

An O.D.E.S.S.I. for Public Engagement in a New Era of Science

*This concept paper was authored by Joy Y. Zhang, Director of the Centre for Global Science and Epistemic Justice at the University of Kent, as part of ongoing work on inclusive science governance. The ideas presented here are informed by sustained dialogues with colleagues and communities across both the Global North and Global South, focusing on the emerging socio-ethical and ecological implications of engineering biology in environmental, medical, and agricultural contexts. It is offered as an open invitation for further collective reflection, dialogue, and experimentation - particularly in advancing synergies among public engagement, ethics, and science diplomacy.

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Introduction

We are living through an unprecedented era of scientific advancement—defined not only by the speed at which innovations are emerging, but also by the expanding scope of their impact across disciplines, sectors, and borders. Scientific knowledge production has never been a purely linear or insular endeavour; today, it increasingly operates as a form of soft diplomacy—bridging scientific, political, and cultural boundaries as it reshapes relationships between nations, institutions, and communities. At the same time, science and technology are becoming more deeply entangled with societal values, cultural narratives, and pressing global challenges.

In light of these shifts, there is both a pressing need and a timely opportunity to reimagine public engagement—not only as a mode of science communication, but as a form of internal science diplomacy that fosters dialogue across sectors, cultures, and political sensibilities. A general shift from 'public understanding of science' to 'public engagement with science' over the past decades was a significant and commendable step toward fostering two-way dialogue. Yet much of the underlying practice remains influenced by an implicit deficit model: the assumption that public skepticism will dissipate with increased scientific literacy. While statistically plausible in some cases, this logic fails to capture the deeper social, ethical, and cultural concerns that shape public responses to science and innovation.

A 2024 UK public opinion data on engineering biology¹, for instance, reveals strikingly high levels of support—exceeding 70% across major sectors. Yet, practitioners in science policy and ethics know well that such support can be fragile. Enthusiasm tends to wane once technologies are applied in real-world settings. This is not due to public ignorance or hypocrisy, but because what is often categorised as 'skepticism' is, in fact, a reflection of discomfort with the social relations and norms that accompany technological change—particularly when these are perceived as being imposed without sufficient dialogue or consent.

Crucially, the deficit model runs both ways: while scientific institutions may undervalue public insight, communities often expect their perspectives to be dismissed. In a world of widening inequality and diverging aspirations, publics are not merely seeking a voice—they are seeking relevance. They want science to reflect their lived realities and to help shape its direction. Meeting this challenge calls for a public engagement paradigm that recognises, repairs, and reimagines social relations as science advances. This means moving beyond the pursuit of consensus to enable encounters—spaces where diverse values can be explored and negotiated. In this sense, public

¹ <https://www.gov.uk/government/publications/engineering-biology-public-trust-survey-findings/engineering-biology-public-trust-survey-findings>

engagement becomes a form of diplomacy: a platform for mutual recognition, trust-building, and the careful coordination of difference.

Without such a shift, we risk reinforcing a growing disconnect between science and society—what has been described as ‘*science at large*’—where science, though expansive and globally networked, becomes socially unanchored. The task of engagement, then, is not merely to inform or consult a presumed monolithic ‘public’ about risks, but to deliberate on what constitutes benefit, how it is distributed, and how such choices are justified. As science becomes increasingly transnational and embedded in complex global networks, the principles of science diplomacy become indispensable—not only between nations, but within societies divided by competing values, priorities, and access.

Ethics, too, must be recognised as a living practice—responsive to new technologies, shifting cultural norms, and evolving social demands. To navigate this complexity, ethics, science diplomacy, and public engagement must be understood as interdependent: together, they underpin a science governance model that is legitimate, adaptive, and responsive to a pluralistic world.

Introducing O.D.E.SS.I.

In light of these dynamics, we propose a new framework: **O.D.E.SS.I.**—a public engagement paradigm grounded in five interlocking principles:

- **Open**
- **Deliberative**
- **Enabling**
- **Sensible and Sensitive**
- **Innovative**

Together, these principles form the scaffolding for meaningful, equitable, and forward-looking dialogue on science in society.

The Pillars of O.D.E.SS.I.

Open

Openness refers to more than transparency or inclusivity. It is about cultivating truly open-ended dialogues—where questions, priorities, and values can be thoughtfully revisited and refined in light of new perspectives and shared understanding. It includes a readiness to consider whether particular scientific pursuits (e.g., heritable genome editing) should proceed at all. Openness demands humility: acknowledging that any resolution is provisional, conditional, and always subject to future revision. It also entails a sincere willingness to receive new perspectives, without defaulting to institutional or disciplinary closure.

Deliberative

Deliberation in the O.D.E.SS.I. model shifts away from the pursuit of consensus as the desired goal. Instead, it emphasises the coordination of differences. It is this shift—from seeking agreement to navigating diversity—that opens the space for genuine deliberation. By framing engagement as a process of mutual negotiation and sense-making—rather than one of binary opposition—stakeholders become more willing to listen, reflect, and collaborate. In this sense, deliberation becomes a form of diplomacy: a careful, ongoing effort to bridge divergent perspectives, build

mutual understanding, and create the conditions for inclusive and context-sensitive action, where ‘both/and’ approaches can replace the deadlock of ‘either/or’ thinking.

Enabling

Public engagement must empower both science and society. It should enable communities to access, interpret, and apply scientific knowledge to their needs, while also enabling science to benefit from diverse perspectives. This calls for a feedback loop in which public insight informs the design, development, and application of technologies—not only to mitigate risks but also to inspire new directions of inquiry. In this way, engagement becomes an enabling tool for localised science diplomacy—translating knowledge across knowledge systems and fostering cooperative problem-solving rooted in shared accountability.

Sensible and Sensitive

Scientific norms and policies are rarely able to satisfy all interests or perspectives. They are often compromises—crafted in response to a plurality of social needs, concerns, and constraints. Yet even when full agreement is not possible, outcomes can still be sensible, if they are shaped through a sensitive (i.e. response-able) engagement with difference. That is, sensible decisions arise not from a singular or dominant logic, but from the ability to acknowledge, care for, and carefully weigh diverse arguments and values. In this sense, public engagement becomes a form of diplomacy—an effort to listen deeply, respond thoughtfully, and communicate clearly why certain choices are made, and how competing concerns have been considered.

Innovative

Public engagement often encounters rhetorical impasses—moments where language alone fails to capture the depth of public sentiment or social complexity. People express their values, concerns, and hopes in many forms that are not easily verbalised. Breaking through these limits requires methods that can decode and translate social expressions beyond spoken or written language. This is where innovation plays a crucial role—not simply through new platforms or digital tools, but through creative approaches that include visual, performative, narrative, and playful modes of expression. These methods can surface tacit knowledge, reveal fresh perspectives, and open up new ways of thinking about science and society.

Our Vision and Next Steps

In the coming years, we will launch international events and collaborations to explore and refine the O.D.E.SS.I. approach. These activities will serve as laboratories for new practices in engagement—anchored in local realities but informed by global dialogues.

We do not view O.D.E.SS.I. as a prescriptive model. Rather, it is a conceptual compass—one that encourages a move toward public engagement as a living, co-creative, and socially responsive endeavour. Our aim is to collectively build a new norm of science-society relations, and a diverse repertoire of engagement strategies that reflect the plural realities of our shared planetary future.

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* To learn more about upcoming O.D.E.SS.I. events and activities, please reach out to gsej@kent.ac.uk.