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BENJAMIN SHEARS

The Science of Success: Madame du Châtelet's Scientific Corpus in University of Oxford Collections

This article examines the scientific texts written by Madame du Châtelet, one of the most well-known female scientists of the eighteenth century. It uses the material texts that are available in the University of Oxford collections to craft an intimate portrayal of a woman who managed to attain her intellectual apotheosis in a world dominated by the *Hommes de Lettres*. The article is concerned with the materiality of her texts, rather than their contents, thus exposing a raw look at detail often missed in scholarly practice. In so doing, what follows is a systematic chronology of how du Châtelet's works were received physically. It is this focus on the exchange of physical objects that shows not just du Châtelet's endeavour (in, for example, rivalling the prodigious Voltaire), but her success, too. Additionally, the article argues that du Châtelet constructed a stage from which to publicise her achievement and rigour, mainly through the translation of one of the century's most prolific texts. Ultimately, Madame du Châtelet is shown to be an author and scientist whose works engaged in and shaped the great discourse of epistemology that defined the Enlightened age.

Fashioning an Image: Introduction

Émilie, Marquise du Châtelet¹ (1709-1749) was a French scholar, and one of the few well-recognised female scientists of the eighteenth century, along with the likes of Laura Bassi and Caroline Herschel. In France, du Châtelet is perhaps the most well-known and successful women scientist of the eighteenth century. As has been duly noted, '[d]e son vivant', du Châtelet enjoyed '[une] réputation scientifique européenne'.² Nevertheless, to assume that she was immediately successful is to underestimate the importance of her own extraordinary commitment. She was detailed and methodical in her approach to scientific endeavour, and this is evident in her texts. Indeed, she was recognised for her excellent contributions to the field in numerous ways, including when the Académie des Sciences de Paris published some of her work.

¹ From hence referred to as 'du Châtelet'.

² 'throughout her lifetime'; 'a Europe-wide scientific reputation' (all translations are my own, unless otherwise indicated). *Émilie du Châtelet, 1706-1749 : Une femme de sciences et de lettres à Créteil. Catalogue de l'exposition*, ed. by Mirielle Touzry and Geneviève Artigas-Menant, p. 92 <http://bibliotheque.u-pec.fr/servelet/com.univ.collaboratif.utilis.LectureFichiergw?ID_FICHER=1259766018095> [accessed 15 March 2019].

However, the focus of this article is not du Châtelet's general approach to scientific conjecture and discourse, but rather what her physical texts – namely the production and reception thereof – can tell us about how successful she was. This essay will examine the *Dissertation sur la nature et la propagation du feu* ('Dissertation on the Nature and Propagation of Fire') and the *Institutions physiques* ('Foundations of Physics'), which are often seen as her crowning achievements in the field of science, as physical objects, rather than from the perspective of their content. By investigating when and where these texts were produced and published, it will be shown how du Châtelet attained notoriety. By analysing the contemporary reception of her texts, the article will characterise how her reputation became solidified as she went on to broaden her scientific pursuits. Other texts by du Châtelet (and held in Oxford collections) will be examined, such as the *Éléments de la philosophie de Newton* and her translation of Newton's *Principia Mathematica*; this will uncover how her reputation grows as she uses translations to augment her international standing during the eighteenth century.

In terms of a theoretical approach to this topic, as far as is possible, the communications circuit that Robert Darnton draws with respect to the book trade will be followed.³ The key components of the circuit that will be explored are: the publishers, the printers, and (wherever possible) the booksellers. The texts will be viewed in the same way as D.F. McKenzie observes, as objects upon a journey, and not from the point of view of their content.⁴ This approach will frame the journey, whether materially or symbolically, in terms of the success or failure of du Châtelet. Unfortunately, because 'we have no best-seller lists or statistics on book "consumption" for the early modern period' in broad terms, it is very difficult to consider the economic implications of du Châtelet's texts.⁵ However, The French Book Trade in Enlightenment Europe Project covers the period between 1769 and 1794 from this angle, helping to situate this writer's texts within the larger network of more well-known French writers in the eighteenth century, such as Voltaire.⁶ Indeed, there are very detailed reviews of her texts, which show that her texts were well-received at the time they were published.

Igniting the Fire: *Dissertation sur la nature et la propagation du feu*

Chronologically, in the main texts under consideration, the *Dissertation sur la nature et la propagation du feu* comes first, initially published in 1739.⁷ Unfortunately, the only edition available in the University of Oxford is that of 1744, held in the Weston Library.⁸ In 1736, the *Mercure de France* and the *Gazette de France* purportedly used Isaac Newton's work on

³ Robert Darnton, 'What is the History of Books?', in *The Book History Reader*, ed. by David Finkelstein and Alistair McCleery, 2nd edn. (Oxford: Routledge, 2008), pp. 9-26 (p. 12).

⁴ D.F. McKenzie, *Bibliography and the Sociology of Texts* (Cambridge: Cambridge University Press, 1999).

⁵ Robert Darnton, 'Reading, writing, and publishing in eighteenth-century France: A case study in the sociology of literature', *Daedalus*, 100.1 (1971), 214-56 (p. 219).

⁶ Simon Burrows and others, 'The French Book Trade in Enlightenment Europe Project, 1769-1794' <<http://fbtee.uws.edu.au/stn/>> [accessed 25 March 2019].

⁷ Beatriz Wallace and others, 'Du Châtelet (1706-1749)' <<http://projectvox.library.duke.edu/du-chatelet-1706-1749>> [accessed 25 March 2019], section 2.2. Hereafter 'Wallace'.

⁸ Émilie du Châtelet, *Dissertation sur la nature et la propagation du feu* (Paris: Prault, 1744). The edition held in the Weston Library has the classmark 'Meerm. 713 (1)', forming part of the Meerman Collection.

fire to devise the following competition question: what is fire? We know that ‘Du Châtelet and Voltaire embarked on this project together’, but they also reached a point when they intensely disagreed with each other’s views.⁹ Perhaps the most fundamental disagreement in this regard was the fact that, whilst Voltaire believed that ‘fire had weight, was subject to gravity, and, as Newton asserted, was “matter”’, du Châtelet did not believe the same.¹⁰ Their disparate opinions on the subject matter likely led to du Châtelet to articulating what she thought to be the correct argument regarding the nature and propagation of fire in the *Dissertation*.

The 1744 edition of du Châtelet’s *Dissertation* in the Weston Library is given the ‘Approbation & Privilège du Roi’, which was the government approval for manuscripts in France during the eighteenth century; though not strictly necessary to publish a text, most well-recognised texts at this time have this approval. Like most of Voltaire’s texts that were published in Paris, du Châtelet’s text was published by Prault. As well as the royal approval, the fact that her publisher was the same as Voltaire’s (indubitably one of the century’s most prolific and successful authors) may show her favourable position in the field. The *Dissertation*’s bibliographic information is as follows:

[6] pages of introductory matter (n.b. [] = unnumbered pages)
 139 numbered pages, the main *Dissertation*
 38 numbered pages, Lettre de M. De Mairan
 37 numbered pages, Réponse par Du Châtelet
 Title vignette
 1 full-page image, on p.54
 19.5cm format – height
 Octavo (8°)¹¹
 Printed Commentary: Comments summarising argument on each paragraph/ new point
 Author: published anonymously
 Bibliography/References: none

This copy of the *Dissertation* is a typically-bound text of the period.¹² The *Dissertation* has full leather binding with a panel design and a red label on the spine, although this is much harder to identify colour-wise, given that the text seems to have been well-handled, and the colour has somewhat faded on the binding; the gold hand-sewn end bands look to be well-worn, too.¹³

⁹ Judith P. Zinsser, *La Dame d’Esprit: A Biography of the Marquise Du Châtelet* (London: Penguin, 2006), p. 154.

¹⁰ Zinsser, p. 157.

¹¹ ‘Octavo’ means that the book comprises one or more full sheets on which 16 pages of text are printed; then they are folded three times, leaving eight leaves. Hence, a book printed in octavo represents 1/8 of the size of the original sheet.

¹² ‘History of Binding. 18th Century: Elaboration and Simplicity’ <<https://lib.msu.edu/exhibits/historyofbinding/18thcentury/>> [accessed 25 March 2019].

¹³ As mentioned above, this version of the *Dissertation* belongs to the Meerman book collection in the Bodleian Library at the University of Oxford. Gerard Meerman was a wealthy book collector who died in 1815, and his son, John Meerman, sold his father’s collection at a large sale in The Hague, from which the Bodleian Library purchased around 1500 volumes of different texts in 1824. Du Châtelet’s *Dissertation* was sold for Fl. 1 St. 16, which was the eighteenth-century Dutch currency, ‘Fl.’ for guilder – derived from fl. (Florin), an ancient currency – and ‘St’ for Stuiver. *Catalogue of books purchased for the Bodleian Library at the sale of M. Meerman at the Hague, June 8-July 4, 1824 : with a statement of expenses attending the purchase* (Oxford: Bodleian Library, 1824), p. 6, under ‘Chastelet’.

In terms of the detail of the physical edition, from the opinion of the librarian (written in 1744, when the text was published), it is clear that, originally, the *Dissertation* was composed in 1738 for the Académie des Sciences; the librarian notes that du Châtelet did not win the prize, but that – rather extraordinarily for the time – the *Dissertation* was nevertheless published in the *Recueils de l'Académie*.¹⁴ In fact, the *Dissertation* is included in the compendium of essays, the *Recueil des Pièces qui ont Remporté le Prix de l'Académie Royale des Sciences en 1738*.¹⁵ Indeed, the fact that it was printed by the 'Royal Printer in Paris' offers more evidence that her essay had rapidly gained recognition in scholarly scientific circles. Moreover, in the 1739 edition of the *Journal de Trévoux*, the editors allude to the works by both Voltaire and du Châtelet on the nature of fire, suggesting the former is 'd'une [...] de nos premiers Poètes', and the latter is from 'un [...] jeune Dame d'un haut rang'.¹⁶ Interestingly, Voltaire and du Châtelet – as well as sharing a publisher – are referenced together. This portrays du Châtelet as a credible and intelligent woman scientist in eighteenth-century France. In fact, until this point, 'the Académie had never published a dissertation by a woman.'¹⁷

In the eighteenth volume, letter CCLXIII of the *Observations sur les écrits modernes*, the pieces by Voltaire and du Châtelet are discussed in further detail by contemporary reviewers. The advertisement for each dissertation notes that both 'ont paru des meilleures de celles qui ont été envoyées' to the judges of the competition.¹⁸ It is probable that du Châtelet being named in the *Observations* makes her work well-known to learned readers. Regardless, it is surprising that du Châtelet is explicitly mentioned, given she wanted to maintain anonymity. The *Observations* praises du Châtelet's text for its 'érudition physique [...] Que de remarques sçavantes, que d'observations fines, que d'expériences qui embrassent presque toute la Physique, que de vues, que de principes !'¹⁹ This review was published during the same year that du Châtelet's *Dissertation* appeared in the *Recueil des Pièces*, which was in 1739. Thus, the quick, congratulatory reviews that du Châtelet received upon the publication of the *Dissertation* reflect the strength of her position as an eighteenth-century French scientist. Furthermore, as Elisabeth Badinter argues, du Châtelet was trying to distance herself from Voltaire's idea of the nature of fire, and it is this disagreement that ultimately led her to publish her own *Dissertation*. Yet, as Badinter maintains, throughout 'tout cet été 1737, Émilie regarde Voltaire faire ses expériences et s'acharner à découvrir la nature du feu.'²⁰ Voltaire provided du Châtelet with the spark of enthusiasm to challenge his conjectures: she writes in a letter to Maupertuis on the 21st June, 1738 that 'L'ouvrage de M.

¹⁴ Wallace, section 1.3.

¹⁵ 'Collection of the Pieces that have Won the Royal Academy of Sciences Prize in 1738'; Wallace, section 2.2.

¹⁶ 'one of our foremost poets'; 'a lady of high rank', [Anon.], 'Nouvelles Littéraires', *Mémoires pour l'Histoire des Sciences & des beaux Arts* (May 1739), 1109-136 (p. 1135). Repr.: *Journal de Trévoux; ou, Mémoires pour servir à l'histoire des sciences et des arts*, vol. 39 (Geneva: Slatkine Reprints, 1968), pp. 282-88 (p. 288) <<https://gallica.bnf.fr/ark:/12148/bpt6k30671r/f280.item>> [accessed 25 March 2019]. The article errors in these citations reflect apparent errors in the original.

¹⁷ Zinsser, p. 169.

¹⁸ 'appeared among the best of those that were sent in'. [Anon.], 'Lettre CCLXIII', *Observations sur les écrits modernes*, 18 (1739), 169-92 (pp. 169-70). Repr.: Pierre-François Guyot Desfontaines, *Observations sur les écrits modernes, 1735-1743. Volume III, comprenant les tomes XVII à XXIV* (Geneva: Slatkine Reprints, 1967), pp. 138-44 (pp. 138-39) <<https://hdl.handle.net/2027/mdp.39015014811486?urlappend=%3Bseq=142>> [accessed 25 March 2019].

¹⁹ 'full of spirit, of erudition in physics.... what learned remarks, what fine observations, what experiences that encompass almost all of physics, what views and principles!' *Ibid.*, p. 170 (repr.: p. 139).

²⁰ 'All the summer of 1737, Émilie watches Voltaire perform his experiments and strive to discover the nature of fire.' Elisabeth Badinter, *Mme du Chatelet, Mme d'Épinay ou l'Ambition féminine au XVIIIe siècle* (Paris: Flammarion, 2006), p. 304.

de Voltaire, qui était presque fini avant que je n'eusse commencer (sic) le mien, me fit naître des idées et l'envie de courir la même carrière me prit.²¹ In fact, she questioned 'toutes ses idées dans [s]on ouvrage', and so projected her own voice in the battle for the prize, which, ironically, neither of them would win.²²

Foundations of Fame: *Institutions de physique*

However, du Châtelet's failure to win the Académie prize for her *Dissertation* pushed her to test further the boundaries of scientific discourse. Often considered her 'Magnum Opus on Natural Philosophy', the *Institutions de physique / Institutions physiques* was a project for du Châtelet from even the early months of 1736, when she is said to have first considered writing about Newtonian physics, in all likelihood due to Voltaire's 1738 publication of the *Éléments de la philosophie de Newton* (in which du Châtelet was named as co-author).²³ Their difference of opinion and consequent friendly rivalry propelled both Voltaire and du Châtelet to produce scientific texts; these were derived from long-standing scientific principles upon which the world was based. The first edition of the *Institutions* text was published in 1740 by Prault in Paris, the same publisher as the *Dissertation*. Although the royal approbation was conferred on the text on September 18th, 1738, du Châtelet did not have it published until 1740, owing to the various changes and modifications she made to the text before publication. At the University of Oxford, both the Taylor Institution Library and Christ Church College Library have an edition of the text. The former has the first edition, published in 1740, and the latter has the second edition, published in 1742.²⁴ The bibliographic information for the first edition of 1740 is as follows:

[6] pages of introductory matter (n.b. [] = unnumbered pages)
 450 numbered pages
 [28] pages, end papers
 [12] unnumbered full-page plates (11 folded) - illustrations
 Title vignette
 20cm format – height
 Octavo (8°)
 Printed Commentary: Comments summarising argument on each paragraph/ new point
 Author: published anonymously
 Bibliography/References: included
 Catalogue: Bookseller's catalogue, pp. 473-476
 Errata: last [2] pages of book (pp. 477-478). Errata was only used in cases where errors were detected too late to be corrected in the normal way, but before the finished book was distributed.

²¹ 'The work of Mr. Voltaire, which was almost finished before I had started my own, sparked ideas within me and I was seized by the desire to embark upon the same profession.' Ibid., p. 304.

²² 'all his ideas in my work'. Ibid., p. 305.

²³ Karen Detlefsen, 'Émilie du Châtelet' (2014), in *Stanford Encyclopedia of Philosophy* <<https://plato.stanford.edu/entries/emilie-du-chatelet/#NewAtt>> [accessed 17 March 2017]; Voltaire, *Elémens de la Philosophie de Neuton* (London: [n. pub], 1738) <<https://gallica.bnf.fr/ark:/12148/btv1b8622062t>> [accessed 3 April 2019].

²⁴ The first edition, held in the Taylor Institution (classmark ZAH.III.B.65), is [Émilie du Châtelet], *Institutions de physique* (Paris: Prault, 1740). The second edition, held in Christ Church College Library (classmark ZO.7.12) is Émilie du Châtelet, *Institutions physiques* (Amsterdam: Compagnie d'Amsterdam, 1742).

The bibliographic information for the second edition of 1742 is as follows:

[8] pages of introductory matter (nb. [] = unnumbered pages)
 542 numbered pages
 [36] pages, end papers
 [11] leaves of plates at end (some folded) - illustrations
 Title vignette, frontispiece of du Châtelet (full page)
 20cm format – height
 Octavo (8°)
 Printed Commentary: Comments summarising argument on each paragraph/ new point
 Author: ‘Madame la Marquise du Chastellet’
 Bibliography/References: ‘Tables des Matières principales contenues dans ce volume’
 Includes Index
 Errata: last [2] pages of book.

Besides the fact that the 1740 edition is titled *Institutions de Physique*, and the 1742 edition is titled *Institutions physiques*, the first difference to note is that the 1740 edition is published anonymously, whereas the 1742 edition names ‘Madame la Marquise du Chastellet’ on the title-page. The text is addressed to ‘Mr. son Fils’; there is also a sub-title: ‘Nouvelle édition, corrigée & augmentée, considérablement par l’Auteur’.²⁵ This tells that us that, within two years, du Châtelet might have had a change of heart about her anonymity in her published works. Perhaps the success she enjoyed with the *Dissertation* precipitated a new-found pride in her work, which she wanted to make known. Du Châtelet may have wanted to claim the work, which received widespread recognition as a fundamental discussion of the foundations of the physical world, and solidified her growing reputation. The other important difference between these two texts is that the second edition of 1742 was printed in Amsterdam, whereas the first edition was printed in Paris, by the same publisher as the *Dissertation*, Prault.²⁶

The 1742 edition was printed ‘À Amsterdam Aux dépens de la compagnie’ (in Amsterdam at the expense of the Compagnie d’Amsterdam). In the eighteenth century, Amsterdam was a place for the publication of books which might have scandalised France; the same is true of London. Both countries had numerous French publishers, many of them Huguenots. Indeed, the text was also printed in London in 1741.²⁷ The Taylor Institution edition is markedly less damaged than the one held in Christ Church Library. The black-and-white illustrations are clear and well-preserved. There is precise detail of geometrical analysis through diagrams, and the spine is decorated with gold tooling. Although clearly not a Cambridge panel design (due to its relative lack of detail and ornateness on the spine, as well as the dull colour), it is a typical eighteenth-century design for an original text.

This 1742 edition was acquired by Christ Church, Oxford in 1904 from Charles Lloyd (1784-1829), whose signature can be found on the inside of the front cover: ‘C. L Lloyd’.²⁸

²⁵ ‘addressed to Mr, her son’; ‘New edition, corrected and considerably expanded by the author’.

²⁶ Jean-Dominique Mellot and Élisabeth Queval, *Répertoire d'imprimeurs/libraires (vers 1500-vers 1810)* (Paris: Bibliothèque Nationale de France, 2004), p. 457.

²⁷ Wallace, section 2.2.

²⁸ Additionally, the same edition can be found at the British Library, under the shelf mark ‘General Reference Collection DRT Digital Store 8704.bbb.30’: see <<http://explore.bl.uk/BLVU1:LSCOP-ALL:BLL01017014338>> [accessed 17 March 2017].

There is a title-page in red and black, with a full-page vignette of the typical portrait of du Châtelet, which is the famous depiction of the author at 44 years old. The binding of the text is very loose, and it looks to have been bound in eighteenth-century wrappers. The illustrations inside the text sometimes cover full pages, and some of them are folded; they mostly depict mathematical/geometrical analysis and diagrams, which correspond to a particular chapter or paragraph of the text. The book itself is falling apart, and looks to have been damaged heavily by water. This may point to either its frequent usage, or to a careless owner.

In terms of the dissemination of the *Institutions*, the large variety of translations that were quickly produced indicate the text's influence. More specifically, it is clear that both German and Italian translations of the *Institutions* were published in 1743; the former in Halle/Leipzig, and the latter in Venice.²⁹ Of particular significance to the 1742 edition is that it includes du Châtelet's exchange with Jean-Jacques Dortous de Mairan, along with his 1728 dissertation on the proper measure of the dead force of bodies, translated into Italian. The inclusion of this exchange illustrates the contemporary reception of du Châtelet's text in the world of the Republic of Letters.

In the Limelight: Contemporary Reactions to the *Institutions*

The *Journal des Savants* was the major French government publication specialising in "Philosophy, Science, and the Arts".³⁰ It was one of the earliest and most influential academic journals published in early-modern Europe – first appearing in 1665, and still published today.³¹ The remarkable fact that du Châtelet had sent copies of the *Institutions* to the 'most important of Europe's Republic of Letters' and that the *Institutions* appeared in the *Journal* 'placed the author among the *savants* by definition.'³² The short pamphlet by de Mairan that also appeared as a review separately was his first public act as the newly-elected perpetual secretary of the Académie royale des sciences.³³ This pamphlet addressed to du Châtelet provided validation of her scientific mind, and demonstrated that a woman could produce leading research in eighteenth-century scholarly circles.

Unfortunately, the review by de Mairan was not positive, instead criticising the foundations upon which du Châtelet's *Institutions* were based: 'living forces'. He objected to du Châtelet's disagreement with Newtonian principles.³⁴ The main question that started the debate between de Mairan and du Châtelet was the following: 'Was the force of moving bodies equal to the mass times the velocity squared, as Leibniz claimed, or to the mass times the simple velocity'? Du Châtelet held the former view, and de Mairan held the latter, more traditional, view.³⁵ In his critique, de Mairan drew upon gender stereotypes to emphasise du Châtelet's femininity: he abhorred her constant 'changement' and inability to embark

²⁹ Wallace, section 2.2.

³⁰ Zinsser, p. 167.

³¹ Wallace, section 2.5.

³² Zinsser, p. 167.

³³ Zinsser, p. 191.

³⁴ Zinsser, p. 192.

³⁵ Robert L. Walters, 'Du Châtelet-Lomont, Gabrielle-Émilie (1706-1749)', in *Routledge Encyclopedia of Philosophy: Descartes to gender and science*, ed. by Edward Craig (Abingdon: Taylor & Francis, 1998), pp. 131-33 (p. 132).

upon a fixed and direct course.³⁶ However, this criticism was ostensibly tempered by his final remarks in the letter: ‘Je me flate, madame, que vous regarderez toutes ces réflexions comme une preuve du cas que je fais de vos lumières, & de ce bon esprit qui ne sçaurait vous permettre de résister au vrai, quand il se présentera à vous sans nuage.’³⁷

Despite this denigration of du Châtelet’s work, de Mairan’s review does not match the general reception of the text. It is possible that de Mairan, after his newly acquired role, wanted to use his critique of du Châtelet merely to establish his importance to the Republic of Letters. For example, although the December 1740 review of the *Institutions* starts by outlining that, historically, ‘L’esprit philosophique [...] se trouve plus communément parmi les hommes que les femmes’, the review praises du Châtelet’s scholarly practice in the *Institutions*.³⁸ More specifically, that ‘[I]es sciences lui [à du Châtelet] auront la double obligation de contribuer à leur avancement par ses lumières & par son exemple’ clearly glorifies the author of the *Institutions*, citing her as a valuable asset to the eighteenth-century French academic community.³⁹

There was renewed praise of the *Institutions* in the *Journal de Trévoux*, an influential publication printed by the Jesuits on a monthly basis in France (1701-1782). The journal served to publish critical reviews of scholarship.⁴⁰ In the May review, the stylistic devices employed in the *Institutions* are praised, particularly ‘[I]e ton de l’instruction familière, aisée, intelligible & cependant noble & pleine de bienséance’, and the reviewer embraces that ‘[I]’auteur des *Institutions* nouvelles, pense fort modérément sur Descartes, que d’autres veulent trop rabaisser’, giving more weight to Cartesian observation.⁴¹ However, the review also invites reader opinion and discrimination on the question of ‘les forces vives’, the subject of the dispute between du Châtelet and de Mairan: ‘C’est au Public de décider. En un mot, ces nouvelles institutions de physique, nous paroissent un bon Recueil de physique moderne, fait, selon les intentions de l’Auteur, pour un jeune Seigneur, qui doit en sçavoir jusqu’à un certain point.’⁴²

Whilst the previous month’s review does not mention du Châtelet by name, the June issue does, even though the London edition of the *Institutions* of the same year (1741) was

³⁶ ‘changing mind’. Jean-Jacques Dortous de Mairan, *Lettre de M. de Mairan [...] à Madame *** [la marquise du Châtelet] sur la question des forces vives, en réponse aux objections qu’elle lui a fait sur ce sujet dans ses ‘Institutions de physique’* (Paris: [n. pub.], 1741) <<https://gallica.bnf.fr/ark:/12148/bpt6k73081z>> [accessed 25 March 2019], p. 6.

³⁷ ‘I flatter myself, Madame, that you will regard all of these reflections as a proof that I attach great importance to your knowledge & your good mind, which would not know how to permit you to resist the truth when presented to you without clouds.’ *Ibid.*, p. 37; see also Zinsser, p. 192.

³⁸ ‘The philosophical spirit is more commonly found among men than women’. [Anon.], ‘Institutions de Physique’, *Journal des Sçavans* (1740), 737-54 (p. 737). <<https://gallica.bnf.fr/ark:/12148/bpt6k56589d/f715.item>> [accessed 25 March 2019].

³⁹ ‘the sciences have a two-fold duty (to Madame du Châtelet), at once to contribute to their advancement through her wisdom, and to lead by her example’. *Ibid.*, p. 737 [accessed 25 March 2019].

⁴⁰ Wallace, section 2.5.

⁴¹ ‘The tone is one of familiar instruction, at once graceful, understandable, yet most noble and seemly’; ‘the author of the new Foundations, thinks most sensibly on Descartes, whom many seek to belittle excessively’. [Anon.], ‘Institutions de Physique’, *Mémoires pour l’Histoire des Sciences & des beaux Arts* (May 1741), 894-927 (pp. 895, 897). Repr.: *Journal de Trévoux; ou, Mémoires pour servir à l’histoire des sciences et des arts*, vol. 41 (Geneva: Slatkine Reprints, 1968), pp. 228-36 (pp. 228, 229) <<https://gallica.bnf.fr/ark:/12148/bpt6k30673f/f226.item>> [accessed 25 March 2019].

⁴² ‘It’s up to the public to decide. In a word, these new Foundations, seem to us to be a good collection of modern physics; one made, according to the author’s intentions, for a young master who is expected to know a certain amount about it.’ *Ibid.*, p. 927 (repr.: p. 236).

still published anonymously. The reviewer describes du Châtelet as displaying ‘[I]a vivacité & la finesse du style’, which led readers to the conclusion that the text was written by ‘une Dame fort versée dans ces matières & pleine d’esprit; c’est-à-dire, Madame la Marquise du Ch...’⁴³ It is not the abundant praise and recognition du Châtelet receives in this issue that points to her success as much as it is her work being described as ‘sçavant’.⁴⁴ As well as an indication of her intelligence, the term simultaneously assimilates her with the Savants of the Republic of Letters in eighteenth-century France and alludes to the *Journal des Savants*, which (as previously shown) had already published a glowing review of her *Institutions*. Thus, the author of this review in the *Journal de Trévoux* drew readers’ attentions to the achievements of this young female scientist. During 1741, the *Journal des Savants* also published their consecutive review, which was subsequently published in Amsterdam.⁴⁵ The international reach of du Châtelet’s *Institutions* mirrors the success she achieved in pursuing such great intellectual heights.

Legacy Left Through Translation: du Châtelet’s *Principes mathématiques*

In 1738, Voltaire had credited du Châtelet as co-author of the *Éléments de la philosophie de Newton*, the frontispiece of which had a very flattering image of du Châtelet, portraying what has been described as Voltaire’s “Minerva of France”.⁴⁶ Newton’s *Philosophiæ Naturalis Principia Mathematica* was, and still is, a notoriously difficult text to interpret and translate.⁴⁷ Hence, du Châtelet’s translation of Newton’s text conveys her commitment to the subject. Christ Church Library has the two volumes of du Châtelet’s translation in its Special Collections holdings.⁴⁸ The bibliographic information for this text (both volumes) is as follows:

Title vignette (half-page) on title-page and on introductory page, featuring geometrical objects

Illustrated – folds out to full page

Quarto (4°)

Printed Commentary: Comments summarising argument on each paragraph/ new point

Author: ‘Par feu Madame la Marquise Du Chastellet’

Bibliography/References: ‘Table alphabétique des matières contenues dans les principes mathématiques de la Philosophie naturelle’; Préface historique by Voltaire, p. [v]-xiii

Du Châtelet died on 10th December 1749, due to complications in childbirth; therefore, she never saw the published editions of her *Principes mathématiques*. There was a 1756

⁴³ ‘the vivacity and finesse of the style’; ‘that it belonged to a young woman, well-versed in these matters, and spirited’; ‘that is to say, Madame the Marquise du Ch...’. [Anon.], ‘Dissertation sur l’Estimation et la Mesure des Forces Motrices des Corps. Par M. de Mairan ...’, *Mémoires pour l’Histoire des Sciences & des beaux Arts* (June 1741), 1073-1101 (pp. 1099-100). Repr.: *Journal de Trévoux; ou, Mémoires pour servir à l’histoire des sciences et des arts*, vol. 41 (Geneva: Slatkine Reprints, 1968), pp. 272-79 (p. 279) <<https://gallica.bnf.fr/ark:/12148/bpt6k30673f/f272.item>> [accessed 25 March 2019].

⁴⁴ ‘scholarly’. Ibid., p. 1099 (repr. p. 279) [accessed 25 March 2019].

⁴⁵ Wallace, section 2.5.

⁴⁶ Voltaire (1738), p. 3; Zinsser, p.164.

⁴⁷ Zinsser, p. 242.

⁴⁸ Isaac Newton, *Principes mathématiques de la philosophie naturelle*, trans. by Émilie du Châtelet (Paris: Desaint & Saillant, 1759), 2 vols. In Christ Church Library, these texts have the classmarks ZO.5.9a (vol. 1) and ZO.5.9b (vol. 2).

edition of the text that was incomplete, published by Desaint & Saillant.⁴⁹ The texts in Christ Church Library, however, were published in 1759, and they include the royal approbation and privilege; they were published by Desaint & Saillant in 1759, and the bookseller was Lambert.⁵⁰ Moreover, the ‘Exposition Abregée du Système du Monde, et Explication des Principaux phénomènes Astronomiques Tirée des principes de Mr Newton’ is also present in this 1759 edition.⁵¹ From the second volume, it is shown that the text came into Christ Church, Oxford in 1903, as there is a visible bookplate before the introductory matter in the text. This bookplate is similar to the one below and displays the college crest of Christ Church. In terms of other physical details, the binding of both volumes is noted as being vellum (from a calf), the most common kind of leather binding, even today. The text has title ornaments, and comprises half titles, too. The first volume of the text is a translation of Newton’s original *Principia*, and includes a review by Alexis Clairault; the second volume is a commentary on Newton’s principles, and their relationship to the workings of the world.

There is, however, not a single image of du Châtelet in the volumes. Yet, there is detail of the printer and the bookseller, as previously mentioned. As well as this, in the draft version of the manuscript, held in the Bibliothèque nationale de France, the text has later additions, including: writing over paragraphs; cutting phrases; crosses in the margin; abbreviations; lack of finesse, particularly with regards to the drawing of Halley’s comet, which she did not have enough time to finish.⁵² Du Châtelet intended the *Principes mathématiques* to be finished and published soon after the royal privilege was given, on the 7th March, 1746, but this was not to be. Due to complications with printing, it would only be after her death that her work would be recognised more publicly, for what d’Argenson called its elegant, neat and strong translation.⁵³ As Badinter and Muzerelle have shown, ‘nous lui devons, aujourd’hui encore, la seule traduction française complète des *Principia* de Newton, et cette traduction est toujours valable en regard des progrès accomplis depuis par l’historiographie scientifique’.⁵⁴ As a scientist, she changed the landscape of scientific enquiry for ever, showing that women could understand and interpret (just as well as men) the most challenging conceptual ideas present in the eighteenth century.

Conclusion

This essay has taken some major works of Madame la Marquise du Châtelet and explored their significance as objects in terms of her scientific reputation in the eighteenth century. The essay first examined the *Dissertation sur la nature et la propagation du feu*; using the 1744 edition, held in the Weston Library, Oxford, the detail of the text was shown, and it was clear how du Châtelet established herself as a valuable member of the

⁴⁹Wallace, section 2.3.

⁵⁰Mellot and Queval, *Répertoire d’imprimeurs/libraires (vers 1500-vers 1810)*; Lambert is listed as being born ‘1722?; died 31 July 1787’, p. 336.

⁵¹Abridged exposition of the system of the world, and explanation of the principal astronomic phenomena, drawn from the principles of Mr. Newton’, *Ibid* [accessed 17 March 2017].

⁵²The text can be found on shelf mark Ffr.12266; Zinsser, p. 243.

⁵³Zinsser, p. 243.

⁵⁴‘We owe to her what is still, even today, the only complete French translation of Newton’s *Principia*, and this translation is still useful in light of the progress since made by scientific historiography.’ Elisabeth Badinter and Danielle Muzerelle, *Madame Du Châtelet: La femme des Lumières* (Paris: Bibliothèque nationale de France, 2006), p. 92.

scientific community through her association with Voltaire. Although neither Voltaire nor du Châtelet won the prize for which both dissertations were submitted, the latter received wide praise for her submission. The essay then moved to discuss her *Institutions de physique / Institutions physiques*, analysing the 1740 edition, held in the Taylor Institution Library, and the 1742 edition, held in Christ Church College Library. The contemporary reviews of this text highlighted du Châtelet's extraordinary success in scientific research, simultaneously proving that a female author could have as much — if not more — credibility as her male counterparts. Du Châtelet's final contribution to scholarship was her translation of Newton's magnum opus, the *Principia Mathematica*. Her reputation grew along with her confidence, tackling one of the most challenging discourses on scientific method ever written. Her translation was brave and unique: she still stands as the only author to have translated the entire *Principia Mathematica* into French. In summary, the trajectory of du Châtelet's academic career began simply by answering a question posed by the *Mercure de France* and the *Gazette de France*; it ended by leaving an indelible mark upon scientific endeavour. Thus, du Châtelet died as an emblem of unprecedented progress in eighteenth-century France, and she worked hard to prove her worth amongst the other — mostly male — literary élites.

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