A JOURNAL BY SISSA MEDIALAB

JCOM

Communicating Discovery Science

EDITORIAL

Engaging with discovery science: expanding the conversation within the science communication community

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Abstract

Many of us who engage with or communicate about discovery science — sometimes called curiosity-driven research or basic research — have grown increasingly concerned in recent years by the disproportionate attention to applied science, medicine, and technology, seemingly at the expense of basic science. This concern led to the creation of a joint U.S. Department of Energy-Kavli Foundation initiative, the Science Public Engagement Partnership (SciPEP) to catalyze and advance scholarship and practice specifically about communicating discovery science. This special issue is one outcome of that effort. In this issue, readers will find scholarship, practice, and thought leadership that explore the many different communication modes for sharing discovery science employed by scientists, their institutions, and the communicators who work with them. The issue also suggests ways to support basic scientists in identifying and clarifying their goals and audiences depending on what and with whom they are communicating.

Keywords

Public engagement with science and technology; Public perception of science and technology; Public understanding of science and technology

Received: 26th September 2024
Accepted: 26th September 2024
Published: 21st October 2024

Many of us who engage with or communicate about discovery science — sometimes called curiosity-driven research or basic research — have grown increasingly concerned in recent years by the disproportionate attention to applied science, medicine, and technology at the expense of basic science. It was a desire to restore basic science to the communication ecosystem of vaccine hesitancy, climate adaptation and mitigation, mis/disinformation, and similar issues that led the U.S. Department of Energy's (DOE) Office of Science and The Kavli Foundation to launch the Science Public Engagement Project (SciPEP).

SciPEP's aim is to elevate discourse and scholarship about basic science communication in broader conversations among scientists, practitioners, and communication scholars. This special issue of the *Journal of Science Communication (JCOM)* reflects some of the challenges of and opportunities for communicating about, and engaging broader publics with, discovery science.

In their essay, Sawyer and Smith [2024] — the Department of Energy and Kavli Foundation leads for SciPEP, respectively — paint a clear picture of the enormity of this challenge. They chart the difficulties inherent in communicating about science that, by its definition, often lacks compelling use cases or obvious utilitarian value. Their recap of SciPEP's activities and the future they envision for basic science communication sets the table nicely for the remainder of this special issue.

As SciPEP winds down its activities, this special issue offers an opportunity to take stock of what we have learned, what remains to be explored, and where best practices for basic science communication can be showcased and elevated for broader attention. What is not clear is whether the work of SciPEP has been sufficient to refocus or reinforce attention to basic science as part of the overall science communication ecosystem. If SciPEP has moved the needle on research and practice for public engagement with discovery science, then is this renewed attention sustainable?

This special issue gives me hope that it is. In this issue, readers will find scholarship, practice, and thought leadership that explore the many different communication modes employed by basic scientists and their institutions. The issue also suggests ways to support basic scientists in identifying and clarifying their goals and audiences depending on what and with whom they are communicating.

A recurring theme is one that bedevils many of us trying to find a bright line separating those communicating about discovery science from their counterparts talking about applied science. The authors in this issue take a step back and look not just at differences between basic and applied science, but also at where in the *process* of science this communication takes place. Is it at the fundamental discovery stage, where applications and relevance are not yet clear? Is it at the stage of public adoption or commercialization? Is it at the point of impact on policy, or where it becomes subject to deliberate or unintentional mis/disinformation?

While it might have been tempting for us to try to elucidate, once and for all, what differentiates basic science from applied science and technology, that was not our remit for this issue and its authors, thankfully. For the purpose of this special issue, we focus on communication research, practice, and theory arising out of public engagement with basic science as it emerges from research but before application or policy impact, or settled science shared in such a way as to inspire curiosity and awe independent of personal

relevance. And we leave it to other scholars and scientists to set boundaries on the definition of basic or discovery science.

Leading off this issue you will find a revealing analysis by Zhang, Joubert, Dudek and Costas [2024] of how science news organizations, in this case the science news distribution service, EurekAlert!, deal with discovery science versus applied science. This analysis illustrates well the challenges public information officers face when trying to attract media attention to discovery science. This paper pairs well with a more general discussion by VanDyke and Yeo [2024] on the ability of the media to spark public engagement with discovery science.

Besley, Yeo, Newman and Dudo [2024] examine how scientists and other research actors pursuing discovery science decide what, how, to whom and for what ends they communicate about their work. In a related paper, Du, Peterman, Besley and Maier [2024] explore how strategic goal-setting informs astrophysics outreach in a major scientific institution. Toyib, Pramesti and Herachwati [2024] showcase a grassroots approach to sharing the joy and wonder of astronomy to diverse audiences that might otherwise never be exposed to celestial wonders.

In fact, if there is a Platonic ideal of discovery science with no immediate, practical application, it's probably in this realm of physics and astronomy. And yet these disciplinary areas capture public attention in ways that few other areas of discovery science can emulate. Two papers in this issue showcase approaches that various institutions have taken to engage public interest in two marquee findings in recent years. Middleton et al. [2024] explore the long arc of communication that attended the discovery of and communication about gravitational waves, and Dorey, Holliman, Scanlon, Gillies and Godhino [2024] take a similar tack on the multi-decadal communication opportunities enabled by discovery of the Higgs boson.

How people make sense of the discovery science to which they are exposed is the focus of Tsai, Branch and Rowe [2024] paper about public engagement around ocean sciences, especially the social construction of meaning within informal education and communication. This insight aims to help readers further assess various approaches and tactics for communicating discovery science.

We conclude the issue with Milne et al.'s [2024] description of an innovative program designed to engage public audiences as partners with scientists around making ethical decisions about the discovery science they pursue. This discussion provides a good transition to the place of discovery science in broad conversations about science's role in society.

One issue of one journal, no matter how prestigious, is not going to reverse the obsession our community seems to have with political and policy hot-button issues around science, or the extent of mis/disinformation about science and how to counter it. Nor is it going to open the checkbooks of science agencies and institutions or science communication funders whose interests are most closely aligned with these obsessions.

None of us who have been following the dichotomy between communication modes for discovery and applied research would argue we need *less* communication about applied science, medicine, and technology. But the work of SciPEP, and of the authors in this special issue, can help expand conversations with scientists, their funders, and the communicators

who work with them, to engage broader publics with basic science. Ultimately, however, it falls on all of us to ensure these conversations *are* balanced, *are* informed by evidence and evaluation, and *are* centered in equity, accessibility, and diversity.

Please join me in thanking the editorial committee that helped frame and conceptualize this issue — T.Y. Branch, Julia Cramer, Jeanne Garbarino, Marina Joubert, and Sara Yeo. We all hope you enjoy and share the exciting work in this issue.

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About the author

Rick Borchelt is a communications consultant and freelance science writer. He recently retired from a 40-year career communicating the broader impacts of federally supported science and technology for U.S. federal agencies, research universities and scientific institutions, the U.S. House of Representatives, and the U.S. Executive Office of the President in the Clinton Administration. He was a co-lead of the joint Kavli Foundation-U.S. Department of Energy initiative, the Science Public Engagement Partnership.

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How to cite

Borchelt, R. (2024). 'Engaging with discovery science: expanding the conversation within the science communication community'. *JCOM* 23(07), E01.
https://doi.org/10.22323/2.23070501.

ISSN 1824-2049. Published by SISSA Medialab. jcom.sissa.it