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The Kavli Foundation
Ethics and Public Engagement of Scientific Discoveries
WORKSHOP SUMMARY

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Background

Major scientific breakthroughs have the potential to transform our everyday lives, yet the same science that holds promise for progress can raise concerns and questions for society. Scientists are making these advances at an accelerated rate, and as the rate of discovery increases, there is also a potential increase in societal and ethical implications born from breakthroughs. Historically, the identification of relevant ethical implications of science and technology issues, as well as dialogue with affected or interested publics, occurs either at the stage of technological application or when issues are controversial. There have been calls to consider ethical implications and engage society more proactively than has traditionally been done. To deepen understanding in this domain, [The Kavli Foundation](#) hosted an in-person workshop on April 16-18, 2024, focused on exploring advancements, obstacles, and opportunities to strengthen public engagement with ethical considerations born from basic discovery science.

The workshop provided a forum for approximately 35 international participants from diverse backgrounds to convene and deliberate on the nuances of public engagement with ethical considerations in discovery science. Attendees represented various disciplines including social scientists, natural and bench scientists, funders, ethicists, engagement and communication practitioners, and academic leaders. This document summarizes insights, questions, and suggested paths forward that emerged from workshop discussions.

Key Insights and Questions

Participants were keen to think differently together and explore innovative strategies to strengthen effective public engagement about ethical issues born from discovery science more proactively than has traditionally been done. Key questions and insights that surfaced include:

When, in the process of science, is it optimal to explore ethical and societal considerations?

Pre-workshop discussions and readings pointed to *a*, if not *the,* key area of exploration to be "if we are going to engage publics about potential ethical considerations, earlier than has been done, when is *earlier*?" Discussions unpacked this idea of "earlier"–When is it? Who bears the responsibility for identifying the right time–Scientists? Ethicists? University legal or technology transfer offices? Communities that may be affected?

The definition of "scientific discovery" was explored in this context, acknowledging that scientific discovery is rarely a solitary moment, but rather is a continuous, collaborative process. This makes grappling with the idea of identifying ethical considerations and discussing them with publics "earlier" challenging. The idea of ongoing public engagement throughout the entire scientific process, where engagement is built in from the outset, emerged. This "public interest research" approach is perhaps more manageable when the scientific questions being explored are explicitly designed around a societal need or an applied research topic. Engaging social scientists and publics as a continuous component of the scientific process may theoretically be ideal, however, the practical reality of continuous engagement in every scientific endeavor seems unrealistic. It follows that how to approach this in curiosity-driven science, when areas of scientific inquiry may be more open ended, rather than moving toward potential application, is murkier. Who may be impacted by some unknown application is unclear, therefore who to engage "earlier" can also be unclear. Use-inspired basic science, however, might begin discussions with potential users of an application earlier in the research process (e.g. chemistry or physics underpinning alternative energy or molecular/cellular neuroscience research related to underpinnings of autism). Aiming for engagement to be done 'earlier' is desirable, complex, and likely needs more experimentation and efforts to learn from.

What do we know about the impact of exploring ethical implications with relevant publics more proactively on both science and society?

Participants noted the need to build a strong-evidence base of the impact of engaging publics more proactively than has been done, including being open to grappling with undesirable impact. The following were identified as areas of potential impact:

- *Foster trust and mutual understanding.* Trusting relationships between scientists and publics can be created when meaningful dialogue, involving empathy and listening, occurs in bi-directional ways. This can engender humility, cultivate community and belonging, encourage healthy skepticism and credulity, and facilitate shared agency and investment in science. This necessitates scientists meaningfully listening to, and acting on, what they hear. By reaching out to publics for input more proactively than has been done, the scientific community could build more trust among the parties.
- *Surface ethical issues.* Participants felt it may be too optimistic to assume bringing publics into the scientific process before the point of application could avoid or anticipate ethical issues before they arise, rather, they posed it might help surface potential issues and mitigate their negative impacts, potentially maximizing beneficial impact long-term.
- *Influence pace and efficiency in scientific processes*. There was uncertainty about whether engaging publics in ethical considerations would "slow down" or "speed up" the pace of science. Initially, it may slow down research to take the time needed to do this work. However, this time investment could allow for faster, more equitable application later in the discovery process.

- *Facilitate contextual agenda-setting.* Participants acknowledged that public engagement allows for better understanding of ethical contexts and frameworks that vary across populations, times, and places. Therefore, there is an opportunity for future decision-making, policy, and regulatory processes to be more efficient and responsive to societal needs.
- *Expose power imbalances.* Conversations touched on the ways upstream engagement can create a more equitable playing field, allowing for multidirectional, multidisciplinary conversations where all opinions and values are surfaced and respected, including perspectives of historically marginalized communities.

The reality and role of misinformation

Participants acknowledged that engaging publics meaningfully on any science and technology issue is situated in an information ecosystem with mis- and disinformation present. Some participants felt the best intentions to meaningfully discuss issues related to science and technology can be challenging, or even hopeless, given the prevalence of mis- and disinformation. Others noted that mis- and disinformation has been present throughout history, is not specific to only science, and is a reality to work within. Some shared that misinformation is a symptom of broader trust issues, and that engaging publics meaningfully and more proactively than has been done might lead to desirable trust building.

Other barriers

Discussions also highlighted additional barriers, which are common to meaningful public engagement in any context, including: traditional reward systems often do not acknowledge public engagement in tenure, promotion, and review; a lack of training for scientists in this area (e.g. communications, ethics, societal context of science); a scarcity of funding and resources allocated to multidisciplinary collaboration; and inequality in the value ascribed to social science or civic engagement contributions and expertise as compared to other scientific disciplines.

Opportunities for Action

Participants collectively identified several areas of opportunity to further investigation, action, or investment, which could bolster capacity to explore ethical considerations and engage publics more proactively about basic scientific discovery than traditionally has been done. Participants also noted a need for continued work and experimentation to further learnings in this area.

Build infrastructure to engage communities:
establish the relational infrastructure necessary to ensure sustainable, mutually beneficial, trust-based public engagement. Infrastructure must be built within science to recognize ethical considerations, as well as identify and engage relevant communities who may have an interest or stake in particular

research areas or their potential downstream applications. This requires multidisciplinary collaborations, and mechanisms in higher education to connect and collaborate across departments and experts.

Academic culture change that values and respects multidisciplinary collaborations, including with publics outside of academia: cultivate a culture of appreciation, reciprocity, respect, and cross-disciplinary collaboration to harness the collective wisdom of different groups and maximize science's positive impact on society. Academic culture change that recognizes and rewards the diverse multidisciplinary collaborations, time, and resources required to identify potential ethical considerations and engage publics with these considerations is needed. Social science and civic engagement experts must be included in scientific collaborations in meaningful and respectful ways. This may require fostering multidisciplinary partnerships earlier in the discovery process and creating partnerships with social scientists and engagement professionals in leadership roles.

Enhance funding mechanisms: science funders should consider incorporating funding of social science and civic engagement expertise as part of a scientific initiative or grant. Establishing a framework that serves as a tool for science funders interested in engaging publics could be useful. This could include creating new approaches to funding calls that recognize and support the value of social science and civic engagement expertise and consider the inclusion of these partnerships an appropriate use of research funding.

Ensure preparedness: preemptively create relationships and dialogue between basic science, social science, and humanities to allow for more efficient and effective problem-solving when ethical challenges arise. It could be beneficial to invest in preparedness of social science (referred to as "basic social science"), community relations, and cross-disciplinary relationships before they are needed. This is particularly prescient given the unpredictability of when any scientific endeavor, let alone a project with a basic science focus, is at a stage to put social science and civic perspectives into practice.

Strengthen and adapt specialized training: strengthen efforts in scientist training that build appreciation of the need to consider the social context surrounding their science, as well as the value of fostering collaboration with social scientists, engagement experts, and publics. Note, there has been work to champion skill building of scientists in their training (e.g. courses on communication or ethical approaches to research). Workshop discussions focused less on scientists developing proficient skills to do the engagement themselves, and more on ensuring scientists have opportunities to build an appreciation of the societal context of their science, recognize and understand that there are other experts they might collaborate with (e.g. ethicists, sociologists, community organizers), and explore what it might take to initiate and maintain successful cross-disciplinary collaborations.

Understand the impact of public engagement on science and society: deepen understanding of the impact of more proactive engagement of publics with ethical issues born from basic science. Invest in qualitative and quantitative methods to collect data about the impact and changes that occur, both to science and involved publics, in order to better understand the value of this work and to improve approaches.

Next Steps

The Kavli Foundation will be using the insights gained and opportunities for action in its strategic planning. The foundation will share these ideas with other colleagues, partners, and funders. Hopefully this document will spark new ideas and collaborations among participants and those who read it. If you are interested in sharing ideas or connecting with The Kavli Foundation on this topic, please email us at Science.and.Society@kavlifoundation.org.

Additional Information

More information about the workshop is available below:

- A summary of pre-workshop listening sessions, where attendees shared their ideas, can be found [here](#).
- Workshop attendees can be found [here](#).
- Workshop agenda can be found [here](#).
- Detailed meeting notes can be found [here](#).