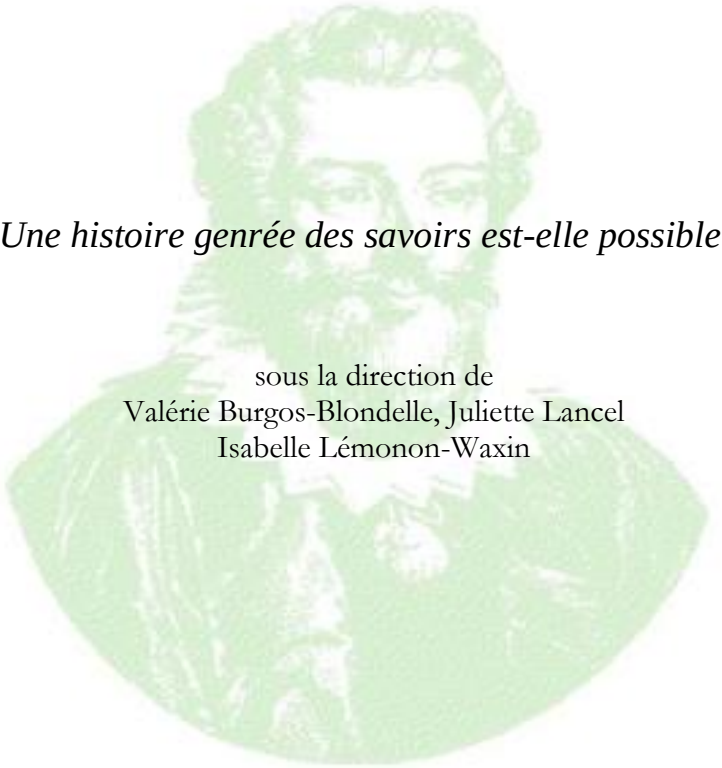
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## *Une histoire genrée des savoirs est-elle possible ?*

sous la direction de
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# Cross Interview on Women's and Gender Studies in the Field of the History of Science and Knowledge

with Evelynn M. Hammonds, Ludmilla J. Jordanova, Ilana Löwy, Margaret W. Rossiter & Londa L. Schiebinger

by Isabelle Lémonon-Waxin

The publication of a special issue of the *Cahiers François Viète* combining women's and gender studies and the history of science and knowledge is an opportunity to take a historiographical and reflexive look at the evolution of this field of research over the past thirty years. This contribution invites the dialogue of several historians of science and knowledge who have contributed to the construction of the fields of women's and gender studies. This conversation does not aim to present all the developments in the humanities and social sciences, and more particularly in the history of science and technology, but to illustrate the diversity of methodologies and research issues. Evelynn M. Hammonds, Ludmilla J. Jordanova, Ilana Löwy, Margaret W. Rossiter, and Londa L. Schiebinger accepted our invitation to take part in this exercise in order to highlight the advances, setbacks and obstacles encountered in their fields of research.[1]

**Isabelle Lémonon-Waxin: Why did you choose to invest (bring) women's and/or gender studies in (to) the history of science?**

*Ludmilla J. Jordanova:* I started working in this area in the late 1970s. It arose organically from sources I was reading and from contemporary concerns, such as feminism. I was trained as a historian of science, especially the life sciences (Jordanova, 1976), so I was already reading and

[1] These interviews were conducted in English via an online questionnaire or through a video conference interview, during the summer of 2021. Afterwards, each historian was made aware of the whole text of the interview in order to complete her remarks in response to the discussion. The historians who agreed to respond are mainly from English-speaking countries, and only one French researcher, Ilana Löwy, completed the questionnaire. Short biographies of each of them are provided at the end of the article.

thinking about medicine, where issues connected with women and gender came up all the time. So, I certainly would not say it was deliberate choice, and I wouldn't describe what I was doing as "investing" in any case there was hardly a field at that time to invest in. Key contacts for me were anthropologists, and other people doing feminist scholarship. I am guessing that some people thought working on women/gender was odd or unimportant, but enough people were interested and supportive that it was viable.

*Margaret W. Rossiter:* As for me, after being assured by my Yale professors of the history of science (c. 1970) that there had never been any women scientists I decided to look for myself and found 100 or more in the early editions (c. 1900-1920) of the *American Men of Science*, a big biographical dictionary with career histories. Many had connections to the women's colleges of the time, most of which had archives. So I went to several and found enough to start a book... (Rossiter, 1982).

*Evelynn M. Hammonds:* Personally, I chose to invest women's and/or gender studies in the histories of science because of the absence of historical material in these areas. I was also a physics student for 11 years (Hammonds, 1993).

*Londa L. Schiebinger:* This was all very interesting to me because there were no women professors in the History Department at Harvard University in my field when I went through. I got my Ph.D. in 1984 (Schiebinger, 1984); there was only one woman professor in Middle Eastern Europe. I was very interested in women in science because there was a movement growing at that time. There was a first conference of women scientists at MIT recounting their experiences and trying to understand the barriers they encountered. As a historian, I could hear they were telling similar stories, and I wanted to see what the social structures were that created these stories. What were the barriers? What opportunities allowed them to participate? I was actually a 19th century historian, but you notice my first work is on the 18th century because that's where I found the origins of the problem (Schiebinger, 1989). So rather than being time constrained by a particular time period, I looked for the origins of the problem. There were lots of women ready to take their place in science around 1700-1750 at the very moment we define as the European Scientific Revolution. I looked at the structures that allowed them to participate, such as the guild system and what I define as the noble networks. Those pathways were closed down as science migrated into universities, and you needed a professional degree to

participate. Furthermore, I was really interested in how biological determinism came to explain why women could not do science. I was interested in why and how that argument started. As a historian, I wanted to understand the historical structures and how the arguments were structured.

*Ilana Löwy:* My decision to work on this topic came in two stages. First, because I was teaching introduction to science studies, but also history of biology and medicine, I became very interested in the intersections between science studies, history of science and gender studies. I wrote about it and co-organized workshops on this topic. Only later, when I started a study on female cancers (Löwy, 2007), I directly applied insights from gender studies to my own research – and then found out that I should have done it also when I worked on presumably "non-gendered" topics, such as the history of yellow fever in Brazil (Löwy, 2010).

**How would you characterize your research?**

*Londa L. Schiebinger:* I was trained as an intellectual and social historian, and a philosopher. With the *Gendered innovations* project, founded in 2005, I work across the natural sciences and engineering (Schiebinger & al., 2011-2021). Once a discipline touches human society in some way, you're going to find social factors that are important. What I like about *Gendered Innovations* is that I get to do everything. I've learned so much about computer science, natural language processing, social robots, haptic technologies, medical technologies, marine science (very important for understanding climate change and doing something about it!). ...I just love all of the different sciences. As a historian of science, you can work with colleagues in these fields. For me, the words are "interdisciplinary" and "collaborative," as much as anything else. That's what I do, and now I'm really working with policy makers. I'm not just staying in my little historical cubicle, I just do whatever it takes to move things forward. I have never been constrained by my discipline; I am not disciplined by my discipline! I'm using historical analysis and the tools of social analysis in an effort to make science and technology work for everyone in society, not just a privileged few.

*Ludmilla J. Jordanova:* How would I characterize my own research? There is no simple answer to this. I've done a range of work over the years/decades. I am interested in cultural history, so I've used diverse sources and thought about a range of historical problems. My overall approach is 'integrative'. Issues connected with gender became part of

my overall historical approach, sometimes quite explicitly (Jordanova, 1993), at other times not. I would generally use visual and material evidence, but not always. And I have worked on a number of periods and places. Sometimes I describe myself as a cultural historian of science and medicine who works on 1600 onwards. I also write about themes that aren't connected with science or medicine, such as the nature of historical practice (Jordanova, 2000). My research is curiosity driven and responsive to opportunities that present themselves.

*Ilana Löwy:* I see myself above all as a historian of medicine and biomedicine, with a strong focus on material practices and the intersections between the laboratory, the clinics, and the field. But since I often work on present-day topics my work strongly intersects with sociology and anthropology of medicine and biomedical sciences.

*Margaret W. Rossiter:* Personally, I see my research as archival, when possible; quantitative later on (World War II and after) when lots of data was collected on degrees, fields, etc. My subfield within the history of science was called "the social history of American science", or the rise of the "profession" – degrees, jobs, bureaucracy, professional associations, medals, etc. –, not the actual science (botany, geology, etc.).

*Evelynn M. Hammonds:* As for me, I am interested in how gender and sex shape and are shaped by scientific practitioners and how the construction of gender and race shape scientific and medical cultures (Hammonds & Herzig, 2008).

**In your personal work and more generally in historiography, what changes have you noticed in terms of methods, sources and objects of research over the last 20/30 years?**

*Ilana Löwy:* The foundations of this field were laid in the last 30 years of the 20th century, with the work of scholars such as Ruth Hubbard, Donna Haraway, Evelyn Fox Keller, Ludmilla Jordanova. Since then the field has undergone an important growth, and was linked with other domains such as queer studies and post-colonial studies.

*Evelynn M. Hammonds:* With respect to objects of research, I would say that culture, race, ethnicity and decolonization have become more prominent as well as sexuality.

*Margaret W. Rossiter:* I noticed there are now a lot more scholarly biographies of individual women. Maybe one a month is coming out. Publishers are now much more interested, due primarily to the STEM[2] movement.

*Londa L. Schiebinger:* I was really an intellectual historian, and after my Ph. D. I wondered what I could do next regarding the intellectual arguments used to exclude women. *Nature's Body* documented concrete examples of how science was not objective but in fact infused with gender norms (Schiebinger, 1993/2004). I looked at Linnaeus's botanical classification system, at why mammals are called mammals, and at the racial hierarchies embedded in 18th century studies of the anatomy of difference because the same arguments were made for anybody who shouldn't be involved in science. I was very interested in how the race arguments paralleled the gender arguments, and how they were different. It's an important part of understanding the origins of European modern science. I would call that intersectional analysis. Many people were doing it early on. Then I decided that as a historian, I didn't want to just understand the past, I wanted to help create the future and that's when I started *Gendered Innovations* and focused on developing practical methods of sex, gender, and intersectional analysis for natural scientists and engineers, and provided case studies or concrete examples of how these methods can lead to discovery and innovation.

*Ludmilla J. Jordanova:* Regarding the changes that occurred in the last 20/30 years, this area has simply become much more established. At the same time, it participates in broader historiographical trends, e.g. an increased concern with global and transnational phenomena. All of this means that science/gender/medicine/women has become a separate field, which brings its own limitations. I prefer to see the histories of science and medicine as very broad and for people who work in a range of ways to continue to speak to and collaborate with one another. I would like to see gender become part of everything we, that is, historians do. That's what I would call an integrative vision. The biggest change is that a focus on gender is no longer controversial in any way. Along with that, scholars address an ever increasing range of places and times.

[2] STEM stands for *Science, Technology, Engineering, and Mathematics.*

**In your opinion, what have been the most important developments, setbacks and obstacles?**

*Margaret W. Rossiter:* Nowadays, there is more general interest in, and attention given to women in science, rather than being dismissed and ridiculed as in the past.

*Londa L. Schiebinger:* I was of the generation along with Margaret Rossiter that developed gender studies and put forward gender studies. At that time, to get tenure we had to define what journals counted, what were the top gender journals. So, we not only founded the scholarship, we had to develop the institutional process for judging tenure in these areas. It was hard for me to get a first job because no one understood what I was doing. My greatest obstacle was that there were no women to study with, and the guy who was my thesis advisor was, let's just say it, a misogynist. I could never count on a letter from him, but other extremely generous colleagues at different universities wrote letters for me because they understood what I was doing. In the early days, there weren't any jobs defined for this field, and you would get all kinds of weird objections from scientists. But I learned how to maneuver those. Margaret Rossiter, who was also at Harvard in my day, told me: "Don't just say it yourself. Base it on facts and data. Quote the primary source. It's not your opinion". This stood me in good stead because I was simply presenting the evidence. With evidence, scientists can't say much. You have to work twice as hard and be ready for their objections, and that's how I've approached everything. I do my homework; I work very hard. So, it became hard for them to object. Furthermore, the policies are changing. The European Commission moved from the gender dimension, meaning sex and gender analysis, to including intersectionality in *Horizon Europe*. The *Deutsche Forschungsgemeinschaft* put out their policy in 2020 and highlighted sex, gender and diversity analysis[3]. The policy landscape is changing rapidly, so academics better get on board, that's all I have to say.

*Ludmilla J. Jordanova:* An important development is recognising the centrality of gender for all historical phenomena. The main "setback" comes from separating gender and women from other concerns. There is too much fragmentation in scholarly activities. Initially an obstacle was

[3] https://www.dfg.de/foerderung/grundlagen_rahmenbedingungen/chancengleichheit/gleichstellungsstandards/

people not appreciating why these are significant issues. Now it is probably that some people at least find them banal and over studied.

*Evelynn M. Hammonds:* For me, the biggest obstacles have been the resistance to foregrounding race, gender and sexuality in studies of scientific work.

*Ilana Löwy:* The most important development is probably the existence of the new domain at the boundary between gender and science studies, and with strong links with post-colonial studies. Once gender became visible, it was difficult to make it invisible again: the dimension of gender in studying historical topics is there to stay. As for obstacles, I would underline three: the rising tide of religious conservatism in the world, the continuing resistance of some academics (including in France) to the "politicized" and "non-scientific" areas of studies such as gender and post-colonial studies, and for some scholars, short memory and insufficient attention to pioneering studies from the late 1970s and 1980s which already discuss many of the questions that arise today. Another problem is the great predominance of Anglo-American scholarship and English language publications. It is important to create more space for other languages and other cultural areas.

**Has the emergence of the history of knowledge alongside the history of science had an impact on your research?**

*Evelynn M. Hammonds:* To some extent, it had. But I am much more interested in how processes of racialization operate internally and externally to science.

*Margaret W. Rossiter:* I don't think it had an impact on my work. What mattered somewhat way back c. late 1970s were some conversations I had with a labor economist in Berkeley. Many snippets about the second tier of women in science (as obituaries) listed their degrees but were pretty vague about their employment and career paths. I began to include women who were employed as museum assistants, observatory workers, chemical librarians as what can be called "women's work", their normal and evolving career path. There was also a lot of sexual segregation by field, such as "home economics" or child psychology (Rossiter, 1997). Many became "chemical librarians".

*Ludmilla J. Jordanova:* For me too, this emergence did not really influence my research. I am aware of it, and find it a mixed blessing. I am

interested in ideas in their contexts, so I am keen on the insights that institutions, for example, can offer, but this is an unfashionable field compared to the late 1960s and early 1970s when I was trained. I find some work on the history of knowledge quite vague and sketchy, although I do think it's good to avoid anachronistic uses of 'science' for example. I am interested in social practices, habit and conventions, in being open to diverse sources and perspectives.

*Ilana Löwy:* History of knowledge was the starting point of my reflections. When I came to the history of science, in the late 1980s, history and sociology of knowledge were already central to the field, at least for me. My first book was on the origins of thought of Ludwik Fleck, a pioneer of sociology of scientific knowledge (Löwy, 1990). I also spend much time in the Max Planck Institute for the History of Science in Berlin (MPIWG); one of the important centers of the development of studies in the history of knowledge. In my work I extensively use insights from scholars such as Lorraine Daston, Hans-Jörg Rheinberger, Ian Hacking.

**What perspectives do you think are open for the next twenty years?**

*Margaret W. Rossiter:* I don't know if we can talk about it as perspectives, but if access to individuals' emails were made as easy as paper archives have been a lot of personal interactions could be documented.

*Ludmilla J. Jordanova:* To some degree it depends on the world around us. E.g. in 1980 I published an article in the book *Nature, Culture and Gender* that was concerned with binaries (Jordanova, 1980). Now that topic seems 'hot' again, given the ubiquity of reductive dualisms and polarised politics. I'd love to see scholars re-engaging with it and exploring how to explain changes in the ways we use masculine/feminine and so on, in a situation where many children are drawn to gender fluidity. I wouldn't have predicted that notions of gender fluidity would become so widespread. At the same time popular culture is increasingly sexualised and commodified so far as women are concerned. The most important thing is to be open and responsive, seeing social change as inviting historians to reflect anew on how to explain trends and assess their impact. We are inevitably contemporary historians no matter what period we focus on.

*Evelynn M. Hammonds:* In my opinion, it is appropriate to explore race, gender, sexuality and globalization.

*Ilana Löwy:* Historians are much better at predicting the past! Also predictions are risky: who will predict in December 2019 than three months later a virus will bring much of the world to halt. And I am worried about the rise of political and religious conservatism and backlash against gender studies in many countries. Still, perhaps the most important trend is increasing attention to intersectionality – linking different kinds of discrimination, of oppression to produce "thick" and nuanced narratives and analyses and the "provincialization" of Europe and North America – and to the growing numbers of studies focused on non-Western countries.

*Londa L. Schiebinger*: Now I'm working more at the policy level. A colleague from the Wellcome Trust and I are finishing up a global review of publicly funded granting agencies and their policies for integrating sex, gender, and diversity analysis into research design. After reviewing the funding agencies, I intend to review peer-reviewed journal policies. We have to think of science infrastructure as resting on three pillars (Tannenbaum & al., 2019):

- The funding agencies at the beginning of the process,
- The peer-reviewed journals at the end of the process (*Nature* has just implemented a policy to use the SAGER guidelines[4] which is sex and gender analysis as *The Lancet* did),
- The universities are needed to train the next generation in these methods – especially in the natural, medical and technological sciences. I will at some point develop a strategy to analyze curricula.

A lot of universities and our National Institutes of Health and National Science Foundation are all trying to bring in new participants. That is a first step, but knowledge, what happens inside these institutions, also needs to change. In a way, we've just started this process, and it's now rolling. I'm always excited if structural changes enhance social equity and opportunity. We have to focus on gender in an intersectional way. Through intersectional analysis in science, you can discover things, you can create something new. We developed methods of sex and gender, and now intersectional analysis for natural scientists, engineers, and medical researchers because these skills are not taught sufficiently in their *curricula*, and they should be. What about women of African origins? What about race and ethnicity? What about people with disabilities? To answer some of these questions, I extended my research to include European colonial science, indigenous knowledge, and the circulation of knowledge in the Atlantic World (Schiebinger, 2004). We also really need to explode the

[4] The SAGER guidelines are the Sex and Gender Equity in Research guidelines published by (Heidari & al., 2016).

categories of women and gender. In the United States, our NIH just tasked our National Academies with the job of redefining the categories of gender for health records, for birth certificates and other legal documents. I really think we're in a moment of upheaval in all of these concepts and what they mean for science.

*Evelynn M. Hammonds*, a physicist and historian of science, is a professor in the Departments of History of science and African and African-American Studies at Harvard University. Her work in the history of science and medicine is characterized by a feminist and intersectional approach. Her current research focuses on the intersection of scientific, medical, and socio-political concepts of race in the United States.

*Ludmilla J. Jordanova* is a historian and professor emerita of history and visual culture at Durham University. Her work lies at the intersection of science, medicine, gender and art. In her recent book *The Look of the Past. Visual and Material Evidence in Historical Practice*, she mobilizes a material and visual approach to characterize the role of images, objects and buildings in the study of the past (Jordanova, 2012). Her research also questions historical practices.

*Ilana Löwy*, a doctor of immunology and historian of science and medicine, is an emerita director of research at Inserm (Cermes3). Her research focuses on the relationship between laboratory investigations and clinical practices during the twentieth century. Her work explores the history of bacteriology and immunology, the history of medicine and biomedical sciences in Latin American and Eastern European countries, and gender and biomedicine.

*Margaret W. Rossiter*, a historian of science, is a professor emerita at Cornell University. She helped found the Department of Science and Technology Studies there. Through her reference work *Women Scientists in America* (Rossiter, 1982, 1998, 2012), she has theorized and, above all, extensively documented the Matilda effect using a rich corpus of sources that have allowed her to expose the causes of women's invisibility (Rossiter, 1993).

*Londa L. Schiebinger*, a historian of science, is a professor at Stanford University. Her work has focused on analyzing three distinct but interrelated pieces of the puzzle of gender and science: the history of

women's participation in science, gender in the structure of scientific institutions, and the gendering of human knowledge.

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