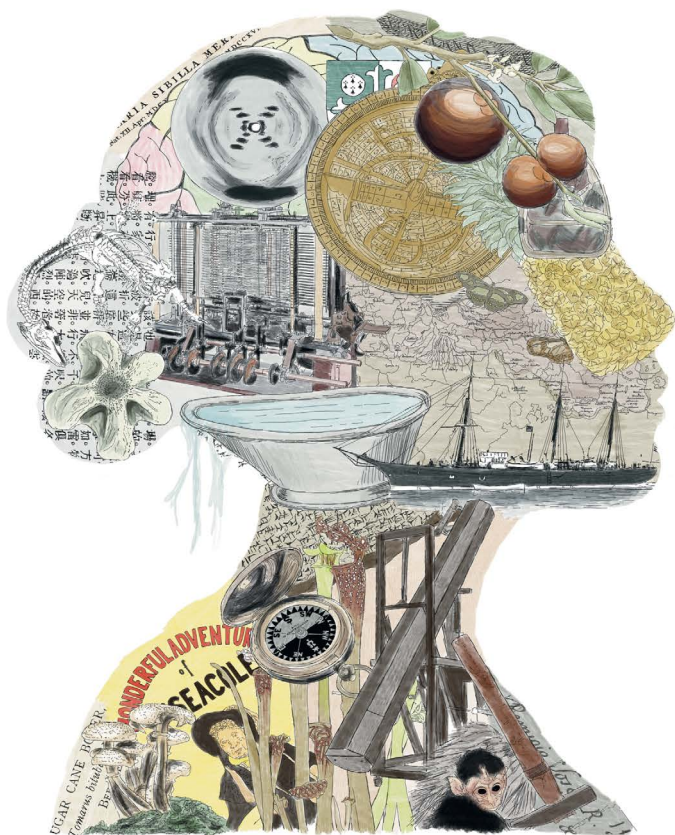


WOMEN IN THE HISTORY OF SCIENCE

A SOURCEBOOK



EDITED BY

HANNAH WILLS, SADIE HARRISON, ERIKA JONES,
FARRAH LAWRENCE-MACKEY AND REBECCA MARTIN

UCLPRESS

Women in the History of Science

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Hannah Wills, Sadie Harrison, Erika Jones,
Farrah Lawrence-Mackey and Rebecca Martin

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**Josefa Amar y Borbón
(1749–1833): An extract from
*Discurso sobre la educación
física y moral de las mujeres*
(*Discourse on women's physical
and moral education*) (1790)**

Professor Mónica Bolufer Peruga⁶

Introduction

This text is the introduction to the first part of a pedagogic work by the eighteenth-century Spanish writer Josefa Amar y Borbón (1749–1833), the *Discurso sobre la educación física y moral de las mujeres* (*Discourse on women's physical and moral education*), published in Madrid in 1790. Josefa Amar y Borbón belonged to a family of the lower Aragonese nobility whose male family members were physicians or bureaucrats (one of her brothers, Antonio José Amar y Borbón, was the last viceroy of Nueva Granada in Spanish colonial America). Her father, José Amar y Arguedas, was a university professor in Zaragoza from 1743, appointed royal physician in 1754, and later elected vice-president of the Academia Médica Matritense (Madrid Medicine Academy). Her mother, María Ignacia de Borbón, was a learned woman and the daughter and granddaughter of other prestigious physicians, Miguel Borbón y Berné (vice-president of the Royal Medical Court) and Felipe Borbón. Josefa Amar married the lawyer Joaquín Fuertes Piquer, nephew of another distinguished physician and philosopher, Andrés Piquer. In November

1790, Josefa Amar became the first woman admitted into the Academia Médico-Práctica de Barcelona, on the grounds of the intellectual prestige she had acquired nationally, and to some extent internationally, with her published works. Her *Discourse*, published that same year, was particularly influential in helping her gain this recognition, as were her family connections to the medical profession and its institutions.

Source

Amar y Borbón, Josefa. *Discurso sobre la educación física y moral de las mujeres* [1790]. Edited by María Victoria López-Cordón. Madrid: Cátedra, 1994. 1–6.

Entre los bienes de la naturaleza ninguno hay comparable con el de la salud y robustez del cuerpo. Este solo puede recompensar la falta de los demás, y sin él todos son inútiles. Porque ¿de qué le sirve a un rico enfermizo la abundancia de manjares, la multitud de criados y de conveniencias, y aun el séquito de aduladores, si su estómago no puede digerir sino ciertas viandas, y esas en poca cantidad, ni se encuentra en disposición de usar de sus facultades sino con un millón de limitaciones? Si tiene entendimiento, y vuelve la vista a considerar el estado de un labrador destituido de riquezas, pero sano y contento en el centro de su familia, gozando de su vida desde el momento que amanece, y muriendo quizá de solo vejez, ¿no trocaría gustoso su aparente felicidad por la de éste? Pues toda la diferencia está en que el uno disfruta de cuanto tiene, y hasta de su misma existencia por el beneficio de la salud, y el otro es verdaderamente pobre y desgraciado en medio de la opulencia, porque no puede gozar de ella. Sus privaciones le son más sensibles que al otro la falta de conveniencias, de que acaso no tiene idea. Por otra parte, ¿y qué satisfacción se encuentra en el estudio o en las diversiones cuando no hay salud? Nada se puede hacer en este estado, o si se hace algo es con perjuicio de la vida, o con cierta flojedad de ánimo que se trasluce desde muy lejos. Nuestra máquina está de tal suerte organizada en todas sus partes, que cuando alguna padece, las otras no pueden ejercer libremente sus funciones, y éste es uno de los motivos para que se procure y estime la salud.

La salud es conveniente a entrambos sexos: porque si los hombres deben ocuparse en varios destinos que requieren fuerza y agilidad, del mismo modo hay bastantes mujeres que están precisadas a trabajar corporalmente para ganar su vida, y cuando esta razón no hubiera,

bastaría la que tienen todas señoras y no señoras, como es la de parir y criar hijos robustos. Esto importa más de lo que parece, y si todos los legisladores ordenasen sus leyes en cuanto a la infancia con la prudencia que Licurgo, serían más universales los maravillosos efectos que se vieron en Esparta. Licurgo estableció que las muchachas se ejercitasen igualmente que los muchachos en los juegos militares, y no lo hacía, como dice Plutarco en la vida de aquél, para que siguiesen la profesión de las armas, sino para que produjesen hijos inclinados a la milicia, y que pudiesen tolerar fácilmente las fatigas. El efecto de esta providencia y de otras encaminadas al mismo fin correspondió a los designios de su promulgador. En cierta ocasión preguntó una extranjera a Gorgo, mujer del Rey Leónidas, en qué consistía que las mujeres de Lacedemonia eran las únicas que tenían verdadero dominio sobre los hombres, y con razón respondió ésta: “porque también somos las únicas que parimos hombres invencibles”.

¡Qué distinta es nuestra educación! Tan lejos está de fomentar una fortaleza varonil en las mujeres, que se les permite contraer desde niñas el vicio de asustarse por cualquier cosa, aun sin discernir entre los verdaderos peligros o imaginarios. Lloran por costumbre, y todo esto ocasiona una delicadeza y pusilanimidad, que llega a hacerlas inútiles para todo. Mr. Fénelon es de sentir que en esto hay gran parte de afectación, y que no hay otro modo de vencerla que el desprecio, pues aunque no hayan de tener la mismas ocasiones que los hombres de manifestar el valor, es bueno tenerlo para poder resistir los peligros imprevistos que ocurren a todos, y no asustarse sino de casos muy terribles. Las mujeres tienen tanto influjo en la primera educación física y moral de los niños, que por esto quería Platón que se las instruyese del mismo modo que a los hombres, conociendo que son de mucha consecuencia para el Estado sus errores o sus virtudes.

Translation

Of the gifts granted us by nature, none is comparable to that of bodily health and strength. It alone can compensate for the lack of the others, and without it, all are useless. For what good to a wealthy invalid are an abundance of fine food, a multitude of servants and income, and even a retinue of flatterers, if his stomach can only digest certain foods, and those in small quantities, or if he is in no state to use his faculties except with a million limitations? If he had wisdom, and were to consider the circumstances of a working man who has no money but lives happily and healthily, surrounded by his family, who takes pleasure in his life from the moment it begins and perhaps dies only of

old age, would the rich man not willingly exchange his apparent happiness for that of the worker? For the difference lies in the fact that the poor man enjoys what little he has, and indeed enjoys his very existence because he has the benefit of good health, while the rich man is in truth poor and wretched in the midst of his wealth, because he cannot enjoy it. He feels his privations more than the other feels his lack of income, of which he may not even be aware. Moreover, what satisfaction is to be found in studies or diversions unless one has good health? We can do nothing if we suffer from poor health, or at least not without risking harm to our lives, or by acting with a certain lack of spirit that is easily perceptible. The workings of our body are organised in such a way that when one part suffers, the others cannot freely fulfil their functions, and this is one of the reasons why good health is both sought after and highly valued.

Good health is expedient for both sexes: while men need to occupy themselves in various employments that require strength and agility, there are similarly plenty of women who are required to undertake physical labour in order to earn a living. And were this reason not to exist, there would still exist that other which applies to all women, whatever their station, namely that of giving birth to and bringing up healthy children. This matters more than it seems, and if all legislators were to arrange their laws regarding children with the prudence of Lycurgus, the miraculous results seen in Sparta would now be more universal. Lycurgus ordained that girls should take as much part as boys in military games, and as Plutarch tells us in his life of Lycurgus, this was not to turn young women themselves into soldiers, but to strengthen their bodies so that they would be better able to endure the pain of childbirth and produce sons inclined to a military life. The effect of this ruling and of others designed for the same end met its promulgator's aims. A foreign woman once asked Gorgo, wife of King Leonidas, why it was that the women of Sparta were the only ones who could hold sway over men, and the Queen with good reason replied, "Because we are also the only ones who give birth to men".

How different is our education. Far from encouraging virile strength in women, it instead allows them to acquire from girlhood the vice of taking fright at the slightest thing, without distinguishing between real and imagined dangers. They are accustomed to weeping, and all this instils a delicacy and timidity in them which render them unfit for anything. It is Monsieur Fénelon's opinion that much of this is simple affectation, which has to be treated with contempt, since although women may not encounter the same opportunities as men to demonstrate their valour, it is right that they possess this quality in order to ward off the

unforeseen dangers that face all people, and only to take fright in extreme situations. Women have so much influence on the early physical and moral education of children and this is why Plato wanted them to be educated in the same way as men, knowing that their faults or virtues are of great consequence to the State.

Analysis

Although the selected passage, being an introduction, includes virtually no references to authorities, throughout her work Josefa Amar displays familiarity with the intellectual traditions of the early Spanish Enlightenment (c. 1760s–1816).⁷ This familiarity includes the works of Andrés Piquer, as well as contemporary European medical knowledge, including the works of Ballexferd, Fourcroy, Le Roy, Tissot, Van Swieten, Raulin, Orlandi, and the proceedings of the Berlin, Stockholm and Helvetica academies. A talented girl, Josefa Amar received a highly unusual education, especially considering she was not an aristocrat, but a member of the middle ranks. She had a solid training in Latin and Greek, modern languages (French, English and Italian), the classics, and the sixteenth-century Spanish humanists (Vives, Fray Luis de León, Nebrija, and Arias Montano).⁸ She also benefited from a well-stocked family library for her extensive readings of medical literature, which went far beyond what was customary among cultivated women of her time.

The *Discourse on the physical and moral education of women* (1790), her major work, is a learned and lengthy treatise divided into two sections.⁹ The second and longer section covers women's moral, domestic and intellectual education, with a particular stress not only on its importance for the public good, but also, in contrast to the more usual utilitarian approaches, the importance of education for self-esteem and for the fulfilment of women's potential as rational beings. The first section of the book, from which this passage is taken, is a thorough revision of contemporary medical advice concerning women's healthcare, particularly through pregnancy (covered in chapter one), childbirth and breastfeeding (covered in chapter two, where she does not share the harsh judgements of contemporary male authors towards the ignorance of midwives), choice of wetnurses if needed (covered in chapter three, where again she distances herself from the most dogmatic arguments favouring breastfeeding regardless of the circumstances and severely blaming women who could not, or did not, practice it), and childcare (covered in chapters four to seven).¹⁰

Amar's arguments in this passage stress the importance of health and physical wellbeing for both men and women, for their own sake as well as for its social consequences for the public good. In this respect, she subtly but significantly differs from other perspectives on women's physical education and healthcare, heavily dominated by populationist aims, which stressed above all women's role in reproduction and the need to make them healthy breeders. Although she shared this eighteenth-century concern with increasing population in numbers and strength, the first paragraph of her introduction makes no gender differentiation in praising health as a source of personal happiness (a central pursuit for her) and pleasure.¹¹ Only in the second paragraph does she introduce a gender differentiation, and even there, she underlines that many women, just like men, need to undertake physical work to earn their living; it is in their role as mothers that the difference lies, but this comes later in her arguments. Finally, the last paragraph lays out even more clearly her strong criticism of how women were educated and her plea for more balanced, in some aspects egalitarian, gender relations. She presents women's physical and psychological weakness, to a great extent, as the result of an education that encourages bodily inhibition, shyness and fear, instead of courage, determination and confidence. Amar argues that, instead, physical and moral education should make women not only stronger and more capable of raising healthy children, but also more self-assertive.

This passage, along with the rest of the work, attests to both the refined education of its author and to her firm defence of gender equality, which can also be found in her earlier published works. Born in Madrid, Josefa Amar had moved after marriage to Zaragoza. Here she translated various important texts from Italian and English, connected with intellectual and reformist circles, and approached the Aragonese Economic Society of Friends of the Country to which her husband and many male friends belonged. She was the first woman to be admitted into the Aragonese Economic Society of Friends of the Country in 1782.¹² She wrote her *Discurso en defensa del talento de las mujeres y de su aptitud para ejercer el gobierno y otros cargos en que se emplean los hombres* (Discourse in defence of women and of their aptitude for government and other positions in which men are employed) (1786) to argue for women's admission to the Economic Society in Madrid, to which she was later successfully admitted.¹³ She claimed and tried to persuade the male members of the Society that intellectual equality between men and women was a requirement in an institution that claimed to represent modernity and progress.¹⁴ This text was widely acclaimed and was both

published in the periodical press and translated into Italian in 1789 and 1810 respectively.¹⁵

On 22 November 1790, Josefa Amar was admitted to the Academia Médico-Práctica of Barcelona, founded in 1770 and accorded in 1785 the status of Royal Academy, as *socia libre* (free associate). This was a newly-created position to allow relevant intellectual figures, not just physicians, who did not reside in Barcelona, and therefore did not attend the meetings, to be admitted to the Academy. Among the first six to be admitted in this role were two Frenchmen – the botanist and treasurer of the Académie des Sciences Mathieu Tillet, and the chemist Louis Proust – and three distinguished Spaniards – physicians Antoni Martí i Franquès and Antoni Palau, and the chemist Pedro Gutiérrez Bueno. The members of the Academy acknowledged Josefa Amar’s ‘instruction in medical questions’, particularly visible in her work on women’s physical education, but also her family origins, described as her ‘ancient lineage of very learned royal physicians’. The fact that the archives of the Madrid Medicine Academy are partially destroyed for the period 1752–1791 makes it impossible to verify whether this sister Academy reacted in some way to the work of the daughter of the man who was its vice president up to his death in 1779.

Questions

1. How might the notion of women’s bodies as a product of education and socialisation shown in this passage relate to modern theories of gender?
2. Compare this source to the final source in this part, The Junta de Damas de Honor y Mérito (Committee of Ladies of Honour and Merit): children’s parchments in the Madrid Foundling House (1802). What are the similarities and differences between the forms of knowledge produced?
3. How might we consider this source within the context of the Spanish intellectual milieu of the late eighteenth and early nineteenth centuries?
4. From where could the author have taken the idea of the body as a well organised machine, and how might this be understood in relation to her Catholic religious beliefs?
5. Consider the social backgrounds and connections of the women mentioned in this part, including Josefa Amar y Borbón. How might this have enabled them to undertake natural philosophical pursuits?

Further reading

- Bolufer Peruga, Mónica. 'New inflections of a long polemic: the debate over the sexes in Enlightenment Spain', In *A New History of Iberian Feminisms*, edited by Silvia Bermúdez and Roberta Johnson, 38–49. Toronto: University of Toronto Press, 2018.
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Questions

1. How would you define ‘paper technologies’ and ‘paper tools’? Can you think of any other eighteenth-century examples? You might consider different fields such as natural history.
2. What role did these parchments play within the wider system of identifying and tracing foundlings?
3. To what extent did paper technologies such as the one used in the Madrid Foundling House enable the production of new knowledge?
4. How did the paper technologies employed in the Madrid Foundling House relate to skills considered at the time necessary in the education of high-class women, such as accounting and housekeeping?
5. The Foundling House was an institution run by women, whereas many scientific academies of the day only permitted men. Might this have had implications for the kinds of knowledge produced, shared, and valued by these places? If so, how?

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Part V notes

- 1 Porter, ‘Introduction’, 2003, 1–22.
- 2 McClellan, ‘Scientific Organisations and the Organisation of Science’, 2003, 90–94.
- 3 For an exploration of the role of women within the Royal Institution, see Lloyd, ‘Rulers of Opinion’, 2019.
- 4 For the role of class in enabling women to access spaces of knowledge production within elite society see Schiebinger, *The Mind Has No Sex?*, 12.
- 5 Schiebinger, *The Mind Has No Sex?*, 10; Goodman, ‘Enlightenment Salons’, 1989, 338.
- 6 The research for this piece has received funding from the European Research Council under the European Union’s Horizon 2020 research and innovation programme (Project CIRGEN, ERC Grant Agreement No 787015).

- 7 The Spanish Enlightenment is a subject of internal debate within the field and, as has been highlighted within this text, it should be considered critically who is centralised as the source of Enlightenment thought, what the term Enlightenment means and who it includes and excludes when reviewing these sources. For a selection of essays on the various definitions of the Spanish Enlightenment, see Astigarraga, *The Spanish Enlightenment Revisited*.
- 8 López-Cordón, *Condición femenina y razón ilustrada*.
- 9 Amar y Borbón, *Discurso sobre la educación física y moral de las mujeres*.
- 10 Martínez Vidal and Pardo Tomás, 'Un conflicto profesional, un conflicto moral y un conflicto de género', 2001.
- 11 Lewis, *Women writers in the Spanish Enlightenment*.
- 12 Sullivan, 'Josefa Amar y Borbón and the Royal Aragonese Economic Society (with documents)'; López-Cordón, *Condición femenina y razón ilustrada*.
- 13 Amar y Borbón, 'Discurso en defensa del talento de las mugeres y de su aptitud para el gobierno y otros cargos en que se emplean los hombres'; Facsimile editions in López-Cordón, *Condición femenina y razón ilustrada*; English translation in Barker, *In Defence of Women*.
- 14 Bolufer Peruga, 'New Inflections of a Long Polemic'.
- 15 Fabiani, *Il calamaio sulla finestra*.
- 16 Leonhard Euler (1707–1783), Swiss mathematician.
- 17 Sergei Gerasimovich Domashnev, director of the Academy from 1775 to 1782.
- 18 Nicolas Fuss (1755–1826), Swiss mathematician, trained in Russia by Leonhard Euler.
- 19 Jacob Stählin (1709–1785), German poet, professor of allegory and rhetoric at the academy from 1735.
- 20 The *Commentarii Academiae Scientiarum imp. Petropolitanae* were the academy's scholarly journals, published in Latin since 1728.
- 21 On Dashkova's life see Prince, *The Princess and the Patriot*, and Woronzoff-Dashkoff, 'Dashkova', 2008.
- 22 Woronzoff-Dashkoff, 'Dashkova', 2008, xxiii.
- 23 Gordin, 'Arduous and Delicate Task', discusses her role in the Academy of Sciences.
- 24 Gordin, 'The Importation of Being Earnest', 2010.
- 25 Werrett, 'The Schumacher Affair', 2010.
- 26 Herschel, *Memoir and Correspondence of Caroline Herschel*, v.
- 27 Aquabusade was a lotion, usually containing alcohol, used to clean wounds.
- 28 Available at <https://royalsocietypublishing.org/doi/pdf/10.1098/rstl.1787.0001> (accessed 14 December 2022).
- 29 The letter is addressed to Charles Blagden, then Secretary of the Royal Society.
- 30 Herschel, *Caroline Herschel's Autobiographies*, I, 63.
- 31 Burney, *The Court Journals and Letters of Frances Burney*, vol I, 152; 317.
- 32 Herschel is quoted in Winterburn, *The Quiet Revolution of Caroline Herschel*, 268.
- 33 James, 'Making Money from the Royal Navy in the late Eighteenth Century', 2021.
- 34 Walter Scott to John Bacon Sawrey Morritt, 9 August 1810, in H.J.C. Grierson, Ed., *The Letters of Sir Walter Scott*, London: Constable, 12 volumes, 1932–1937, 2: 368.
- 35 Humphry Davy to Jane Apreece, c.8–12 July 1811, in Fulford et al. *The Collected Letters of Sir Humphry Davy*, vol. 1: 273.
- 36 Lord Byron to Samuel Rogers, 12 April 1812, in Marchand, *Byron's Letters and Journals*, vol. 11: 180–181.
- 37 Humphry Davy to John Davy, June 1812, in Fulford et al. *The Collected Letters of Sir Humphry Davy*, vol. 2: 327.
- 38 Joseph Banks to Charles Blagden, 3 October 1816 in Chambers, *The Scientific Correspondence of Joseph Banks*, vol. 6, 217–19.
- 39 For example, see Packer et al., '2308. Robert Southey to Edith Southey, 25 September 1813'; Davy, *Fragmentary Remains, Literary and Scientific of Sir Humphry Davy, Bart*, 142.
- 40 For example, Humphry Davy to Grace Davy, 22 August 1812, in Fulford et al. *The Collected Letters of Sir Humphry Davy*, vol. 2: 339. Written from Dunrobin Castle, the Scottish seat of the Marquess of Stafford. Davy managed to namedrop a further two dukes and an earl with whom they would be staying.
- 41 The research for this essay was funded by the European Research Council under the European Union's Horizon 2020 research and innovation program (Project CIRGEN, ERC Grant Agreement No 787015). I am thankful to the Max Planck Institute for the History of Science in Berlin (MPIWG-Berlin) in which part of this research took place.

- 42 On wet-nursing see Sussman, *Selling Mother's Milk*; Valerie Fildes, *Wet Nursing*.
- 43 For a comparison on the situation in other founding houses, see Fuchs, *Abandoned Children and Levene, Childcare, Health and Mortality at the London Foundling Hospital, 1741–1800*. See also Styles, 'Objects of Emotion'.
- 44 On the Spanish intellectual and political context in which the Junta de damas was set up, see Serrano, 'Chemistry in the city', 2013; Bolufer Peruga, 'Neither Male, Nor Female'; and Bolufer Peruga, 'Women in Patriotic Societies'.
- 45 On numbers as a measure of objectivity, see Porter, 'Making Things Quantitative', 1994.
- 46 A good revision of the historiography can be found in Jardine, 'State of the Field', 2017. See also Bittel, Leong, and von Oertzen, 'Introduction' and Oertzen, 'Keeping Prussia's House in Order'. On notebooks and note taking as paper-technologies, see Heesen, 'The Notebook: A Paper-Technology'; Yeo, *Notebooks, English Virtuosi, and Early Modern Science*. Also useful is Blair, *Too Much To Know*. On paperwork, lists and other literary technologies, see Kafka, 'Paperwork', 2009; Yale, 'The history of archives', 2015; Delbourgo and Müller-Wille, 'Listmania', 2012.
- 47 Details of how the inscription of babies in legend books worked in Serrano, 'Bookkeeping for Caring'.
- 48 Hess and Mendelsohn, 'Case and series', 2010.
- 49 Oertzen, Rentetzi, and Watkins, 'Finding Science in Surprising Places', 2013.

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