

Navigating the Crossroads of Rhetoric and Science: Towards an Informed Public in an Era of Pandemics and Pandemonium

Jonathan W. Crocker
Texas Christian University

As the world grapples with the unprecedented challenges of pandemics and pandemonium, the significance of addressing the intersection of rhetoric and science cannot be overstated. The COVID-19 pandemic has spotlighted the limitations of public understanding of science and mathematics and exposed the widespread resistance to scientific facts and the prevalence of mathematical misconceptions. The need for an informed public capable of discerning and evaluating complex scientific information is urgent. In response, this special issue of the *Electronic Journal for Research in Science & Mathematics Education* seeks to spark conversations at the crossroads of rhetoric and science, exploring the role of public education, public rhetorics, and scientific argumentation in fostering a scientifically literate and engaged citizenry.

Historically, the sociology of scientific knowledge has been fraught with instances of skepticism and resistance to scientific claims. Gaonkar's (1993) critique of the rhetoric of science, for example, sparked an ongoing conversation that underscored the importance of examining the discursive debris that envelops our collective understanding of scientific knowledge. In the current era of pandemics and pandemonium, this conversation must not only continue but evolve, as we face the necessity of reconciling public perception and scientific reality. The intersection of rhetoric and science raises a multitude of complex questions about the relationship between scientific facts, public discourse, and public understanding. How can the rhetoric of science be better employed to engage the public in informed and nuanced discussions about critical scientific issues? How might educational and communication strategies be developed to counteract misinformation and dispel misconceptions, thereby cultivating an informed and science-savvy citizenry? These are among the many questions this special issue seeks to explore and catalyze, drawing on disciplinary perspectives from education, rhetoric, science, mathematics, and critical theory.

Addressing the rhetoric of science is particularly crucial in light of the pressing global challenges we face today, such as climate change (IPCC, 2017), clean water scarcity (UNICEF, 2022), food safety (WHO, 2018), and the ethics of artificial intelligence (Bostrom & Yudkowsky, 2014) or CRISPR-driven genetic enhancement (Brokowski & Adli, 2019). With lives at stake, the importance of ensuring that the public is equipped with the requisite knowledge and critical thinking skills to engage in well-informed discussions and decision-making processes cannot be underestimated. In addition to the rhetoric of science, the rhetoric of mathematics also warrants attention in our pursuit of an informed and scientifically literate public. As a discipline, mathematics often appears inaccessible and abstract to many, fostering a divide between those proficient in its language and the general public. The manner in which mathematical knowledge is communicated can either bridge or exacerbate this divide. Consequently, understanding and navigating the rhetoric of mathematics is crucial for facilitating public comprehension of and engagement with quantitative information.

The first article, "*Simply a matter of numbers*": *Public Commentators' Construction of a Mathematical Model of Equality Perpetuating the Myth of Mathematics as Objective and Neutral* (Gómez Marchant et al., 2023), critiques the commonly held perception that mathematics is an objective and neutral subject, arguing that it is frequently used to perpetuate white supremacy in public political spaces. The authors draw on critical race spatial theory to demonstrate how white parents used a mathematical model of equality to maintain and perpetuate white supremacy in a school board meeting on redrawing the

attendance zone of an elementary school. Through a discourse analysis of public comments, the authors highlight how the mathematical model was co-constructed through public comments and how the variables included and excluded perpetuated injustice. The authors argue that the use of mathematics in political spaces cloaks individuals in a guise of neutrality, obscuring human decision making and diverting responsibility.

The second article, *More Complexity, Less Uncertainty: Changing How We Talk (and Think) about Science* (Mays, 2023), argues that the problem with science communication, particularly around complex topics like the COVID-19 pandemic, is not uncertainty but rather complexity. While the framing of uncertainty has been useful in scientific communication discourse, it can have deleterious effects on public discourse by leading to reductive rhetorical treatments of scientific concepts. The simplification of scientific topics can cause anemic science communication that promotes political division and rhetorical disengagement. Mays suggests that communicators should shift their focus from uncertainty to complexity to better communicate scientific concepts. He concludes that communicators cannot ignore certain stases of argument in their rhetorical approaches and emphasizes the importance of robust communication and understanding of complex scientific subjects to public knowledge and a healthy political sphere.

This special issue features contributions that span theoretical, empirical, and practitioner-oriented domains, investigating the relationship between rhetoric, science, and public education, as well as exploring pedagogical approaches and communication strategies that promote scientific literacy in both formal and informal learning contexts. By offering a platform for diverse and interdisciplinary insights, the two articles included here begin a conversation about the challenges and opportunities presented by the intersection of rhetoric and science, and ultimately, contribute to the cultivation of an informed public capable of navigating the complexities of our rapidly evolving world. As the world contends with pandemics and pandemonium, the role of rhetoric and science in shaping public understanding and fostering informed engagement with scientific issues becomes ever more critical. It is my hope that this special issue will not only spur insightful discussions and further research, but also serve as a catalyst for collective efforts to advance the cause of science education, mathematics literacy, and public engagement in this era of uncertainty and turbulence.

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