Why does research assessment need systems thinking?

Journal Impact Factor (JIF) is now widely deployed in academia largely because of its simplicity. However, the entrenched misappropriation of this proxy indicator has created systemic imbalances and inequity in the production and recognition of quality scholarship.

In complex systems like research assessment there is rarely a onesize-fits-all approach, and any effective intervention to replace JIF will require significant cooperation and the re-alignment of goals across a variety of different entities.

External system forces set the context

Systems involving an open and networked set of entities produce their own forces, which result in a dynamic pattern of behaviors and complex relationships over time.

Recognizing the nature and source of these system forces can help us identify where to focus, and where deeply embedded perceptions may be shaping institutional structures.

Reliance on JIF holds the system in place

The conflicting motivations and drivers of individual entities create complex interactions and relationships, with each entity playing its specific role to maintain the system in a stable state in tight relationships. For example, as long as JIF provides advantages for academic career advancement, publishing in high JIF journals will continue to be a top priority, especially for those in their early career.

about how new relationships and value flows can productively disrupt this stable system.

Clear markers of stability and success

Demonstration of the value of **Desire for** work promotion and career

Certain types of inquiry are more likely to get funded and cited

Academic areas of interest don't always map neatly onto external

forms of impact

Novelty takes longer to get recognized, which is harder to measure and reward

A systems perspective can further thinking

Researchers enter academia to do good work, but quickly learn that moving up requires "playing the game." As a result, researchers view JIF as a necessary means to improve their careers.

"Impact" matters to the outside world, but less so as a metric for promotion

Because it is a firmly entrenched and familiar measure of quality, institutions may not question whether JIF is actually the best way to measure or compare quality scholarship.

Institutional ranking and academic recognition

Desire to advance knowledge and nurture talents

> Lack of a good alternative evaluation system or examples of good practice

Communities

and publics

Researchers ely on grant

advancement

journals for higher JIF

JIF to increase efficiency and confidence in funding decisions

Desire to

simplify the

review process

and reduce risk

of investment

Researchers

funding to gauge



Publishing alternative

Journals

little surprise that the desire to be top-tier is just as prevalent for

Reputation as a gatekeeper Maintaining a and elite publication high JIF signals selectivity and an elite status, so it's

Demonstration

of impact and

attractor for talent

JIF provides a quantifiable and comparable measure that mitigates cognitive burden in grant evaluation, but may also lead to a false sense of confidence when making funding decisions.

Institutions

Funders

Embedded biases reinforce system inequity

> A lack of alternate evaluation methods demotivate cross-disciplinary cooperation

Simplicity of measurement travels more easily than disiciplinary authenticity

JIF is not a meaningful construct for those outside academia

Funder's personal mission/ organization interest

> Not enough examples of other credible. successful approaches

Barriers and drivers behind behaviors

journals as for researchers.

Because JIF is currently used as a dominant form of "currency" in review and promotion decisions, researchers seeking career stability may not only emphasize publishing activities over service and teaching, but choose projects and journals with the intent to deliver high-JIF results over other valuable interests and options.

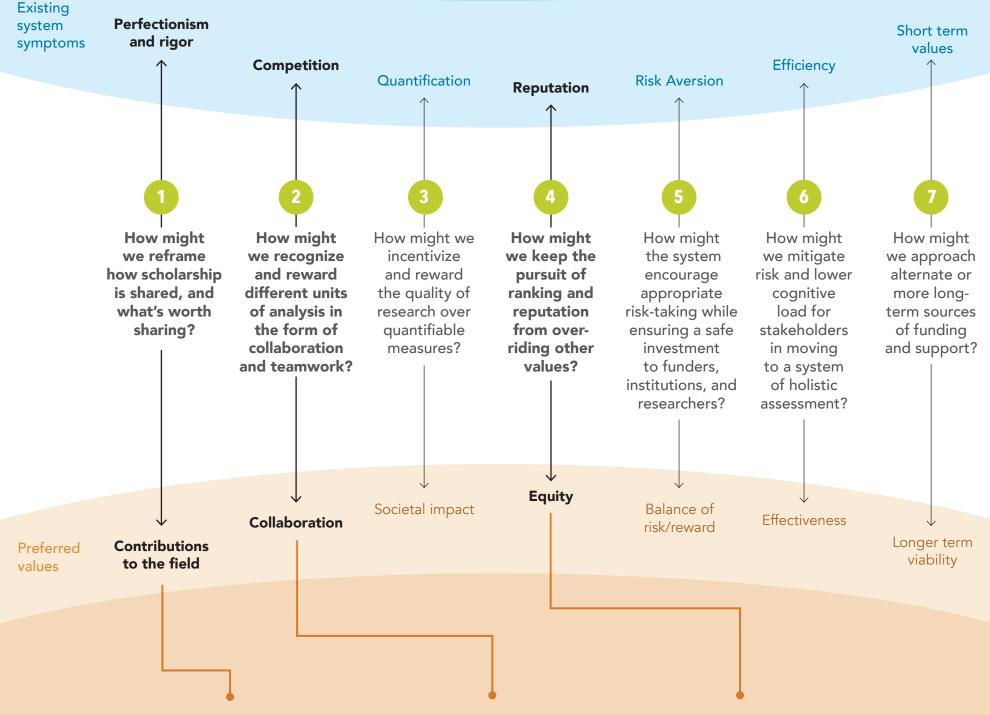
Understanding the causes of the issues that are visible in the system and knowing where patterns of behaviors stem from can help organizations consider why players act the way they do and prepare for how players may act in response to changes in the system.

What can we do?

Systems thinking can provide insight into areas where institutions have the highest chances of making strategic interventions, with the goal of advancing practical and robust approaches to research assessment globally and across scholarly disciplines.

Stable systems can be difficult to change, which may cause tensions within the current system and require disruption to achieve a more desirable one. The interactions and relationships between entities with conflicting behavioral drivers produce tensions that can create unintended outcomes and reinforce perverse incentives for action.

We identified seven primary tensions resulting from dynamics in the current state of the research assessment system, which pit opposing values against one another. While neither value is entirely good or bad, the values at the top — perfectionism and rigor, competition, quantification, reputation, risk aversion, efficiency, and short term results — tend to emerge from or reinforce a reliance on JIF, while those below — contributions to the field, collaboration, societal impact, equity, balance of risk/reward, effectiveness, and longer term viability — are more aligned with a research assessment context that rewards broader notions of quality scholarship.



Starting from these three tensions of focus, institutions can embrace a system perspective of research assessment in a practical way. By making achievements visible and concrete across disciplinary and geographic boarders, institutions can create a momentum for lasting change and expand its network for partnership for a better system of research assessment.

To realign research assessment and decision-making with core academic values within and across organizations, institutions can conduct both internal discussions and conversations with external stakeholders to explore new ways, such as:

- (Re)defining core academic values and how they might be measured and achieved in new ways
- Identifying gaps between current practices (what is shared) and desired outcomes (what is worth sharing)
- Revealing underlying considerations of stakeholders with a decisive role
- Inviting decision-makers and most affected groups to co-create solutions

To recognize and reward different units of analysis in the form of collaboration and teamwork, institutions can connect with and facilitate partnerships between organizations that would benefit from cross-disciplinary collaboration and teamwork, such as:

- Identifying partners in the field who are doing collaborative work and research
- Curating and evaluating tools and approaches for rewarding collaborative scholarship
- Determining parties that would benefit from collaboration and cross-disciplinary work
- Sharing best practices and case studies, and collecting feedback for iteration

To improve system equity and elevate these values over ranking and reputation, institutions can leverage its position as a convener and advisory organization to strategically consider tools, partnerships, and alternatives to JIF and encourage behaviors that address structural inequality in the system, such as:

- Articulating new forms of value and measurement to advance practices that promote equity
- Identifying potential key audiences of these interventions and their behavioral drivers
- Considering new motivators that may encourage new patterns of behaviors and create relationships in the system
- Positioning equity as a key indicator in mainstream ranking systems