

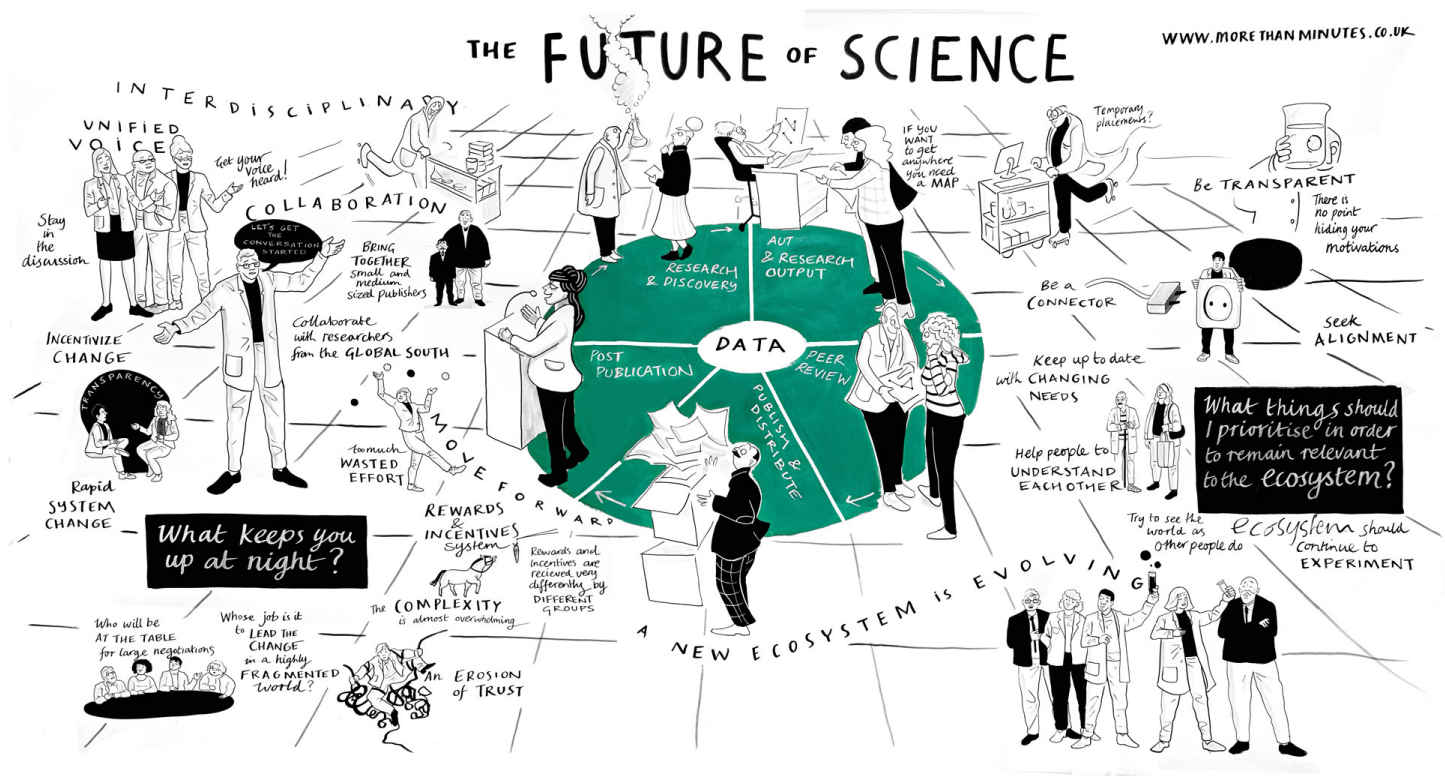
Outsell and Copyright Clearance Center (CCC) co-produced a by invitation event called the Future of Science on October 10, 2019 in London. After the event, Outsell authored this Insight and with it provided distribution rights for CCC to share this piece with its market. CCC did not commission this Insight as a fee-for-hire white paper. Outsell’s fact-based research, analysis, and all aspects of this piece represent our independent opinion. For questions, please contact us at info@outsellinc.com.



Anthea Stratigos
Co-founder & CEO

October 15, 2019

Multilateral problems require multilateral solutions as the system changes to support the future of science, a topic discussed at an event last week and depicted in the artwork below. It remains unclear who will step up to seize the opportunity this change presents and who will demonstrate real leadership along the way.



© 2019 More than Minutes

This past week, at the Royal Society of the Arts, Outsell and Copyright Clearance Center (CCC) held a leadership summit focused on The Future of Science. This invitation-only event brought together a cross-section of senior leaders throughout the science ecosystem to build on the momentum of a broader event hosted in March. High on the agenda: examining the value chain of scholarly communications to identify, probe, and investigate changes to the implicit and explicit reward systems that would foster necessary change.

As a backdrop to the event, the two organizations collaborated on a map and its accompanying report. They detail the value chain of the scientific publishing ecosystem, charting the “virtuous circle” of scholarly communications — from authoring and output to publication, research, and discovery, with the motivations and concerns of stakeholders outlined for each stage. The map and report were designed to foster dialogue and take the conversation beyond the high-level and toward the concrete change necessary to advance the future of science and the scholarly communications system that supports it.

The session opened with thought-provoking examples of maps used as universal means of communication, bridging language and culture barriers. The audience was reminded that maps excel as graphical representations of complex dynamics — essential resources to navigate the path ahead.

The program then focused on the needs of scientists and researchers as a backdrop for how the ecosystem can better support the needs of those who drive discovery and innovation to solve the world's most challenging problems. The following areas came up:

- Science is fundamentally an interdisciplinary and collaborative process. Connecting domain expertise is essential, not only within research organizations but across organizations, companies, and governments around the world, including the Global South. As a result, scientists are demanding interoperability among resources.
- Expertise in bioinformatics (software and programming languages) is in precious supply, and scientists and researchers are clamoring for more support.
- Data proliferation has driven data management needs to an all-time high, and hiring and retaining related talent is at a critical point. One anecdote spoke of researchers designing experiments to minimize data creation because of the challenges with managing data volume — certainly a troubling prospect.
- Scientists need additional services that help them stay abreast of regulatory developments and market demands. In essence, they need more context for the work they do and are asking for more support around interdisciplinary mandates.

Groups of four participants tackled the issues of threats (“What keeps you up at night?”) and changes that would minimize them. The litany of threats included poor data quality and lack of expertise in data management, inequalities in funding for each domain area, incentive and reward systems not being fit for purpose, mandates blind to the complexity and variability of the ecosystem, the growth of polarization, the exclusion of smaller players from the discourse, poor change management, and erosion of trust. Add to these the inefficiencies that drive up the costs of publishing, and the gloomy picture is complete.

One bold statement addressed the need to eliminate the impact factor as a metric that rewards quantity over quality, with the belief that funders could render it nearly obsolete within five years. The tenor of the meeting suggested that more collaboration is needed, open science in a digital age is less and less served by the current ecosystem, and there may be a need to “break and reset” the reward systems and value chain entirely. What could that look like?

There was a general view that collaboration across disciplines is essential, that stakeholders need to design for the next generation of scientists who are not aligned with the status quo, and that funders are taking a more active role in creating change — perhaps even accelerating it by driving a wedge between publishers and researchers and their institutions. A new vision in science heralds a move from open access (OA) articles to open data and open software, which funders seem to recognize.

One participant was open about the original Plan S earning its reputation of a radical program by “breaking a few eggs,” excluding some stakeholder groups from the dialogue, and taking “brash steps” that hurt the feelings of many. The new and updated Plan S and its supporting workshops and outreach programs are designed to rectify the damage. These efforts involve spreading the word among the global community of researchers, including younger researchers and those in health and social sciences (HSS) fields. To this end, data showcasing the societal benefit of OA can be a useful tool, such as the recently revealed statistics about the frequency of citation of OA articles: 31% of all articles are published OA, but they are referenced 52% of the time. Ironically, relying on the frequency of citation references illustrates our dependency on existing metrics and reward systems, such as the impact factor.

After much debate, the group centered on a few concrete steps to move forward:

- Develop a counterproposal to the funder’s coalition that is “driving a wedge between stakeholders”: more collaboration and more players at the table, across geographies, fields, and stakeholder groups.
- Ensure that any solutions are grounded in transparency about scientific and economical objectives. Plan S is seen as prescriptive, which impedes adoption even with players who do not dispute its key concepts.
- Support changes to the legacy model to foster greater alignment among libraries, publishers, and funders. Libraries must be part of the conversation and “making data flow” by implementing standards and offering new services that address data needs.
- Establish and test business models that complement APCs that are deemed “unsustainable” due to potentially lower profit margins.
- Share and amplify the experimentation and success stories already happening in university reward systems, transformative publishing models, new working groups, and open access education. Leverage and build upon the many forums that already exist to bring academic, research, library, publisher, funder, and intermediary stakeholders together to move beyond high-level conversation and to actual problem-solving.
- Develop new metrics at the researcher and article levels that build upon the impact factor and focus on outcomes and quality, not just reputation.

Adding a note of optimism, participants referred to the creation of ORCID as an example of “huge problems being solvable.”

In wrapping up the program, the conveners reminded the participants that the Outsell/CCC scholarly communications ecosystem map was designed to become part of the ecosystem: “an ecosystem about the ecosystem.” Its goal is to describe the ecosystem, track its dynamics, foster dialogue, and monitor change over time.

An appetite for broader dialogue and deeper dives into specifics emerged as one clear outcome of the event. Another was the need to define tangible objectives to “attack first.” While the appetite for multilateral dialogue was ripe, it was unclear who would lead the way. Among the proposed objectives, compliance with Plan S by January 1, 2021, stood out as the most practical, if only because the plan is already in place. Issues that made it into the top 10 to address included the glut of data and the infrastructure it calls for; the sustainability of OA; the need for researchers’ voices at every discussion table; the call for representation from demographics diverse in age, stage of career, and geography; and the overhaul of metrics.

Why This Matters

Scholarly communications are at a tipping point. It is built on outdated incentive systems and needs to build upon the impact factor and shift to better metrics, including those focused on outcomes.

The current system is becoming obsolete as the needs for interdisciplinary approaches to science abound to solve the world’s most complex problems. It’s clear to us that the journal, as an entity, must give way to an aggregation of multidisciplinary articles and artifacts along with the need to run analytics and surround these artifacts with data and value-added services.

One group discussed the example of Spotify, and who could fulfill that role in the scholarly communication ecosystem. If the record label was the journal producer, the researcher the musician, and the article and supporting data his or her output, alongside a modernized peer review process, where could that lead in a modern-day aggregation play where the value is in the combination of playlists that leads to better outcomes?

Plan S, for all the discussion and debate it generates, stands out as one of the few tangible cases of defined deadlines, action items, risks, and rewards. The industry clearly balks at prescriptive change measures and calls for consensus and a balanced matrix of stakeholders at the discussion table. Yet, with few alternatives forthcoming, we believe it is more probable that change will come from a new entrant. Despite the potential impact of more government mandates, more funder requirements, or the arrival of a technology player of the Spotify or Apple iTunes ilk, we see little fresh thinking from current players, whose incentives focus on margins, shareholder value, and maintaining the status quo.

At our March event, we spoke of the day of reckoning among textbook and newspaper publishers. As both sectors took a hit, the name brands survived — just barely — and some boutique brands did as well, but the middle market was gutted. We suspect the same will play out in scholarly publishing, and it's a matter of time before it hits full tilt. What remains will be bad for researchers and institutions who face less choice longer-term.

It's likely that an external player will enter the scholarly communications space from the camp of Apple, Facebook, Amazon, Google, or the next Spotify — today unnamed but lurking to seize opportunity in an inefficient and slow-moving market, just as Uber and Airbnb disrupted their respective markets before.

Industry dynamics and politics aside, the lack of quality and glut of data are big issues that must be addressed along with incentive and rewards systems that are no longer working. Indeed, if one looks at the needs of scientists and their institutions, the playbook for a product roadmap is clear: interdisciplinary, interoperable, data-compliant services to complement the journal article plus analytics to make the field move more fluidly so that the biggest problems can be solved with greater ease. Who will step up to the plate?

The need to solve the world's biggest problems is the epicenter of the need for change. Whether it be climate change, curing disease, solving addiction, or feeding the planet with quality food at scale, the problems are vast and the need for scientists to solve them even greater:

- There is a mismatch between the legacy scholarly communications ecosystem, supported by the “publish or perish” reward infrastructure and the realities of the digital age, and the future of science.
- Trust is currency, transparent collaboration across disciplines is key, and reliable, well-managed data is the fuel of scholarly communications — yet all three are in short supply.
- Change is called for at every stage of the value chain; in fact, the very concept of value is under scrutiny and up for an overhaul.
- The roadmap is clear: We await the firm in our industry who will convene multilateral dialogue and lead the way into the future.

There is evidence that stakeholders recognize the need for change but flinch at the short-term pain it will inflict. It appears that survival rates in the long term will tip heavily in favor of the more agile, risk-tolerant, diversified organizations that are open to experimenting and giving up some margin along the way.

Since there are multiple paths to chart on this journey, it is possible that sharing incremental wins and “failing fast” will produce a selection of pathways that work for the future of science. For the leader who has the wherewithal to take the high road and manage investor expectations for the long-term good, it's time to drive change and step up to what's happening with urgency. We await the innovative firms that dare to make it happen.

About Insights

Redistribution: Insights is an annual subscription service. Workgroup subscribers may distribute content freely only within their workgroup as defined in their agreement with Outsell. Individuals subscribe for their own use and may not distribute, disseminate, disclose, or otherwise make use of the information herein without permission.

The information, analysis, and opinions (the “Content”) contained herein are based on the qualitative and quantitative research methods of Outsell, Inc. and its staff’s extensive professional expertise in the industry. Outsell has used its best efforts and judgment in the compilation and presentation of the Content and to ensure to the best of its ability that the Content is accurate as of the date published. However, the industry information covered by this report is subject to rapid change. Outsell makes no representations or warranties, express or implied, concerning or relating to the accuracy of the Content in this report and Outsell assumes no liability related to claims concerning the Content of this report.

About Outsell

Outsell is the only research and advisory firm serving information industry CEOs and their teams, and investors in media, tech, data and information. Our solutions are built from the ground up leveraging a unique set of assets: proprietary data, industry leading analysts, world class events, and a thriving and growing peer-to-peer community. Through deep industry relationships, we ensure our clients make great decisions for their businesses on a wide spectrum of topics, including competition and markets, operating and sales performance, M&A and due diligence, and critical trends. We stand by our work 100% and guarantee results. That’s how fanatical we are about our clients’ success.

Outsell inc.

Email: contact_us@outsellinc.com

Telephone: +1 650-342-6060