Science on Women and Women in Science in the Dutch Republic

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Abstract

This article brings together the main historiographical discussions that concentrate on women in science and science on women in the early modern Low Countries, with a focus on recent decades and the Dutch Republic. Modern scholarship on the early modern Dutch scholars, writers, and thinkers that discussed the female nature in this period is relatively limited. The first part of the article brings together publications on seventeenth- and eighteenth-century developments in Dutch anatomy, studies that discuss the ideas of particular scholars, for example Johannes Swammerdam (1637-1680), Reinier de Graaf (1641-1673), and Frederik Ruysch (1638-1731), and the recent work on the early modern debate on female education. In contrast, current scholarship that discusses the role of women in scientific and scholarly debates in the Dutch Republic is a broad and varied field, consisting of studies on the genres in

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which the debate about the (potential) position of learned women was conducted, of in-depth explorations of the lives and works of individual women, and, more recently, of projects that construct a more collective understanding of female participation in the intellectual domain. Building on recent insights, this contribution makes a plea for interdisciplinarity and a more integral perspective that moves beyond the singular and the exceptional.

Keywords: history of science and knowledge, scholarly women, female body, *querelle des femmes*

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In 1639, Johan van Beverwijck (1594-1647), the established Dutch physician and author of several popular medical works, published *Van de Uutnementheyt des Vrouwelicken Geslachts* (*Of the Excellence of the Female Sex*).[1] In line with broader European developments, Beverwijck's hefty volume, written in the vernacular, brought together two important early modern discourses on the position of women as knowledgeable beings. First, he discussed how progressive medical viewpoints had recently started to challenge traditional medical precepts on women. Whereas traditionally women had been regarded as 'flaws of nature' (i.e., failed men), the idea that women ought to be regarded as human beings in their own right steadily gained momentum, opening the door for an (albeit hesitant) acceptance of their intellectual capacities. Secondly, to illustrate this (predominantly conceptual) claim, Beverwijck presented his readers with a series of lives of prominent learned women in history, showing how women could indeed become exceptional intellectuals if provided with optimal circumstances. The work must have struck a chord: a second, enlarged edition was published in 1643.[2]

Beverwijck's contribution does not only stand out in the historiography as a pivotal turning point in redefining women's roles in the early modern Dutch Republic.[3] His argument also turns out to be illustrative for the two predominant strands of research that have long governed the study of the relationship between women and science, and which remain relevant and influential in academic discourse today. Following Beverwijck's structure, we will analyse the main historiographical discussions that consider science on women and women in science in the early modern Dutch Republic, with a focus on the recent decades.[4] First, we will discuss science on women: how have modern scholars made sense of the understanding of women, their minds, their bodies, and their beings in the

1 Van Beverwijck, *Van de Uutnemendheyt*. Throughout the article we will cite from this 1639 edition.

2 Van Beverwijck, *Van de Uutnemendheyt* (1643).

3 See Moore, '"Not by Nature"'; Van Gemert, 'The Power of the Weaker Vessels'; Van Gemert, 'Johan van Beverwijck als "instituut"'; Sneller, *Met man en macht*.

4 The term 'science' (or *scientia* in Latin) had not acquired its modern meaning. Broadly speaking, the disciplines and practices which constitute science today were generally referred to as natural philosophy. However, in early modern Europe, 'science' referred to knowledge in general. As a consequence, we adopt a broad definition of the term.

early modern period? Second, we will focus on the current studies which examine women as knowledgeable agents and their participation in the field of learning (i.e., the continuum between the study of arts and sciences), discussing the early modern learned women who made a name for themselves in an overwhelmingly male environment. It is important to note at the outset that the historiography on women and science in the Low Countries is dominated by studies on the Dutch Republic. Projects that discuss matters in the Southern Netherlands, and/or that compare both regions, have only recently commenced. Building on this inventory of historiographical perspectives, which are rarely directly affiliated with each other, the conclusion of this article will identify lacunae, perspectives, and recently started projects, resulting in a plea for interdisciplinarity and a more integral perspective that moves beyond the disciplinary, the singular, and the exceptional.

Science on Women

A dominant theme in the first book of *Uutnementheyt* is Van Beverwijck's criticism of so-called *vrouwen-lasteraers* ('women-slanderers'): men who argued that the female nature was inferior to the male.[5] In the historiography on women and gender in early modern Europe, short summaries of this negative attitude towards the female, her mind, and her body are prevalent. These studies present the general perspective on the female nature that characterised early modern medical books, scientific studies, and popular literature, outlining the four-temperament theory that differentiated the male (hot, dry) from the female (cold, moist), and at times describing the historical models that analysed these differences in more detail. Touching on either the classical hierarchical model of Aristoteles, who described the female body as a derivation of the male standard, and/or the binary, or the complementary model of Galen, who argued that male and female bodies were fundamentally different, such overviews usually function as an explanatory background. Modern scholarship emphasises that these traditional perspectives on the female body both supported and legitimised early modern patriarchal societies, in which the subordination of women to men was persistent in cultural, political, social, and scientific settings.[6]

In contrast with these general summaries, which feature in most publications that touch on early modern women and gender, the international historiography on early modern scientific perspectives on the female from medical, cultural, and social points of view is a lively field of research. Londa Schiebinger's work is seminal, as her groundbreaking ideas on women's participation in science and the gendering of human knowledge have shaped the field since 1989.[7] Furthermore, recent historiographical debates have been determined by the continued critical engagement with Thomas Laqueur's one-sex/two-sex model. It has been over thirty years since the publication of his foundational *Making sex*, yet the

5 Van Beverwijck, *Van de Uutnementheyt*, 2.

6 See for example Antonelli, Romano, and Savoia (eds.), *Gendered Touch*; Capern (ed.), *The Routledge History of Women in Early Modern Europe*; Hopkins and Norrie (eds.), *Women on the Edge in Early Modern Europe*.

7 Schiebinger, *The Mind Has No Sex?*; Schiebinger, *Nature's Body*; Schiebinger, 'European Women in Science'; Schiebinger, 'The Philosopher's Beard'.

book still inspires scholars, even if most of them criticise, or even outright reject and abandon, his theory on the female anatomy.[8] Laqueur argued that while in the Western world women and men had for centuries been viewed as two different forms of a single essential sex, a two-sex model, in which the sexes were regarded as directly opposing each other, became dominant in the eighteenth century.[9] In her 2023 article on the myth of the 'one-sex' body, Katherine Park argued that Laqueur's theory is nothing more than 'attractive fiction'. To stake her claim, she provides an in-depth overview of her own work and the research of other scholars – including Monica H. Green, Helen King, and Brooke Holmes – that has discussed pre-modern perspectives on the body, the anatomy, and the nature of women over the last three decades.[10] The broader field of the study and contextualisation of early modern scholarly and/or medical understandings of the inner- and outer workings of the female body is represented in *The Routledge history of women in early modern Europe*. In this collection, scholars such as Amanda Capern, Sarah Toulalan, Leah Astbury, and Elaine Leong stress that the debate was often dominated by questions regarding conception, fertility, childbirth, and the female life cycle, emphasising that early modern views on the female body were centred on the reproductive function (fig. 1).[11]

In contrast to this flourishing international field of research, scholarship on the early modern Dutch scholars, writers, and thinkers that shaped, adopted, or criticised the traditional perspective on the female, taking into account research on the cultural, medical, and societal contexts in which they operated, is relatively limited. Adopting a bird's eye view, the historiography on the topic can be divided into three categories. First, recent scholarship has connected seventeenth- and eighteenth-century developments in Dutch anatomy to changing ideas about sex and the female body, engaging with the influential model of Laqueur. In his chapter for *Sekse. Een begripsgeschiedenis*, Eric Jorink argued that in the historiographical debate on Laqueur's one-sex/two-sex model, too little attention was paid to the important role played by René Descartes (1596-1650), Johannes Swammerdam (1637-1680), and Reinier de Graaf (1641-1673).[12] These last two early modern Dutch thinkers, building on Descartes's perspective on the human body, argued in their studies of the human reproductive organs that the anatomies of men and women were different but equal and complementary, with both men and women playing an important role in reproduction. According to Jorink, their convictions played an important role in the development of new ideas about sex: the popularity of Cartesianism in Dutch science in this period ensured that the hierarchical model, in which women were seen as imperfect men, was replaced by an egalitarian model. Compared to Jorink, Rina Knoeff has been more critical of Laqueur's approach, as she calls into question his cultural determinism by emphasising how the gendered anatomy around 1700 embodied medical practices and

8 Laqueur, *Making Sex*. Critical studies include Park, 'The Myth of the "One-Sex" Body'; Holmes, 'Let Go of Laqueur'; Ragab, 'One, Two, or Many Sexes'; Cadden, *Meanings of Sex Difference*; Green, 'Bodily Essences'; Voß, *Making Sex Revisited*; King, *The One-Sex Body on Trial*; Stolberg, 'A Woman Down to Her Bones'.

9 Laqueur, *Making Sex*.

10 Park, 'The Myth of the "One-Sex" Body'; Green, 'Bodily Essences'; King, *The One-Sex Body on Trial*; Holmes, 'Let Go of Laqueur'.

11 Toulalan, 'Bodies, Sex, and Sexuality'; Astbury and Leong, 'Medical Knowledge and Practice'.

12 Jorink, 'De geest heeft geen sekse, maar het lichaam?', 21-22.

Fig. 1 Pieter van Gunst (after Gerard de Lairesse), Anatomical study of a pregnant woman's belly, 1685, engraving, 32,7 × 47,3 cm. Rijksmuseum Amsterdam.

techniques as well as public morals and opinions. Exploring the staging of the organs of generation in the anatomical cabinets of Frederik Ruysch (1638-1731), the anatomical atlas of Govert Bidloo (1649-1713), and the Amsterdam city hospital, Knoeff has argued that the materiality of the female organs of generation and their public presence reflected and manipulated anatomical knowledge. She concluded that a 'cultural invention of an ontological and incommensurable category of the female sex did not exist': sex differences were differences of degree rather than absolute, and apprehensions of these varieties were in constant flux.[13]

13 Knoeff, 'Sex in Public', 58.

The second category consists of studies that describe the ideas presented in the Dutch Republic on the nature, mind, and/or body of women, focusing on particular early modern scholars. The work of Jorink and Knoeff partly fall within this second category, too, as they focus on the views of Swammerdam, De Graaf, Ruysch, and Bidloo. Matthew Cobb's *The Egg and Sperm Race* analyses (critiques on) the traditional image of the female in relation to the publications on reproduction of, amongst others, De Graaf and Jan Swammerdam. Cobb highlighted that Dutch anatomists – part of a wider early modern network of scholarship that included for example Francesco Redi (1626-1697), Marcello Malpighi (1628-1694), and Niels Stensen (1638-1686) – studied female anatomy and debated the relative contributions of men and women to the act of reproduction.[14] Lia van Gemert, Cornelia Niekus Moore, Agnes Sneller, and others have discussed Van Beverwijck's perspectives on women, as voiced in his *Van de Uutnementheyt* and other publications such as the different *Schat der gesontheyt* books.[15] Karen Hollewand has compared the perspective of rebel humanist Hadriaan Beverland (1650-1716) on women to that of his contemporaries, including Van Beverwijck. Studying the female physique, the nature of women, and female behaviour in seventeenth-century Dutch society, Beverland's outlook, as presented in his *De Stolatae Virginitatis Iure* (*On the Law on Draped Virginity*, 1679), corresponded with the general perspective of Van Beverwijck. Furthermore, while neither men prescribed abstinence, arguing instead that lust, sex, and reproduction were natural and necessary, they both urged women to guard their reputation and be aware of the dangers of sexual desire.[16]

A third and final category of scholarship discussing the nature of females concerns the debate on female education, which flared up in the seventeenth century but would explode in the eighteenth century. Both male and female scholars attempted to revise the subordinate position of women in society, focusing in particular on their access to education, sometimes by relying on the view of Descartes, who argued that the bodies and minds of women had the same capacities and ontological status as those ascribed to men.[17] François Poulain de la Barre (1647-1723), as demonstrated in Siep Stuurman's seminal study, used Cartesianism to present a new answer to the 'question of women'.[18] This early modern discussion was closely connected to the *querelle des femmes*, the European literary-historical debate about the position and nature of women that began in the fourteenth century. Arguing against claims of mental instability and inferiority, the root of the discussion was the question if women were capable of rational, abstract thought. Brita Rang has studied both international and Dutch contributions to the *querelle des femmes*. She concluded that the persistent, traditional image of the weak, imperfect woman was being challenged and destabilised from the late sixteenth century onwards, and therefore the question whether women could engage in science became more urgent to answer.[19]

14 Cobb, *The Egg and Sperm Race*.

15 See Moore, '"Not by Nature"'; Van Gemert, 'The power of the weaker vessels'; Van Gemert, 'Johan van Beverwijck als "instituut"'; Sneller, *Met man en macht*.

16 Hollewand, 'Over de lust van de vrouw'; Hollewand, 'Eggs, Sperm and Desire'.

17 Harth, *Carthesian Women*.

18 Stuurman, *François Poulain de la Barre*.

19 Rang, '"Een maeght kan eerbaer zijn"'; Rang, '"Geleerde vrouwen van alle eeuwen"'.

Women in Science

One important consequence of this newly burgeoning early modern perspective on the female physique (and, in terms of the binary model put forward by Descartes, the relationship between their bodies and minds) was the room it allowed for the idea that women could also be knowledgeable beings. '[O]ne [sees] in the Anatomy, or dissection of the Brain, that all her being, is the same, without any difference of parts', Van Beverwijck stated.[20] To strengthen his argument, the second and third parts of his study focused on 'the erudition and wisdom of women'. First, he presented a seemingly endless enumeration of learned women to show that they had held their own in the scholarly field since ancient times. He then concentrated on the general virtues that allowed women to be knowledgeable humans. As such, these parts of Van Beverwijck's study are illustrative of the broad and varied contemporary historiography that discussed the role of women in scientific and scholarly debates in the early modern Dutch Republic. Contemporary attention to the subject can be roughly divided into three strands: first, the study of the most important early modern genres in which the historical debate about the (potential) position of learned women was conducted (i.e., 'praise of women' and the collective biographies of learned women); second, in-depth explorations of the lives and works of individual women; and thirdly, the growing and more recent ambition to work towards a more collective, case-transcending understanding of female participation in the intellectual domain.

The two genres to which Van Beverwijck's *Van de Uutnementheyt* belongs, *vrouwenlof* ('praise of women') and the catalogues of learned women, both feature in the historiography that concerns itself with ideas on learned women in the Dutch Republic, particularly in relation to the local manifestation of the aforementioned international *querelle*. In her 2005 dissertation *Tot lof van vrouwen?*, Simone Veld argued that the genre of women's praise flourished in the seventeenth-century Dutch Republic, playing a central role in the vernacular debate between the defenders and opponents of female scholars.[21] Both original contributions and Dutch translations of influential international contributions to the debate appeared in the Dutch Republic.[22] Even though they are known as praises of women, these texts were rarely unambiguously positive, and especially those written by men betrayed a paradoxical and ambiguous attitude that did not escape the attention of contemporaries – the critical response voiced by Charlotte de Huybert (c. 1622-after 1644) upon reading Beverwijck's first edition is clear evidence of this.[23]

Pioneering work regarding the collective biographies of learned women (the second genre) was conducted by Brita Rang in the late 1980s. She has demonstrated the popularity in the seventeenth- and eighteenth-century Dutch Republic of published collections consisting of summaries of the lives of learned women from classical antiquity to the

20 Van Beverwijck, *Van de Uutnementheyt*, 89-90: '[M]en [siet] in de *Anatomye*, ofte ontledinge der Herssenen, dat al haer wesen, even-eens is, sonder eenige verscheydenheyt van deelen.'

21 Veld, *Tot lof van vrouwen?*. See also Veld and De Jeu, 'De uytnementheyt des vrouwelicken geslachts'.

22 Original works include Van der Does, *Den lof der Vrouwen*; Hoobius, *Het lof der vrouwen*; Van Akerlaeken, *Den lof der vrouwen*. Veld pays particular attention to the translated the works of Henricus Cornelis Agrippa and Jean de Marconville.

23 Spies, 'Charlotte de Huybert en het gelijk'.

contemporary, early modern era, which built on the rich international tradition that began with Giovanni Boccaccio's *De mulieribus claris* (1361-1362) and Christine de Pizan's *Le libre de la cité des dames* (1405). Rang has argued convincingly that these overviews demonstrate that there were many more women active in the domains of knowledge and science than is often assumed. She maintains that these summaries invite broader qualitative observations of the genre, focusing, for example, on how women contributed to the transmission of knowledge in the broadest sense of the word, outside the walls of traditional knowledge institutions such as universities, academies, and anatomical theatres. Also, the different profiles of learned women, either as literary or religious figures, and the question as to whether they were indeed isolated by their scientific interests (as has often been claimed), should be taken into account. According to Rang, the latter assumption, which has long dominated historiography, is especially deserving of nuance.

The notion that female scholars mainly worked in isolation has been strengthened and prolonged by the fact that the study of scholarly women in the Dutch Republic has for so long been characterised by case studies on exceptional individuals. Anna Maria van Schurman (1607-1678) in particular – who was already put forward by Beverwijck as the scholarly woman par excellence (fig. 2) – has inspired a rich scholarly tradition, both inside and outside of the Netherlands, in which her unique position as the 'first female student' in Europe has been invariably emphasised.[24] A similar focus on the exceptional has characterised studies on the German-born Maria Sybilla Merian (1647-1717), who has been hailed as the 'exception to the rule', since she, as a woman interested in art and science, not only managed to conduct innovative (and often still relevant) entomological research but also to develop a flourishing business model (fig. 3).[25] Apart from the long-standing interest in Van Schurman's position in the so-called 'Women's Republic of Letters', a structural focus on a perspective that transcends the individual, such as was advocated by Rang in the late 1980s, is a recent phenomenon.[26]

Over the past two decades, a growing body of scholarship has focused on the more collective nature of female participation in the intellectual domain. Thanks to the studies by Claudette de Baar-de Weert, for example, we know that women participated in scientific societies from the mid-eighteenth century onwards. Founded in 1785 and aimed at the scientific education of about forty women, the history of the *Natuurkundig Genootschap der Dames* in Zeeland in particular shows that interest in the sciences transcended the individual level and appealed to a wide range of women.[27] Building on the recent attention paid to the phenomenon of the scholarly persona, attempts are also being made to get a grip on the

24 De Baar et al. (eds.), *Anna Maria van Schurman*; Larsen, *Anna Maria van Schurman*; Van Beek, *The First Female University Student*.

25 Van der Roemer et al. (eds.), *Maria Sibylla Merian*; Reitsma, *Maria Sibylla Merian*; Davis, *Women on the Margins*, 140-216. Of more recent date are case studies of lesser-known women such as Petronella de Timmerman and Maria de Wilde: Van Deinsen and Dietz, 'The woman with armed eyes'; Van Deinsen, 'Cultivating a Female Presence'.

26 On the female Republic of Letters, see Pal, *Republic of Women*; Norbrook, 'Women, The Republic of Letters, and the Public Sphere'. A recent example of a more structural focus is De Baar, *Uw sekse of de onze*.

27 De Baar, *Uw sekse of de onze*, esp. 48-56; Sturkenboom, *De elektrieke kus*; Jacob and Sturkenboom, 'A Women's Scientific Society'; Harbers and Gáldy, 'Science, Gender and Collecting'.

Fig. 2 Paulus Lesire, Portrait of Anna Maria van Schurman, *etching, 13,2 cm × 8,3 cm, in: Johan van Beverwijck,* Van de Uutnemendheyt des Vrouwelicken Geslachts, *Dordrecht 1639, Amsterdam, Rijksmuseum.*

shared scholarly virtues ascribed to learned women.[28] This also enhances our understanding of the ways in which early modern women could embody intellectual authority and position themselves in male-dominated knowledge networks.[29] Furthermore, the contribution of women to the scientific domain is becoming increasingly clear now that more attention is being paid to the collaborative nature of science in general. Recent studies by Catherine Powell on Agnes Block (1629-1704) and by Claire Morrison on the role of enslaved women in the production of Merian's *Metamorphosis Insectorum Surinamensium* (fig. 4), to name

28 Scholten, *Rethinking the Republic of Letters*.
29 Van Deinsen, 'Female Faces'; Van Deinsen, 'Spiegels van Sophia'; Peacock, *Heroines, Harpies, and Housewives*; Vanacker and Van Deinsen (eds.), *Portraits and Poses*.

Fig. 3 Simon Schijnvoet, Frontispiece, *hand-coloured etching, 18,6 × 14 cm, in: Maria Sybilla Merian,* Der Rupsen Begin, Voezel en Wonderbaare Verandering, *Amsterdam 1712-1717. Amsterdam, Artis Library, Allard Pierson, University of Amsterdam. Schijnvoet depicts an all-female collective involved in the study of* naturalia. *At the far end of the table, the winged-head personification of Investigation, dressed in an ant-covered gown, lectures Merian in the science of entomology. They are accompanied by two youthful women, possibly representing one of Merian's daughters being taught by the three-breasted personification of Nature.*

Fig. 4 Frederick Ottens, Frontispiece, *hand-coloured etching, 45,5 × 31,5 cm, in: Maria Sibylla Merian,* Over de Voortteeling en wonderbaerlyke Veranderingen der Surinaemsche Insecten, *Amsterdam 1719. Amsterdam, Artis Library, Allard Pierson, University of Amsterdam. Through the monumental stone arch, the observer sees Merian in the act of catching insects in the tropical landscape of Surinam, supported by local inhabitants. In the foreground, a nearly bare-breasted woman – most likely personifying the natural sciences – is seated at a table in the company of cherubs who play with and order* naturalia. *The open book on the ground reveals the best example of such studies, providing a preview of two actual prints included in Merian's publication.*

but two examples, demonstrate that the character of collaborations and the nature of networks in relation to the active participation of women in the spheres of the arts and the sciences – for example in the domestic domain – deserve further consideration.[30]

Panoramas and Perspectives

When discussing gender (in)equality, women, and science in the early modern Dutch Republic, we are confronted with a paradox. To achieve equality, in historiography an emphasis on the similarities between men and women is common: studies point out that women did have a voice and a presence and that they could hold their own in male-dominated environments. Yet this focus on equality often results in a general diminishing of what set women apart from men in different historical periods, how they created their own opportunities – through understanding their limitations as well as their strengths – in order to participate, contribute, and make their mark in deeply patriarchal societies. If we want to integrate female voices into both what we know and would aspire to know about science and knowledge in the early modern period, it is important to be aware of this equality paradox. In our quest to find these women and tell their stories, we should move beyond merely adding them as footnotes to traditional narratives, established contexts, and age-old debates. Instead, we must make room for the new and different perspectives that research on female 'scientists' brings to the table, provoking a possibly dramatic, but at the very least systematic, change of the entire field.

In those studies in which early modern scientific perspectives on women are examined, the Dutch Republic plays a minor role. This is partly due to the international character of science itself, both in the present and in the past: ideas, publications, and discussions rarely adhere to geographical borders. Looking at the historiography, it is painful to conclude that – but even harder to explain why – we know so little about women in science and science on women in the early modern Dutch context, despite the major role of Dutch scholars in discussions of science in this very period, supported by a large number of excellent studies on the history of knowledge, science, and scholarship produced in the Netherlands in the last decades. There is a lot to gain from expanding our knowledge of the thoughts and critiques of early modern Dutch authors on this topic, in connection to their particular social, cultural, political, and academic contexts. Broadening and deepening our understanding of their studies, sources, methods, and debates would allow us to participate in a lively international field and position the exceptional as well as commonplace qualities of the discussions in the early modern Dutch Republic.

Combining our different observations on the two prevalent strands of scholarship that dominate the study of the relationship between women and science, we can draw several conclusions. First, it is important to note that the two strands of thought that characterise the historiographies on women and science in the early modern Dutch Republic hardly connect to one another. Science *on* women belongs to histories of science, knowledge, medicine, and anatomy, in which women are discussed when their minds and bodies

30 Powell-Warren, *Gender and Self-Fashioning*; Morrison, 'Whitewashing Nature'.

appear in the publications of or debates between Dutch learned men. Premodern women *in* science were claimed by the histories of women and gender, and have been studied predominantly from a literary point of view. To move forward, we must build bridges between these different historiographies, sharing sources, methods, and insights.

Second, to find and integrate learned women – and in so doing amend current perspectives, dominant historical narratives, and traditional discussions – we should adopt a fairly broad definition of science. This observation aligns with recent developments in the history of science. The scope of the field has expanded in the last decades, allowing for a shift in emphasis: moving away from a strict focus on natural philosophy and groundbreaking scientific theories to the integration of, for example, studies on knowledge practices and the material culture of science. In looking beyond those who were educated at universities, formally acknowledged in publications, or deemed worthy by the leading, learned men of the time, expanding our perspective on early modern science and knowledge will allow us to find and position women within this field. Increasing our understanding of the topic will also provoke new questions, stimulate the study of unexplored or underappreciated source material, and ultimately change our general perspective on early modern science.

To change how we write histories of early modern science and knowledge, and to systematically integrate the scholarship, works, and ideas of learned women in the Dutch Republic, requires them to become visible. Our third conclusion, therefore, is that we need more women and more female perspectives. This necessitates a move beyond the exceptional few and the adoption of a broader, more complex understanding of the 'learned woman' and how she could participate in the scientific sphere – a shift in perspective, as we have demonstrated, that has already been embraced by a number of scholars. In addition, the adoption of an intersectional perspective is essential: the positions, contributions, and opportunities of early modern learned women did not only depend on their sex and gender, but were also directly related to their social status, religious beliefs, racial backgrounds, places of origin, and residences.

Having located these women, having defined their contributions, and taken all their complexities into account, we should look beyond their exclusion from the formal, conventional realm of science, and analyse their particular roles and contributions by building on the expanding definitions of science and knowledge that have arisen in the last decades, including the convincing plea to consider the household as a place of knowledge production. Leaving the traditional (and dominantly post-nineteenth-century) image of the solitary white, male scientist in his ivory tower behind, collaborations, networks, and the intersections of different disciplines should be taken into account. It is precisely these largely unexplored realms that take centre stage in a number of current research projects, from Claire Morrison's PhD project examining the role of women in knowledge transfers in the university cities of Leuven and Leiden, to research on female publishers and authors as knowledge agents in the early modern book trade conducted by, for example, Richard Calis, Nina Geerdink, and Violet Soen.[31] These projects are also taking crucial

31 Claire Morrison, 'Women in Academia? Gendering Knowledge Transfers in University Cities in the Early Modern Low Countries (Leiden & Leuven, 1575-1675) (FWO Fundamental Research, project no. 1191723N); Lieke van Deinsen (with Nina Geerdink and Violet Soen), 'Partners in Innovation. Women Publishers as

steps towards the creation of a comparative perspective for the Northern and Southern Netherlands. As we have highlighted, scholarship on women in science is almost entirely lacking for the Southern Netherlands.

Lastly, when redefining women's agency in science, we must also look beyond the Dutch Republic and adopt an international perspective. The world of early modern science did not adhere to political borders: ideas, knowledge, and methods were produced, shared, and discussed in a transnational context. Yet it is conspicuous that, despite its prosperous climate for scholarship and the development of new perspectives on the female body, early modern Dutch scholars barely feature in this international field. Scientific perspectives on women formulated in the Dutch Republic and the ideas and activities of learned women with a Dutch background need to be better integrated into international historiography, especially since these scholars did feature prominently in the learned community. At the same time, the insights of international studies on both topics have to be connected to our knowledge of the Dutch Republic to a much greater degree.

The question of women's contribution to science is not, however, limited only to the early modern period. On the contrary, if we can take away anything from Van Beverwijck's broad approach, it is that the *longue durée* perspective on the systematic inclusion and exclusion of the female is key, especially when we endeavour to deepen our understanding of the complex connections between women and science from the past into the present.

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