



Introduction to monographic section. Science diplomacy: actors, topics, and challenges

Introducción a la sección monográfica. Diplomacia científica: actores, temas y desafíos

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The scientific community operates across national boundaries, addressing issues of common interest. These channels of scientific exchange have the capability of contributing to the establishment and enhancement of cooperative relationships among international actors. Despite the long-standing tradition of employing scientific knowledge for diplomatic purposes, the nexus between science, technology, innovation, international affairs, and domestic politics and policies has emerged as a strategic domain in the 21st century. This shift is largely attributable to the capacity of science to identify common ground and facilitate mutually beneficial scenarios among diverse stakeholders. Science Diplomacy has emerged as a prominent and multifaceted phenomenon, characterized by its breadth, depth, and complexity that exceed those of conventional diplomacy.

In the contemporary international system, numerous actors have adopted the practice of science diplomacy as a means of mitigating tensions, resolving issues, exploring cooperative agreements, fortifying relationships, and addressing common concerns to enhance international development in a wide range of domains, including significant challenges related to education, health, economic growth, energy, the environment, outer space, disarmament, and more. In this context, science and technology can be regarded as constructive tools for diplomacy. This tool is not only employed by state actors but also by a diverse range of non-state actors, including cities, regions, NGOs, and universities.

Recent years have witnessed a marked escalation in geopolitical tensions, a development that has led to the emergence of Science Diplomacy as a pivotal instrument in the establishment of bilateral and multilateral agreements on a range of subjects. These subjects include, but are not limited to, arms control, poverty reduction, global health, science and innovation policy, climate change, sustainable development, and cooperation in outer space.

The primary objective of this special issue of ArtefactoS is to shed light on the novel and growing role of science diplomacy as a crucial element of global collaboration in the 21st century world order. The authors who were invited to contribute to this special issue have approached the concept of science diplomacy from a variety of perspectives, encompassing a range of subjects including space, health, commerce, and education. This multifaceted, international, and interdisciplinary approach serves to illustrate the relevance and the utility of this novel form of diplomacy in addressing issues within the international system.

The article authored by Professor Lorenzo Delgado Gómez-Escalonilla of the University of Salamanca in Spain serves as an exceptional introduction to this special monographic edition, which focuses on the subject of science diplomacy. The article's noteworthy contribution lies in its comprehensive historical introduction and analysis of the utilization of science diplomacy throughout time. In his article entitled "R&D Policy in the United States and the Background of Science Diplomacy. Historical Insights", Delgado Gomez-Escalonilla offers a reflection on the genesis of US science and technology policy and the dissemination of its methodologies throughout Europe via the Marshall Plan and the OECD, a seminal instance of scientific diplomacy.

Luis Castillo Argañarás, a research associate at CONICET Argentina, has contributed an article to the academic journal examining the use of science diplomacy in the area of disaster management. The article, titled 'Space Diplomacy and International Cooperation in Disaster Management', explores the potential for international collaboration in disaster management, with a particular focus on the use of space technology. A case study focuses on international cooperation within a multilateral system as a tool of space diplomacy in addressing disasters that pose a global challenge to humanity, making a specific case in the United Nations Platform for Space-Based Information for Disaster Management and Emergency Response (UN-SPIDER) and the International Charter on Space and Major Disasters.

Sofia Belardinelli from the University of Naples "Federico II", Italy, addresses the study of environmental diplomacy in her article "Scientific environmental diplomacy: A key asset for governing the biodiversity crisis". Belardinelli explains how over the past few decades, environmental diplomacy has gained prominence in the international politics system, and how it has become essential for addressing knowledge gaps arising from the complexity and global scale of the interconnected environmental crises – encompassing climate change, biodiversity loss and pollution – and land degradation.

Prof. Anette Wu, a member of the faculty in the Department of Medicine at Columbia University, highlights the relevance of science diplomacy for the future of the healthcare sector and the vital role of the next generation of healthcare professionals in shaping our collective future. In her article, "Preparing Health Professions Students for Science Diplomacy Via Internationalization of Medical Education—A Case Report," Wu presents a case study that demonstrates the efficacy of fostering international scientific collaboration through the internationalization of medical education. The International Collaboration and Exchange Program (ICEP) is a consortium of over 40 medical schools on five continents. The program's objective is to support students in becoming global citizens and developing into stakeholders for science diplomacy.

In a similar vein, Esther Yu et al. from Columbia University in the United States examine the role of students in the development of science diplomacy. In their article entitled "A Scoping Review of Students as Stakeholders in Science Diplomacy," Yu describes the relevance of science diplomacy, understood as the intersection of scientific collaboration and international relations, in advancing global health and shaping health policy. The article provides relevant information in three main areas. The initial focus will be on the role of science diplomacy in science and healthcare during the pandemic. Second, an assessment of its inclusion in medical school curricula is imperative. In conclusion, the following proposal is hereby submitted: that strategies for the integration of science diplomacy into medical education be formulated.

Jackie Li of Columbia University, in her article "Evaluating the Student Definition of Science Diplomacy: A Mixed-Method Global Study," examines how college students and recent graduates perceive the role and meaning of science diplomacy. Through a combination of quantitative and qualitative methods, her study offers valuable insights into how emerging professionals understand this relatively new concept, highlighting differences in awareness, interpretation, and perceived relevance across disciplines and regions. The findings contribute to a deeper understanding of how science diplomacy is viewed by the next generation of scientists, policymakers, and global leaders.

Prof. Andrea Pitasi of the University of D'Annunzio in Italy introduced the concept of "hyperuniversity," which was developed to examine the new uses of diplomacy in the 21st-century university. In his article, "Hyperuniversity: Capital and Diplomacy in the Three Mission Academic Policies," Pitasi examines the evolution of the university's role and the intersection between scientific knowledge and diplomacy. He asserts that the diplomatic practice, conceptualized as a horizontal, cosmopolitan, global network for knowledge and science across borders, is likely to be a pivotal characteristic of the contemporary university.

Janvi Ghandi Kanakia, from the United Nations Population Fund (UNFPA) and the Tata Institute of Social Sciences in India, presents a distinct approach that analyzes the role of science diplomacy and cooperation in the implementation of emergent technologies. In her article "Implementing Artificial Intelligence/ Machine Learning & Large Language Models for Cross-Sectoral Collaborations for Social Good in India: What are the implications?", Ghandi Kanakia introduces an original case study that focuses on the implementation of AI/ ML technologies to enhance the lives of resource-poor communities in India. The study critically examines cross-sectoral collaborations and the influence and use of diplomatic tools by several local stakeholders in the implementation of new technologies.

Finally, Prof. Michael Dodge of the Department of Space Studies at the University of North Dakota, United States, makes the case for the use of space diplomacy in his article, "U.S.–Japan Space Cooperation: Modeling New Opportunities for Space Sustainability and Data Sharing through Framework and Implementing Agreements." In this work, he explores how the strong ties between the United States and Japan create shared opportunities to advance the peaceful use and exploration of outer space.

As this long list of prestigious authors shows, this special monographic focused on the topic of science diplomacy from an interdisciplinary and international perspective, to comprehend the complexity of the phenomenon. In this sense, the monograph endeavors to introduce innovative perspectives to the study of science diplomacy by examining various actors, subjects, and challenges.

Science Diplomacy is a novel and growing empirical phenomenon that merits further examination. This monograph establishes a foundational starting point for a range of novel approaches that are imperative for a comprehensive understanding of the growing significance of science diplomacy in the contemporary international system.