Claiming Space in Science

Women in Scholarly Societies and Congresses on the Eve of their Admission to Universities[1]

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'But what makes the true basis of a traveller – enterprise, confidence, and perseverance – the esteemed lady possessed as much of these as the most audacious man'. With these words, Wilhelm Haidinger (1795–1871), President of the Imperial-Royal Geographical Society in Vienna (*k.k. Geographische Gesellschaft*) in 1856, praised the accomplishments of the 'truly heroic' Ida Pfeiffer (1797–1858).[2] Pfeiffer was a world-renowned traveller, scholar, and author frequently mentioned in the society's proceedings. She is also one of the few female scholars of the nineteenth-century Habsburg monarchy who is still remembered today, a shortcoming this article seeks to remedy.[3] In particular, we aim to dispel the myth of the solitary male genius, working alone and without the help of others. In contrast, our research strongly suggests that male scientists were supported by their wives and children when they went on expeditions and conducted research.

With few exceptions, contemporary historiography still portrays women as largely absent from the historical organisation of science, especially before their university admission. In the Habsburg monarchy, the first faculties opened their doors to female students in 1897. We are left with portraits of 'exceptional women' that inadvertently reinforce the idea that science is a male affair. This portrayal is worthy of investigation. Were women really completely excluded from science? How were their attempts to participate

1 The work presented in this paper is part of the project 'Women researchers, discourses, fields of action: Women in the scientific societies of Vienna (1870–1925)', conducted at the Institute of Culture Studies and Theater History (IKT) and financed by the Cultural Department of the Municipality of Vienna (Kulturabteilung der Stadt Wien, MA7). The project team consisted of Sandra Klos, MA (co-leader), Dr. Johannes Mattes (co-leader), Ottilie Manegold, BA, and Sarah Triml, BA. We thank Kirsty Jane Falconer (Prague) for her English language editing of this article.

2 Haidinger, Wilhelm: Versammlung am 1. März 1856, in: Mittheilungen der k.k. Geographischen Gesellschaft in Wien 1 (1857), p. 30. Translated by the authors.

3 An article about Pfeiffer was recently published in 'Heimat großer Töchter' by the Österreichischer Integrationsfonds, celebrating important Austrian women in history and present: Österreichischer Integrationsfonds (ed.), Heimat großer Töchter. 35 Frauen, die Österreich geprägt haben, Wien 2022, pp. 52–53.

in scientific discourse perceived at the time? Did male colleagues see them as a threat to their masculinity or as transgressors of gender norms? Did they truly lack any political agency in the world of science? The history of scientific societies and scientific congresses offers a more nuanced picture.

Women were not excluded from science and the public sphere to the extent that early feminist historiography would have us believe. These early feminist historians tended to assume that modern, post-Enlightenment bourgeois ideas assigned men and women to entirely separate spheres: men to the public world of business, science, and politics, and women to the private sphere of the home.[4] However, the evidence suggests that these spheres were permeable.[5] In the Habsburg monarchy of the eighteenth century, most women were employed in the agricultural sector or worked as day labourers or industrial workers. When it became apparent in the mid- to late-nineteenth century that the daughters of bourgeois families needed to contribute to the family income, even though there were no suitable jobs for them other than governess or teacher, private and religious institutions attempted to step in by creating educational opportunities. In particular, the economic crisis following the stock market crash of 1873, which left many bourgeois family businesses without income, created a greater need for women's education and training – for some, a path to scientific research.[6] In 1866, the first Viennese Women's Trade Society (*Frauenerwerbsverein*) was founded, followed in 1888 by the Association for Advanced Women's Education (*Verein für erweiterte Frauenbildung*), which opened the first private *Gymnasium* for girls in Vienna.[7] The exclusion of women qua gender as university students was enshrined in law in 1878[8] and only overturned in the philosophical faculties of the Habsburg Empire in 1897 (the medical faculties followed suit in 1900).[9]

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4 See Hausen, Karin: Öffentlichkeit und Privatheit. Gesellschaftspolitische Konstruktionen und die Geschichte der Geschlechterbeziehungen, in: Karin Hausen/Heide Wunder (eds.), Frauengeschichte – Geschlechtergeschichte, Frankfurt a.M./New York 1992, pp. 81–88.

5 See Drüeke, Ricarda/Klaus, Elisabeth: Feministische Öffentlichkeiten. Formen von Aktivismus als politische Intervention, in: Beate Kortendiek/Birgit Riegraf/Katja Sabisch (eds.), Handbuch Interdisziplinäre Geschlechterforschung, Wiesbaden 2019, pp. 931–939, 933–934.

6 See Heindl, Waltraud: Bildung und Emanzipation. Studentinnen an der Universität Wien, in: Mitchell G. Ash/Josef Ehmer (eds.), Universität – Politik – Gesellschaft, Göttingen 2015, pp. 529–564.

7 See Hauch, Gabriella: Einleitung, in: Gabriella Hauch, Frauen bewegen Politik. Österreich 1848–1938, Innsbruck/Wien/Bozen 2009, pp. 9–22, 13; Friedrich, Margret: Zur Tätigkeit und Bedeutung bürgerlicher Frauenvereine im 19. Jahrhundert in Peripherie und Zentrum, in: Brigitte Mazohl-Wallnig (ed.), Bürgerliche Frauenkultur im 19. Jahrhundert, Wien/Köln/Weimar 1995, pp. 125–173.

8 Verordnung des Ministers für Cultus und Unterricht an die Rectorate sämmtlicher Universitäten betreffend die Zulassung von Frauen zu Universitäts-Vorlesungen 6. Mai 1878, Verordnungsblatt für den Dienstbereich des Ministeriums für Cultus und Unterricht, ausgegeben am 1. Juni 1878, Nr. 15/1878.

9 Verordnung des Ministers für Cultus und Unterricht, betreffend die Zulassung von Frauen als ordentliche oder außerordentliche Hörerinnen an den philosophischen Facultäten der k. k. Universitäten vom 23. März 1897, Reichsgesetzblatt für die im Reichsrath vertretenen Königreiche und Länder, ausgegeben am 1. April 1897, Nr. 84/1897; Verordnung des Ministers für Cultus und Unterricht im Einvernehmen mit dem Ministerium des Innern, betreffend die Zulassung von Frauen zu den medicinischen Studien und zum Doctorate der gesammten Heilkunde vom 3. September

However, women's agency in science did not begin or end with their struggle for admission to universities and higher education. As a concept in socio-historical research, 'agency' is usually understood as 'self-directed action'.[10] It is a key analytical concept that serves to uncover overlooked historical actors, individuals or groups, and their capacity to act, make choices, and intentionally shape their own lives.[11] In our analysis, we understand the political aspect of agency as 'the power to bring about change in collective life'.[12] We examine women's engagement within civil society with significant political and politicising potential by looking at scientific societies and congresses.[13] We aim to shed light on the agency of women, who have often chosen different settings and forms of participation in science than men. To that end, we further develop the concept of permeability between the private and public spheres.[14]

In line with Lynn M. Thomas, we consider agency not as an endpoint (what she calls 'agency as an argument')[15] but as the starting point of our analysis, pursuing the question of *how*, rather than *whether*, women have asserted agency in science. Our analysis addresses women's agency in all its facets, including diverse forms of participation, underlying motivations and varying levels of involvement in science, both directly and through social and familial networks. The aim is to overcome the narrative of exclusively victimised and passive women in historiography.[16] We also take into account the interdependent relationship between agency and social structure. Social structure determines individual agency and, at the same time, is shaped by it. The question of how social structures enable and constrain individual agency proves particularly relevant with regard to women's participation.[17] Our analysis of female political agency in scientific societies explores the intertwining of individual actions with social structures by showing how women claim space in the scientific public sphere.

First, we will look at (popular) scientific societies in the context of the Habsburg scientific landscape and ask whether these communication hubs were perceived as 'appropriate' sites for women's agency. Second, we will argue that (popular) science was a collaborative, inclusive family enterprise before its professionalisation. As such, bourgeois men and women without formal academic qualifications could contribute on an equal

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1900, Reichsgesetzblatt für die im Reichsrath vertretenen Königreiche und Länder, ausgegeben am 15. September 1900, Nr. 149/1900.

10 Johnson, Walter: On Agency, in: Journal of Social History 37/1 (2003), pp. 113–124, 115.

11 Wiesner-Hanks, Merry E.: Introduction, in: Merry E. Wiesner-Hanks (ed.), Challenging Women's Agency and Activism in Early Modernity, Amsterdam 2021, pp. 9–22, here p. 10.

12 Sauer, Birgit: Die Asche des Souveräns. Staat und Demokratie in der Geschlechterdebatte, Frankfurt am Main 2001, p. 34.

13 See Fuchs, Gesine: Politik, in: Ruth Becker/Beate Kortendiek (eds.), Handbuch Frauen- und Geschlechterforschung. Theorie, Methoden, Empirie, Wiesbaden 2010, pp. 547–554, 548.

14 On the longstanding debate about separate spheres, see Drüeke/Klaus: Feministische Öffentlichkeiten, pp. 933–934.

15 Thomas, Lynn M.: Historicising Agency, in: Gender & History 28/2 (2016), pp. 324–339, 326.

16 See Wiesner-Hanks: Introduction, p. 11.

17 An extensive analysis of the intertwining of structure and agency can be found in: Elder-Vass, Dave: The Causal Power of Social Structures. Emergence, Structure and Agency, Cambridge 2010, pp. 87–114. Elder-Vass refers to Anthony Giddens's statement that agency and structure are two sides of the same coin.

footing with their professional counterparts, who could attain academic honours, to scientific communication channelled through societies. Last but not least, we will look at the exemplary cases of the first women who became members of the Imperial-Royal Geographical Society and the Imperial-Royal Zoological-Botanical Society (*k.k. Zoologisch-Botanische Gesellschaft*) in Vienna. We do not claim that these pioneers were representative in their career paths, but they did make noteworthy contributions to the output of these societies. Our sources are the associations' journals, membership lists, meeting minutes, anniversary editions, and selected congress participation lists and programmes. We aim to explore women's (political) agency and how it shaped the history of science in the Habsburg monarchy.

1. (Popular) scientific societies in Vienna: An 'appropriate' place for women?

Scholars of popular science in the nineteenth century have argued that the emergence of learned societies was rooted in the formation of civic culture, social diversity, and modes of democratic liberal participation.[18] However, differences in the state's role, social stratification, and the pace of economic change led to variations in the system of associations, the scientific culture of the associations, the different social groups included and the extent of women's participation. In Great Britain, the popularisation of science mostly took place within discrete and clearly defined social strata, relied heavily on private interests and was supported by the liberal attitude of the state and the free press.[19] Similar processes in the German Empire were based primarily on the work of a microcosm of 'mediators' located outside the academic milieu.[20]

In the Habsburg monarchy, however, the state bureaucracy, the imperial court, and the Catholic orders participated in the founding of external scholarly organisations. At the same time, they formed their own associative bodies with their own methods of scholarly exchange. This meant that informal kinds of academic socialising, such as salon culture, dinner parties, and reading circles, prevailed until the 1840s. Women participated in these events as organisers, associates or family members of other participants. At this time, women's clubs, including singing, charity and life insurance associations (*Sterbeversicherungsvereine*), were already an integral part of many areas of Viennese public life.[21]

18 See Cooter, Roger/Pumfrey, Stephen: Separate spheres and public places: Reflections on the history of science popularization and science in popular culture, in: History of Science 32/3 (1994), pp. 237–267.

19 See Bowler, Peter J.: Science for All. The Popularization of Science in Early Twentieth-Century Britain, Chicago 2009.

20 See Daum, Andreas W.: Wissenschaftspopularisierung im 19. Jahrhundert. Bürgerliche Kultur, naturwissenschaftliche Bildung und die deutsche Öffentlichkeit 1848–1914, München ²2002, p. 377.

21 See Friedrich: Zur Tätigkeit und Bedeutung bürgerlicher Frauenvereine; Mazohl-Wallnig, Brigitte: Einleitung, in: Brigitte Mazohl-Wallnig (ed.), Bürgerliche Frauenkultur im 19. Jahrhundert, Wien 1995, pp. 9–26, 19. On the male-dominated associational culture of the late Habsburg monarchy and the role of women see Hye, Hans Peter: Zum Vereinswesen der Habsburgermonarchie, in: Emil Brix/Rudolf Richter (eds.), Organisierte Privatinteressen. Vereine in Österreich, Wien 2000,

During the decline of the corporative state structure, scientific associations played a significant role in organising the developing civil society. Associations such as the Lower Austrian Trade Society (*Niederösterreichischer Gewerbeverein*) not only acted as intermediaries between the government, bureaucracy, and private stakeholders but also became venues for (proto-)public debates and political discussions.[22] Nobles who joined these associations had to abide by the duties and rights of members laid down in the statutes. Some came to see themselves as members of the bourgeoisie and adopted their behaviour and modes of address.[23]

Despite reservations about private, decentralised forms of scientific organisation, the bureaucracy promoted research fields deemed 'useful' for economic development out of patriotic motives. These included agriculture, medicine, cartography, and mineralogy. This also extended to the founding of state-supervised learned societies, whether as a concession to liberal demands or as a counter-model to the efforts to establish separate national associations in the run-up to the revolution of 1848–1849. During the political and financial crises of the 1850s and 1860s – a period marked by the loss of the Habsburg dominions in Italy, defeat by Prussia and the Austro-Hungarian Compromise – the intertwining of science and the public sphere fostered the emergence of novel, more resilient forms of scientific organisation that were independent of state funding.

In contrast to the exclusive Imperial Academy of Sciences, newly founded (popular) scientific societies, such as the Anthropological, Geographical and Zoological-Botanical Societies, were established in research fields that were not yet academically accredited or in which state research agencies had insufficient human or financial resources.[24] Before the universities developed into full-fledged research institutions after the Thun-Hohenstein reforms (1849–1860),[25] the societies provided the infrastructure for scholarly communication and cooperation, making science a holistic and patriotic endeavour.

Of the 74 societies with around 49,400 members involved in producing and disseminating knowledge in Cisleithania around 1867, 20 societies with 17,000 members were based in Vienna alone.[26] They brought together scholars, practitioners, and patrons, such as politicians, state officials, military officers, members of the nobility and the

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pp. 33–53, 37; Judson, Pieter M.: Die unpolitische Bürgerin im politisierenden Verein. Zu einigen Paradoxa des bürgerlichen Weltbildes im 19. Jahrhundert, in: Hannes Stekl/Peter Urbanitsch/Ernst Bruckmüller/Hans Heiss (eds.), „Durch Arbeit, Besitz, Wissen und Gerechtigkeit". Bürgertum in der Habsburgermonarchie, Wien 1992, pp. 337–345.

22 See Drobesch, Werner: Vereine und Interessensverbände auf überregionaler (cisleithanischer) Ebene, in: Helmut Rumpler/Peter Urbanitsch (eds.), Die Habsburgermonarchie 1848–1919, vol. 8/1: Politische Öffentlichkeit und Zivilgesellschaft. Vereine, Parteien und Interessenverbände als Träger der politischen Partizipation, Wien 2006, pp. 1029–1132, 1029.

23 See Hye, Hans Peter: Josef Bermanns Tagebücher. Eine Quelle zum frühen Wiener Vereinswesen, in: Wiener Geschichtsblätter 44 (1989), pp. 118–127, 124.

24 See Mattes, Johannes: Imperial Science, Unified Forces and Boundary-Work: Geographical and Geological Societies in Vienna (1850–1925), in: Annals of the Austrian Geographical Society 162 (2020), pp. 155–210, 168.

25 See Christof Aichner/Brigitte Mazohl (eds.), Die Thun-Hohenstein'schen Universitätsreformen. Konzeption – Umsetzung – Nachwirkungen, Wien 2017.

26 See Statistische Central-Commission (ed.), Statistisches Jahrbuch der Oesterreichischen Monarchie für das Jahr 1866, Wien 1868, pp. 333–340.

bourgeoisie, with a growing scientifically interested public. Members built enormous libraries and collections, participated in expeditions, applied research findings in practice, administered scientific trusts and hosted scientific conferences. By simultaneously practising and popularising science, the societies reinforced the consensus between the political elite and the emerging civil society. As public-private interfaces, they offered powerful support for managing imperial diversity while pursuing liberal claims at the micro-level of associational life through the free election of their boards, their statutory constitutions, and social accessibility to commoners and aristocrats alike. While scientific societies initially played a key role in nationalising the research landscape, from the 1870s onwards, they became driving forces in establishing new forms of cross-border collaboration.[27] International commissions and a booming congress culture supported by the societies transcended previous bilateral forms of communication such as travel, meetings, and correspondence between individuals.[28]

Scientific societies began to organise international conferences relatively early compared to academic institutions, especially in scientific fields such as anthropology, botany, geography, and zoology, which depended on international comparisons and the standardisation of specimens and research data. Moreover, these fields – some of which professionalised relatively late – offered opportunities for women to participate. While physicists and chemists relied on laboratories and measuring equipment, fieldwork-based research was more accessible to women. Practical tasks for knowledge acquisition, such as collecting, dissecting, drawing, and travelling, were often leisure activities in middle-class families and were considered more suitable for women than laboratory or archival work.

For women, membership in a (popular) scientific society could fulfil several needs. First, it gave them access to the societies' resources, spaces, and networks and helped them engage in (political) agency. Regular access to libraries, collections, and evening or weekend lectures enabled women researchers to gain greater autonomy over their male counterparts.[29] Second, conferences, guided visits to scientific facilities, and (field) excursions organised by societies offered women freer access to scientific knowledge and education. In many cases, the threshold for membership in popular science societies was

27 See Fox, Robert: Science Without Frontiers. Cosmopolitanism and National Interests in the World of Learning, 1870–1940, Corvallis 2016.

28 See Crawford, Elisabeth: Nationalism and Internationalism in Science, 1880–1939, Cambridge 1992, pp. 38–43.

29 With the exception of the summer months, Vienna's scientific societies held (public) lectures about twice a month, from Monday to Friday evening. These were sometimes scheduled to coincide with each other. Popular lectures were also held on Sundays at Viennese institutes of higher education, including lectures with alternating speakers at the Vienna Polytechnic (1812–65), by the physicists Andreas Baumgartner (1793–1865) and Andreas von Ettingshausen (1796–1878) at the University of Vienna (1828–1868) and by the anatomist Carl Bernhard Brühl (1820–1899) at the university's Department of Zoology (1863–1888). In addition to Brühl's classes, lectures explicitly addressed to both men and women were popular at the premises of the Lower Austrian estates, including a series of talks organised by the mineralogist Wilhelm Josef Grailich (1829–1859) in the late 1850s. See Taschwer, Klaus: Wie die Naturwissenschaften populär wurden. Zur Geschichte der Verbreitung naturwissenschaftlicher Kenntnisse in Österreich zwischen 1800 und 1870, in: Spurensuche 8/1–2 (1997), pp. 4–31, 14–17.

lower and easier to achieve than admission as a special guest auditor (*Hospitantin*) at universities. This exceptional procedure required the approval of the lecturer, the faculty, and the ministry.[30] Third, affiliation with scientific societies brought a certain degree of academic prestige and scientific accreditation that transcended gendered role models.

A comparison with other European countries suggests that Viennese scientific societies tended to admit women as full members earlier than in other metropolises. For example, London's *Royal Geographical Society*, established in 1830, did not open its doors to female members until 1913, ending a 20-year debate.[31] In contrast, the Geographical Society in Vienna admitted its first women as early as 1857, and by 1914, it had 10 % female membership.[32] This example shows a tendency that is not due to the liberal progressiveness of the Viennese societies but to structural phenomena that can vary depending on the association, the scientific field and the political objective.

A key factor in this difference could be the relatively late formalisation of academic sociability in the Habsburg monarchy. Unlike other 'Western' states, informal associations such as reading circles, salons, and dinner parties prevailed long before official scientific societies were founded. This allowed women already represented in these less formal settings better access to the official societies. Family connections to board members, influential scholars or an aristocratic background also opened doors for women to attend public events and host private non-university gatherings.

Another factor was that in the Habsburg monarchy, the popularisation of science in the form of public lectures and scientific journalism began in the 1840s, some 40 years before the emergence of the scientist as an academically trained professional.[33] This meant that the empire-wide scientific societies established during the neo-absolutist period could maintain their status and integrative function until the 1890s. Women benefited from the fact that members defined themselves less by their academic training or disciplinary specialisation than by their social standing, loyalty to the imperial house and liberal convictions. If women mastered the practices required in the relevant field, such as collecting, preserving and documenting specimens, they qualified as society members. They were occasionally included in collaborative undertakings, albeit mostly as 'infras-

30 Beginning in 1878, women were officially excluded from attending university lectures as ordinary students. However, they were sometimes allowed to be extraordinary guest auditors.

31 See Bell, Morag/McEwan, Cheryl: The Admission of Women Fellows to the Royal Geographical Society, 1892–1914, in: The Geographical Journal 162/3 (1996), pp. 295–312, 295; Evans, Sarah L./Keighren, Innes M./Maddrell, Avril: Coming of Age? Reflections on the Centenary of Women's Admission to the Royal Geographical Society, in: The Geographical Journal 179/4 (2013), pp. 373–376; Keighren, Innes M.: A Royal Geographical Society for Ladies: The Lyceum Club and Women's Geographical Frontiers in Edwardian London, in: The Professional Geographer 69/4 (2017), pp. 661–669.

32 By 1910, the Vienna Geographical Society had about 2,000 members – less than half the membership of the *Geographical Society* in London and about twice as many as its 'sister society' in Berlin. However, it had fewer financial reserves than any of them. See Kollm, Georg: Geographische Gesellschaften, Zeitschriften, Kongresse und Ausstellungen, in: Geographisches Jahrbuch 32 (1909), pp. 409–438.

33 See Mattes, Johannes: "Central Nodes" and "Neutral Grounds": Boundary-Work between Scholarship, Scientific Amateurism and the Public in Vienna (1860–1890), in: Physis – rivista internazionale di storia della scienza 56 (2021), pp. 181–199, 196.

tructure'[34] for the research conducted by men: as assistants to their fathers, brothers, husbands or teachers. Although gender equality was not an explicit part of the inclusiveness of these societies, which was most evident in the social, scientific, and geographical diversity of their membership, the Viennese associations were more permeable than the London gentlemen's societies.

Finally, pragmatic reasons may also have tipped the scales in favour of admitting women. The Antiquarian Society (*Alterthumsverein*), where a committee discussed the admission of women in 1857, stated in its journal: 'Why should women, who are allowed to take an interest in music and the fine arts, […] not also be allowed to support the reproduction, appreciation, and preservation of art and historical monuments of earlier times? What conceivable harm could it do to the Antiquarian Society if they support their laudable purpose by way of annual contributions?'[35] According to the ideal gender roles of the period, women were involved in the cultivation of music and art. Still, they were to be kept from knowledge-based activities, even though the bylaws of Viennese societies did not exclude women in principle. Compared to the state-funded associations in St. Petersburg or the largely privately sponsored London associations, Viennese societies tended to be poorer. With the exception of the Academy of Sciences, these societies had to finance themselves exclusively through membership fees until the 1880s. Gender bias notwithstanding, women represented an important financial 'resource', especially in times of crisis. For example, the Association for the Dissemination of Scientific Knowledge (*Verein zur Verbreitung naturwissenschaftlicher Kenntnisse*) decided to replenish its ranks with women after some of its original members split off to form a separate association in 1869. Financially well-off learned societies such as the Scientific Club (*Wissenschaftlicher Club*), on the other hand, successfully enforced a long-term policy of not admitting women.

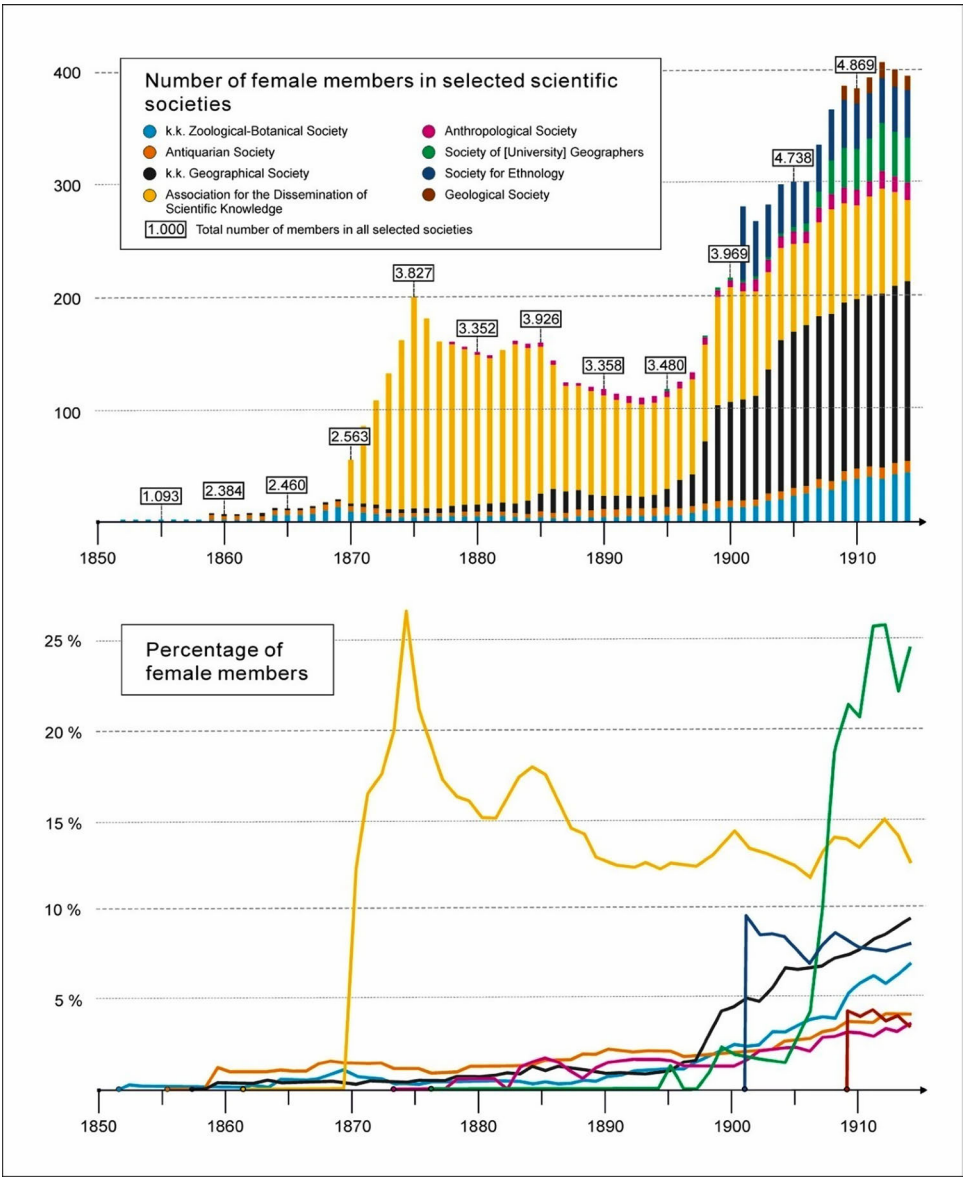
Table 1 illustrates the increase in female membership in eight influential societies between 1850 and 1914. Until 1870, women's membership was exceptional and limited to scientifically or socially established women, some of whom came from abroad. These included the Bohemian botanist Josephine Kablik (1787–1863), the salonnière Sophie Todesco (1825–1895) and Gabriele von Neuwall (1824–1913), president of the Viennese Women's Trade Association.[36] Between 1870 and 1895, most societies opened up to women, especially those with popular orientations. Access was facilitated by the women's family networks and social status, and it was assumed that they came from bourgeois families with experience in Viennese associational life.

34 Kölbl-Ebert, Martina/Turner, Susan: Towards a history of women in the geosciences, in: Wolf Mayer/Renee Clary/Luz Azuela/Teresa Mota/Stanislaw Wołkowicz (eds.), History of Geoscience, London 1996, pp. 205–216, 207.

35 Ausschuss des Alterthums-Vereines (ed.), Antrag bezüglich der Aufnahme von Damen als Mitglieder, in: Berichte und Mittheilungen des Alterthums-Vereines 2 (1857), p. XXXIII.

36 Gabriele von Neuwall held the presidency of the Women's Trade Association from 1868 to 1873. The purchase and establishment of the Association's first school building in Vienna can be traced back to her work. See [Anonymous]: Vereins- und Schulhaus des Ersten Wiener Frauen-Erwerb-Vereines, in: Allgemeine Bauzeitung 39 (1874), pp. 25–26, 26.

Tab. 1: Development of the proportion of women in selected Viennese scientific societies between 1850 and 1914 in absolute and relative numbers. Sources: Membership lists in the journals of selected societies. Data collection: Ottilie Manegold. Calculation & diagrams: Johannes Mattes.



Between 1895 and 1914, many societies lost their scientific prestige as universities became full-fledged research institutions. Female membership increased, averaging around 10 %, although there was considerable variation between disciplines.[37] The

37 In comparison, 153 female auditors were enrolled at the Faculties of Philosophy and Medicine of the Vienna University in 1900–1901, 41 of whom were ordinary students. By 1913–1914, this number

admission of women as full university students was important in this regard. As mentioned above, this began in practice in Vienna as early as 1897 but was not approved by the Technical University until 1919. Primary school teachers (from 1880 onwards) and university students (from 1900) also increasingly joined the societies.

A comparison of these results with selected natural scientific societies in the provincial capitals such as Graz, Innsbruck, and Prague reveals that women in the latter cities tended to become members later, and in the case of Innsbruck and Prague, not until the 1890s.[38] We could not confirm our hypothesis that the provincial societies, due to their popular orientation and more interdisciplinary nature, presented lower hurdles for women than those in the imperial capital. In Vienna, women certainly benefited from the more liberal and vibrant associational life of the metropolis. They can be understood as pioneers rather than mere examples of a development that took place synchronously in the Habsburg monarchy.

Without downplaying the significance of this moment, however, membership did not guarantee equality. Women were often still excluded from the opportunity to present at the societies' lectures and conferences, publish in their journal series, or be elected to the board. When these opportunities were granted, women had to meet higher standards than their male counterparts. The travel writer Leopoldine von Morawetz-Dierkes (1861–1933), the first woman to lecture at the Geographical Society in 1897, had to submit her presentation to a committee for approval.[39] Her case not only shows how agency depends on relationships but also reveals an inherent political dimension. Rather than being taken for granted, it was subject to conflicting claims that had to be negotiated. Despite the early admission of women, the Viennese scientific associations remained 'masculine and homosocial spaces'[40] whose membership policies allowed for the 'sufferance' of women in their ranks for pragmatic rather than ethical or moral considerations.

2. Levels of participation: From science as a family enterprise ...

As we have seen, science historiography mainly focuses on exclusive scientific institutions such as universities and academies of science. In contrast, our research has shown that cooperative and more inclusive science associations and their meetings at scientific congresses laid the groundwork for this exclusive science. Women were present and actively involved at various levels at these meetings, from taking on domestic and caring duties to support the male scientists to giving their own lectures. These women's names were often not recorded, only their relationships with specific men. Nevertheless, they

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had risen to 796 female students, of whom 498 were ordinary students. See Heindl: Bildung und Emanzipation, pp. 533–534.

38 We compared the membership registers of the Styrian Natural Scientific Society (*Naturwissenschaftlicher Verein für Steiermark*) in Graz, the Natural Scientific and Medical Society (*Naturwissenschaftlich-Medizinischer Verein)* in Innsbruck and the German Natural Scientific and Medical Society for Bohemia (*Deutscher Naturwissenschaftlich-Medizinischer Verein für Böhmen*) "Lotos" in Prague.

39 See Morawetz-Dierkes, Leopoldine von: Land und Leute in Finnland, in: Mittheilungen der k.k. Geographischen Gesellschaft in Wien 41 (1898), pp. 219–261.

40 Evans/Keighren/Maddrell: Coming of Age, p. 374.

could play vital roles in financing the association's activities or educating young men to pursue their own scholarly careers. Science as a family enterprise and the profession of an entire social elite has been undervalued, as men's names dominate the written sources. But, as this subchapter will demonstrate, science was conducted more collaboratively and inclusively than previously thought.

The activities of individual clans such as the Exner-Frisch family[41] and the popular science practised in association life alongside university courses support this understanding of science as a collaborative, inclusive enterprise that only became more exclusive with professionalisation.[42] Our study of women participating in scientific societies and their associational congresses further underscores this inclusivity. Educated middle-class women supported their husbands' scientific endeavours by taking on the responsibility of domestic childcare and their children's education. However, they also used their family networks to gain access to (popular) scientific education themselves, as demonstrated by the following examples from the Association for the Dissemination of Scientific Knowledge, the Geographical Society, the Geographers' Day in Vienna and the Anthropologists' Day in Innsbruck.

Seven years after the Association for the Dissemination of Scientific Knowledge was founded in 1860, the first women claimed space in one of its lectures and later became its members.[43] The association was a highly active and prestigious society, comprising mainly state officials (37 %) and academics (20 %).[44] It played a part in popularising radioactivity, photography, telegraphy, and the telephone.[45] On 18 November 1867, the professor of chemistry, Alexander Bauer (1836–1921), was speaking 'On the Conservation of Food and Drinks' when two unnamed women appeared and asked permission to attend the evening lecture.[46] They were initially turned away but insisted they had close family ties to the speaker and were eventually admitted. Thus, women were able to use family relationships strategically to gain access to lectures on topics deemed appropriate by society.

41 See Coen, Deborah R.: Vienna in the Age of Uncertainty. Science, Liberalism, and Private Life, Chicago 2007. See also Reiter, Wolfgang L.: Zerstört und vergessen: Die Biologische Versuchsanstalt und ihre Wissenschaftler/innen, in: Österreichische Zeitschrift für Geschichtswissenschaften 10/4 (1999), pp. 585–614. Here, the Jewish families Schey, Figdor, Przibram, and others had a great influence on the field of biology in Vienna in the first half of the 20th century.

42 Women attended popular science lectures in Vienna from the 1850s onward, presumably mostly accompanied by their husbands. In 1863, 25 women attended the zoological-anatomical Sunday lectures given by the anatomist Carl Bernhard Brühl; by 1868, 250 of the 700 registered participants were women. See e.g. Taschwer: Wie die Naturwissenschaften, p. 17.

43 The sources are not very specific for the early years. It can, however, be stated that by 1870, there were 40 female members registered.

44 See Kusel-Fetzmann, Elsa: 125 Jahre im Dienste der Verbreitung naturwissenschaftlicher Kenntnisse, in: Schriften des Vereines zur Verbreitung naturwissenschaftlicher Kenntnisse in Wien 126 (1987), pp. 21–36, 23. The other 43 % comprised military staff, artists, students, factory owners, trade- and craftsmen, and others.

45 Ibid., pp. 21–36.

46 See Franz Toula (ed.), Festschrift zur Feier des fünfzigjährigen Bestandes des Vereines zur Verbreitung naturwissenschaftlicher Kenntnisse, Wien 1910, p. 8.

This foot in the door meant that women could and did attend more lectures at the association. Space in the lecture halls became a contentious issue, increasingly associated with female attendees. Soon afterwards, the association split into two autonomous organisations, both of which continued to thrive and grow. In 1910, the president and geologist Franz Toula (1845–1920) looked back on the events of more than four decades prior, commenting on women's first attendance: 'Today, we are happy that the female sex is so interested in our lectures and attends them in such high numbers'.[47] The events of 1867 had long-lasting effects and opened the doors for subsequent female attendees.

In his address, Toula also highlighted the names of the founding president's widow, Karoline Grailich (1835–1913), who was also the daughter of the famous physicist Andreas von Ettingshausen (1796–1878), as well as her two grandchildren and her sister, Emma Harum (1847–1915). This constellation illustrates that science was more of a family enterprise than researchers had previously imagined. As we have already seen, the first women to be successfully admitted to a club lecture did so by invoking their relationship with the lecturer. However, these relationships went much deeper. The entire Grailich family (and not just the men) was involved in the business of the society.

At the 1910 anniversary celebration, the society's treasurer, Willibald Lukesch (1838–1918), gave a toast to women. His toast makes clear that although women were welcome at the society's lectures, they were not regarded as scientists in their own right. To be sure, women were 'the most loyal and tenacious members of our association'.[48] But, he continued, 'when they return to the home hearth, they use some of what they have learned in the education of their children, and so cooperate in the interests of the association'.[49] In Lukesch's view, women's main contribution to the association lies in their role as housewives and educators for future generations. As such, they were highly valued. The societies consisted not only of professional scientists but also of many non-academically trained men and women who pursued science in their leisure time or applied what they had learned in their daily lives, for example, in raising their children.

Similar observations can be made at the Geographical Society. A year after the first two women showed up for Bauer's lecture at the Association for the Dissemination of Scientific Knowledge, the Geographical Society specifically advertised a lecture as 'open to non-members (men and women)'.[50] In 1871, a report on the occasion of a farewell party for an American North Pole expedition even stated, 'The dedicated hall for lectures was almost exclusively filled with women'.[51] Unlike the association, this observation was not critical in tone but rather pleased and even proud. This pride in tone shows that in the late 1860s and early 1870s, women's access to scientific lectures and evening events at association sites changed and became increasingly accepted as a normal event as they actively claimed this space for themselves.[52]

47 Ibid.

48 Ibid., p. 263. Translated by the authors.

49 Ibid. Translated by the authors.

50 M. A. Becker (ed.), [Misc.], in: Mittheilungen der k.k. Geographischen Gesellschaft in Wien 11 (1868), p. 67.

51 M. A. Becker (ed.), Notizen, in: Mittheilungen der k.k. Geographischen Gesellschaft in Wien 14 (1871), p. 378.

52 See also Taschwer: Wie die Naturwissenschaften, p. 17.

Married couples also often went on expeditions together, financed and organised by the societies, to which they sent travel reports and brought back samples and objects. The most famous are Marie Hein (1853–1943) and her husband Wilhelm (1861–1903), who have recently been studied as a working couple in nineteenth-century ethnology in southern Arabia in 1901–1902.[53] Women often performed essential tasks such as drawing and taking photographs in the field.[54]

We can also trace women's participation in different congresses around 1900. These congresses brought together participants from diverse scientific and non-scientific backgrounds. They were important social events that reflected the international and inclusive nature of non-university science practised by the societies at the time. Women were claiming their own spaces here, too. By 1904, international congresses such as the International Geographical Congress in Washington offered exclusive discounts for women, as this advertisement shows: 'Member fee 20 marks, for women and participants 10 marks'.[55] In other words, female members were encouraged to attend but expected to pay less, as if they were not considered as contributors and full members, but as mere accessories to their male counterparts. The Second German Geographer's Day, organised by a committee consisting mainly of association members, was held in Vienna in 1891. There were a total of 642 participants, 9 % of whom were women.[56] Of these, 72 % were married (marked as 'Mrs' rather than 'Miss'), and half of them came from Vienna or the surrounding area. In contrast, 69 % of the men were from Vienna or the surrounding area, meaning more men than women travelled further away to attend the congress. Although this was to be expected, a few exceptions are worth noting: Miss Maria M. Ogilvie (1864–1939) was originally from Scotland but was studying in Munich at the time. She was unmarried and travelling alone, but she knew the organisers, Ferdinand (1833–1905) and Irmgard von Richthofen (1853–1910), well.[57] One couple, the Storns, came from as far away as New York. Two daughters of a wealthy wholesaler also came to Vienna from Germany, unaccompanied by spouses, although they may have already been in Vienna, where their father often did business. Overall, 15 % of the female participants were without male (or female) accompaniment. We therefore know that female attendees travelled much shorter distances and often came in male company. In other words, men were also often accompanied by their wives and attended these meetings as a couple.

53 Sturm, Gertraud: Leben für die Forschung. Das Ethnologenpaar Wilhelm und Marie Hein in Südarabien (1901/02), Wien 2007.

54 See e.g. Diener, Carl: Bericht über die Exkursionen des X. Internationalen Geologen-Kongresses in Mexiko, in: Mitteilungen der k.k. Geographischen Gesellschaft in Wien 50 (1907), pp. 211–240, 211; Anton Handlirsch (ed.), Allgemeine Versammlung am 6. Februar 1907, in: Verhandlungen der k.k. Zoologisch-Botanischen Gesellschaft in Wien 57 (1907), p. 13.

55 August Böhm von Böhmersheim (ed.), Kleinere Mitteilungen und Forschungsberichte, in: Mitteilungen der k.k. Geographischen Gesellschaft in Wien 47 (1904), p. 56. Translated by the authors.

56 [Anonymous]: Liste der Besucher des IX. Deutschen Geographentages in Wien, Wien 1891.

57 See Creese, Mary R. S.: Maria Ogilvie Gordon (1864–1939), in: Earth Sciences History 15/1 (1996), pp. 68–75.

Rosa[58] and Emil Tietze (1845–1931) are just one example of a couple who attended the congress together (Fig. 1). They are an excellent case of science as a family enterprise, for Rosa herself came from an important family of geologists, the von Hauers. Following in his father-in-law's footsteps, Emil succeeded Franz von Hauer (1822–1899) as a geologist at the Imperial Geological Survey. Hilde, a daughter of the Tietzes, later married Wilhelm Petraschek (1876–1967), also a renowned geologist. Their son was another earth scientist, Walther E. Petraschek (1906–1991).

Fig. 2: Rosa and Emil Tietze, 1929. Image credit: Tate/Heinz Strobl.

As for the social composition of the participants, the titles of nobility and professions listed for men show that 35 % of women were from the nobility, with larger proportions also coming from the bureaucratic class (*Beamtenschaft*) and the bourgeoisie. Women had

58 Rosa's lifespan is not known.

no occupational titles on the participant list; only Miss Ogilvie had her own academic title (B.Sc.). It was a social elite that came together here.

The events were organised by a special committee of which three women (or 5 %) were permanent members (including Miss Ogilvie). In contrast, more than one in two male participants were permanent members, making women less than 1 % of the permanent members. Four speeches and 20 academic presentations were made. The speakers, all male, addressed the audience exclusively as *Meine Herren* (gentlemen). It can therefore be assumed that women's presence at these conferences was still new and that most of them did not yet have permanent status, organisational responsibilities or speaking privileges.

Just four years later, the first meeting of German and Austrian anthropologists was held in Innsbruck. There were 368 participants, of whom only 256 were named, while the others were unnamed companions (one son and 111 women).[59] Most of the companions were wives and other family members. Only four women are named and counted individually: Anna Eysn, Marie Eysn (1847–1929), J. Merstorf, and Therese Schmid. So, while male relatives such as brothers, sons, and fathers were counted and named individually, most female participants were not. Gender was even more of a determining characteristic than age or kinship. For example, 'with mother' can often be read on the list, while 'with father' would have been unthinkable. If Mr Eysn had been present, his wife Anna and daughter Marie would likely not have been mentioned by name but merely counted as his companions.

In short, science was a cooperative family enterprise involving men, women, and even older children, some of whom were actively engaged in administration, fundraising and other tasks for the scientific societies. Family relationships undermined the concept of separate gendered spheres as women claimed space at congresses and association lectures. Widows of illustrious members occupied a special place in association life and refused to disappear after the deaths of their husbands. Such academic gatherings were also a good opportunity to find suitable matches for unmarried offspring. It seems that most of the women who participated in the social aspects of scientific gatherings did not thereby transgress the established 'ideal' gender norms.

3. … to notable individuals

As we have seen, most women remained associated with a husband or father at these meetings. However, a few notable women are also mentioned by their own names and are not associated with a man's name at all. These women actively travelled, collected, and contributed to scientific proceedings under their own names. These examples show us that women have made remarkable contributions to the history of science even without access to higher education. In addition to female autodidacts, some men without formal education or training attained the highest honours. This demonstrates that science in

59 [Anonymous]: Versammlung der deutschen und österreichischen Anthropologen in Innsbruck. Liste der Theilnehmer Nr. 1–2, Innsbruck 1894.

these societies was not a purely professional enterprise but a collaborative and inclusive family business.[60]

In what follows, we will look at a selection of women who stood out to us as pioneers, although the aim is not to give full biographical accounts, as many of them already exist. The objective is to depict their active role in the life of cooperative science. The following six women were the first individual female members we identified in the Geographical Society and the Zoological-Botanical Society.

Pauline Countess Nostitz (1801–1881) was the remarried widow of Johann Wilhelm Helfer (1810–1840). She edited his writings about his travels in the Middle East and India for publication and supplemented them with a chapter on 'My Experiences and Memories after Helfer's Death'.[61] In 1857, together with Ida Pfeiffer, she became one of the first female members of the Geographical Society in Vienna. The society was interested in her husband's literary and scientific legacy. In response to their requests, the Countess confidently replied, 'Maybe I can answer some of the questions myself'.[62] She was awarded membership in the same year.

Louisa Hay Kerr (1806–1900) was originally from Scotland and became best known for her translation of Leopold Ranke's *A History of Servia* from German into English.[63] She became a permanent and founding member of the Geographical Society in Vienna when she travelled through Vienna on her way to Serbia in 1859 and donated several objects from Japan and scientific literature to the society on this occasion.[64] Kerr was already a member of the Asiatic Societies of London and Paris, the Archaeological Societies of Great Britain, Palestine,[65] and Athens, the Geographical Society in Paris and the Viennese Historic Association.[66] She also became a member of the prestigious Association of Friends of Geography in Leipzig, as reported in the Viennese newspapers.[67] In 1863, the Austrian Emperor awarded her the Great Golden Medal for Art and Science.[68]

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60 Colonial power dynamics, in particular, helped elevate many social climbers' careers. Similarly, the previously mentioned Ida Pfeiffer also travelled extensively around the globe and benefited from colonial networks and epistemologies. But this aspect still remains a research desideratum.

61 See *http://biografia.sabiado.at/nostitz-pauline/* vom 12.11.2023.

62 Franz Foetterle (ed.), Versammlung am 17. Februar 1857, in: Mittheilungen der k.k. Geographischen Gesellschaft in Wien 1 (1857), p. 97.

63 Ranke, Leopold: A History of Servia, and the Servian Revolution, transl. by "Mrs. Alexander Kerr", London 1847.

64 Franz Foetterle (ed.), Versammlung am 10. Mai 1864, in: Mittheilungen der k.k. Geographischen Gesellschaft in Wien 8 (1864), p. 89.

65 On the *Palestine Association*, see Gibson, Shimon: British Archaeological Work in Jerusalem between 1865 and 1967: An Assessment, in: Katharina Galor/Gideon Avni (eds.), Unearthing Jerusalem. 150 Years of Archaeological Research in the Holy City, University Park, USA 2021, pp. 23–58, 30.

66 [Anonymous]: Kunst, Wissenschaft, Literatur, in: Klagenfurter Zeitung vom 24.3.1859, p. 268; [Anonymous]: Kurznotizen, in: Blätter für Theater, Musik u. Kunst vom 23.4.1862, p. 132.

67 [Anonymous]: Mannigfaltigkeiten, in: Illustrirte Zeitung vom 17.5.1862, p. 330.

68 [Anonymous]: Mannigfaltigkeiten, in: Illustrirte Zeitung vom 4.7.1863, p. 12. The original German read: „Mrs. Luoise Kerr, die bekannte gelehrte Uebersetzerin von Leopold Ranke's ‚Serbischer Revolution', hat vom Kaiser von Oesterreich die große goldene Medaille für Kunst und Wissenschaft erhalten." Not much is known about this award.

Josephine Kablik was listed by the Zoological-Botanical Society as a pharmacist's widow.[69] But she was much more than that; in 1852, she became its first female member. At the time, she was already a member of the Royal Botanical Society in Regensburg. For several years, she paid a higher membership fee as a donation to the society, and her portrait was gifted to the society in 1860 by the botanical trader Alexander Skofitz (1822–1892).[70] Kablik had collected and compiled numerous alpine plant species from the Riesengebirge, including 100 specimens of fungus, which she donated to the society. A contemporary from Brünn (Brno) wrote her biography with the title "Biography of the Famous Living Plant Researcher, Mrs Josephine Kablik from Austria".[71]

Anna Pehersdorfer (1849–1925) worked as a teacher in Steyr, Upper Austria, for 32 years. While there, she wrote a handbook on botanical terminology in 1897, which earned her membership in the Zoological-Botanical Society the same year. She continued to publish books on the flora of Steyr (1907)[72] and especially on lichen (1908).[73] Together with Marie Eysn, Marie Posch (1859–1914), and Ms W. Schlegel, among others, she contributed to a handbook on the flora of Salzburg in 1899.[74]

Johanna Witasek (1865–1910) was also a teacher and became a member of the Zoological-Botanical Society in 1900. Witasek and her sister were enrolled at the University of Vienna from 1897 to 1903.[75] In 1899, she published her first article on species of the genus Callianthemum in the society's journal.[76] She became the namesake of 113 plant species and had a rich herbarium of her own, later donated to the university by her family.[77] She was also featured in a photo album dedicated to the famous Viennese geologist Eduard Suess (1831–1914) in 1901.[78]

Rosa von Gerold (1829–1907) was mostly known for her well-attended salon in Vienna, her extensive travels throughout Europe, her books (published by her husband's publishing house), journal articles, and her passion for botany.[79] She was an autodidact in many different fields of knowledge. When the 66th German Natural Researchers' and

69 It is not known whether she continued to run the pharmacy business on her own after her husband's death, but it is a likely possibility, as many widows did so. See Reske, Karolien-Maria: Weibliche Apotheker. Die ersten Absolventinnen in der Pharmazie an der Berliner Friedrich-Wilhelms-Universität 1908–1937, Stuttgart 2008, p. 18.

70 [Anonymous]: Sitzung am 1. Februar 1860, in: Verhandlungen der k.k. Zoologisch-Botanischen Gesellschaft in Wien 10 (1860), p. 9.

71 Pluskal, Frantisek Sales: Biographie der berühmten, jetzt lebenden Pflanzenforscherin Oesterreich's, Frau Josephine Kablik, Brünn 1849.

72 Pehersdorfer, Anna: Die Flora von Steyr, Steyr 1907.

73 Pehersdorfer, Anna: Die Flechten des Bezirkes Steyr, Steyr 1908.

74 Julius Hinterhuber/Franz Pichlmayr (eds.), Flora des Herzogthumes Salzburg und der angrenzenden Ländertheile, Salzburg 1899.

75 See *http://biografia.sabiado.at/witasek-johanna/* vom 12.11.2023.

76 Witasek, Johanna: Die Arten der Gattung Callianthemum, in: Verhandlungen der k.k. Zoologisch-Botanischen Gesellschaft in Wien 49 (1899), pp. 316–356.

77 See *http://biografia.sabiado.at/witasek-johanna/* vom 12.11.2023.

78 See Mattes, Johannes: "To look like an (earth) scientist": Science popularization and professionalization based on the example of a photo album dedicated to the Viennese geologist Eduard Suess (1901), in: Earth Sciences History 39/2 (2020), pp. 336–362, 353.

79 See *http://biografia.sabiado.at/gerold-rosa-von/* vom 12.11.2023.

Doctors' Day in 1894 and the Second International Botanical Congress in 1905 were held in Vienna, von Gerold put together specific 'ladies' committees' to organise social events for the conference participants.[80]

These six pioneering women exemplify the efforts and contributions of women in science who operated outside traditional family networks. They were widows, teachers, and salonnières who became visible and active members on their own initiative. Again, these examples are the exception. The rule remained that women were less visible as they collaborated with their male relatives in their scientific endeavours.

4. Conclusion: Womanless science?

In 1983, Peggy McIntosh asserted, 'Womanless History specializes in telling about those who had [the] most public power and whose lives were involved with laws, wars, acquisition of territory, and management of power. History is usually construed, in other words, to exclude those who didn't possess a good deal of public power.'[81] This notion, she claimed, reinforced dominant power structures without the participation of women. While McIntosh identified precisely why 'Womanless History' is written and taught, Joan W. Scott presented a method to remedy this shortcoming in 1986. She contended that gender is a useful category of historical analysis that can do no less than write an entirely new history.[82] In 1999, Londa Schiebinger questioned whether feminist movements and women's participation had actually changed science.[83] She concluded that more women than previously thought had participated in the scientific process. However, although the history of science has made more female scientists of the past visible, scientific knowledge and epistemologies have not yet changed significantly.

In this paper, we have argued that nineteenth-century Habsburg scholarship, as practised in (popular) scientific societies, was often a family enterprise. Specific phenomena such as the asynchrony between the popularisation and professionalisation of science compared to the British and German empires and the low financial resources of associations created the conditions for the comparatively early participation of women in Habsburg scientific societies. Histories may have been written without including women's names, but history itself proves to be more complex and requires closer examination. The microcosm of association life was based on bourgeois values that gave little visibility to women's participation outside of gender-specific roles, let alone their contribution to knowledge production. To be sure, sources demonstrate that women participated extensively in lectures, donated specimens, literature, and funds, and appeared sporadically as lecturers or authors from the 1870s onwards. Yet it is impossible

80 [Anonymous]: Zweiter internationaler botanischer Kongreß, in: Pharmazeutische Post vom 26.3.1905, p. 186; [Anonymous]: Deutscher Naturforscher- und Aerztetag in Wien, in: Therapeutische Blätter vom 28.1.1894, p. 93.

81 McIntosh, Peggy: Interactive Phases of Curricular Re-Vision: A Feminist Perspective, Working Paper No. 124/1983, p. 7.

82 Scott, Joan W.: Gender: A Useful Category of Historical Analysis, in: The American Historical Review 91/5 (1986), pp. 1053–1075.

83 Schiebinger, Londa: Has Feminism Changed Science, Cambridge, MA/London 1999.

to capture women's overall share in collaborative ventures and everyday activities under the auspices of scientific societies. Nevertheless, our few sources on their active participation show that women were present and active of their own accord; in other words, they claimed their space in collaborative scientific ventures. They used family networks to their advantage to assert their agency in less professionalised contexts that were more accommodating to autodidacts and social climbers.

Our intention in this paper is not to highlight the lives of a few more 'exceptional women'. Instead, we maintain that women were an integral part of collaborative citizen science even before their admission to university. Associations and gatherings of association members showed that women were actively engaged in an imperial enterprise called science. They were mostly wives and daughters of named male figures, but some also made a name for themselves and gained public recognition (such as the Austrian Emperor's gold medal for Kerr). They were teachers or came from the salon tradition. We contend that their claim to space in science was itself an act of political agency, understood as a self-directed action to transform society.