



Multilingualism for diversity and inclusion in science

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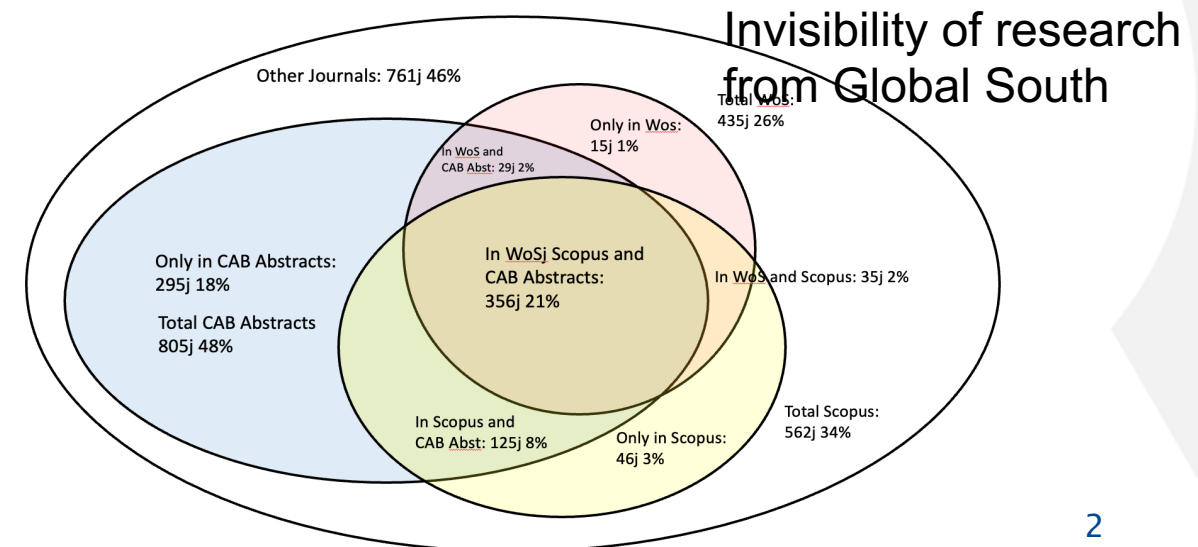
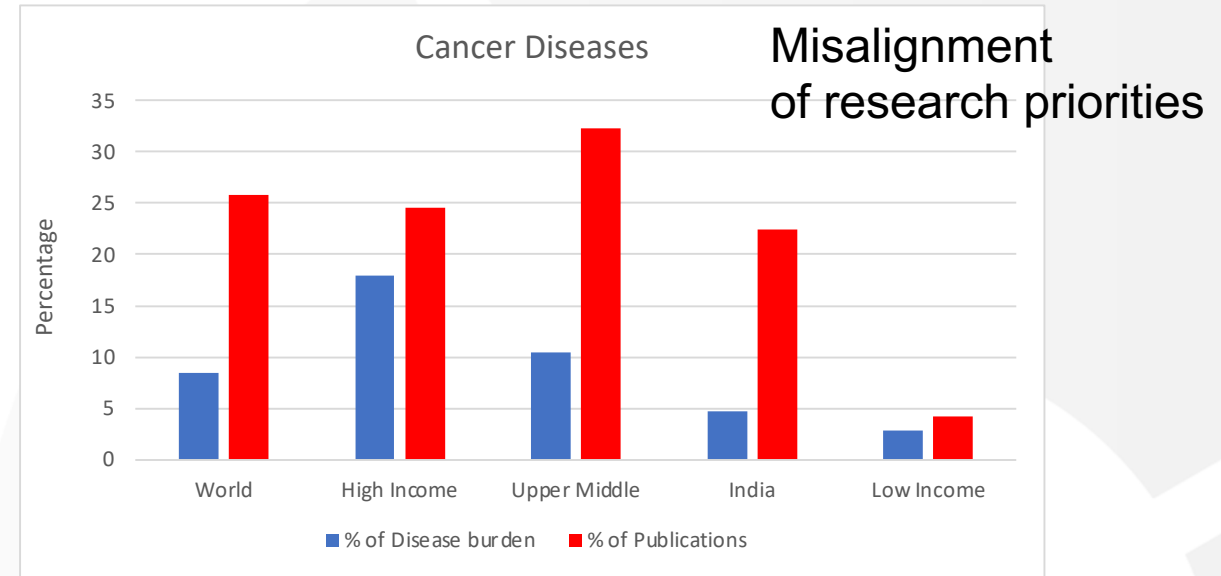
Universiteit
Leiden

UNESCO Chair on Diversity and Inclusion in Global Science at CWTS, Leiden Univ.

With Rodrigo Costas, Louise Bezuidenhout and André Brasil

Three main lines:

- Investigate epistemic/topic inclusion, inequalities: e.g. health priorities – esp. in evaluation
- Infrastructures on research information infras- / databases
- Supporting UNESCO in developing monitoring for (countries) commitments to science (OS)



The argument: Why science needs multilingualism

Three imperatives of public engagement / participation (Fiorino, 1990; Stirling, 2005)

- **Instrumental imperative (pragmatic):**
 - because it helps in sharing scientific knowledge with populations
- **Normative imperative (democratic):**
 - because (participating and benefiting of) science is a human right
- **Substantive imperative ('better' knowledge):**
 - because constructing science with various languages leads to more robust knowledge
 - mobilises more ways of knowing
 - facilitates participation of citizens and stakeholders, with associated expertise

Instrumental imperative

**Language for reaching out
users and beneficiaries**

Communicating scientific knowledge for beneficiaries

- **Using the national language and writing-formats of users / beneficiaries**
 - To reach out relevant knowledge to practitioners (e.g. in medicine)
 - Briefs for policy makers
 - History and social science books to reach out to citizens
 - Educational resources for High School in local language
 - Documents for agricultural extension
 - Scientific literacy against ‘fake news’ (trust in science)

“All the communication purposes in all different areas of research, and all the languages needed to fulfil these purposes.”

Gunnar Sivertsen (2018)
(article in English and Catalan)



The vision of research assessment reform by CoARA: qualitative assessment informed by indicators

- “Our vision is that the evaluation:
 - (...) recognize the VARIOUS results, practices and activities [not just publications]
 - that maximize the quality and [scientific AND SOCIAL] IMPACT of research
 - This requires basing the evaluation mainly in qualitative judgment, for which peer review is central,
 - supported by the responsible use of quantitative indicators.”

Need to:

- diversify assessment criteria and indicators,
- change assessment process to allow contextualisation



Normative imperative

**Languages for
democratisation:**

**The right to science as a
human right**

The right to science as a human right

Universal Declaration of Human Rights (1948)

Article 2

Everyone is entitled to **all the rights and freedoms** set forth in this Declaration, **without distinction of any kind**, such as race, colour, sex, **language**, religion, political or other opinion, national or social origin, property, birth or other status. (...)

Article 27a

Everyone has **the right to freely to participate** in the cultural life of the community, to enjoy the arts and to **share in scientific advancement and its benefits**.

- The right to participate in science
- The rights to benefit from scientific advancement
- ...**without distinction of any kind – NOT language**



The right to science as a human right: implications

Today access to knowledge and benefits of science is extremely unequal.

In multiple dimensions: gender, class, neighbourhood, cities, countries, ethnic groups...

... and language is a factor in intersectionality, one of the dimensions of identity compounded by others.

Democratisation of science through language:

- ...means for citizens to participate
- ... means for citizens to benefit from science
- ... to include more socially diverse citizens and workforce



10th December 2023

UNESCO Recommendation 2021:

‘...open science is defined as an **inclusive construct** that combines various movements and practices aiming to make **multilingual** scientific knowledge openly available, **accessible and reusable for everyone**, to increase scientific **collaborations and sharing of information** for the **benefits of science and society**, and to **open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community.**’



Open Science Recommendation UNESCO, 2021: Core Values and Guiding Principles

Academic freedom

Policies on ethics

Assess according to
resources

Gender, ethnic, class,
language.

Topic diversity

Biblio- diversity

Linguistic diversity



VALUES

Quality and integrity

Collective benefit

Equity and fairness

Diversity and
inclusiveness

PRINCIPLES

Transparency, scrutiny,
critique and reproducibility

Equality of opportunities

Responsibility, respect
and accountability

Collaboration,
participation and inclusion

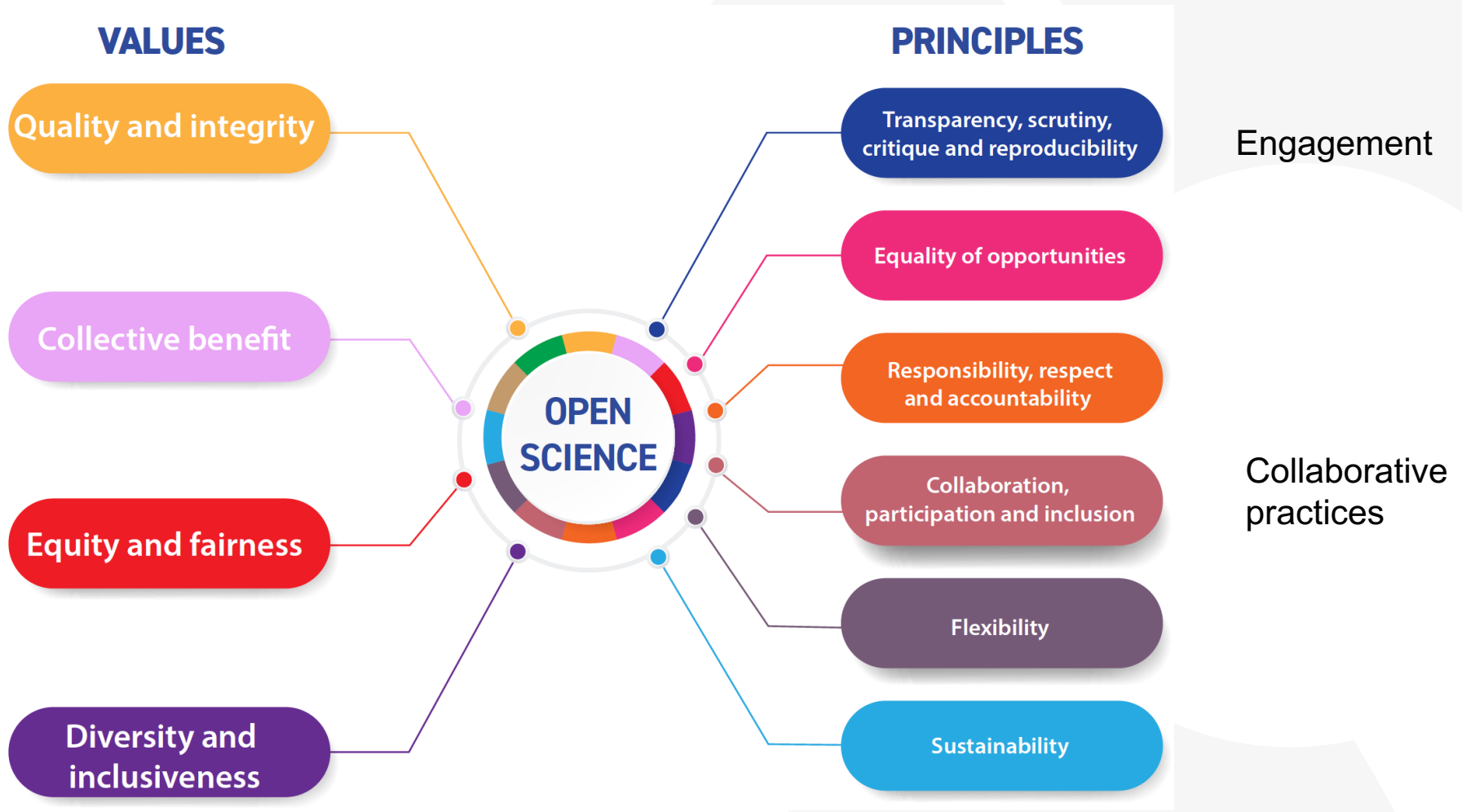
Flexibility

Sustainability

Engagement

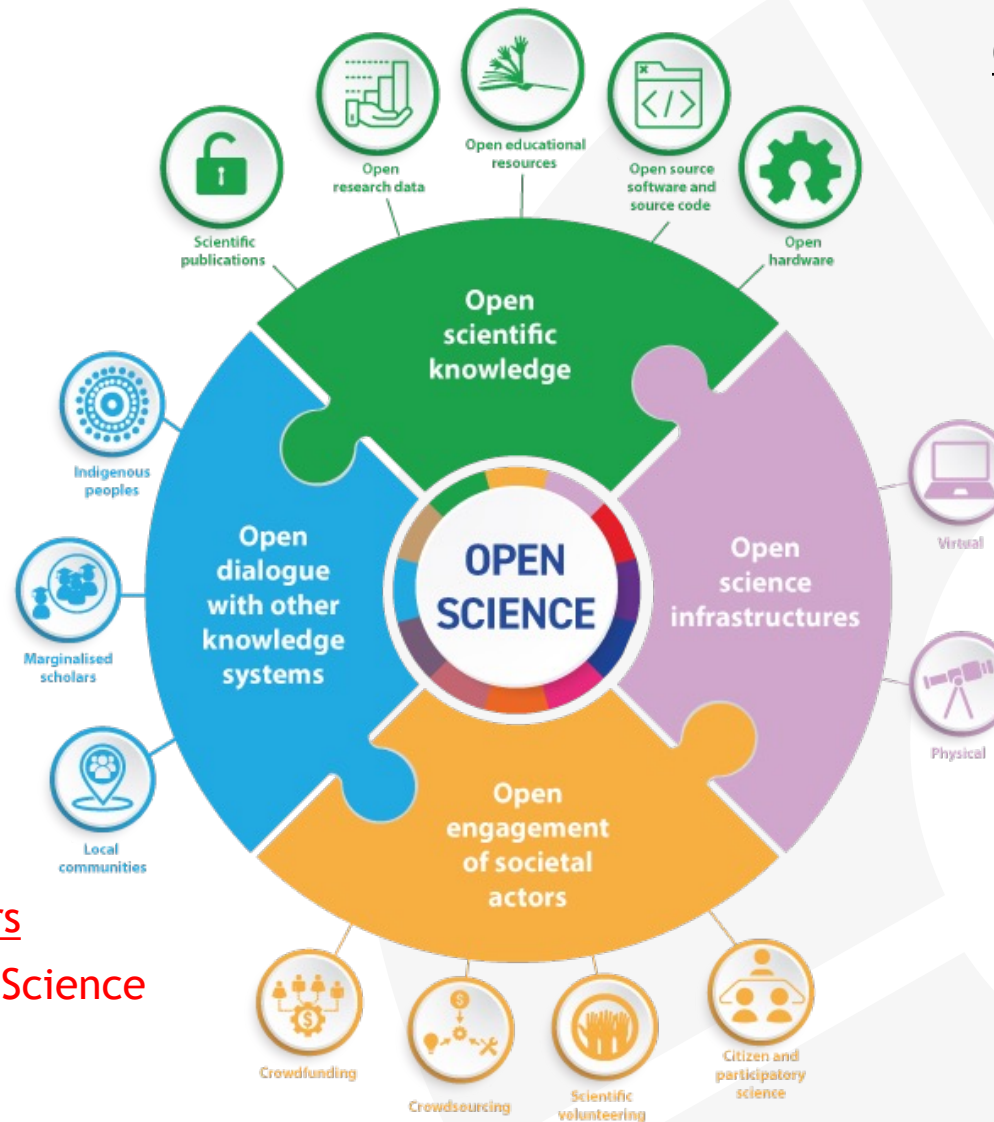
Collaborative
practices

OPEN
SCIENCE



What is Open Science?

2021 UNESCO Recommendation



Dialogue with other knowledge

- Local communities
- Professional expertise
- Marginalised scholars

Engagement of Societal Actors

- Citizen and Participatory Science
- Scientific Volunteering
- Crowdsourcing
- Crowdfunding

Open Scientific Knowledge

- **OA Publications**
- Op Research Data
- **Op Educational Resources**
- Op Source Software
- Open Hardware

Open Science Infrastructure

- Physical
- Virtual

Substantive imperative:

Language for 'better' science

**learning from stakeholders
and citizens**

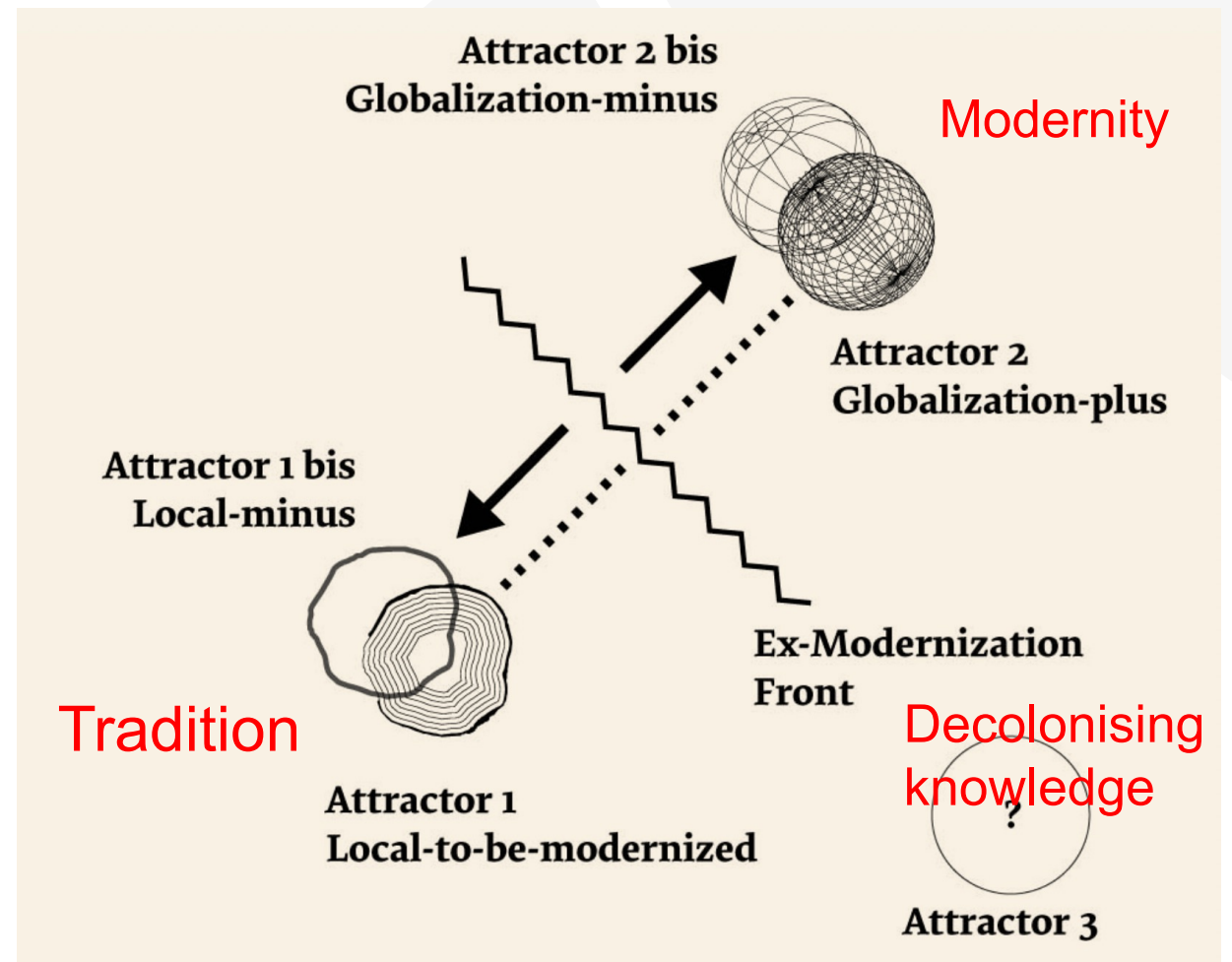
Rethinking the local vs. global, tradition vs. modernity

Previous narrative sets opposition between tradition vs. modernity (Sandra Harding, 2008)

- Global (imperial language): new, modern, white, male, cosmopolitan, scientific
- Local (including language): old - conservative, female, non-white ethnic, ignorant
- Science was part of empire
- Science IS part of current globalisation

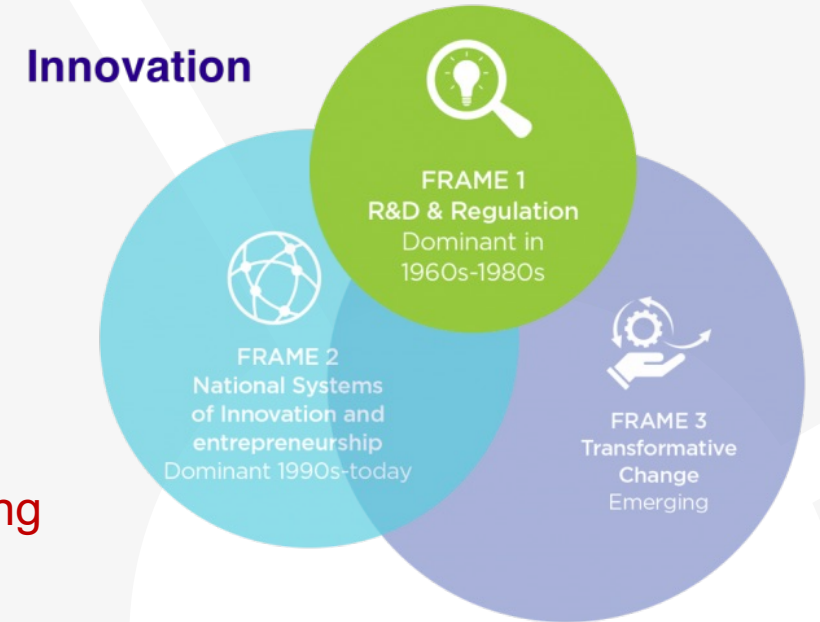
New narrative towards inclusive, diverse, non-colonial

- “Decolonising knowledge”



Three frames of innovation policy (Schot and Steinmueller, 2018)

1. Linear model (postwar until 1980s)
 - Science → Technology → Innovation → Well-being
 - Input (\$, people) and output (pubs, pats) indicators of STI.
2. Innovation Systems (early 1990s until late 2000s)
 - Interactions between stakeholders are key to produce innovation.
 - STI interactions → Innovation → Economic Growth → Wellbeing
 - OECD Oslo Manual (1992)



Transformative Innovation
Policies Consortium

<https://www.tipconsortium.net>

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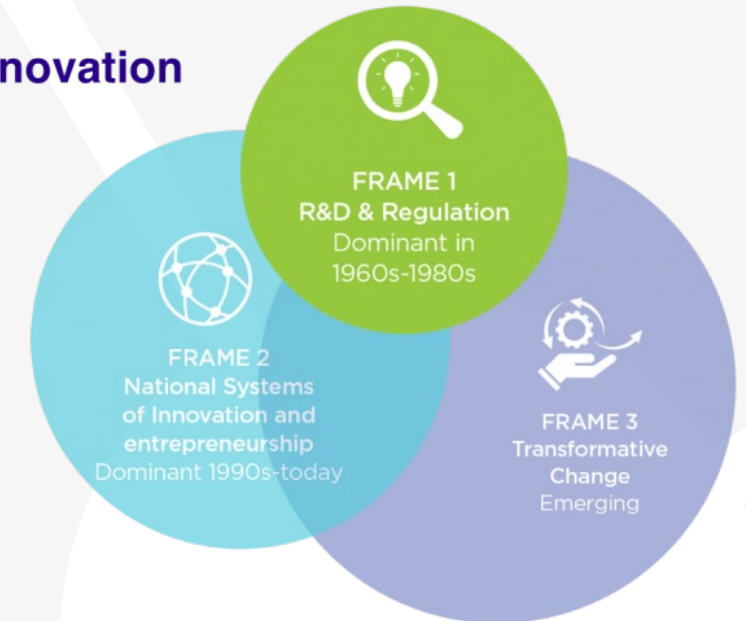
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3. Inclusive or transformative innovation (2010s...)

- **Innovation NOT necessarily positive – climate change, financial crash.**
- **Plural views on directions/goals of research and innovation**
- **Attention to diverse types of knowledge - given uncertainty**
- **Need to situate and contextualise innovation: where? who? for whom?**
- **Public participation and co-creation needed**

Innovation



Transformative Innovation
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Local sites (**in multiple languages**)
as spaces to articulate research
with societal needs and aspirations

The place for inclusion
is **NOT** always the nation-state

The local space as a space for public engagement and citizen science

¿**Qué pasa Riachuelo?** (What's happening in Riachualo?)

A platform for engaging local citizens in the cleaning up of a river in the periphery of Buenos Aires, Argentina)

The groups affected by the pollution of the river participate with local knowledge, shaping the agenda, bringing research data and interpreting findings for change.



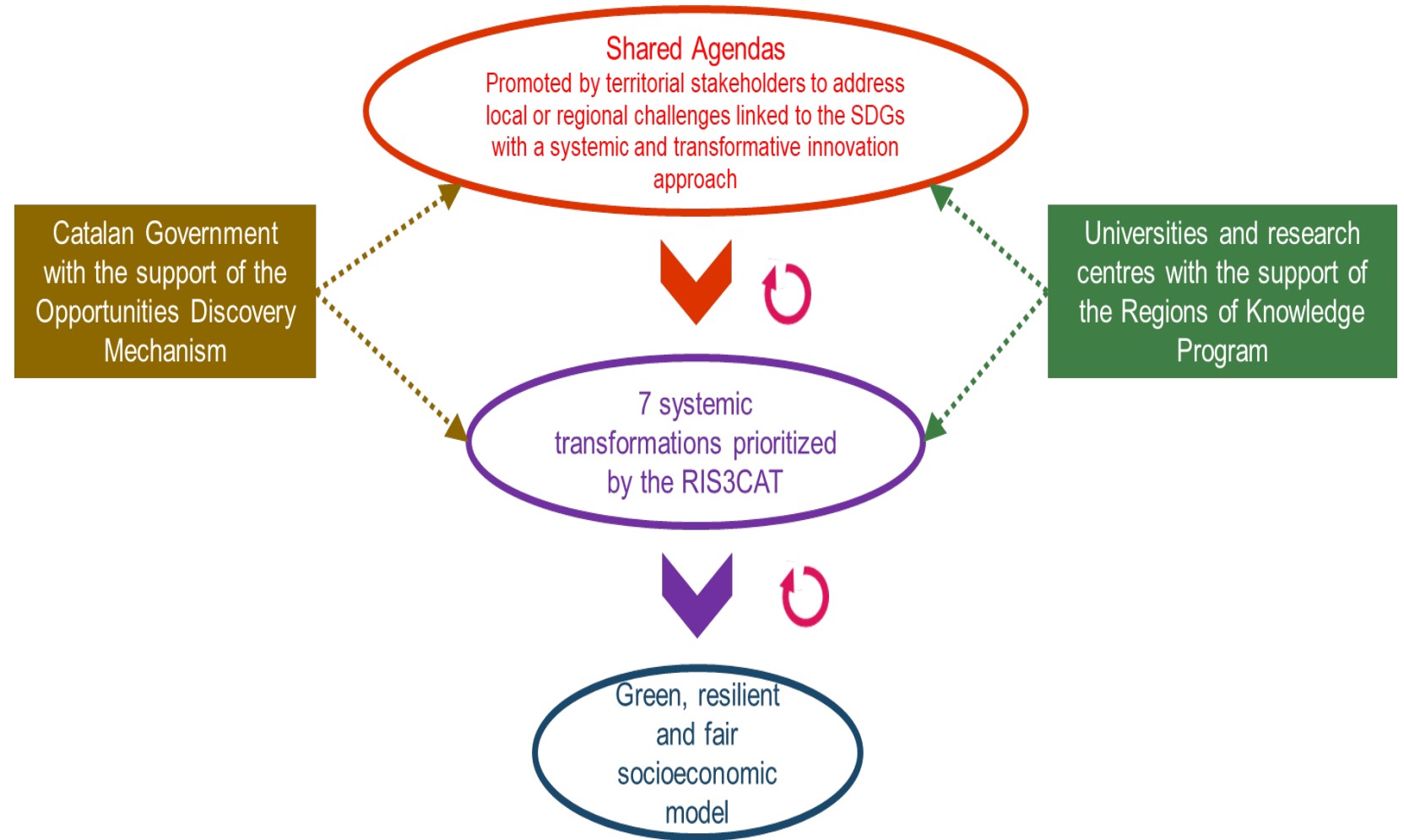
Valeria Arza (Univ. San Martín)

European Union: Strategies for Smart Specialization



RIS3CAT 2030

The nested nature of the RIS3CAT (Catalonia)



Source: Secretariat of Economic Affairs and European Funds, Generalitat de Catalunya

INGENIO (CSIC-UPV) Boni and Acebillo-Baqué (2023)

Conclusion

Argument here: Science needs multilingualism

- NOT only because it helps in sharing science with citizens but ALSO
- The democratic **values of inclusion and equality**: because (participating and benefiting of) **science is a human right**
- The value of **epistemic diversity**: because constructing science with various **languages leads to more robust knowledge**
 - mobilises more plural ways of knowing (historical narratives)
 - on topics that are relevant to citizens

Multilingualism also needs science?

- To keep languages fully alive, it needs to engage with 'science'?
- ...because one language that cannot engage with science may not have the social value to survive (at least in Europe)??
- ... because it supports the historical and cultural perspective of the peoples associated with that language? Crucial in SSHs??

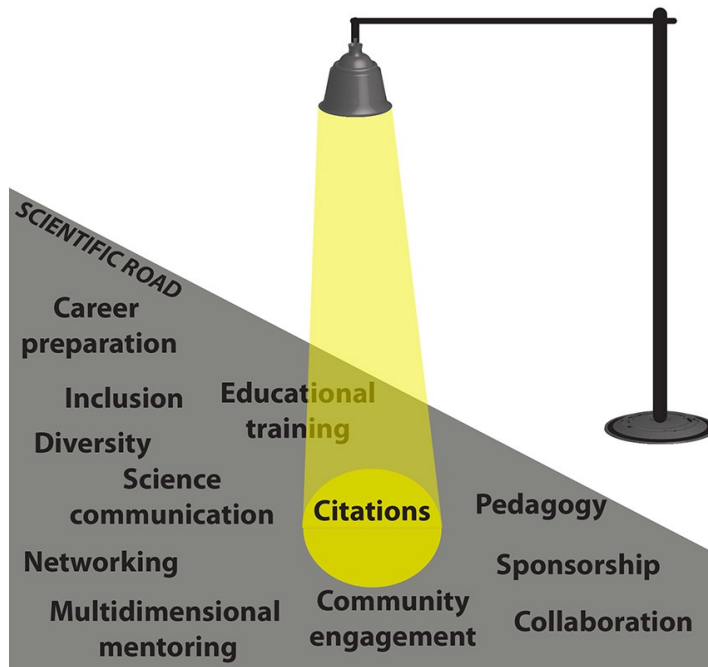
Back up slides



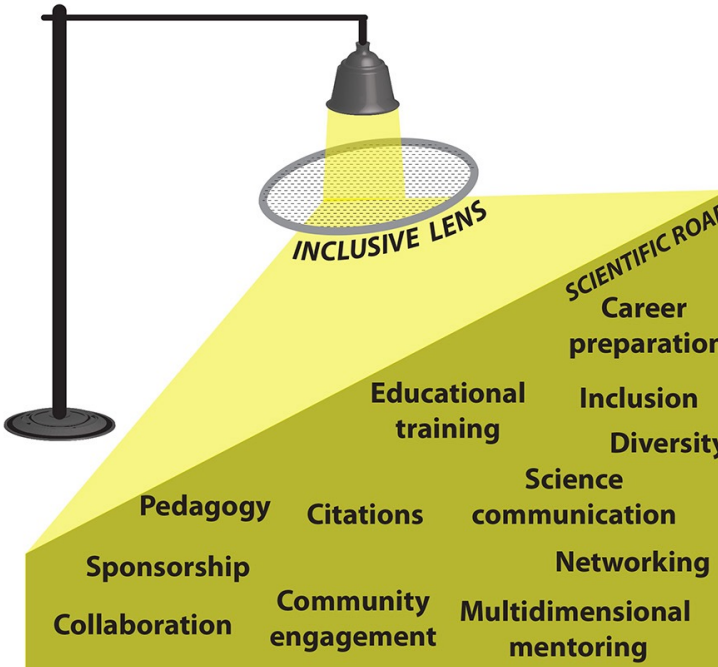
The streetlight effect of indicators

- Use of indicators may have consequences on research system
- Incentive structure: indicators signal to stakeholders what is important.
 - Goal displacement: instead of mission, follow indicators

A) Narrow View of Scientific Impact



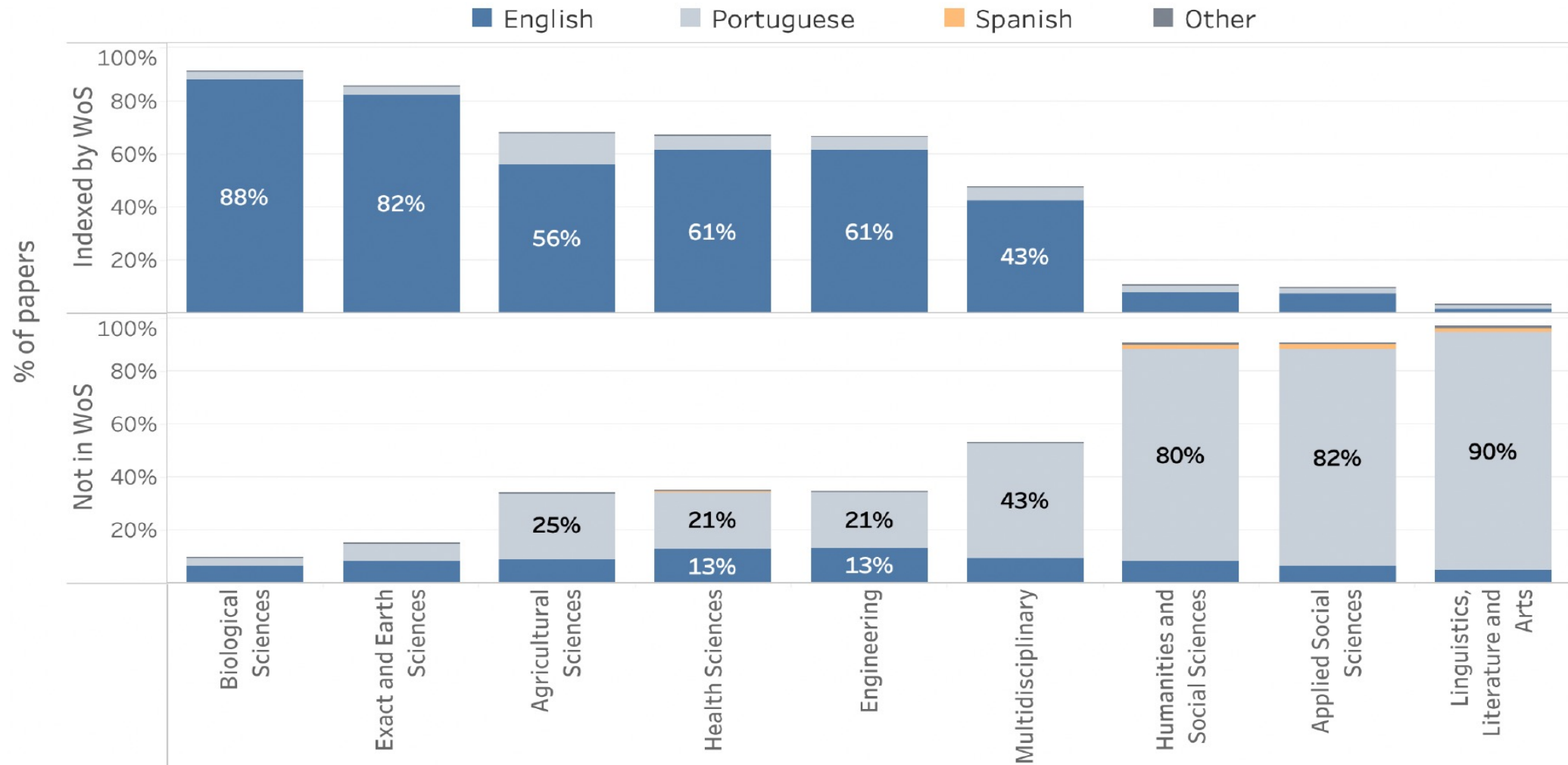
B) Inclusive View of Scientific Impact



Suppression of diversity

- Shift towards English publications
- Shift towards more technical / mainstream
- Diversion of research away from local or national issues
- Bias toward positive reporting
- Invisible / undone science

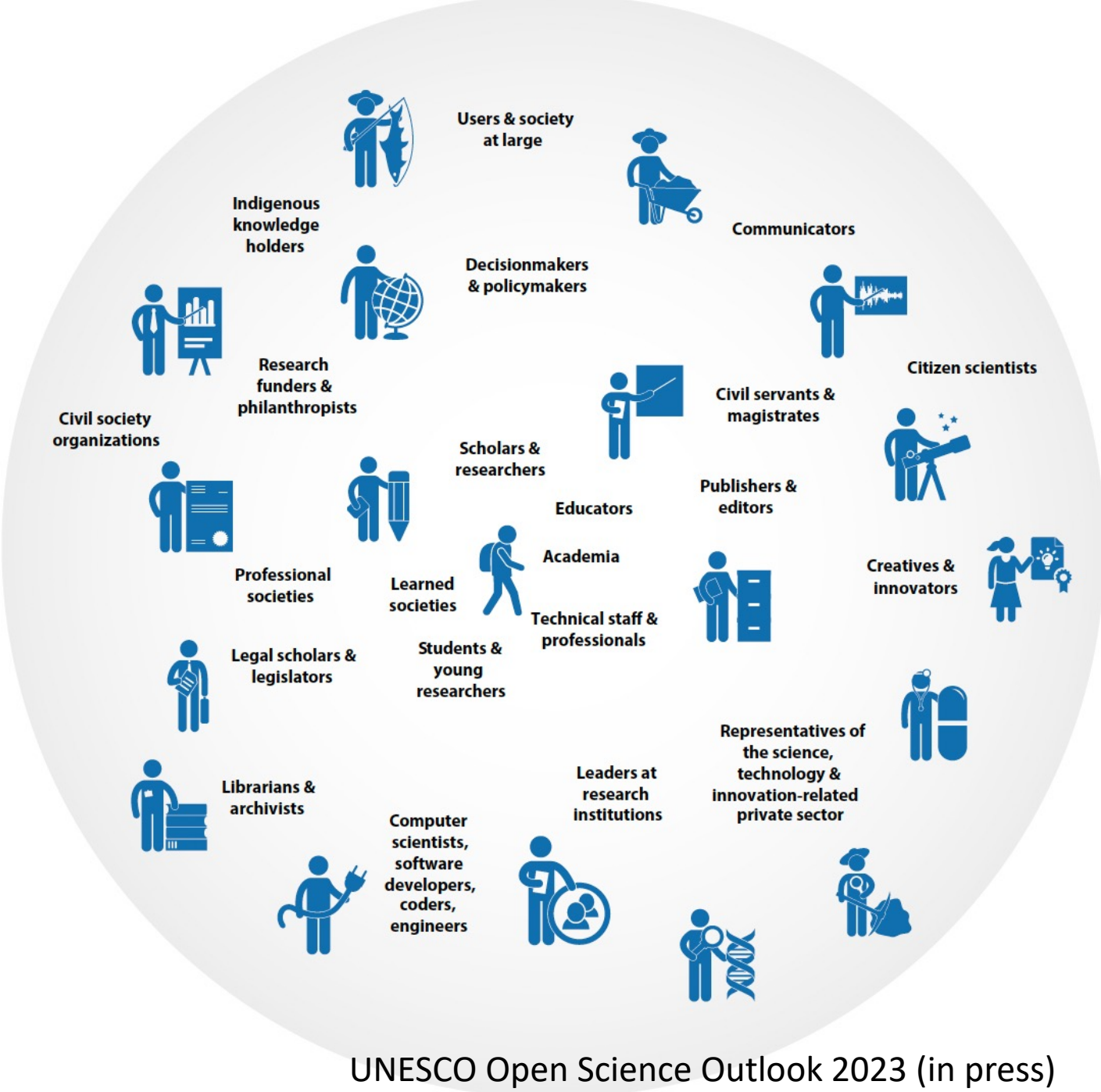
Brazilian univ. publications (2013-18, CAPES) coverage in WoS



Contextualised Openness

“...there is no single or universal concept of OS that is sufficient to encompass the diversity of knowledge traditions and practices from around the world. Hence the term OS and the notion of “openness” is highly situated, constantly subjected to negotiation according to local contexts and historical contingencies.

Our collective observations therefore challenge the tendency to define Open Science as a set of technical infrastructure, workflow, protocols, and licensing conditions that can be universally applied regardless of context, history, and human agency.” Leslie Chan (2020)

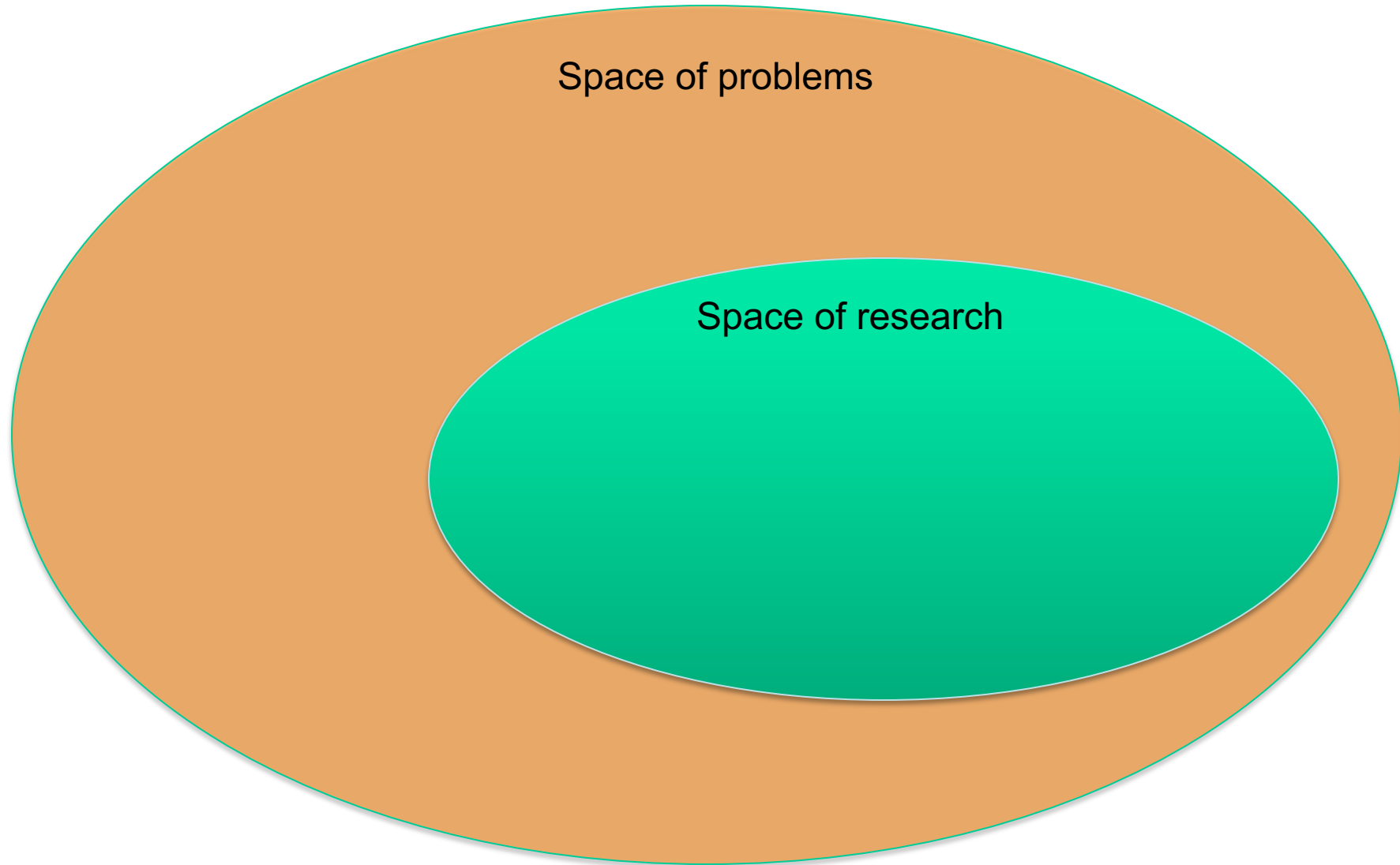


Problems, research, visibility and valuation

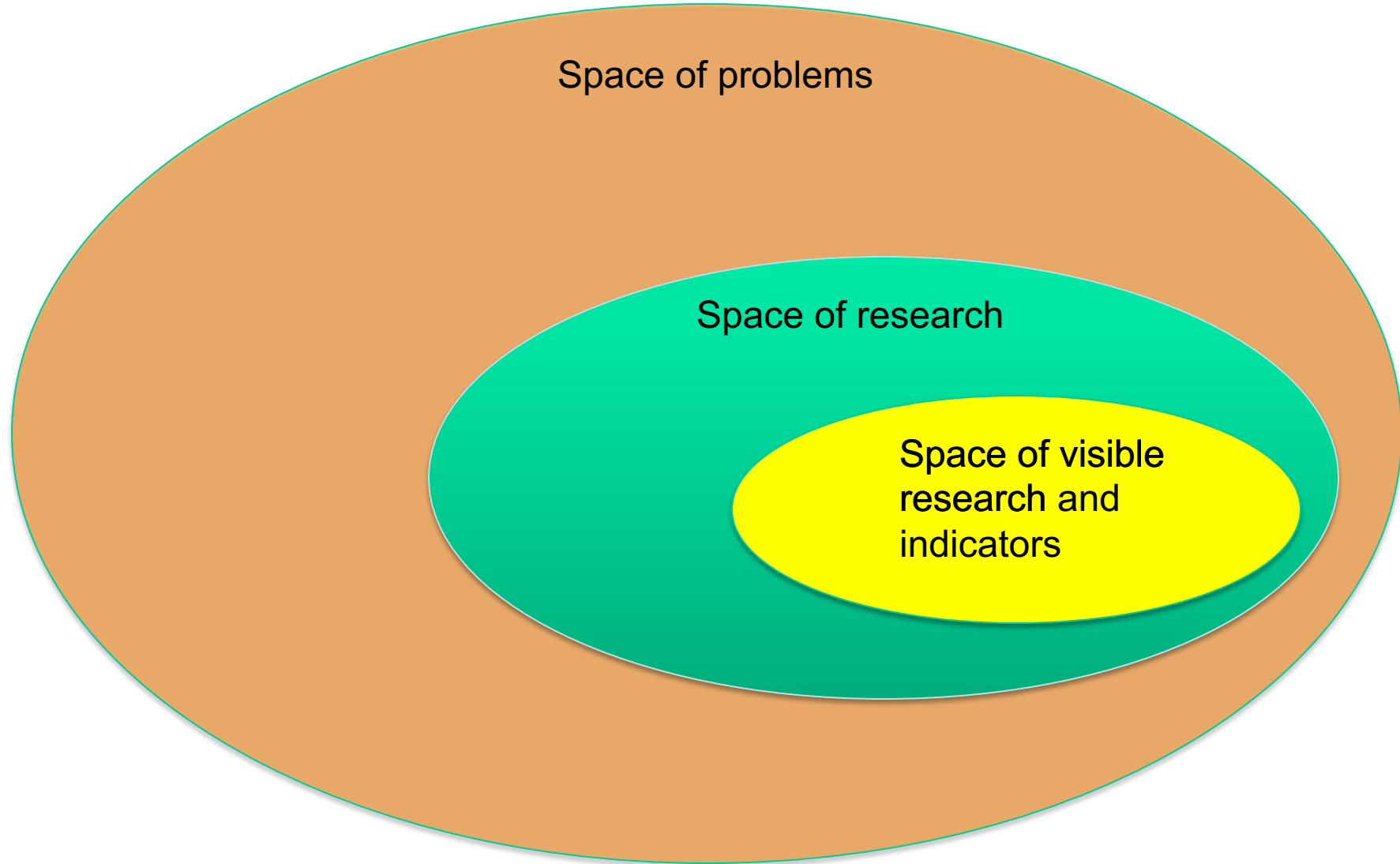


Space of problems

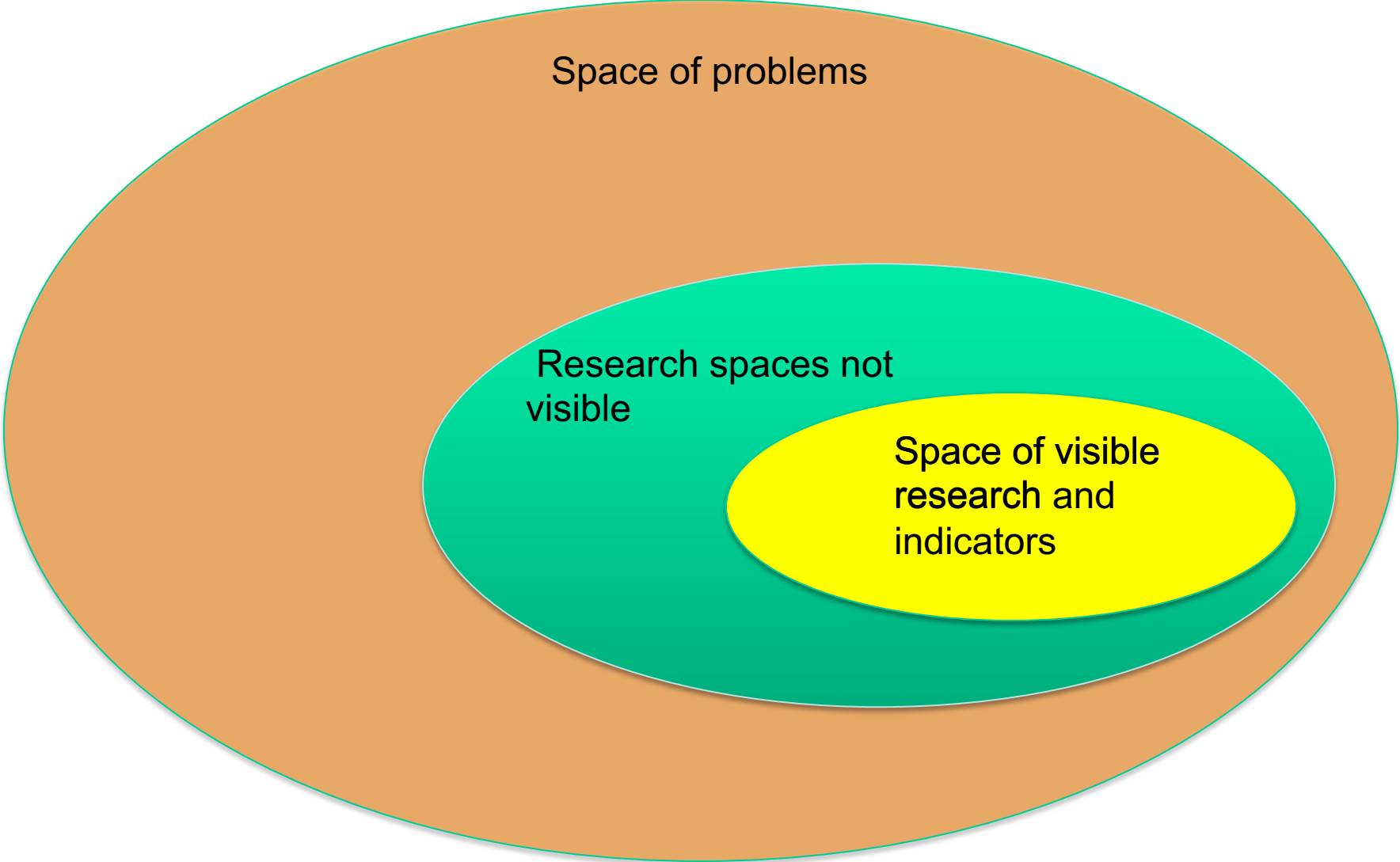
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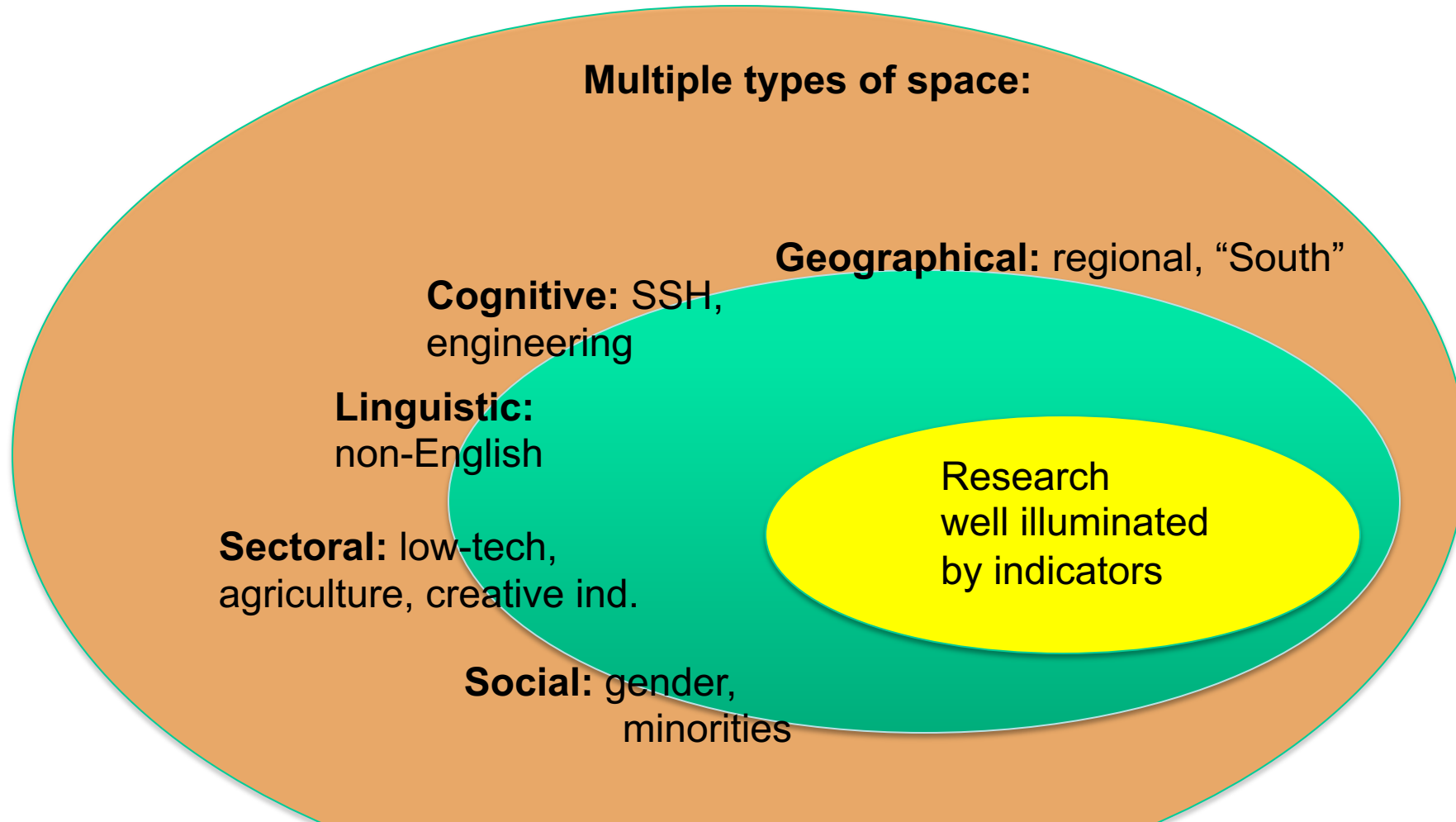
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Problems, research, visibility and valuation

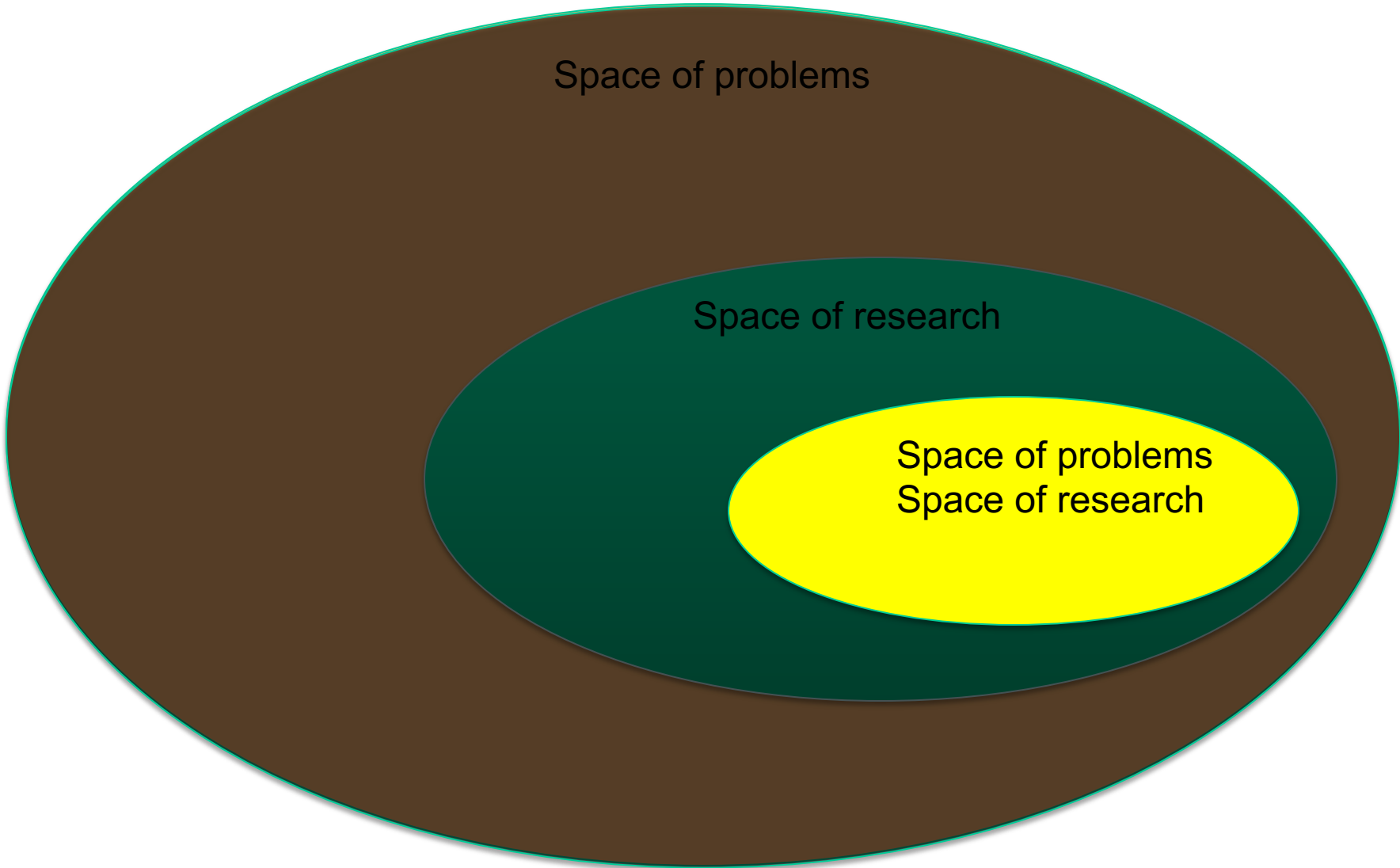


Problems, research, visibility and valuation



Multiplicative effect: primary health care of poor neighbourhoods in Salvador de Bahia, written in Portuguese (Cog, Geo, Ling, Soc.)

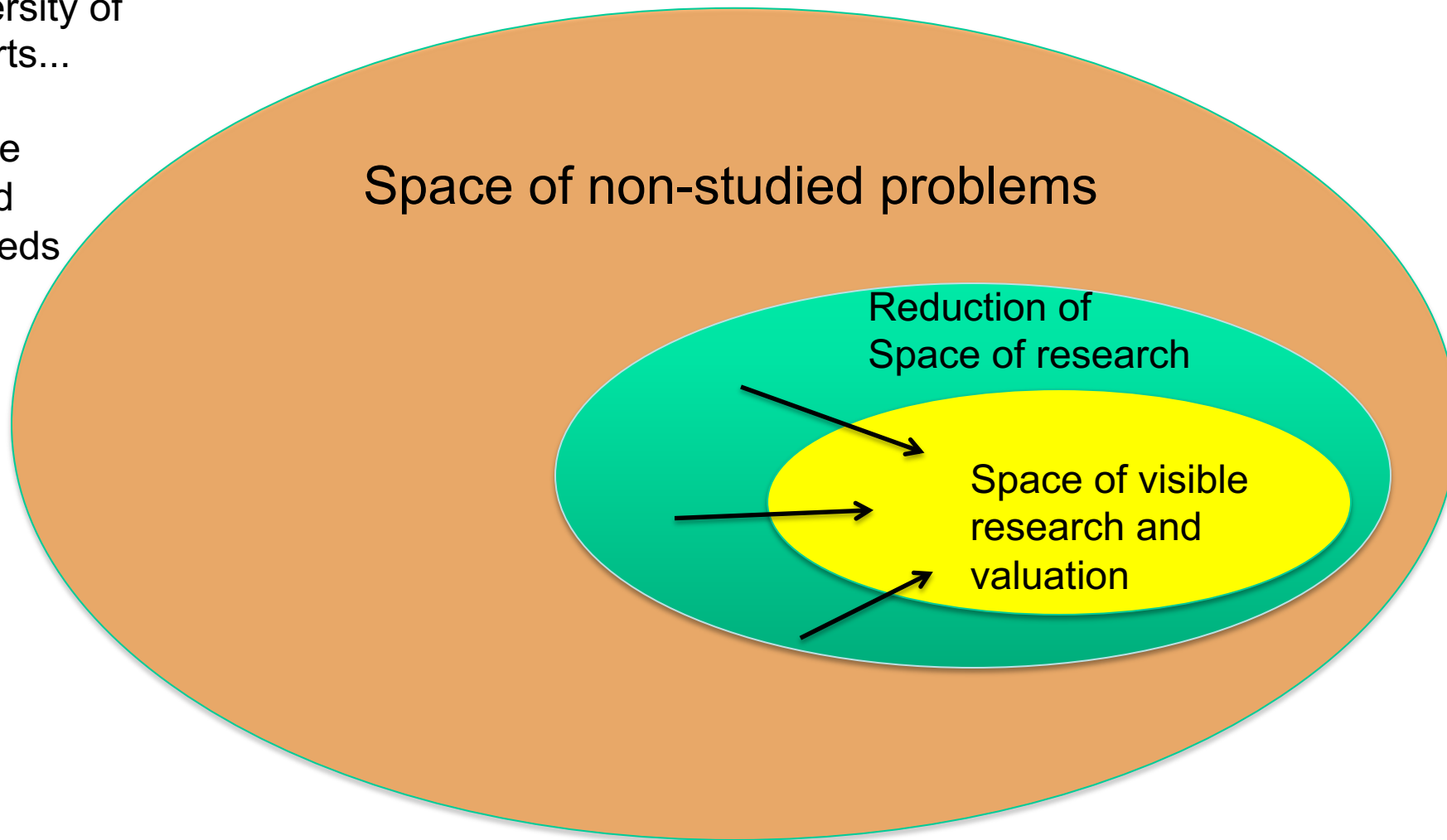
Streetlight effect in indicators: mistaking light with “problems”



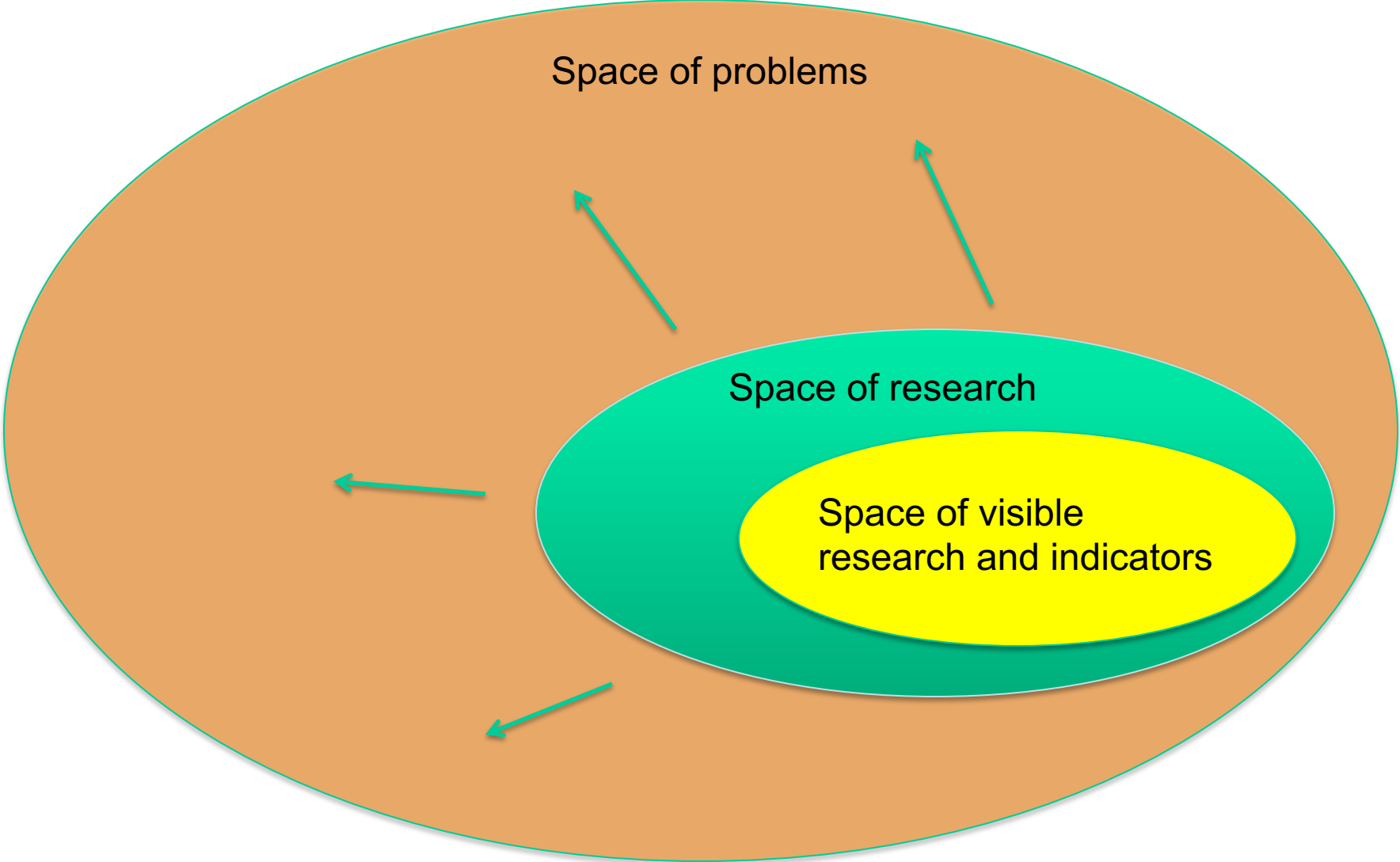
Hypothesis: reduced coverage may contract research space

Reduced diversity of
research efforts...

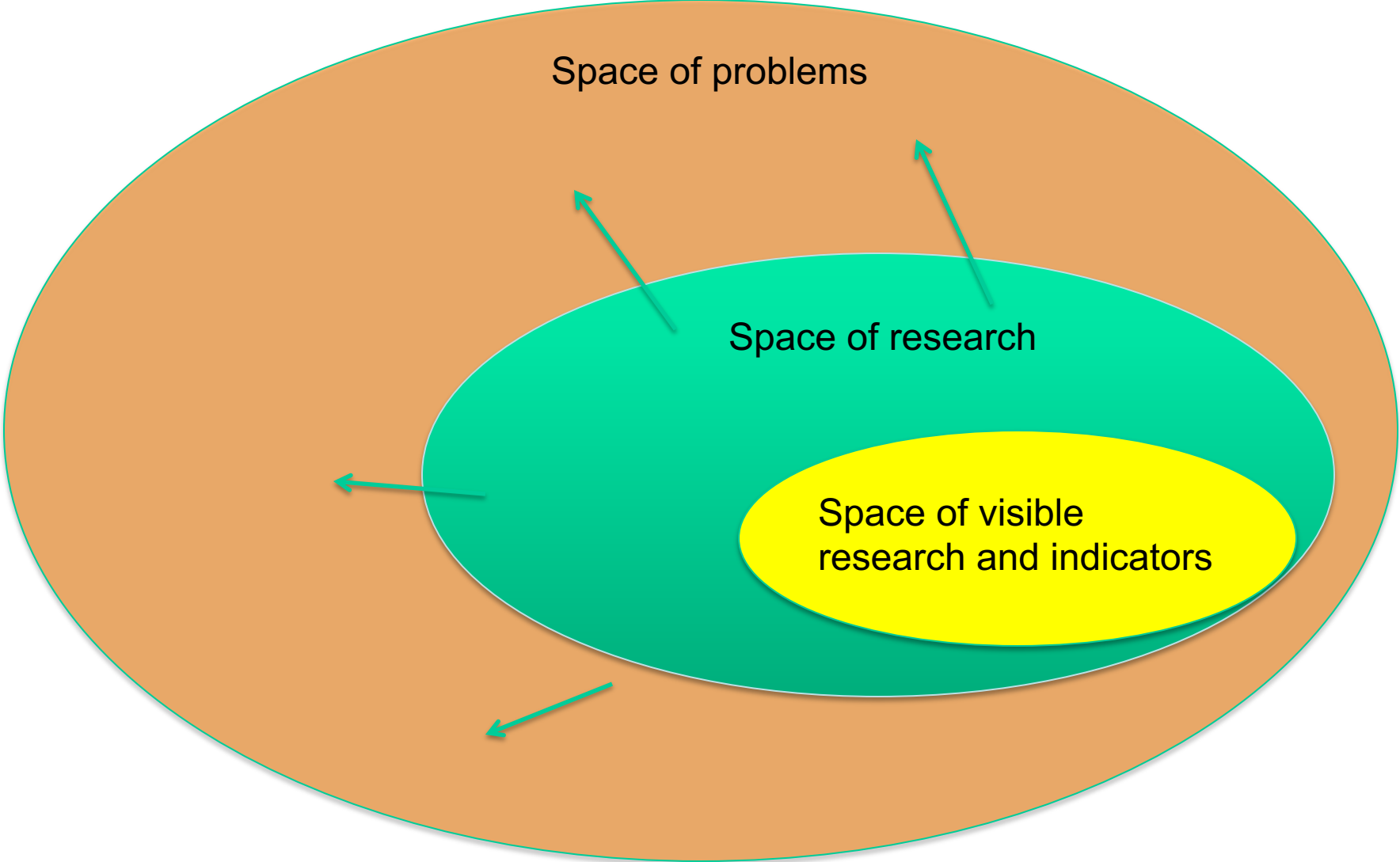
...larger space
of non-studied
of societal needs



Demands for expanding role of science in society...



Demands for expanding role of science in society...



... require an expanded perspective (large datasets) and plural STI indicators

