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Rewriting the Rules

Women Astronomers and the Codification of Conduct in Astronomical Societies (1950–2000)

▼ **SPECIAL ISSUE** in *Scholarly Codes of Conduct in the Twentieth Century*

▼ **ABSTRACT** This article examines how women astronomers navigated, contested, and sought to reform scholarly codes of conduct within scientific associations during the twentieth century, focusing on the case of astronomical societies, specifically the International Astronomical Union (IAU) and the American Astronomical Society (AAS). Drawing on archival research, including correspondence, meeting records, handbooks, and institutional publications, it traces a shift from women's accommodation to implicit gendered norms (before 1970), through active contestation and demands for reform (1970s–1980s), to the codification of more explicit standards of conduct in the 1990s. We distinguish between *implicit* and *explicit* codes of conduct and argue that, by putting matters of gender equality on the agenda of scientific societies, women astronomers helped transform previously unspoken expectations into explicit objects of discussion and reform. In doing so, they also produced new knowledge about inequality within their profession, notably by documenting experiences, naming structural constraints, and mobilizing statistics and international comparisons. The article centers on two key moments of transgression and codification: Margaret Burbidge's 1971 refusal of the Annie Jump Cannon Prize, and the drafting of the Baltimore Charter for Women in Astronomy in 1992. More broadly, it shows how scientific

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societies became spaces where norms of participation and conduct were not only enforced but also made visible, debated, and gradually reformulated.

▼ **KEYWORDS** Astronomy; women scholars; scientific societies; gender equality; scientific prizes

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In 1988, the Committee for the Status of Women in Astronomy (CSWA), a working group founded in 1979 within the American Astronomical Society (AAS), organized a session titled “Women Worldwide in Astronomy.” The session aimed “to focus people’s attention on the problem that women face as women in astronomy” during the General Assembly of the International Astronomical Union (IAU), the largest international gathering of astronomers, held every three years in changing locations.¹ That year’s meeting took place in Baltimore. Yet the session on women’s unequal position in astronomy never made it to the IAU’s main program. Nor was its report—which concluded that discrimination against women in the field was “primarily subtle rather than as overt as it has been in the past”—published as part of the IAU’s *Highlights*, the volume reserved for contributions deemed of general interest to the astronomical community.² The IAU’s General Secretary, Derek McNally, justified this decision by dismissing the CSWA’s initiative as dealing with “essentially social problems” rather than scientific ones.³

The IAU’s refusal to recognize the CSWA’s initiative pointed to a broader tension concerning the role of scientific associations in relation to social and political questions, including gender equality. Historians of science have shown that throughout the twentieth century, many scientific academies and international organizations cultivated an image of neutrality by distancing themselves from partisan disputes. Such commitments were intended to safeguard intellectual cooperation across national and ideological lines, particularly during the Cold War.⁴ Less attention, however, has been paid to the exclusionary effects of these same attitudes. While classic studies, including Margaret Rossiter’s work on women scientists in the United States, addressed scientific societies’ politics of neutrality in relation to major political questions such as the Equal Rights Amendment,⁵ more recent scholarship has examined how apparently neutral practices—including systems of membership, prizes, office-holding, and professional sociability—reproduced gendered inequalities.⁶ This scholarship has also begun to examine the strategies through which women

1 IAU archives, Paris, Box 34: “Women Worldwide in Astronomy,” 1988.

2 Ibid.

3 IAU archives, Box 34: Letter from Derek McNally to Nike Penston, January 2, 1990.

4 See, for instance: Lettevall et al., *Neutrality*; Wolfe, *Freedom’s Laboratory*.

5 Rossiter, *Forging a New World*, 234–68.

6 See, for instance: Noordenbos, “Women in Academies”; Ayres, “Women and the Natural Sciences.”

challenged such institutionally embedded forms of exclusion.⁷ Building on this work, this article examines astronomical societies through the lens of scholarly codes of conduct, to analyze how gendered norms of participation, recognition, and behavior were debated and gradually reformulated.

In the context of this special issue, we approach scientific associations first and foremost as institutional spaces in which norms of scholarly conduct were articulated, enacted, and, at times, contested.⁸ Our argument is not that debates over gender equality directly reshaped astronomy's epistemology in the narrow sense of how astronomical knowledge was produced or validated. Rather, we show that such debates generated new forms of reflexive knowledge about the norms, professional behaviors, and practices that governed participation and recognition in scientific communities. By distinguishing between *implicit* and *explicit* codes of conduct, we argue that women astronomers helped transform previously unspoken expectations into explicit objects of discussion and reform. In this sense, the article contributes to the history of knowledge by examining how scientific societies produced knowledge about their own norms and practices, and how that knowledge emerged through contestation, documentation, and, particularly, the use of statistics and codification.

Astronomy provides a particularly revealing case for examining how scholarly codes of conduct shaped participation and recognition. As one of the earliest internationalized scientific disciplines, astronomy developed dense networks of national and international associations, notably the AAS (founded in 1899) and the IAU (founded in 1919).⁹ These organizations structured professional life through conferences, committees, and elected offices, and their commitment to scientific neutrality remained especially important during the Cold War.¹⁰ At the same time, scholarship on women in astronomy has shown how scientific labor was gendered, from the concentration of women in feminized forms of clerical and computational work to the masculine coding of observatories and professional space.¹¹ Such studies have illuminated the social structuring of scientific participation,¹² but they have paid less attention to how scientific associations themselves codified and negotiated the norms governing conference sociability, mobility, representation, and professional visibility—dimensions of scientific work that were also deeply gendered. From the 1970s onward, women astronomers increasingly challenged these arrangements,

7 On women's collective strategies to counter these institutional barriers, see: Kohlstedt, "Sustaining Gains"; Von Oertzen, *Science, Gender, and Internationalism*; Cabanel, *Femmes de Sciences*.

8 For a broader historiographical reflection on the gendered history of European academies and the tension between symbolic inclusion and structural exclusion, see: Frevert et al., *Women in European Academies*, ix–xii; Štrbáňová et al., *Women Scholars and Institutions*.

9 On the AAS, see: DeVorkin, *American Astronomical Society*; on the IAU, see: Andersen et al., *International Astronomical Union*.

10 Andersen et al., *International Astronomical Union*.

11 Trimble and Weintraub, *The Sky is for Everyone*; Rossiter, *Struggles and Strategies*, 51–72; Oreskes, "Objectivity or Heroism?"

12 Larsen, "A Woman's Place."

bringing questions of gender equality into institutions that had long treated them as secondary to, or outside, their scientific mission.¹³ This combination of internationalism, institutional governance, and gendered professional norms makes astronomy a particularly rich site for studying how codes of conduct were contested and reformulated.

Our analysis draws on archival research conducted at the archives of the IAU (Paris) and the AAS (Washington, D.C.). These records include statutes, bylaws, committee minutes, correspondence, and conference publications, which document how questions of participation and recognition, but also professional conduct, were organized and challenged in the course of the twentieth century. To reconstruct implicit behavioral norms, we analyze handbooks, newsletters, conference photographs, and statistics on women's participation based on membership lists and attendance at international conferences. Although these materials foreground American and Western European actors, they offer a rare view of how scientific associations regulated belonging, visibility, and professional conduct. They also show how gendered expectations regarding participation gradually became more explicit.

The article proceeds in four parts. Part I analyzes scientific associations as arenas in which norms of scientific conduct were regulated and, through contestation, became objects of reflection and knowledge, distinguishing between *implicit* and *explicit* dimensions of codes of conduct. Part II examines how, until 1970, *implicit* codes shaped women's participation in astronomy, relegating them to peripheral social roles and separate forms of recognition. Part III shows how, between 1970 and 1990, women astronomers contested these norms within the AAS by rejecting segregated recognition, challenging sexist language in bylaws, seeking leadership positions, and broadening institutional representation. Finally, part IV turns to the 1990s to examine how these debates became internationalized within the IAU, where a case of harassment exposed the limits of informal regulation and prompted the adoption of more *explicit* policies on conduct and inclusion.

Making Implicit Norms Explicit Through Contestation

By the twentieth century, scientific associations had become important arenas for defining and regulating conduct in science.¹⁴ Through statutes, membership procedures, committee structures, and meeting protocols, they governed not only the circulation of knowledge but also the norms and expectations that structured participation. *Explicit* rules appeared in constitutions, bylaws, and charters, which are formalized texts often described as codes of conduct. Such

¹³ Determann uses the term “astro-activism” to qualify the engagement of astronomers towards social justice. See: Determann, *Diversity, Equity, and Inclusion*, x.

¹⁴ See, for instance: Friedman, *Politics of Excellence*.

documents codified expected behavior and legitimate forms of interaction, often in connection with wider efforts to define the “scientific” as a distinct domain of social activity. For example, rules governing who could present papers in official sessions, who could hold office, or how meetings were separated from more informal social events helped distinguish genuinely scientific participation from auxiliary or merely social forms of presence.

Yet, as historians and sociologists of science have shown, scientific conduct was equally regulated through informal expectations and customary practices that operated both within scientific communities and in the broader society. Stephanie Gänger has, for example, uncovered the importance of “civility,” as a way of behaving in accordance with the customs of the bourgeoisie, in the international contacts of scholars at the turn of the twentieth century.¹⁵ By conforming to such *implicit* norms of social comportment, Gänger shows, non-Western scholars were able to establish epistemic credibility and participate in international scholarly exchanges. In line with the broad definition of scholarly codes of conduct adopted in this special issue, we use the term to refer to the layered set of explicit and implicit norms that organized scientific life.¹⁶

Contestation plays a crucial role in making these normative orders perceptible. Because many of the norms that organized conduct in scientific associations operated implicitly, they were not always articulated or consciously examined by those who inhabited them. They became most visible when challenged. Acts of contestation thus functioned as epistemic practices: They made norms legible, transformed them into objects of reflection, and enabled participants to articulate competing visions of proper conduct. In this sense, contestation produced knowledge about scientific conduct, revealing dimensions of scientific life that had previously remained in the background.

These dynamics unfolded through diverse repertoires. Some responses took indirect forms, as women navigated gendered arrangements without openly confronting them. In this article, such practices included women’s use of separate awards or marginal conference spaces to assert their professional presence within institutions that still treated them as secondary participants. Such “covert” strategies did presuppose an awareness of the norms being navigated. Other forms of contestation were more overt, ranging from individual refusals—most notably Margaret Burbidge’s rejection of the Annie Jump Cannon Prize in 1971—to collective campaigns for procedural reform, such as efforts to revise bylaws, collect statistics on discrimination, and adopt explicit guidelines on conduct. Although varied in form, such contestations shared a common function: They rendered implicit norms newly intelligible and opened them to debate.

Gender provides a significant analytical lens for understanding these processes. Many codes of conduct, whether explicit or implicit, presupposed a

¹⁵ Gänger, “Non-Western Scholars.”

¹⁶ Cabanel et al., “Scholarly Codes of Conduct.”

male scientific subject: They assumed freedom to travel, ease of participation in conference dinners, receptions, and excursions, and entitlement to speak in official sessions or to occupy visible positions of authority. Because such norms were often experienced as natural or normal by those who benefited from them, they were frequently rendered perceptible by those positioned at their margins. Gender was therefore not only a category of exclusion but also a standpoint from which the organization of scientific conduct could be observed and, at times, contested. Over the course of the twentieth century, the role of scholarly associations in reproducing gendered norms of participation became increasingly visible both to those excluded by them and to the institutions themselves. As scientific societies faced disputes over participation and recognition, as well as challenges prompted by cases of misconduct, they increasingly articulated more explicit standards of professional conduct.¹⁷

Implicit Codes for Women Astronomers' Participation and Recognition to 1970

The group photograph of the participants at the 1955 General Assembly Meeting of the IAU reads almost like a family portrait. The smiling and well-dressed men and women in formal suits and summer dresses, some accompanied by their children positioned in the front, convey a friendly, indeed familial atmosphere [**Fig. 1**]. The taking of such a group photo was itself a ritual of community-building, reinforcing the cohesion among those present and producing a visual reminder of the gathering for the years to follow.¹⁸ Since its foundation in 1919, the IAU had relied on such practices to cultivate internal solidarity and international cooperation, as stipulated in the first article of its statutes.¹⁹ These triennial meetings, lasting up to two weeks, combined scientific sessions with receptions, excursions, and visits to observatories in the vicinity of the conference venue. Women often accompanied their husbands and participated in these social events. In this model, familial sociability served not only as leisure but as a diplomatic mode of scientific internationalism that aimed to soften political divisions through cordial personal relations, and women as wives and mothers had a place within it.

Within this ecosystem, a group of professional women astronomers occupied a more ambiguous position. They formed a steady group of 6 to 9 percent of official participants at postwar IAU General Assemblies between 1947 (Zürich) and 1965 (Hamburg), increasing in absolute numbers from 22 to

17 On cases of misconduct, see, for instance, Huistra and Paul, "Systemic Explanations." In this issue, see: Bailey, "Formal Rule."

18 Jacobi and Schiele, "Scientific Imagery." In this issue, see: Kotsou, "Convention Before the Lens."

19 IAU, "Statutes of Convention," 219.



Figure 1: Group photograph of the participants at the IAU General Assembly Meeting in Dublin, 1955 (Bibliothèque numérique/Observatoire de Paris, reproduced in: Andersen et al., *International Astronomical Union*, 114).

91 as total attendance expanded from 279 to 1,156.²⁰ Some of these women were married to other astronomers and attended as part of a scientific couple, while others were not. Still other women—absent from official participation lists—were present as wives of male attendees, without practicing astronomy professionally themselves, yet sometimes assisting in different capacities with their husband’s work.²¹ The attendee list of the 1970 Brighton meeting makes these ambiguities visible. Of 2,283 registered “members, invited participants and registered guests,” 21.6 percent were women, classified either as regular participants (165) or as “plus ones” (330). The document’s layout reflected the dual positionality of women astronomers, at once scientists and wives, who navigated the expectations attached to both roles.²²

Astronomical associations reinforced these ambiguities by making implicit and explicit connections between femininity and sociability. From at least the 4th IAU meeting in Cambridge, Massachusetts in 1938, local organizers established the “ladies’ committees” to arrange receptions and tours for visiting

20 We draw these figures from an open-access relational database set up within the ERC-funded Global Academies project. We assembled data on conference participation at IAU meetings between 1919 and 1990, including the gender and represented country of attendees. See: Bailey et al., *Relational Database*.

21 While research into “scientific couples” within twentieth-century astronomy is scarce, the position of women as scholars within family networks has been studied for earlier periods. See: Bernardi, “Domestic Astronomy”; Roberts, “Learned and Loving”; Lykknes et al., *For Better*.

22 IAU archives, Box 8B: “Participants: Fourteenth General Assembly.” Brighton, England, August 18–27, 1970.

wives.²³ Implicitly, such arrangements naturalized a heteronormative distinction between “male” scientific activities and “female” social accommodation. The section on “Rules for scientific meetings” in the internal IAU guidebook *Astronomer’s Handbook* of 1970 described a “ladies program” as a “welcome courtesy,” alongside receptions and excursions.²⁴ These courtesies welcomed women partners, but they also imposed conflicting expectations on professional women scientists. The 1970 *Ladies’ Handbook*, which assembled information on shops, hairdressers, and clothing for the IAU meeting in Brighton, played into these mixed expectations by acknowledging the variety of women’s activities: “We hope you will enjoy your stay, whether your object is comprehensive sight-seeing and shopping, or academic pursuits or simply peaceful relaxation,” adding that for most women it would be “a compromise between these extremes.”²⁵

Documents such as the 1970 *Ladies’ Handbook* and activities organized by “ladies’ committees” functioned as implicit codes of conduct for women in the field of astronomy, grounded in implicit gendered assumptions about sociability. They set a general framework for how women were expected to behave within the IAU. As Geert Somsen has shown for chemistry conferences, such social activities were more than mere moments of leisure; they served as key moments of community-building.²⁶ Amid the political tensions of the postwar world, also within astronomy, women gained increased appreciation for their “social” role, as a kind of scientific diplomacy between politically competing nations. At the 1958 General Assembly in Moscow, for example, Babbette Whipple, the wife of astronomer Fred Whipple, praised the “excellent tours arranged for the ladies” and described such exchanges as fostering international friendship.²⁷ Her comments illustrate the valued diplomatic and social role assigned to astronomers’ wives within the IAU’s conference culture. For professional women astronomers, however, these same expectations could be constraining, since they blurred the boundary between scientific participation and the supportive social roles assigned to women.

While the IAU played a central role in organizing international sociability in the world of astronomy, recognition and professional advancement were largely mediated through national societies. In the United States, the AAS assumed this role. Unlike the IAU’s triennial and diplomatically oriented assemblies, the AAS held regular meetings and administered a growing system of prizes and awards—many of them internationally regarded. The AAS was more directly confronted with debates over professional status and representation, and undertook initiatives to discuss and promote women’s positions *as scientists*. The Annie Jump Cannon Award was established in 1933 through a

23 IAU, “List of members and guests,” 277.

24 IAU, *The Astronomer’s Handbook*, 287.

25 IAU, *Ladies’ Handbook*.

26 Somsen, “‘The Goddess.’”

27 Whipple, “Greetings,” 4.

\$1,000 donation from Cannon herself, who used funds from a prize she had received from the Association to Aid Scientific Work by Women. Conceived as a prize to honor “distinguished contributions by women in astronomy,”²⁸ it provided a formal mechanism to recognize women’s scientific achievements at a time when most major awards effectively excluded them.²⁹ Yet, rather than challenging the male-dominated hierarchy of honors, it created a parallel and gender-segregated channel of recognition.

The prize thus reproduced gendered distinctions within the broader system of honors. Rather than integrating women into the main structures of scientific recognition, it marked their achievements through a separate and symbolically secondary channel, aptly described by Margaret Rossiter as “at best only partial palliatives to a segregated system.”³⁰ Systems of scientific recognition formed an important dimension of the implicit codes governing professional conduct. As studies of scientific honors have shown, awards defined who could be recognized, how, and on what terms, thereby shaping the symbolic economy of the field.³¹ In the case of the Cannon Award, its presentation at the end of a dinner rather than in a dedicated scientific session, and the absence of a lecture by the recipient (unlike the Henry Norris Russell Lectureship established by the AAS in 1946), signaled its lower status within the society and again connected femininity with sociability in science. The symbolism of the prize also reinforced gendered expectations, as recipients were given a delicate pin or pendant representing a nebula or universe. Yet Annie Cannon’s remark about the pin, “Isn’t it the first universe ever made by a woman?,” also suggests an awareness, or perhaps even a subversive reclaiming, of symbolic space for women in science.³²

The experience of Cecilia Payne-Gaposchkin, the first recipient of the Cannon Award in 1934, and the first woman to receive the AAS Norris Russell Prize in 1976, shows how such arrangements were experienced by women scientists themselves. In her autobiographical reflections published in 1984, she drew a distinction between the “intellectual” side of scientific work, where gender made “very little” difference, and the “material side,” where it entailed “a great disadvantage...a tale of low salary, lack of status, low advancement.”³³ Payne-Gaposchkin’s distinction underscores the limits of symbolic recognition: Women could be honored for scientific achievement while still facing structural disadvantages in status, salary, and advancement.

Within the IAU, no comparable award for women astronomers existed. It was only in 1970, during the IAU meeting in Brighton, that the British-American Margaret Burbidge was awarded an honorary degree by the

28 AAS Records, Box 14, File 15: “A.J. Cannon Prize, 1933–1934,” 1933.

29 Rossiter, *Struggles and Strategies*; Von Oertzen, *Science, Gender, and Internationalism*.

30 Rossiter, *Struggles and Strategies*, 312.

31 Hansson and Maas, *Nobel Genius*.

32 AAS Records, Box 34, File 15: Letter from Cannon to the AAS Secretary, 1933.

33 Payne-Gaposchkin, *An Autobiography*, 226–27.

University of Sussex. On that occasion, an article in the conference newspaper presented her as “not only a distinguished astronomer but also as a successful wife and mother,” picturing her alongside men, wearing an academic gown.³⁴ By then, however, women scientists in the United States were increasingly challenging such gendered forms of recognition. Their concerns reflected a broader feminist shift toward equal treatment rather than forms of institutionalized separation that continued to reinforce women’s second-class status.

From Questioning to Contestation: Reforming Codes of Conduct within the American Astronomical Society, 1970–1980

By the early 1970s, the logic of segregated inclusion that had long structured women’s participation within astronomical societies increasingly came under scrutiny. What had once been framed as supportive measures (parallel awards in the US and family-oriented conference sociability) began to appear as mechanisms that maintained and reinforced women’s marginal status within the community. This shift reflected broader social transformation, especially in the United States, where the women’s movement, anti-discrimination legislation, and university reforms made gender inequality newly legible as a structural rather than an individual problem. In this context, practices that had been accepted or strategically accommodated by an earlier cohort of women scientists became objects of critique and, ultimately, of contestation.³⁵

The discomfort with segregated forms of recognition became particularly visible in debates surrounding the Annie Jump Cannon Prize. By the mid-1960s, the composition of its nominating committee had changed, as former recipients and younger women astronomers joined its ranks and used their institutional positions to reshape how the award was presented. In 1965, for example, the committee chaired by the astronomer Helen Sawyer Hogg requested that the recipient’s name be printed in the official AAS meeting program and that she be given a “place of honor” at the head table during the society dinner, accompanied by a formal presidential speech.³⁶ Such interventions signaled an emerging awareness that gendered recognition carried symbolic weight and that the ceremonial treatment of the prize mattered for women’s standing within the field.

These early efforts remained reformist rather than confrontational, focusing on improving the practicalities and symbolism of women’s awards rather than questioning their segregated nature. The limits of this reformist approach became evident in 1971, when Margaret Burbidge publicly declined the

³⁴ IAU, “Sussex University Honours Astronomers,” 1.

³⁵ Determann, *Diversity, Equity, and Inclusion*, 55–61.

³⁶ AAS Records, Box 14, File 16: “Report of the Nominating Committee for the Annie J. Cannon Prize,” 1965.

Cannon Prize. In her letter to the AAS Secretary in May 1971, Burbidge argued that gender-specific awards perpetuated the very inequalities they claimed to redress. Such awards, she insisted, did nothing to address the “larger systemic barriers that kept women from being considered for professorships, directorships, and chairmanships of major astronomical institutions.”³⁷ In her view, they did not simply compensate for women’s exclusion; they reproduced it by marking scientific merit as gendered rather than universal. Her refusal exposed the implicit rules governing scientific recognition and made visible the unequal assumptions embedded in apparently supportive forms of honor.

Burbidge’s rejection of the prize had immediate and far-reaching consequences. Beatrice Tinsley, a British-born astronomer from New Zealand who relocated in the United States in the early 1960s to follow her husband, wrote in support that Burbidge had exposed “deeply ingrained discrimination.”³⁸ She pointed in particular to anti-nepotism policies that prevented women from being hired at the same institution as their husbands, a barrier Tinsley herself faced as the spouse of physicist Brian Tinsley. Her intervention showed that gender inequality was built around assumptions of mobility, marriage, and family life that aligned more easily with men’s careers than with women’s.

At the same moment, women astronomers and their allies began to mobilize statistical data to demonstrate that discrimination was systemic rather than anecdotal. One of the first actions of the AAS Working Group on the Status of Women, founded in 1972, was to compile data on women’s membership, representation, and professional advancement in astronomy.³⁹ Using international comparisons based on IAU membership statistics, it framed the issue not simply as an American problem but as a broader structural one, comparing the position of women astronomers in the United States with that of their counterparts in France and the Soviet Union. By making women’s under-representation in membership, office-holding, and conference participation measurable, these actors transformed scattered experiences of exclusion into evidence of structural inequality. In doing so, they produced new forms of knowledge about their profession and made gender inequality a legitimate object of institutional discussion. In 1982, Caty Pilachowski noted that although women made up only 9 percent of AAS membership, more women had begun to serve as officers and present papers since the 1970s.⁴⁰ Within the IAU, by contrast, General Secretary Richard West stated in 1985 that 10–15 percent of its members were women and expressed the hope that this figure would

37 AAS Records, Box 14, File 17: Letter from Margaret Burbidge to Laurence W. Fredrick, May 27, 1971.

38 AAS Records, Box 14, File 19: Letter from Beatrice Tinsley to Laurence Frederick, August 30, 1971. In 1978, after leaving her husband and children, she became the first woman Professor of Astronomy at Yale.

39 Humphreys, “Award Rejection,” 3.

40 Pilachowski, “Women in Astronomy,” 3.

eventually reach “a desirable 50 per cent,” framing change largely as a gradual demographic process rather than as the result of institutional reform.⁴¹

Surveys conducted in the 1980s further identified the gendered assumptions embedded in norms of scientific conduct. In her contribution to a 1982 IAU survey, Polish astronomer Cecylia Iwaniszewska highlighted the incompatibility between expectations of mobility, night work, and conference travel and the responsibilities of family and childcare. For all these things, she concluded, “I think that an astronomical career is much more difficult for a married woman than, for instance, the career of a [male] physicist or a mathematician also working at a university.”⁴² In the same report, the American astronomer Caty Pilachowski emphasized the difficulties faced by “astronomical couples,” in which women’s careers were subordinated to their husbands’ institutional appointments.⁴³ By naming these constraints, such contributions made explicit what had previously operated as implicit expectations about who could fully embody the scientific *persona* of the astronomer.

By the late 1970s and early 1980s, women’s activism led to the formation of committees and advocacy groups within scientific associations. Unlike earlier women’s committees or societies, which often focused on fostering community without directly addressing the causes of women’s marginalization, these caucuses explicitly confronted institutional barriers women faced and advocated for systemic change.⁴⁴ The formation of the CSWA in 1979 reflected this shift, moving beyond social support to promote concrete measures aimed at addressing gender inequality within astronomy. Although the CSWA was an American initiative, the organizing committee for the session “Women Worldwide in Astronomy” included influential women astronomers from across the globe, such as Evangelie Athanassoula (Greece), Silvia Torres-Peimbert (Mexico), and Li Shu Xian (China), among others.⁴⁵

These advocacy efforts coincided with increasing women’s participation in the governance of the AAS. The election of Margaret Burbidge as AAS president in 1976 exemplified the influence of women’s agency and collective mobilization within the society. Slowly, more women gained positions in the nominating committee, which was responsible for selecting candidates for the AAS executive committee, including the president, vice-presidents, and delegates to the IAU. Vera Rubin, who chaired the nominating committee in 1975, played a key role in advancing Burbidge’s candidacy for the presidency.⁴⁶

Under Burbidge’s leadership, the AAS confronted questions previously treated as outside the society’s proper scientific remit. During debates over

41 IAU, “Mandakini Interviews,” 4.

42 Iwaniszewska, “Astronomical Careers,” 6.

43 Pilachowski, “Women in Astronomy,” 4.

44 Briscoe, “Women’s Caucuses.”

45 At the time of the workshop, Li Shu Xian and her husband, the astronomer Fang Lizhi, were living in exile in the United States following political persecution by the Chinese Communist Party.

46 AAS Records, Box 18, File 2: “Nominating Committee, 1974.”

the Equal Rights Amendment, which aimed to guarantee equality regardless of gender, Burbidge proposed that the AAS boycott states that had not ratified the amendment, by refusing to hold annual meetings there.⁴⁷ The measure provoked highly polarized responses, as critics feared it would “endanger the apolitical status of the society,”⁴⁸ but it narrowly passed in 1978.⁴⁹ Although such measures may have had limited practical impact, they nevertheless signaled a growing willingness within the AAS to treat gender equality as relevant to the conditions of professional scientific life.⁵⁰

Other reforms were quieter but consequential. In the same year, the AAS revised its bylaws to replace the universal masculine “he” with gender-neutral formulations (he/she or they/their).⁵¹ Although the archival record contains no debate over this change, a close reading of successive bylaw revisions reveals a gradual shift in the imagined scientific subject from implicitly male to explicitly inclusive. Such linguistic adjustment in formalized codes of conduct, often seen as merely dry and technical documents, signals growing institutional reflexivity about how formal codes articulate belonging and participation.

Yet efforts to reform professional norms within the AAS did not translate easily into the international arena. At the IAU General Assemblies, sessions organized by the CSWA attracted limited support and remained peripheral to the official scientific program. Margaret Burbidge reportedly noted the “difficulty we have experienced at IAU meetings in setting up gatherings for women astronomers to share their experiences.”⁵²

The IAU’s refusal to formally recognize gender equality initiatives revealed deeper differences in how scientific associations conceptualized their social responsibilities. Whereas the IAU maintained that the assessment and recognition of scientific merit were neutral processes that should remain insulated from “social issues,” the AAS increasingly treated questions of equality as relevant to professional standards and organizational legitimacy. Even within the IAU, however, individual actors acknowledged the problem informally. In 1988, French astronomer Jacqueline Bergeron was approached to become the assistant secretary of the IAU, with the argument that the Union needed not only younger members but also more women.⁵³ Such gestures, however, remained isolated rather than part of a systematic institutional strategy.

47 AAS Records, Box 1, File 11: “Margaret Burbidge ERA controversy, 1978.”

48 Ibid.

49 Skuse, “Margaret Burbidge.”

50 Rossiter, *Forging a New World*, 246.

51 AAS Records, Box 3, File 10: “Constitution and Bylaws, 1978–1979.”

52 IAU archives, Box 34: Fax from Humphreys to Bergeron, May 13, 1992.

53 Andersen et al., *International Astronomical Union*, 155.

From Contestation to Codification: Formalizing Codes of Conduct in the 1990s

By the late 1980s, many of the reforms initiated within the AAS faced a different challenge at the international level: How to translate concerns about gender equality into institutions that continued to define themselves as neutral, apolitical, and diplomatic, despite the gendered inequalities that shaped participation within them. While committees and caucuses in a number of American scientific societies, including the AAS, had begun to address discriminatory practices directly,⁵⁴ the IAU continued to treat such issues as “social” or “political” matters external to its scientific remit. These differences in institutional self-understanding shaped how questions of behavior and participation were framed and, ultimately, how they became objects of explicit codification.

Tensions over these divergent approaches surfaced in December 1992, when a group of astronomers led by the CSWA convened a meeting at the Space Telescope Science Institute in Baltimore. The meeting resulted in the drafting of the Baltimore Charter for Women in Astronomy, which called for equal opportunities in hiring, access to resources, and participation in leadership, while also drawing attention to the less tangible barriers that hindered women’s full participation in the field. As the Charter stated:

Unequal treatment of women in the laboratory, the lecture hall and the observatory, more subtle but at least as important as overt discrimination, creates a chilly climate which discourages and distresses women, alienates them from the field, and ultimately damages the profession.⁵⁵

By naming and codifying these subtle forms of exclusion—including the “atmosphere” at conferences—the Charter made explicit what had long remained implicit within scientific communities.

A group photograph taken at the meeting visually underscored this shift. Unlike earlier portraits dominated by men and wives in auxiliary roles, the Baltimore image documented women as a collective professional presence [Fig. 2]. As Meg Urry later recalled, “perhaps the most life-changing aspect of the conference was simply seeing 150 women astronomers in one room.”⁵⁶

The Baltimore Charter was drafted at the end of 1992 in response to growing tensions fueled in part by incidents of discrimination and unprofessional conduct that revealed the limits of informal regulation at international meetings, most notably an episode during an IAU-organized meeting in Baltimore in April 1992. According to complaints raised afterwards, one woman astronomer was repeatedly addressed as “the Lady among Gentlemen,” and discussion included offensive language, including explicit sexual remarks. In

⁵⁴ Briscoe, “Women’s Caucuses.”

⁵⁵ STScl, “Baltimore Charter.”

⁵⁶ Urry, “The Gentleman and Me,” 276.



Figure 2: “Women at work: a meeting on the status of women in astronomy.” Space Telescope Science Institute, September 8–9, 1992. Credit: NASA/STScI.

one example cited in these complaints, an astronomical image was described by participants as featuring a “phallic protuberance.”⁵⁷ For CSWA members, and others within the AAS, such behavior constituted a breach of professional conduct that “compromise[d] the scientific environment” and created an atmosphere of discomfort and alienation that discouraged women’s participation in international gatherings.⁵⁸ Here, misconduct was framed not as an ethical transgression in the traditional sense (plagiarism or fraud) but as a failure of professional comportment that undermined women’s participation.⁵⁹ This led to calls for a set of guidelines to prevent exclusionary behavior at meetings.⁶⁰ The demand reflected a recognition that the problem extended beyond overt misconduct to the subtler, yet pervasive, issue of the atmosphere at international meetings: an environment in which women, and likely other minorities, often felt uncomfortable or unwelcome.

The IAU leadership, however, initially interpreted the incident as a matter of cultural misunderstanding rather than professional misconduct, maintaining that social concerns should not interfere with the Union’s scientific mission. This cautious response needs to be read in the context of the early 1990s, when the IAU was navigating geopolitical uncertainty following the breakup of the Soviet Union, and placing renewed emphasis on institutional neutrality and the preservation of its scientific focus. This position exposed competing understandings of what counted as legitimate regulation within international science: While the AAS increasingly treated gender equity as integral to the conditions of scientific work, the IAU continued to categorize it as external to science. Pressure nevertheless mounted. In 1994, the IAU announced the inclusion of a formal non-discrimination statement as the new first article

⁵⁷ IAU archives, Box 34: “Report on the Meeting,” April 1992.

⁵⁸ IAU archives, Box 34: Letters from Barry Lasker, April 1992.

⁵⁹ Marin-Spiotta et al, “Harassment as Scientific Misconduct.”

⁶⁰ IAU archives, Box 34: “Petition to the Council of the American Astronomical Society,” by Roberta Humphreys and Anne Cowley, April 1992.

of its working rules. The text was largely adopted from Article 5 of the International Council of Scientific Unions (ICSU), affirming the principle of the “universality of science”: “freedom of association, expression, information, communication and movement in connection with international scientific activities, without any discrimination on the basis of such factors as citizenship, religion, creed, political stance, ethnic origin, race, language, age or sex.”⁶¹

The ICSU article dated back to 1946, when the postwar international scientific community defined universality as a principle intended to promote cooperation across national and ideological divides. Initially formulated to prevent scientific exclusion along political lines, it was later invoked during the Cold War to defend the circulation of scientists regardless of state ideology. By the 1990s, however, this language had also become a means of articulating other forms of discrimination, including gender inequality. The IAU’s decision to incorporate the ICSU article thus formalized a long-standing principle of non-discrimination while reframing gender equity within a broader discourse of scientific universality. Alongside the new statute, the IAU also outlined a procedure for addressing future incidents: Concerns were first to be handled informally through clarification of cultural differences, then referred to the IAU General Secretary, and only “in the last resort” to the ICSU Committee on Freedom in the Conduct of Science.⁶²

Archival documents show that the IAU came under considerable pressure behind the scenes. The AAS, the US National Committee within the IAU, and the ICSU Standing Committee all contacted the Union about the incident, invoking Article 5. These exchanges illustrate how international codes of conduct often emerge not from consensus but from friction between national and international bodies. Jacqueline Bergeron, then IAU Secretary, embodied many of these tensions. While defending the Union’s neutrality and using statistics to frame progress,⁶³ she also took important steps to advance gender equality in astronomy. In a 1992 letter to the organizer of the International School for Young Astronomers, she protested the absence of women among the fifteen invited speakers and urged the inclusion of “one or two” women in light of the IAU’s international responsibilities and growing scrutiny of gender imbalance.⁶⁴ She also played a central role in organizing the first official IAU meeting on women in astronomy during the 1994 General Assembly in The Hague,⁶⁵ whose published proceedings included national reports and reflections by Margaret Burbidge on persistent inequalities in the field.⁶⁶

Whether the Baltimore incident and its aftermath led to substantive changes in AAS and IAU practice is harder to assess. As Meg Urry later

⁶¹ IAU, “Directives,” 81.

⁶² Ibid.

⁶³ Bergeron, “Membership Within the IAU.”

⁶⁴ IAU archives, Box 3B, Folder Pune (India): Fax from Bergeron to Narlikar, June 4, 1992.

⁶⁵ Boissé, “Jacqueline Bergeron”; Andersen et al., *International Astronomical Union*, 157.

⁶⁶ Burbidge, “Opportunities in Astronomy,” 107–9.

recalled, many institutions declined to endorse the Charter, especially its recommendation that at least one woman normally appear on the shortlist for any paid or honorific position.⁶⁷ The election of a new Executive Committee a few months later was seen as an early test of the IAU's evolving approach to gender equality. As two women stepped down, Bergeron proposed that at least two women be elected in their place. In response, IAU President Alexander Boyarchuk acknowledged the importance of women's representation while reiterating the Union's traditional concern for geographic balance.⁶⁸ Despite this recognition, women's representation on the Executive Committee remained limited: Between 1994 and 2003, no more than two women served on it at any one time. The IAU did not elect its first woman president, Catherine Cesarsky, until 2006.

Yet at the time, the Charter marked a decisive moment: It not only responded to the challenges women astronomers faced but also moved toward establishing shared, explicit norms of professional conduct intended to make international astronomy more inclusive. In this sense, the early 1990s marked the transition from implicit expectations to explicit standards. While the steps taken during this period were often framed in terms of universal principles and international procedure, they also reflected a growing, if cautious, willingness to make the language of non-discrimination and gender equality more explicit. At the same time, these developments underscored the crucial role of individual and collective agency in challenging and reshaping institutional norms. While the IAU's formal commitments to non-discrimination reflected broader international pressures and evolving governance standards, it was the persistent advocacy of women astronomers that brought these issues to the forefront of international astronomy.

Conclusion

This article scrutinized the normative role of scientific societies regarding a range of gender matters from the perspective of the history of knowledge. Focusing on two astronomical societies and the basic question of gender (in)equality, we have shown that scholarly associations acted as spaces where codes about scholarly behavior were produced, discussed, and sometimes fiercely contested. The relation between scholarly societies and the making of behavioral norms was complex and changed over the second half of the twentieth century, along with shifting views on the position of women in astronomy and gender discrimination in society at large. We have sought to provide new insights into this dynamic by differentiating between *implicit*

⁶⁷ Feder, "Gender Equality."

⁶⁸ IAU archives, Box 34, Letter from Boyarchuk to Bergeron, 1992.

and *explicit* scholarly codes of conduct, and by examining the space given to debates over gender (in)equality within astronomical societies.

Up until the 1970s, the astronomical societies studied here produced and enforced *implicit* codes of gendered conduct for women astronomers through practices such as setting up a “ladies’ committee” during international conferences or awarding separate prizes for women. Such practices did not result in explicit rules on women’s (claimed) subordinate role to men in astronomy, but they did implicitly shape a behavioral model that placed women in a segregated, separate, and more “social” sphere. While such practices can be situated in the mid-twentieth century, and at that time as well, some women astronomers used the limited space for reflection within scientific societies to navigate or contest the reigning codes of conduct, more overt contestation of scholarly codes of conduct emerged from the 1970s onward.

We conceptualized this transition since the 1970s as an effort to make *implicit* codes of conduct *explicit* by articulating previously unspoken behavioral norms and their negative effects on women’s scholarly careers. This was only possible through the contestation of established practices within the astronomical societies under scrutiny. Margaret Burbidge’s refusal of the Annie Jump Cannon Prize, her statement on the prize’s discriminatory effect, and the subsequent emergence of working groups on gender in astronomy within the AAS, which discussed the wider effects of common practices and expectations for women scholars in relation to marriage, academic mobility, and family life, offer a case in point. Contestation and activism thus turned astronomical societies into spaces where experiences and data could be gathered, discussed, and critiqued, revealing the negative, gendered effects of previously implicit codes of conduct on women astronomers. In that sense, our contribution shows how making implicit codes explicit was itself a process of knowledge production, grounded in the gathering of experiences, the naming of structural constraints, and international comparisons.

Finally, we studied the extent to which astronomical societies produced and enforced new and *explicit* codes of conduct in relation to women’s changed position in astronomy since the 1990s. In response to an incident of gender discrimination, the CSWA wrote clear guidelines in the form of the Baltimore Charter for Women in Astronomy. It is telling that the CSWA resorted to explicit guidelines to leverage change, but also that this codification took place from below, at working group level. The enforcement of the Baltimore Charter and similar explicit codes at the more general and institutional level produced mixed responses and only gradual change—for example, within the IAU. The case illustrates how the debate over more inclusive codes of conduct still depended on the space given to different “social” topics within scientific societies. Even as gender inequality was increasingly debated from the 1970s, the space for social and political topics within scientific societies and their role regarding the regulation of these matters, have remained—and still remain today—subject to (re)negotiation.

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Data Availability

The relational database used in this article is openly available at KU Leuven RDR: <http://doi.org/10.48804/ECT1PS>.

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Both authors contributed equally to the conception and design of the article, the acquisition, analysis, and interpretation of archival and published sources, and the drafting and revision of the manuscript. Both authors approved the final version and agree to be accountable for all aspects of the work.

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