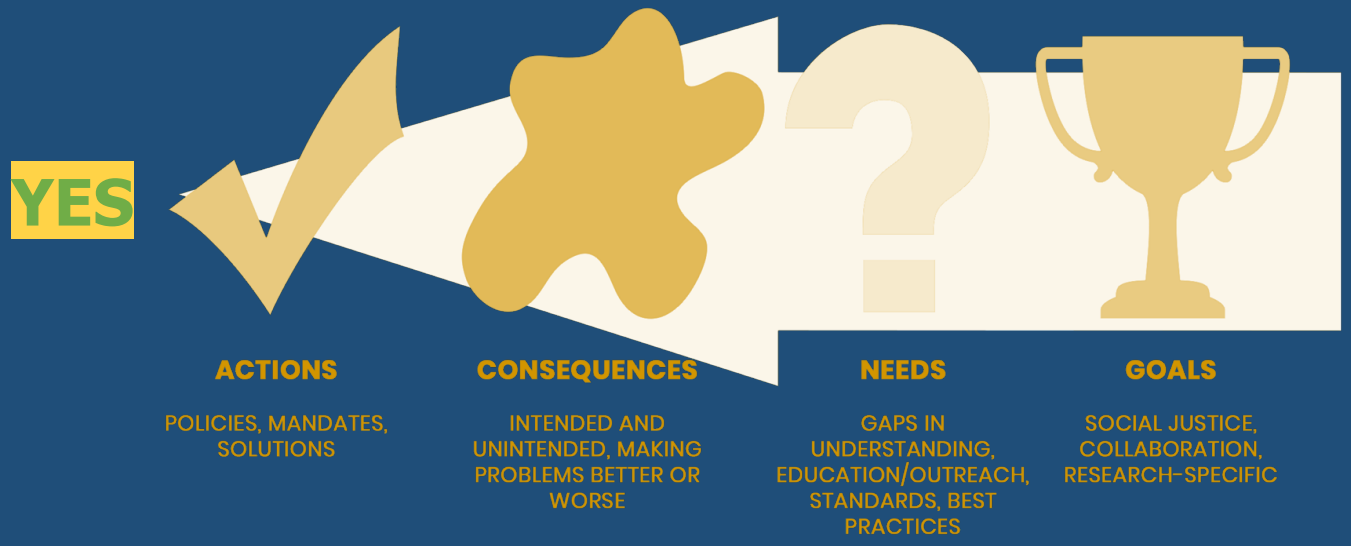
These 6 approaches span the philosophical and technical spectrums. How can we rethink the "publication culture" in academia to better align with the potential of open science, taking into account research needs and concerns?

- **Philosophical approach:** Is the current mindset a good match for the expectations and capabilities of modern communication culture?
- **Technical "to-do" approach:** There are no one-size-fits-all solutions, but there is an array of a-la-carte solutions that can be assembled to meet most needs
- **And learn from best practices:** Are there already easy, high-quality ways forward?---for example, the SciELO model (which Abel will speak about in a few moments)

Think first

For the past 20 years, our approach to open has been driven by ideology. We have designed our open solutions first, and then tried to sell these solutions to researchers, downplaying unintended consequences, and ignoring the need for a more complete understanding of the open space. Reversing this process is important.





Ask the right questions

Instead of focusing on policy details like what kind of licensing is best, we need to ask more big picture questions, like:

- **Who and what?** Is our goal to make everything available to everyone, everything available to some, some things available to everyone, or some things available to some?
- **Why?** Is our goal to help communities of practice succeeded, make research more transparent, give patients better access to information, empower teachers with the newest and best information available to pass along to their students, improve access to knowledge around the globe, or all of the above?
- **How?** Do we build one silo or a network of silos? Do we simplify and incentivize systems for sharing? Do we mandate sharing. allow for a range of open outcomes and licenses, or require only the most liberal licenses? Do we mandate immediate haring or allow researchers time to analyze their data before first?

3

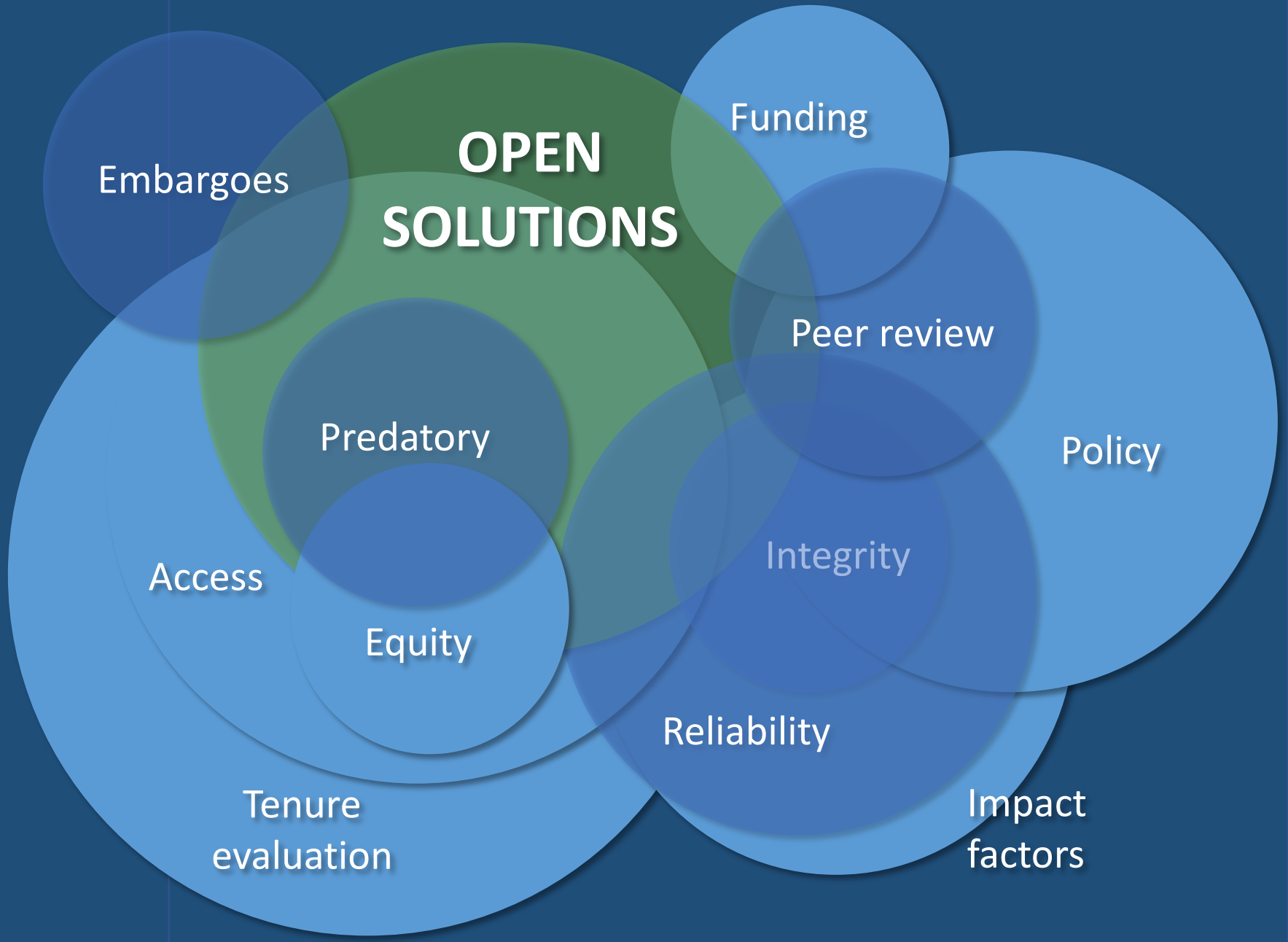
Work together

There are no "let's let someone else decide" options. Open access, open science, open data, and other movements all have different perspectives and priorities. An open science led effort makes no sense for humanities researchers; an open access led effort makes no sense for open data. And here again, there are no one-size-fits-all answers, and the impacts of our policies will vary by field, region, type of open, and more.

4

Set realistic expectations

As noted earlier, we need to be wary of claims that open solutions are a panacea for all that ails research. They aren't. There are many connected issues that need to be worked on in parallel.



5 Value evidence

- **Listen to and build on researcher needs.** Researchers have many concerns about open, and also many workable solutions.
- **Learn from what's actually happening in the open space.** Some of the most successful open models don't fit our narrative of what open is "supposed" to look like (some of these are described later in this presentation).
- **Focus on broad narratives** like good data, common open solutions, and common goals instead of on specific technical and licensing requirements.

Respect diversity

We can no sooner pick the “right” answers from this diversity than pick the right colors from the rainbow. Each is important, and each contributes to the greater whole.

Trying to impose a rigid ideological order on this diverse landscape will at best be ineffectual, and at worst fracture the global solution space instead of unite it. Instead, we need a common-sense, collaborative, experience-driven open solutions policy to unite the disparate elements in this space—an approach that listens to all communities, embraces diversity, nurtures growth and innovation

Conclusions

Rethinking the publication culture: OSI's top 4 conclusions

Open is not a goal

1. **Open is a means, not an end.** It is a way to solve problems and improve benefits.
2. **Open is not an ideal**. No open model is ever universally and completely open.
3. **Open has consquences**. If we truly want open to succeed, we cannot ignore the inequities or unintended consequences it causes.
4. **Open evolves.** , It is not a static state that can be defined once and for all time. As open evolves, it creates other realities we need to face.
5. **Openness requires collaboration**. We must work together to create real solutions—then and only then can we unlock the vast potential of open to improve science and society.

2

Researchers matter

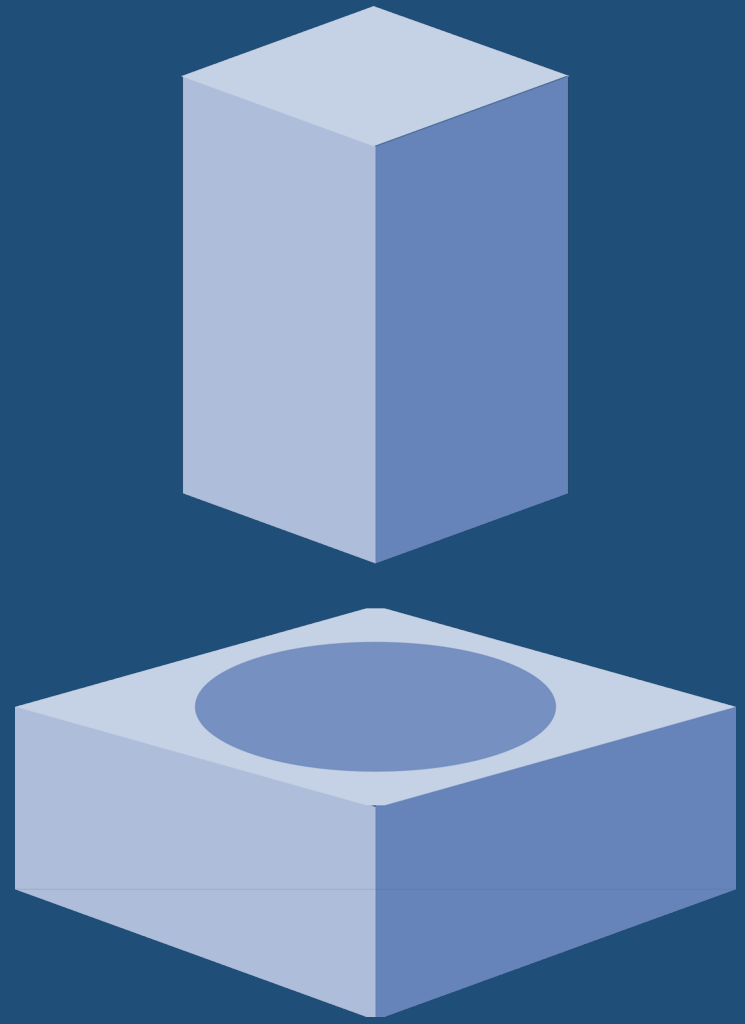
1. **Researchers care** about open insofar as it can help improve the quality, reach and impact of their work.
2. **Researchers are central**. They are the group that generates new knowledge, are arguably the primary consumers of this knowledge, and their ability to access and reuse this knowledge should be the key driver in this effort.
3. **Researcher voices have been underrepresented** in open efforts. Our open efforts to date have mostly involved handing the research community mandates they didn't design.
4. **Researchers have a wide variety of motives** for doing open. By portraying open as a movement where everyone has the same motives, we ignore those who are not motivated, or who are concerned about the real or potential negative consequences of current approaches to open.

3

Use facts, not ideology

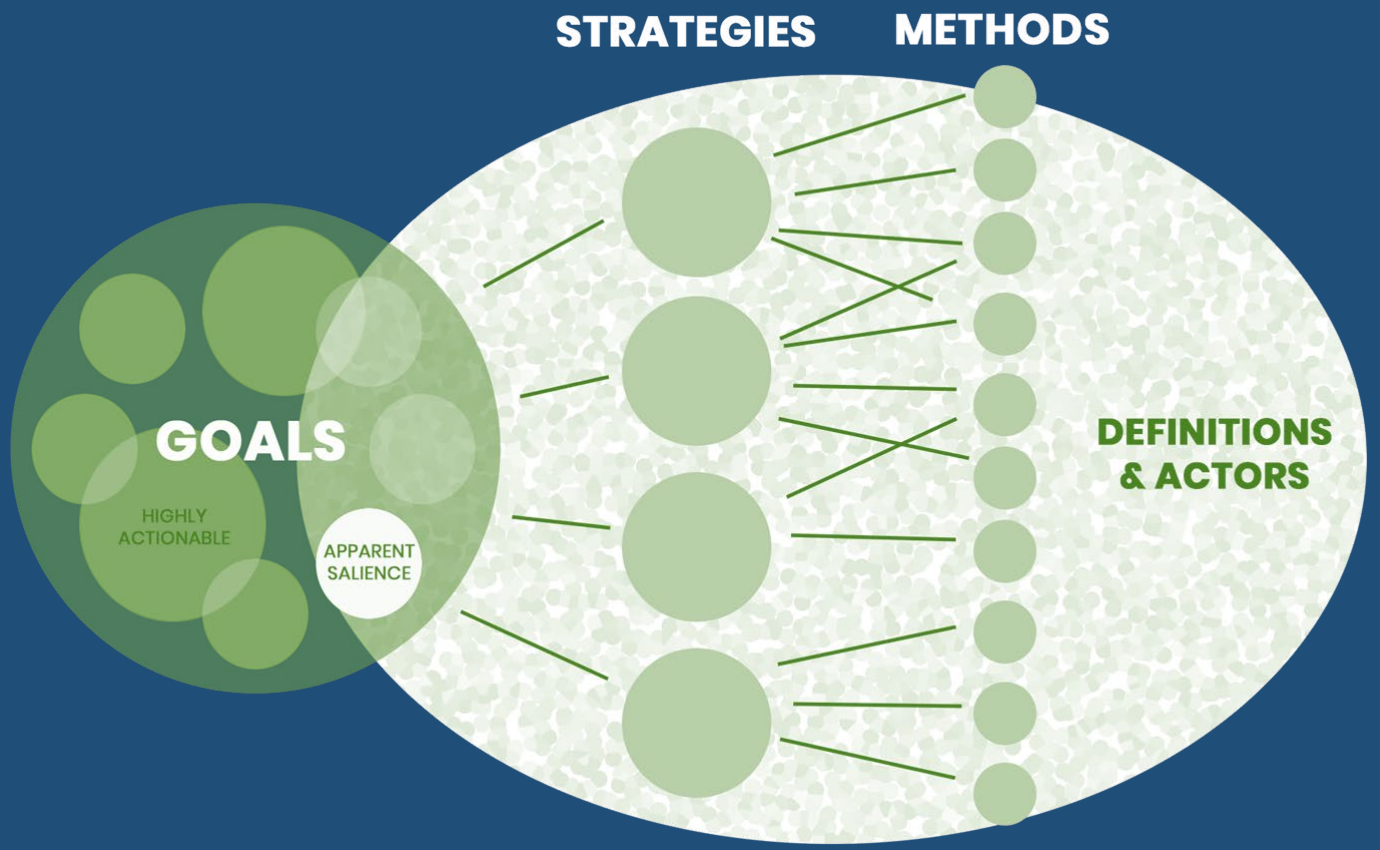
Before the birth of science, it was normal to construct explanations that conformed with "known truths" instead of simply searching for truth—to pound the square pegs of observation into the round holes of what the church and tradition said must be true. This approach stifled learning and kept Western civilization in the dark for 2,000 years.

Today, we are taking the same approach with open solutions policies. We assume we know all there is to know about open, and are working backward, pounding square peg solutions into the round holes of researcher needs and concerns. In the process, we aren't finding truths and unlocking the real potential of open.



4 Work together toward common goals

A goals-based approach identifies the long-term changes our broad community desires, and then works backward, together, to map out the actions and policies we need to create this change. By focusing on common goals first, we work together in ways that maximize our mutual benefit across our many differences. The goals-based (Theory of Change) approach is widely used in business, governments, and the United Nations.

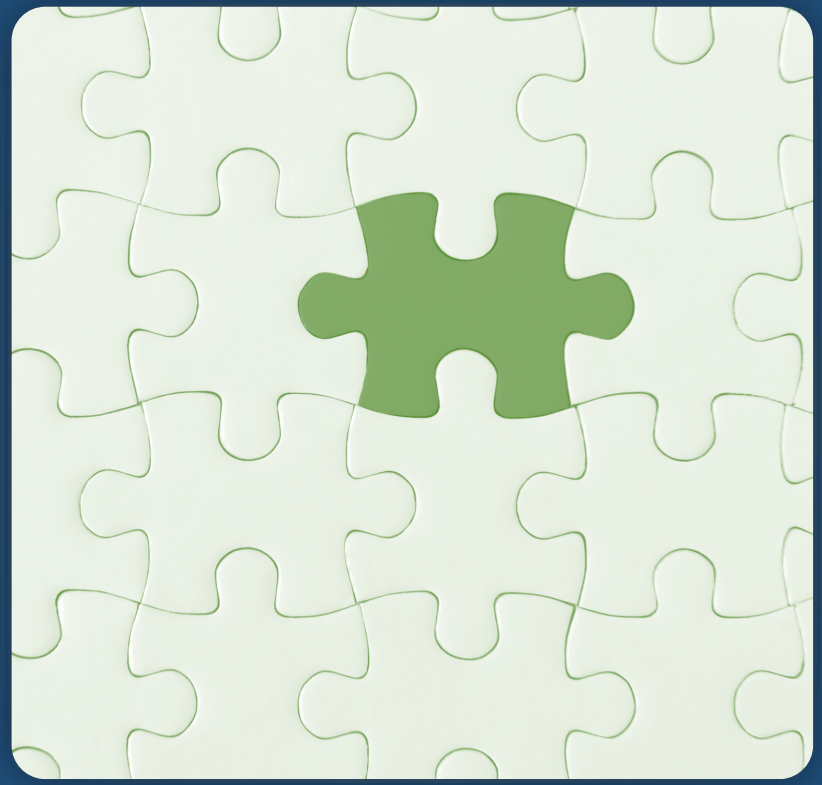


Hampson, G, M DeSart, L Kamerlin, R Johnson, H Hanahoe, A Nurnberger and C Graf. 2021. OSI Policy Perspective 4: Open Solutions: Unifying the meaning of open and designing a new global open solutions policy framework. Open Scholarship Initiative. January 2021 edition. doi: 10.13021/osi2020.2930

What might these common goals look like?

For example, do we "just" want to help scientists make their information more open, or do we really want to work together to:

- **MAKE RESEARCH MORE POWERFUL** (with more connections and more understanding),
- **SPUR INNOVATION**
- **ACCELERATE DISCOVERY**
- **IMPROVE THE SOCIAL IMPACTS OF SCIENCE** (including science literacy, public policy, education, more)



Working together we can also…

- Help improve public policy
- Help improve education
- Help science become more accessible to other scientists
- Help improve the reliability and replicability of science through greater transparency
- Work together to solve immediate crises like climate change and vaccines

Where can we begin?

ACTIONS LIKE THESE ARE SPECIFIC AND ACHIEVABLE

At your university:

- Establish science communication offices in universities and research institutes that help focus on the needs and best solutions
- Start science communication degree programs in universities worldwide
- Introduce science communication training for graduate students and professors
- Allocate a small percentage of grants for science communication goals
- Work to gradually begin reinventing tenure evaluation policies with regard to publishing

As an individual researcher:

- Look for ways to improve your open profile (begin by speaking with your department and library)
- Looks for opportunities to collaborate in research and data sharing collaboratives
- Volunteer to help peer review journals in your field, especially open journals

As a global community:

- Write and catalogue searchable, readable abstracts for all journal articles
- Work to develop different, more appropriate metrics for measuring publishing impact
- Work across fields, institutions, disciplines, and open solutions categories on issues like climate change

More broadly, we can start to reinvent the "publication culture" of science by better understanding this culture, its needs and dynamics

SEE THE BIG PICTURE AND THE BROAD POTENTIAL BENEFITS OF REFORM

- Improve our understanding of the needs, goals, concerns and perspectives of the many participants in this space
- Improve our understanding of the different skillsets needed and used
- Improve coordination, both within and between science communication pursuits, science fields, regions and institutions
- Improve the sense of community in this space
- Improve the uptake of science communication best practices, especially between fields and open solutions

SciELO has succeed in all of these respects and is a model for the rest of the world

MORE ABOUT SCIELO IN A FEW MINUTES…

In closing

Our future has never been more dependent than now on science. Coupled with this, the challenges of transforming our science communication practices into the modern age are significant.

But if we can start working together on our common ground, and also start creating and empowering more, and more diverse, science communication efforts, then we can usher in a new era of discovery for science, and more science benefit for all of society. This work will bring about a generational shift in science, perhaps as important to the future of science as the invention of publishing itself.

The need is real, the time is now, and the solutions we need exist. All we need is the will to move forward, together.

Thank you!

Glenn Hampson
ghampson@nationalscience.org

Questions? Email Glenn Hampson ghampson@nationalscience.org. See also the OSI website at osiglobal.org.

Cite as: Hampson, G. 2021. Open Science: Rethinking the Publication Culture. VI BRISPE conference.

The opinions in this presentation are the views of the author and are are not an official representation of the views of SCI, OSI, UNESCO, or any individual or institution connected to these organizations.