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The roles of learned societies and scientific institutions in facilitating (or obstructing) international exchange in mathematics and statistics

Co-sponsored by the ICHM & IASCUD

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In this symposium we explored the ways in which learned societies facilitated (or obstructed) international exchange in mathematics and statistics in the 19th and 20th centuries. Learned societies and scientific institutions have long played key roles in the cultivation and circulation of knowledge. Under the auspices of institutions, collections of equipment or specialised libraries were collectively assembled, giving wider access to expensive or rare items. Institutions created a physical space in which these resources could be held and consulted, and where people could meet to share their reflections and ideas. International exchange specifically was consciously sought after through, for example, creating the role of a foreign secretary, electing foreign members, or the gifting of journal issues to foreign societies.

The social and intellectual networks built by these societies were certainly not confined within their walls. Indeed, those who were excluded for reasons of gender or social class found or created ways to benefit from such networks, though they are often less obvious in the historical record. Neither were these exchanges equal – as is evidenced by the asymmetrical relations between European and indigenous intellectuals in European colonies. Even in mathematics – where research is oft thought to be more individual than collective and where access to expensive equipment is not a priority – we saw that institutions had multifarious effects. We were especially interested in how marginalised practitioners sought to overcome barriers to engage with, benefit from, and contribute to the knowledge-building cultivated by influential scientific institutions of their time.

The symposium took place in three sessions across two days of the ICHST, with participants taking part in-person in Dunedin and via zoom, and we enjoyed many lively Q&A sessions after the talks. The symposium has already led to a joint paper by Lorenat, Ghosal, and Stenhouse on the recently digitized referee reports of the Royal Society (in progress).

Individual Abstracts

Michael Barany, University of Edinburgh

Negotiating a "Truly International" Mathematical Congress and the Community of National Institutions in the Mid-Twentieth Century

The phrase "truly international" recurs significantly in the organisational paper trail of the 1950 International Congress of Mathematicians, hosted at Harvard University by the American Mathematical Society. The 1950 ICM was organised without the coordinating presence of an International Mathematical Union, whose formal postwar reconstruction was initially linked and then subtly dissociated from the 1950 Congress. Mathematicians negotiated what a "truly international" congress would mean from a variety of perspectives, representing national communities and national institutions in a variety of capacities while doing so. My presentation will contrast how mathematicians spoke for nations and national institutions in these negotiations, what values they espoused, and how these affected the congress that transpired. I draw particular contrasts between the postures of mathematicians and their national institutions in comparatively central and peripheral countries, manifesting significant differences in access to information and in conditions of mobility.

June Barrow-Green, The Open University

The founding of the Journal of the London Mathematical Society

That the Journal of the London Mathematical Society came into existence when it did - in 1926 – can be ascribed to the efforts of one man: G. H. Hardy. As Secretary of the Society, Hardy was aware of the increasing demand for publication space in the Society's *Proceedings,* and the need for an outlet for shorter papers. It was clear to him that a second journal was needed. But to found such a journal required money, money that the Society did not have. But Hardy, well-connected and international in outlook, was the right man at the right time for the task. Moreover, Hardy ensured that the Journal was no parochial periodical: of the papers in Volume 1, over 25% came from outside Britain.

Caroline Ehrhardt, Université Paris 8

Academic mathematics and media mathematics: Exchanges and disagreements at the Académie des sciences of Paris in the 1830s.

In the 1820s and 1830s, the Paris Académie des Sciences played a particularly important role for mathematics in France, both in terms of its assessment of the resear ch submitted to it and of the scientific standing of its members. Through its transactions and memoirs, but also through the presence of journalists who reported what was said during the meetings in the daily press, the Académie was a veritable echo chamber for the books that were sent there, the works that were read there and those that were evaluated there. Since the Académie's dominance was not without internal tensions and external challenges, these newspapers also reported debates and disagreements that were ignored by the official academic publications, and provided a forum for actors who were excluded from the scientific scene. In this talk we will use a case study – a debate between the academicians Poinsot and Poisson in the mid-1830s – to explore the effects of the existence of this media space alongside the academic space on mathematical exchange and the production of results.

Sayori Ghoshal, Max Planck Institute for the History of Science
Internationalizing Indian Statistics: Forging Connections, Maintaining Borders in the 20th Century

How did colonized scientists forge international connections in their sphere of work? What were the implications of these connections for the development of the science in the nation and the discipline as a global phenomenon? Focusing on Indian statisticians in the late colonial and early postcolonial periods, I analyse their attempts towards international network building. Colonized Indian statisticians sought legitimacy from their Euro-American collaborators while also claiming recognition as equal peers in the development of modern science. This period also witnessed the rise of scientific internationalism, and there were attempts from Euro-America to collaborate with postcolonial scientists to advance science, achieve international peace and combat fascism. I analyse the minutiae of the practices of collaborations between Indian and European scientists to highlight the unevenness and its imbrications with imperialism and postcolonialism. At the same time, the turn to internationalising science impacted the kind of national issues taken up by Indian statisticians and the ones they marginalized. While racial origin, national economy and territorial distribution between religious demographies became acceptable subjects of statistical intervention, social hierarchies and discriminatory practices were considered peripheral issues subjectable to scientific redressal. The statisticians suggested that such irrationality and biases would automatically dissolve once the public became scientific and rational. What does this varied prioritizing of problems solvable through scientific internationalism tell us about the Indian statisticians' understanding of progress and peace? I show how internationalization of science remained imbricated with the maintenance of elite nationalism and social exclusions within the postcolonial nation.

Jemma Lorenat, Pitzer College
Guest speakers, seating charts, and train schedules: Party planning and international diplomacy in mathematics c. 1922

In 1922 Bryn Mawr College hosted an international celebration for Charlotte Angas Scott, the first woman to direct a graduate program in mathematics. The guest list was a veritable who's who of mathematicians in the United States. At the party, letters of congratulations poured in from Europe and Alfred North Whitehead made the transatlantic journey for the sole purpose of delivering the keynote address. Complementing the better known logistics of the International Congresses, details of this more intimate gathering embellish the landscape of international mathematics after World War I. In addition, the relative prominence of Bryn Mawr College helps to clarify the distinct situation for international exchange among women mathematicians in the early-twentieth century.

Nicolas Michel, Isaac Newton Institute for Mathematical Sciences, University of Cambridge & Open University, Milton Keynes
Truth below the Rhine, error beyond? International negotiations over geometrical exactness, c. 1880.

This paper focuses on a scientific dispute between Georges-Henri Halphen (1844-1889), a French career military-man, and Hermann Schubert (1848-1911), a German high-school teacher based in Hamburg. Both men made key contributions to the emerging field of enumerative geometry throughout the 1970s, though one class of theorems caused much

division between them. These theorems lay at the heart of Schubert's landmark book Kalkül der abzählenden Geometrie (1879), wherein he developed a groundbreaking and much-acclaimed geometrical calculus.

Yet, Halphen held that those very theorems were all simultaneously refuted by an argument he had published in 1876, albeit only in French periodicals and in very concise notes. The dispute initially unfolded within personal correspondences, with a few other actors playing important roles as mediators and arbiters: those included German leading mathematician Felix Klein (1849-1925) and the Danish geometer Hieronymous Zeuthen (1839-1920), widely recognized to be an expert in such questions. By 1880, however, the disagreement blew up in the open, with Halphen convincing Schubert to pen a retraction of his theorems for the Bulletin de la Société Mathématique de France and finally circulating his own arguments in full and outside France – in particular, via a memoir for Klein's Mathematische Annalen.

Building on Halphen's and Klein's scientific archives and extant correspondences, I will retrace the international negotiation of mathematical (dis)agreement that took place during those months. I will stress the role played by a range of scientific institutions (societies, journals, and academies) and key leaders thereof in validating, diffusing, and safeguarding mathematical assertions.

Petra Stankovic, University of Oxford

The Participation of Russian and Soviet Mathematicians in the International Congresses of Mathematicians, 1897 to 1978

In light of greater opportunities for international connections, the first International Congress of Mathematicians (ICM) took place in 1897 in Zürich, Switzerland, commencing what was hoped would be a new era of exchanging research and fostering personal relations among the world's mathematicians. Although the society and culture in Russia have throughout history developed differently than in Western Europe due to their idiosyncratic religious, political, and cultural traditions, Russian mathematicians gained significant recognition for their contributions and active participation in the ICMs, particularly after World War II. How did institutional cooperation shape mathematical progress in Russia and the Soviet Union? Beyond scientific objectives, were there other factors influencing the presence of Russian delegates at these congresses? How did ICM policies and values evolve when certain individuals, particularly in post-war contexts, faced restrictions on participation?

This paper investigates the Russian mathematicians' involvement in the ICMs between the 1987 Zürich and 1978 Helsinki Congresses. Drawing on conference proceedings and personal narratives, I explore the dual forces of internationalism and nationalism, that served as motivation for attendance, but also the mechanisms of exclusion. A key focus is the systemic discrimination against Jewish mathematicians in the USSR, which escalated in the 1970s. Even Fields Medal recipients were sometimes barred from attending ICMs due to Soviet policies. By analysing these cases, this paper aims to provide an authentic account of how the congresses navigated, and at times failed to address, these discriminatory practices, shedding light on the intersection of mathematics, politics, and human rights.

Brigitte Stenhouse, The Open University

Mathematics on the Periphery: Mary Somerville's interactions with 19th-century learned societies

Scottish polymath Mary Somerville (1780-1872) was widely celebrated in her lifetime as an expert in physical astronomy and as a writer of reflective scientific treatises. Yet, owing to the predominant exclusion of women from memberships of learned societies in her lifetime, it took nearly two decades before Somerville was elected a member to any such society. Moreover, even when she was recognised, it was usually only with honorary membership rather than being elected on equal footing with her male contemporaries. Whilst Somerville's elections are often noted as a step towards greater inclusion for women in science, in fact they made little practical difference to her research methods or access to scientific communities (indeed, less than ten years after her election as an honorary fellow of the Royal Astronomical Society, she claimed to have forgotten that this ever took place!).

In this talk, I will explore the ways in which Somerville gained access to the libraries, collections, and networks of 19th-century scientific institutions, without pursuing formal membership. I will especially focus on how she used this access to support her mathematical research, comparing her experiences in London during the 1820s and her return to mathematics in the 1860s whilst living in Naples.