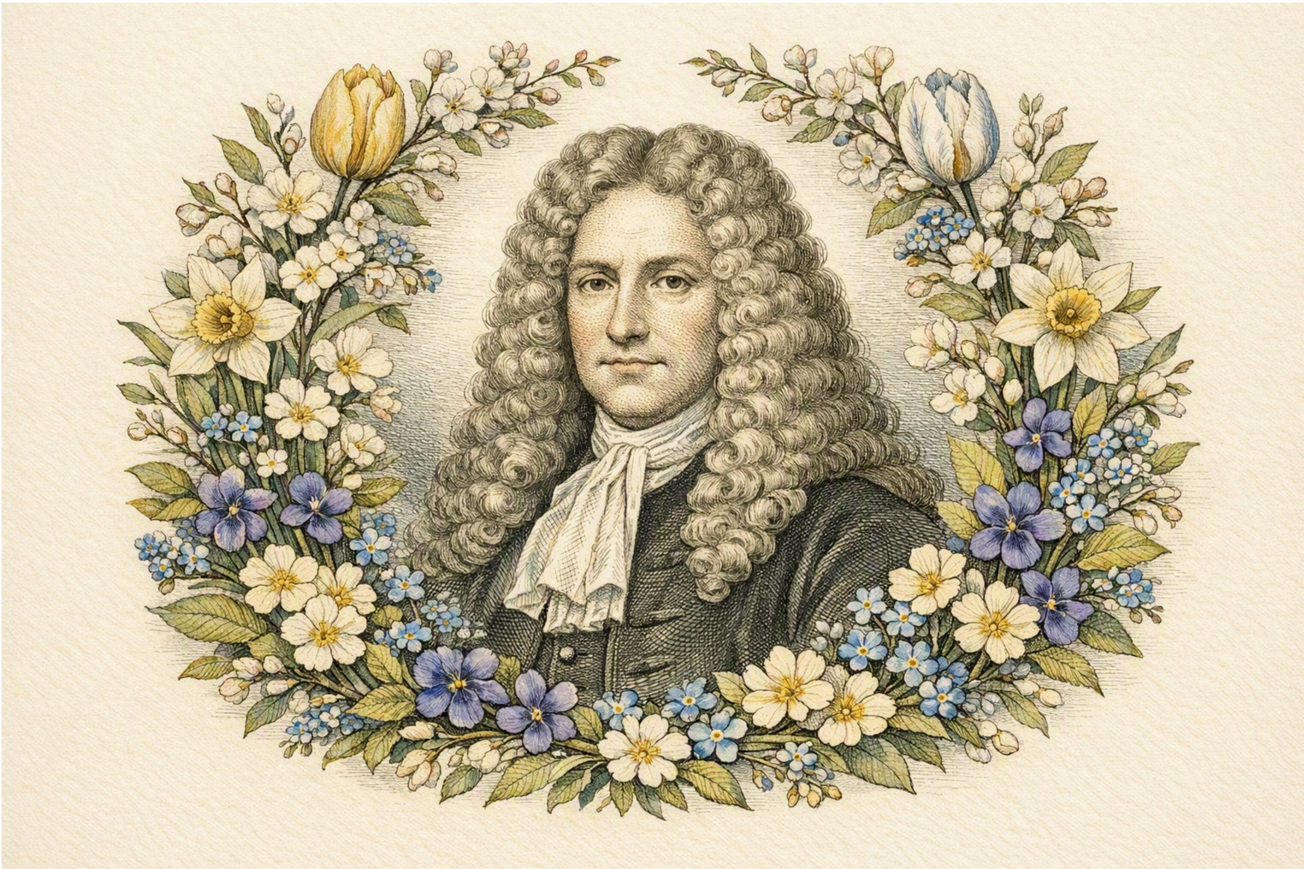
ACTA ERUDITORUM (OTTO)



Space, Astronomy, and Planetary Stewardship

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Masthead and Editorial Statement

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Editorial: Knowledge in the Service of Human Possibility

This issue of Acta Eruditorum considers space, astronomy, and planetary stewardship as a field of shared responsibility. The journal approaches scholarship as more than the accumulation of findings: it is a disciplined public practice through which claims are tested, inherited assumptions are revised, and human beings enlarge their capacity to act wisely.

The papers are interdisciplinary conceptual syntheses. They do not claim to report original human-subjects experiments. Their contribution is integrative: each connects empirical literature, institutional analysis, ethics, and practical governance while identifying questions that remain open.

Contents

Astronomy and the Expansion of Human Perspective

Acta Eruditorum Editorial Team

Abstract

This conceptual review examines observation, cosmology, public imagination, scientific instrumentation, and humanity's place in the universe. It develops an integrated account of how evidence, institutions, values, and implementation interact, and it identifies practical conditions for responsible progress. The synthesis argues that technical capacity alone is insufficient: durable gains require legitimacy, equitable participation, transparent evaluation, and mechanisms for learning and correction. The paper concludes with implications for research, governance, and professional practice.

Keywords: systems thinking, governance, evidence, equity, institutional learning, human progress

Research Questions

1. How should observation, cosmology, public imagination, scientific instrumentation, and humanity's place in the universe be conceptualized as a system?
2. Which institutional conditions support trustworthy and equitable outcomes?
3. What research and governance practices improve learning over time?

Introduction

This paper begins from a practical observation: the institutions surrounding observation, cosmology, public imagination, scientific instrumentation, and humanity's place in the universe were largely designed for conditions that are rapidly changing.

In the case of observation, cosmology, public imagination, scientific instrumentation, and humanity's place in the universe, narrow optimization can transfer costs across borders, generations, sectors, or social groups. A credible account must therefore trace consequences beyond the immediate site of intervention. (National Academies of Sciences, Engineering, and Medicine, 2017).

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Conceptual Foundations

The analysis combines systems thinking with a capabilities approach, treating observation, cosmology, public imagination, scientific instrumentation, and humanity's place in the universe as both a material arrangement and a field of human choice.

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Evidence and Method

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Analysis

Four interacting dynamics organize the evidence: scale, time, distribution, and feedback. Each changes how problems are seen and which interventions remain viable.

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Institutional Implications

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Conclusion

The future of observation, cosmology, public imagination, scientific instrumentation, and humanity's place in the universe will be shaped less by a single breakthrough than by the quality of the relationships built around knowledge, responsibility, and shared benefit.

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The Orbital Commons

Acta Eruditorum Editorial Team

Abstract

This conceptual review examines satellite services, congestion, debris, coordination, accountability, and equitable access to orbit. It develops an integrated account of how evidence, institutions, values, and implementation interact, and it identifies practical conditions for responsible progress. The synthesis argues that technical capacity alone is insufficient: durable gains require legitimacy, equitable participation, transparent evaluation, and mechanisms for learning and correction. The paper concludes with implications for research, governance, and professional practice.

Keywords: systems thinking, governance, evidence, equity, institutional learning, human progress

Research Questions

4. How should satellite services, congestion, debris, coordination, accountability, and equitable access to orbit be conceptualized as a system?
5. Which institutional conditions support trustworthy and equitable outcomes?
6. What research and governance practices improve learning over time?

Introduction

This paper begins from a practical observation: the institutions surrounding satellite services, congestion, debris, coordination, accountability, and equitable access to orbit were largely designed for conditions that are rapidly changing.

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Conceptual Foundations

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Evidence and Method

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Limitations and Future Research

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Conclusion

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Planetary Protection in an Era of Commercial Exploration

Acta Eruditorum Editorial Team

Abstract

This conceptual review examines forward contamination, sample return, private missions, scientific value, and precaution. It develops an integrated account of how evidence, institutions, values, and implementation interact, and it identifies practical conditions for responsible progress. The synthesis argues that technical capacity alone is insufficient: durable gains require legitimacy, equitable participation, transparent evaluation, and mechanisms for learning and correction. The paper concludes with implications for research, governance, and professional practice.

Keywords: systems thinking, governance, evidence, equity, institutional learning, human progress

Research Questions

7. How should forward contamination, sample return, private missions, scientific value, and precaution be conceptualized as a system?
8. Which institutional conditions support trustworthy and equitable outcomes?
9. What research and governance practices improve learning over time?

Introduction

This paper begins from a practical observation: the institutions surrounding forward contamination, sample return, private missions, scientific value, and precaution were largely designed for conditions that are rapidly changing.

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Conclusion

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Space Science as Earth Science

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Introduction

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Issue Synthesis: A Program for Inquiry and Action

Across the four papers, space, astronomy, and planetary stewardship emerges as a problem of alignment. Knowledge must be credible, institutions capable, participation meaningful, and correction possible. None of these conditions substitutes for another.

Editorial Commitments

- Distinguish evidence from advocacy while acknowledging that values shape research questions.
- Report uncertainty, limitations, and distributional consequences.
- Protect open criticism, replication, and reasoned dissent.
- Design participation so affected communities can influence decisions before commitments become irreversible.
- Treat maintenance, stewardship, and learning as core elements of innovation.
- Evaluate progress through human capability and ecological durability, not output alone.

Publication and Ethical Disclosures

Peer-review status. This editorial-team special issue was developed under the journal's internal scholarly review and editorial quality process. Readers should evaluate arguments against the cited literature and subsequent evidence.

Funding and conflicts of interest. No external funding was received for this issue. The editorial team reports no financial conflict of interest related to the conclusions presented.

Research ethics and data availability. The papers are conceptual reviews and involved no human participants, animals, or newly collected datasets. All evidence discussed is drawn from cited public sources.

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