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SPECIAL ISSUE

INTRODUCTION

In this special issue all the authors and ourselves as editors would like to make visible the contribution of some women in public life to the field of culture and knowledge; hence, to the development of humankind. An androcentric view of History has neglected the footprints left by female scientists, translators, journalists or travellers. Their participation, attitudes and opinions have been overlooked by the set of institutional discourses and figures who have held the keys to education and knowledge. Interestingly, Maria Mitchell,¹ in the last quarter of the nineteenth century claimed that

The great gain would be freedom of thought. Women, more than men, are bound by tradition and authority. What the father, the brother, the doctor and the minister have said has been received *undoubtedly*. Until women throw off this reverence for authority they will not develop. When they do this, when they come to the truth through their investigations, *when doubt leads them to discover*, the truth which they get will be theirs and their minds will work on and on, unfettered. (Chapter IX, *Life at Vassar College*)

An Aristotelian conception of women as inferior beings—even intellectually—found a perfect match in the Christian interpretation of the biblical original Fall representing Eve as an alienated and punished woman, corrupt and corrupting. This view clearly provided the justification for the traditional roles of women in society as different from those men had been granted. Women’s involvement in the primary nurturing and caring functions and the household space activities fostered the oblivion of their participation and full commitment to other spheres of life, where they were also equally active. This has been especially so whenever a particular field became a symbol of power, either cultural, scientific or political.

Far behind remain the claims for the mythical matriarchies where prehistoric women might have exerted their own agency. History having been written in “male words”, a female history of science has recently been acknowledged as necessary: it will not only pursue the story of women’s contributions to the evolution of knowledge through one or more disciplines; it will additionally delve into the conditions under which working mothers, daughters, wives or sisters developed their science. Theirs is the story of the mishaps overcome in a male, closed and archaic society, the institutions of which were reluctant to change when threatened by innovation. A study of the history of science from women’s perspective, then, necessarily covers both the personal and scientific grounds and considers the mutual influence between them.

Among the relevant aspects in the rise of a scientific female tradition, linguistic concerns turn crucial, since they precisely reveal the intersections between former privileged male scientific discourses and female, more distinctive voices.



Four of the articles gathered in this issue, those offered by Iria Bello Viruega, Isabel Moskowich, Luis Puente Castelo and Leida María Mónaco, and Begoña Crespo study the way women and men writing about science in English in the eighteenth and the nineteenth centuries would develop diverse linguistic strategies when presenting and arguing for their statements or proving their points in a more or less persuasive way; or their different use of nominalizations in the scientific register as well as the lexical richness as their communicative formats shifted. Five more articles, those by Marta Nadales Ruiz, Mirella Agorni, Ramunė Kasperavičienė, Deborah Uman and Isabel de la Cruz Cabanillas widen the scope of this issue by paying attention to the active female participation in the development of the European scientific practice. In this section, the names of Giuseppa Eleonora Barbapiccola, Sarah Austin and her daughter Lucie Duff Gordon, Margaret Cavendish, Aphra Behn, Elizabeth Carter, Carmen Burgos, Eva Canel, Sofía Casanova, Teresa Escoriaza, Emilia Serrano, Carolina Coronado, Concepción Gimeno, Eulalia de Borbón and Emilia Pardo Bazán are summoned in order to receive due credit for the invaluable and enthusiastic enrolment in the modern sciences: by writing either as authors or as translators of essential treatises; by becoming pioneers in their constant commitment to accuracy and discovery through the observation developed on their journeys; or, last but not least, by preserving the tradition of household recipes containing the practical medicinal lore traditionally associated to women.

In their roles of translators, collaborators, scholars and patrons of scientific activity, women have performed important tasks in the establishment of new sciences, although under the dictates of humanism female learning was acceptable only as part of a moral program of values required to become a good wife and mother. Academic learning was therefore secondary and only high society ladies could come to possess a high cultural level and participate in tasks of a higher quality. Activity in the purely scientific context was discarded, since women could be unseemly too educated according to the standards of the time. Nevertheless, let us simply refer to one of these women, namely, Margaret Cavendish (1623-1674), as an example of their tenacious attitude. An educated lady —married to the Duke of Newcastle, who was also a member of the Royal Society—, she had access to works of contemporary scientists which improved her intellectual level. Ironically, her contribution was to provide a rationalistic view of knowledge arguing against the theoretical assumptions of other coetaneous scientists by reformulating their own theories. Although Cavendish was not accepted in the socio-scientific context of her time, she was allowed to attend as a spectator to the preparation of two experiments by Boyle at the Royal Society: attendance which was only allowed after much discussion on whether or not a woman's entry in the institution should be granted.

¹ MITCHELL, Maria. *The Project Gutenberg EBook of Maria Mitchell: Life, Letters, and Journals by Maria Mitchell*, 2003. Web. <http://www.gutenberg.org/cache/epub/10202/pg10202.html>.



Around a century later, Mary Wollstonecraft,² in a harsh defense of women's rights, contended that

... for the rights of woman, my main argument is built on this simple principle, that if she be not prepared by education to become the companion of man, she will stop the progress of knowledge, for truth must be common to all, or it will be inefficacious with respect to its influence on general practice. (Wollstonecraft, 1792: VII-VIII).

But culture and education would not be the wealth of women until a new religiously-inspired trend of thought considered that well-educated women enriched the life of their husbands. Just as happens today in certain parts of the world, in being barred from education, they could not possibly be integrated in society as full right members. Many women from different parts of the world, as you will see in the pages of this special issue, have fought to form part of the socio-cultural milieu of their times. Some of them were successful, some others were not. The different articles in this compilation will, hopefully, render a modest tribute to some of the female pioneers in history claiming for gender equality.

Guest editors
Begoña CRESPO and María Beatriz HERNÁNDEZ PÉREZ

² WOLLSTONECRAFT, Mary. *A Vindication to the Rights of Woman: with Strictures on Political and Moral Subjects*. London: Printed for Johnson, n.º 72, St. Paul's Churchyard, 1792. Print.



ARTICLES

TRANSLATING SCIENCE POPULARISATION IN THE EIGHTEENTH CENTURY: THE ROLE OF WOMEN IN THE TRANSMISSION OF SCIENTIFIC KNOWLEDGE

Mirella Agorni

Università Cattolica del Sacro Cuore, Milan

ABSTRACT

The subject of this article is women's popularisation of scientific texts in the eighteenth century. Starting from an analysis of the remarkable surge in female writing in Britain in the second half of the eighteenth century, the article attempts to draw a partial or metonymical picture of this phenomenon by means of two case studies which take us beyond the borders of the British Isles. The former concerns Giuseppa Eleonora Barbapiccola's Italian translation of Descartes' *Principles of Philosophy* (1722). The latter illustrates Elizabeth Carter's English translation of an Italian treatise on Newton's optics, Algarotti's *Newtonianismo per le Dame* (1737), which became in fact a handbook for women as a result of the translator's intervention. Both examples illustrate the fundamental role of women in the dissemination of scientific knowledge.

KEYWORDS: translation history, translation studies, women's history.

RESUMEN

El tema de este artículo es la popularización de los textos científicos escritos por mujeres en el siglo dieciocho. Comenzando el análisis en el notable surgimiento de la escritura científica femenina de la segunda mitad del siglo dieciocho, el artículo intenta dibujar un cuadro parcial de este fenómeno mediante el estudio de dos casos que nos llevan más allá de las fronteras de las Islas británicas. El primero es el relativo a la traducción al italiano que hace Giuseppa Eleonora Barbapiccola de los *Principles of Philosophy* (1722) de Descartes. El segundo tiene que ver con la traducción al inglés del tratado italiano sobre la óptica de Newton, *Il Newtonianismo per le Dame* (1737) de Algarotti. Ambos ejemplos ilustran el papel fundamental de las mujeres en la diseminación del conocimiento científico.

PALABRAS CLAVE: historia de la traducción, estudios de traducción, historia de mujeres.



1. BRITISH WOMEN'S WRITING IN THE EIGHTEENTH CENTURY AND THE BIRTH OF THE FEMALE READER

In the second half of the eighteenth century, women appeared to play a fundamental role in British culture. Not only did their writing feature an unprecedented dimension, but it also showed a distinct homogeneous character which allowed women to find an early “room of their own” in the literary marketplace.¹

According to critics such as Armstrong (1989), feminine identity was used instrumentally in the development of a so-called domestic sphere, soon appropriated by a middle class that was still in the process of defining itself in the course of the eighteenth century. Feminine identity was based on an ideology that highlighted the importance of (inner) qualities of mind over (external) physical appearance, but this contrast in fact masked the opposition between traditional aristocratic notions of display (meant in terms of rank and status) and the emerging interest in the natural qualities of the individual. The female image was exploited to embody this new subjectivity, as it represented a kind of power different from those already existing.

The “age of sensibility”, a period running from 1740 to the 1770s, witnessed the emergence of a stress on feelings and sympathy in the discourses of medical science, religion, philosophy and literature. The new emphasis on individual perception and feelings represented a reaction against the early capitalist tendencies of the great commercial development which was taking place in Britain at the beginning of the eighteenth century (Barker-Benfield 1992; Barker and Chalus 1997; Sode-man 2014). Women appeared to exert a peculiar kind of authority over the field of emotions and domestic life, and this had two main consequences: firstly, female images were used instrumentally in a variety of publications and secondly women's writing received unprecedented attention.

Yet, this development cannot be interpreted as a signal for the emergence of proto-feminist tendencies in British in this historical period, The feminine has to be considered as a broad discursive position to be adopted irrespective of the writer's actual sex. Whereas many cultural historians have argued that sensibility indicated the “feminisation” of culture in general and of men in particular, I am of the opinion that, during the period in question, it rather pointed to an instrumental use of gender traits traditionally considered as feminine (Johnson 1995,14).

The new ideology of femininity developed slowly during the decades which spanned from around the mid-eighteenth to well into the nineteenth century in Britain, emerging as a discursive mode initially used in conduct books, magazines and novels for women. Conduct books had traditionally been addressed to aristocratic male readers in the seventeenth century, but in the eighteenth century they began to target almost exclusively young women. Both Richetti (1994) and Armstrong (1989) have argued that the eighteenth century British conduct book

¹ Cfr. Brophy-Bergen 1991; Gallagher 1994; Johnson C. 1988; Schellenberg 2005; Spencer 1986; Todd 1989; Turner 1994.

and the feminine novel after the mid-century somehow foresaw the way of life they depicted, as they anticipated social and economic changes which would in fact take place in the following century.² Furthermore, as Kelly (18) has pointed out, by the mid-century a domestic notion specifically linked to the feminine had already been developed “not only in Britain, but also in France and elsewhere in the continent”. Such a domestic notion was one of the main components of the ideological changes responsible for the emergence of a productive economy centred on the individual, that is a person who strived to set *herself* apart from the world of aristocratic patronage and privileges. Women’s disenfranchisement from the dominant political order made it possible for them to be moulded into a model for the new, modern individual. Thus, the birth of a modern, pre-bourgeois self was anticipated by new definitions of femininity. As Armstrong (66) has memorably put it, “the modern individual was first and foremost a female”.

2. WOMEN AND LEARNING IN EIGHTEENTH-CENTURY ITALY

In order to chart the origins and evolution of women’s increasing importance in British eighteenth-century culture, it would be necessary to widen the scope of this research both from a chronological and geographic point of view, so as to take into account the literature on the so-called *querelle des femmes* produced in Europe since the Middle Ages. An ambitious task for a cultural historian, it goes beyond the scope of this article. Here I shall limit myself to use current historical research in two case studies, drawing a complex picture of the ways in which women exploited certain modes of writing —translation in particular— in order to step into the eighteenth-century “Republic of Letters”. I shall go beyond the geographical borders of the British Isles by drawing into my picture a sample of Italian culture, limited to a short analysis of the role of women in the dissemination of scientific knowledge in the first part of the eighteenth century.

Factors such as the spread of literacy, the progressive secularisation of European’s culture and the waning importance of Latin as the only language of knowledge represented a new opening for women into the publishing world, and more generally into the field of knowledge. As Cavazza (238) has argued, women played a central role both by organising and participating in the socializing practices of the *salon*, started in seventeenth-century France, and soon becoming the centre of diffusion of Enlightenment culture all over Europe. What is more, in the course of the century women were to play an important role both as consumers of texts

² “The early British novel, whether written by a man or a woman, presents domestic life as its recurring central subject and, with its focus on the interior and private lives of characters, moves dramatically away from the traditional concern of literature with public life and masculine heroism in love, war and politics” (Richetti xiv).



and producers of a peculiar type of “mediated” writing, which included translation and adaptation, or rather, popularisation of scientific knowledge.

The importance of Italy in the Enlightenment period has often been undervalued. Owing to the Catholic Church’s condemnation of Galileo in 1633 and the following embrace of Aristotelian theories in both institutional and private settings, Italy has traditionally been considered as one of the most backward provinces in Europe in this historical period. Slow to receive the effects of the new philosophical and scientific developments produced in countries such as France and Britain, Italy demonstrated a strong opposition towards any glimpse of intellectual freedom. Yet, Findlen (1999, 314-5), among other scholars, has shed light on one of the most characteristic traits of Italian *Illuminismo*, that is the role of women in intellectual life, and particularly on their active involvement in the diffusion of modern scientific knowledge (cfr. also Schiebinger 1989, Lawrence and McCartney 2015). Travellers witnessed with a certain amount of surprise the number of learned women or *filosofesse* to be found in this country, as Findlen (1995, 169) points out: “By the middle of the eighteenth century, almost every Italian city with some pretension to culture lay claim to at least one scientifically learned woman”. The same author mentions early women travellers such as Lady Mary Wortley Montagu, marvelling at this phenomenon, and we could add at least another two examples: firstly, Lady Ann Miller, who travelled to Italy with her husband and published her account as “Written by an English Woman” in 1776. After her visit to the University of Padua, Miller described the monument to “Helena Cornaro Piscopia”, a member of the Venetian nobility who had been “honoured at Padua with the Degree of Doctor in Philosophy for her great learning” (Miller 1776, III, 216; cfr. Agorni 2002, 128). The second example is represented by Hester Thrale Piozzi, the well-known British *salonier* connected with Doctor Johnson’s literary circle, whose travel account was published in 1789. Piozzi narrates her visit to Bologna University and describes the Italian practice of accepting women both as students and teachers at well-known universities. She mentions one of the most celebrated cases, that is Laura Bassi’s, who was the first woman to hold a chair at Bologna University:

This university has been particularly civil to women; many very learned ladies of France and Germany have been and are still members of it; - and la Dottoressa Laura Bassi gave lectures not many years ago in this very spot, upon the mathematics and natural philosophy, till she grew very old and infirm; but her pupils always handed her very respectfully to and from the Doctor’s chair. (Piozzi 132)³

Paradoxically, in spite of its lagging behind in terms of scientific vivacity, Italy appeared to be more advanced than any other part of Europe as far as gender

³ Laura Maria Caterina Bassi (1711–1778) received a doctoral degree from the University of Bologna in 1732 and was the first woman to hold a chair in experimental physics at a university in Europe.



issues were concerned, specifically in the field of women's education.⁴ And this was widely acknowledged all over Europe.

As has already been pointed out, Findlen (2003a) has argued that Italian women were especially prominent in the fields of sciences, or natural philosophy as it was called at the time. This is not to deny that their role in the literary field was less important, as female poetry received a great deal of attention, and women were admitted as members of the most prestigious literary circles in Italy. Yet, the fact that a few of them held teaching positions and university chairs in the scientific areas was certainly perceived as a rather unique event by other European countries. Not only were women involved in the diffusion of scientific knowledge, but they also contributed to the popularisation of the new ideas produced by foreign thinkers such as Descartes, Locke, Newton, Boyle and Leibniz. Many of their works were still included in the *Index Librorum Prohibitorum* of the Catholic Church, although their circulation was ensured by *salon* conversations and by the activity of the numerous academies scattered over the territory. Women's presence was significantly linked with Italy's urge for modernisation, as Findlen (1999, 316) has noticed:

The presence of learned women in Italy's academies and universities made them among the most visible emblems of the arrival of modern knowledge in this increasingly provincial corner of the Republic of Letters. Through the publicity surrounding these women's activities, in conjunction with a growing number of Italian treatises that explored the most recent developments in the experimental and mathematical sciences, Italian scholars announced to the world that they had entered the new age of learning.

However, scholars such as Cavazza (242) and Findlen (2003b) have demonstrated that the Italian women who excelled in the scientific fields kept a low profile, in spite of playing such a fundamental role in the culture of their time. For example, they generally did not publish their work in their own name.⁵ Women's attitude towards authorship was extremely ambivalent in the first part of the eighteenth century in Italy (as well as in Britain, where it was to rise dramatically only in the latter part of the century, as has been said in Section 1). Yet, female writing

⁴ Yet, as Cavazza (241-2) has argued, women were in reality considered as "educational experiments", who played a fundamental role at symbolic level, as the prestige of female knowledge was thought to increase the fame of the city hosting them. This is the reason why the exceptional positions granted to a few women (such as memberships of prestigious academies or university posts) did not encounter strong public opposition.

⁵ One famous exception was that of Maria Gaetana Agnesi, who published her *Analytical Institutions for the Use of Italian Youth* in 1748, a popularisation of Cartesian analytic geometry and the new mathematical concepts developed by Newton, Leibniz and Euler, written in the Italian language. In her preface, Agnesi makes clear her pedagogical aim, as her book had been primarily composed to help her instruct her brothers. The text became immensely popular within and outside Italy: Agnesi was offered an honorary Chair in Mathematics at the University of Bologna, which was however refused. On this topic see Findlen 1995.



did have a place in the publishing marketplace as women found ways to make their voices heard, albeit in mediated forms.

Findlen (1995) has aptly described some of their strategies in an article discussing women's role in the circulation of knowledge in eighteenth-century Italy. By highlighting women's function as "synthesizers and translators" of fundamental scientific texts, but also as teachers of modern scientific theories in Italian academies and universities, the American historian gets very close to defining these activities in Lefevere's terms of rewriting (1992). Women were indeed protagonists in the circulation of knowledge, a process, I shall argue, that went well beyond Italian borders (whatever they be in this historical period).

3. WOMEN DISSEMINATING SCIENTIFIC KNOWLEDGE IN EIGHTEENTH-CENTURY ITALY: GIUSEPPA ELEONORA BARBAPICCOLA, "TRANSLATRESS" OF DESCARTES

One of the first Italian women to take upon herself the task of translating science, specifically Descartes' *Principles of Philosophy*, was Giuseppa Eleonora Barbapiccola (ca.1700-ca. 1740),⁶ who published her work in 1722. She was a member of Giambattista Vico's literary circle in Naples, where she became friends with some of the most important intellectuals of that town, and eventually gained access into a famous academy such as Accademia degli Arcadi.

Cartesian philosophy occupied a special place in the lively cultural atmosphere of Naples, in spite of the strong aversion of the Catholic Church, which had banned Descartes' works since the middle of the seventeenth century (cfr. Findlen 1995; Messbarger & Findlen 2005). Hence, Barbapiccola did not embark on the task of introducing Cartesian philosophy anew, but rested on a rather solid tradition.

Barbapiccola added a preface to her work, boldly entitled "The Translatress (*Traduttrice*) to the Reader". Descartes himself appeared to offer the translator the possibility of highlighting the importance of women's education, particularly in the field of natural philosophy. In fact he had simply dedicated his work to Elisabeth of Bohemia, but Barbapiccola exploited this fact in order to address women in general, and legitimate her claim in favour of women's education (Findlen 1995, 7; 2005a, 37-8). Descartes was not her only source of legitimation: Barbapiccola took advantage also of her (male) contemporaries, and quoted Paolo Mattia Doria, who belonged to the Neapolitan circle of Vico and was a strenuous advocate of women's

⁶ Women did not start translating in the eighteenth century: there is a long and non-forgotten tradition of female translation since the Middle Ages (Krontiris 1992; Patterson Hannay 1986; Uman 2012). However, two works in particular on the new scientific methods must have exerted a certain influence on eighteenth-century women translators, and they are Aphra Behn's translation of Fontenelle's *Conversations on the Plurality of Worlds* into English in 1688 (cfr. Agorni 1998) and Emilie du Chatelet's French translation of Newton's *Principia*, published in 1759.



education.⁷ Barbapiccola used his name to support her cause and this enabled her to ask her readers a fundamental, if rhetorical, question: “who, provided that has even a mediocre knowledge of history, does not know how many women in every age have distinguished themselves in various literary pursuits?” (Findlen’s translation, 2005b, 48).

In her preface, Barbapiccola goes on to provide a detailed historical review of women who played crucial roles in the past, distinguishing themselves for their learning in fields such as poetry, mathematics and philosophy, rhetoric, ancient languages, and so on. Barbapiccola’s list started from the early Greeks, going through medieval times, to end up with Christina of Sweden, one of the most educated women of the previous century and patron of Descartes. This tradition was a fundamental source of inspiration for the *traduttrice*, who was eager to highlight the benefits of education for women:

I have been greatly inspired by the example of these famous women. They have led me to believe that I could one day overcome the weakness of my sex, which only studies in order to know how to play games and to speak knowledgeably of fashionable clothes and hair ribbons. Bad education, not nature, encourages this defect. (Findlen 2005b, 55)

From this point onwards in her preface Barbapiccola began a personal, almost autobiographical, narrative in which she referred to her own education path, illustrating the steps that had led her to the field of science, and eventually to “Cartesian philosophy”. On the one hand, her references to religion as the highest source of inspiration of human undertakings were customary at the time, and appeared to rule out, or at least overshadow, individual will. On the other hand, however, the fact that a *traduttrice* used her personal experience to illustrate women’s possibility not only to learn scientific subjects, but also to make them accessible to the public (through translation) was a rare achievement in this historical period. Furthermore, the emphasis Barbapiccola placed on the importance of personal experience is an echo of the importance of the experimental method introduced by Galileo; the *traduttrice* significantly explains that the pragmatic attitude she found in Descartes’ theories triggered her admiration, as illustrated in the following passage (Findlen 2005b, 55):

I began first by cultivating languages and then, as much as my ability permitted, the sciences. Among the latter, I studied philosophy because its moral part makes us civil, metaphysics because it enlightens us, and physics because it informs us about the beautiful and wonderful architecture of this great palace of the world that God made as our home, since it is most indecent to live in it like brute animals. I heard it said that Cartesian philosophy was based on solid reasoning and certain experience, and proceeded with a clear method, deriving one thing from another,

⁷ Doria had published some rather contested works, in an attempt to conciliate traditional platonic doctrines with the modern philosophical thought of Descartes and Locke, cfr. Israel 2001.



for which it had acquired endless followers. For these reasons, I was more inclined to this philosophy than to any other.

Barbapiccola's own contribution to learning, however, went well beyond her personal experience. It has been pointed out earlier that the scope of her translation was not to introduce Cartesian philosophy into her cultural environment, which was already familiar with this philosopher's works. Rather, she redefined Descartes, by producing her own critical reading. Her argument was not original, since she wanted to demonstrate that this philosophical approach did not go against the precepts of the Catholic Church. But what is noteworthy is the degree of her personal involvement and the strength of her argumentation. In the passage quoted below, for example, Barbapiccola exploited the modesty convention as a strategy not to mask, but rather to reveal the boldness of her endeavour (Findlen 2005b, 59):

even though making a good defence of Descartes's philosophy is neither my subject nor am I worthy to undertake this task, since many eminent men have openly defended every line of his philosophy [...] yet it is necessary to justify myself in this task with a few brief words.

Her "brief words" in fact amounted to some nine full-length pages, in which she firmly refuted those critics who maintained that Descartes had departed from the "Word of God". Once again she used, or rather exploited for the sake of her argument, a number of what she believed to be the most authoritative sources of her time, such as Daniello Bartoli's treatise *L'huomo di lettere difeso ed emendato* (1645).⁸ Hence, the "ownership" of the concepts she brings forward is not at stake here, but the straightforward style of her argumentation is striking, as is apparent in the following extract (Findlen 2005b, 61):

There are two great evils, as the praiseworthy father Bartoli informs us in the place I cited: "searching for faith with philosophical curiosity and believing in philosophical things with the certainty of faith".

Findlen (2005, 41-3) has underlined the influence of one of the most important Neapolitan philosophers of the seventeenth century, Giuseppe Valletta (1636-1714) on Barbapiccola's reading of Descartes' work, especially, once again, as far as the controversial relationship between religion and Cartesian knowledge was concerned. Valletta had been one of the first philosophers to investigate this theme from a historical point of view, which enabled him to question the primacy of the Aristotelian approach dominating at his time. Barbapiccola made the most of these theories in her discussion, by introducing a detailed account of the way philosophy had been appreciated and employed by the Church since early Christianity. This

⁸ This book had an enormous success, going through over thirty printings in Italy. It was also translated extensively; cfr. Renaldo 1979.

narrative provided substance and force to her argument, and was clear evidence of her scholarly abilities.

Finally, the conclusion of her preface offers another demonstration of Barbapiccola's clever manipulation of her sources. She quoted an ample portion of a talk by Jacques Hyacinthe Serry (1659-1738), which had appeared in the periodical *Giornale de' Letterati* in 1718. Not only is this citation remarkable as it is extremely functional to the construction of (a perfect) argument, but what should also be noticed is the care she took in providing all the references for her quotations. This strategy would certainly gain her readers' trust in their scrupulous *traduttrice* (Findlen 2005b, 65-66):

As a crowning point, I estimate that it is well worth adding that which the most learned Father Hyacinthe Serry of the truthful Order of Preachers (Dominicans), who to his highest honor is a Professor at Padua, presented as a theory in one of his *Opening Lectures* for the beginning of classes in 1718 and happily proved. A short version of it appeared in the *Journal of Italian Scholars*, tome 31, article 12, page 431, reported with these following words: "that is, that the discoveries of modern philosophers should not be immediately rejected as contrary to the truths of our Holy Faith. Rather they should first be considered and examined carefully to see if they can agree with them, since many things which seem contrary to the Holy Faith at first glance really are not opposed to it. The Holy Documents often adapt their ways of speaking to the intelligence of the common people. But if we take them in their deepest sense, they agree with the Moderns. We can introduce many examples. Finally the spirit of God did not dictate Scripture to teach physics or mathematics but to demonstrate how to perfect our habits and to show us the pathways to Heaven, and not natural phenomena".

One of the most interesting elements of this work from a strictly Translation Studies perspective concerns the intended readership of Barbapiccola's translation: did the *traduttrice* intend to target only or mainly female readers? She appears to be rather ambiguous on this point. On the one hand, she stated that she had decided to translate Descartes' work "in order to share it with many others, particularly women who, as the same René says in one of his letters, are more apt at philosophy than men" (Findlen 2005b, 55). And yet, real-life women do not seem to have been her intended audience, or at least not only them, given the display of erudition demonstrated by her preface. In fact women appear to stand, in a symbolic way, for a larger readership, one that needed to be assisted, or facilitated in its appreciation of a scientific work by means of an introductory paratext. These lay persons, eager to know the new philosophical ideas coming from abroad, could take advantage of the insights offered by a translation. As Barbapiccola herself put it (Findlen 2005b, 56):

In every age it has been customary to translate books into contemporary languages. Thus, the Romans transposed into Latin the most noteworthy Greek works, both histories and works of doctrine. Once the common people no longer used the Latin language, books written in it were transferred into other languages that succeeded it, in particular into Italian during the flowering of the sixteenth century, and into



French in the past century when more than ever reading was established. This has been a great advantage for those who know no other language than their mother tongue and yet desire to learn. This way the path is open to them, not only to enjoy reading books but also to extract that profit from them that the sciences, which are attached to the study of things rather than words, contain.

Translation is a practice that facilitates the circulation of knowledge via a transfer of texts, ideas, scientific advances, etc. —in a word, it makes modernity travel. The ideal recipient of this movement is the common reader, well represented, in a metonymical way, by the image of women, and their being *tabula rasa* vis-à-vis the benefits of education. The fact that the *traduttrice* is a woman herself adds value to her enlightening project: she can draw upon her own experience, and represents a role model for her (female and male) readers. Findlen (1995, 184) has described this aspect of Barbapiccola's work in the best possible way when she writes: "Imagining herself as a facilitator of knowledge, she was one of the first Italian women to suggest that popularisation was a woman's domain".

4. AN ANGLO-ITALIAN REFRACTED CONNECTION: ELIZABETH CARTER'S TRANSLATION OF FRANCESCO ALGAROTTI'S POPULARISATION OF NEWTON'S OPTICS "FOR THE LADIES"

As already pointed out, that Italian women were active in the dissemination of knowledge, particularly scientific knowledge, was well known in the rest of Europe. However, this does not mean that there existed a direct connection among different cultural environments: women of the middle-upper classes did travel, particularly from the Northern to the Southern regions of Europe, but the literary circles which had admitted them tended to be rather culture and language-specific. To my knowledge, there is no evidence of a direct exchange among learned women living in different European regions in the eighteenth century. Men intellectuals, on the other hand, were more encouraged to travel and literary and scientific institutions, such as the numerous academies and societies scattered over most of the European territory, were keen on exchanging ideas and providing connections. This was precisely the path that led Francesco Algarotti (1712-1764) to learn, appreciate and popularise Newton's theories, particularly his work *Opticks* (1704).

Born into a rich merchant family in Venice, Algarotti studied at Bologna University, where he became familiar with the modern advances in natural philosophy and mathematics, and developed an interest in the work of Laura Bassi (Findlen 2003, 61). A true heir of the Renaissance, Algarotti became a polymath and an assiduous traveller and enjoyed an early cosmopolitan lifestyle. England was one of his favourite countries, and he was elected a Fellow of the Royal Society in 1736. One year later he wrote his most successful work, *Il Newtonianismo per le Dame, ovvero dialoghi sopra la luce e i colori*, a popularised version of Newton's theories of optics. This short treatise was extremely successful as it was published



in four editions and translated into three languages in the author's lifetime.⁹ It was immediately included into the *Index Librorum Prohibitorum*, although the Church revoked its verdict for the revised editions published in 1746 and 1750 respectively.

In his introduction, Algarotti dedicates his work to the French philosopher Fontenelle, who in 1698 had published a popularisation of the Copernican system under the title *Entretiens sur la Pluralité des Mondes*. Fontenelle had been an exponent of *salon* culture, and had introduced a new, light way to popularise scientific knowledge by publishing a fictional dialogue between two characters: a philosopher and his pupil, an aristocratic Marquise (cfr. Agorni 1998). As Findlen (2003, 60) has noticed, the philosophical dialogue had a long tradition, revitalized by Galileo, but no one before Fontenelle had thought about introducing a woman as an active participant in the discussion: "Fontenelle was the first to imagine that this dynamic would appeal to a heterogeneous audience for science. The Marquise was his *tabula rasa* whose head he filled with ideas, a woman who knew nothing of science and wanted to know virtually everything".

It is not difficult to see the appeal of this text for a passionate admirer of modern scientific knowledge as Algarotti, who was keen on disseminating Newton's ideas. His Marchioness had to be instructed from the basics, as she was not familiar even with the most elementary laws of physics. However, at the end of the volume she became a true disciple of Newton, to such a degree that the philosopher had to warn her that she should not display her knowledge, and remain within the limits of female modesty. This was not the sort of comment to be expected in a text promoting women's education, and in fact Algarotti's appeal to female readers is probably the most discordant aspect of his work.

The Church's decision to include *Il Newtonianismo* into the *Index Librorum Prohibitorum* cannot be explained simply by the fact that the text endorsed Copernicus' heliocentric theory: other works by Newton, such as *Principia Mathematica* and *Opticks*, had not been condemned. What was perceived as dangerous was Algarotti's eagerness to present Newton's experimental methodology as highly innovative in comparison with the scholastic, authoritative tradition still predominating in Italy. The new empirical method brought about a reassessment of knowledge which could be applied not only to the field of knowledge, but also to civil life. In Britain, it had produced a form of government that combined the needs of the people with the authority of the ruling classes:

Per non parlarvi ne meno più della Fisica, che pare esser all'Osservazioni il campo più proprio per le loro scoperte, non son esse a cui la Politica dee quell saggio non ideale Governo, che più belle del sole del Mezzogiorno rende le nebbie del Nord, in cui la libertà del popolo è conciliate colla superiorità de' Grandi, e coll'autorità del Sovrano? La Metafisica, quel perpetuo bivio della Ragione, à pur loro l'obbligo d'un

⁹ The text was eventually published in 31 editions and translated into six languages (cfr. Hall 37).



sistema certo dell'origine, e del progresso delle nostre idee, e noi del conoscimento di noi medesimi. (Algarotti 1737, 153)¹⁰

It seems that Algarotti's agenda in his *Newtonianismo per le Dame* was in truth the popularisation of a system of thought which was perceived as radically different from the one dominating in Italy, where the Church still retained its temporal power.

The style and the language of this work were part of the project: a scientific treatise written in Italian, rather than Latin, was a deliberate strategy to address a readership much wider than that of the educated readers who could read Newton in the original Latin. As a consequence, the appeal to the ladies functioned metaphorically in order to target a category of readers who did not benefit of the privileges of education.

At the same time, the fictitious appeal to the ladies enables Algarotti to employ a witty literary style aimed at entertaining the readers. Critics such as Casini (1978, 98) and Hall (1984, 39) have argued that the lively style of this work should not be taken as evidence of its being in fact addressed to female readers; on the contrary, by targeting a large, unidentified readership, Algarotti was effectively opening the way to a widespread appreciation of the inductive methodology in his country.

However, Algarotti's use of the discourses of femininity typical of his time is extremely ambiguous (cfr. Agorni 2002). The exploitation of the female image enables the author to adopt a bold and gallant language which becomes almost misogynist and rich in erotic allusions. It can be assumed that, as a matter of fact, *Il Newtonianismo* was not an edifying reading for women.

Two passages are particularly explicit on this topic. The first appears in a discussion of the importance of the senses in the perception of reality, when Algarotti illustrates the concept of touch by using the image of a blind sculptor:

noi abbiamo avuto l'esempio di uno scultore, che benché cieco scolpiva però palpando de' ritratti assai tollerabili. E per le Dame credesi, ch'è non volesse ritrarne la testa senza il busto. (1737, 94)¹¹

Another example is when the philosopher explains the phenomenon of the refraction of light:

¹⁰ Carter translated this passage as follows: "not to say any Thing further of Natural Philosophy, which seems a Province the most adapted to the Discoveries of Observations, is not Politics indebted to these for that wise and real Government, which renders the Southern Suns less pleasing than the Cloudy Regions of the North, where the Liberty of the people is made compatible with the Superiority of the Nobles, and the Authority of the Sovereign." (Algarotti 1739, II, 17).

¹¹ Carter translated the passage in the following way: "We have the Example of a Statuary, who tho' he was blind, yet by the help of his Feeling made tolerably good Likenesses. [(And when it came to sculpting Ladies, it may be imagined that he would have wished to bring forth not the head only but also the bust.) my translation] Algarotti 1739, I, 153).



ecco una cosa, m'interrup'ella, che io non a molto, essendo nel bagno, osservai attentamente, che mi sorprese, e di cui m'inquietava la ragione. Altro ella non è, soggiuns'io, che la rifrazione che soffrono i raggi passando dall'acqua nell'aria. Egli sarebbe una buona cosa lo spiegarvene minutamente gli effetti, e gli scherzi sul margine del vostro bagno. Sapete voi quanti curiosi d'Ottica fareste? (1737, 118).¹²

The female reader appears to be only a rhetorical device in Algarotti's work, where women fictional characters are used instrumentally to entertain and instruct a large percentage of the reading public eager to find a "shortcut" to scientific knowledge. Thus, women's education was not a fundamental aspect of his project.

However, what happens if Algarotti's appeal "to the Ladies" is taken at face value? This was indeed the case of Elizabeth Carter's translation into English, published as *Sir Isaac Newtons' Philosophy Explain'd for the use of the Ladies. In Six Dialogues on Light and Colours, Translated from the Italian of Sig. Algarotti*, only two years after the first edition of the original work.

Commercial interests had already begun to exert a strong influence on the production of translation in the eighteenth century. Publishers and booksellers were usually responsible for the selection of texts to be translated and had a strong impact on the translator's approach. Natural philosophy, physics and mathematics were in great demand in the British early popular press, and yet it seems difficult to justify the need to translate a new simplified version of Newton's *Opticks*, originally published in Italian. A number of simplified accounts of Newton had already been published in English and were still available.¹³ The commissioner of Carter's translation was Edward Cave, publisher of the popular periodical *Gentleman's Magazine*.

Elizabeth Carter (1717-1706), daughter of the reverend Nicholas Carter, was a polyglot, because she learnt Greek, Latin, Hebrew, French, German, Italian and Spanish at a young age and later worked also on Portuguese and Arabic. Thanks to her father's connections, she started contributing poems to the *Gentleman's Magazine* and was commissioned two translations by Edward Cave, respectively from French¹⁴ and Italian. But it was her translation of *All the Works of Epictetus* from the Greek in 1758 that eventually brought her fame and social prestige.

¹² Carter's translation reads as follows: "This is the very Thing, said she, interrupting me, that I lately observed when I was in the Bath, and I was extremely surprised and puzzled to find out the Reason for it. It is nothing else, answered I, but the Refraction which the Rays suffer in passing from Air into Water. [(Twere a good thing to explain to you all the effects minutely on the rim of your bath. Do you know how much curiosity about Optics this would arouse?) my translation]. (Algarotti 1739, I, 119).

¹³ Populisers of Newton's theories included some of his disciples, such as Henry Pemberton (1694-1771) and John Theophilus Desaguliers (1683-1774), author of an allegorical poem, *The Newtonian System of the World, the Best Model of Government* (1728), and Joseph Addison, who was one of the most influential in the pages of his *Spectator*.

¹⁴ Cave sponsored the translation of two texts from the French by the Swiss theologian Jean Pierre de Crousaz, who had published two critical readings of Pope's *Essay on Man*. The two texts were commissioned to Elizabeth Carter and Samuel Johnson. Carter's work was published in 1738 whereas Johnson's project was eventually abandoned.



Carter's contributions to the *Gentelman's Magazine* put her in contact with a group of literary men and women, such as Cave himself, Samuel Johnson, Thomas Birch (Fellow of the Royal Society), Mary Masters and Jane Brereton. The debate of women and education was a frequent subject of discussion among this group and the *Gentleman's Magazine* published articles, letters and even poems on this topic, targeting a large readership made of both sexes (cfr. Agorni 2002).

As has been said earlier, Cave's selection of texts for translation was usually guided by commercial reasons, according to two main criteria: (relative) prestige of the original and public interest. In the case of *Il Newtonianismo per le Dame* prestige was represented by the scientific subject (natural philosophy) and by the Italian author's connection with the Royal Society. The interest of the public, however, appears hardly discernible, as many other books on Newton's philosophy were available at that time, as has already been pointed out.

Yet, given the popularity of conduct literature addressed to a female public and Cave's involvement on the debate about women and education, the most plausible explanation for Carter's translation is Algarotti's apparent concern for women's education. Conduct books circulating at this time tackled many subjects, from art to literature, economics and even medicine, but the scientific areas had never been touched upon. Hence, a popularisation of Newton's system of thought which targeted female readers would have been perceived as a daring novelty at the time.

The fact that this translation was effectively addressed to a female readership is confirmed by an analysis of its reception. Although the translation was published without the name of the translator (who did not print any translator's preface) the fact that the work had been accomplished by Elizabeth Carter was common knowledge. A poem dedicated to "Miss Carter", praising her translation, appeared shortly after the publication of her work. Algarotti's popularisation of Newton's theories was considered as a radical innovation, as a first step into the process of making scientific knowledge available to female readers:

Now may the *British* fair, with *Newton*, soar
To worlds remote, and range all nature o'er;
Of motion learn the late discover'd cause,
And beauteous fitness of its settled law. (Swan 1739, 322).

Furthermore, in 1739, Thomas Birch reviewed Carter's translation in the literary journal *History of the Works of the Learned*, highlighting the fact that a translation produced for the benefit of women had been realised by a woman:

The *English* Translation has this remarkable Circumstance to recommend it to the Curiosity of the Public, as the Excellence of it will to the Approbation of all good Judges, that as the Work itself is design'd for the Use of the Ladies, it is now render'd into our Language, and illustrated with several curious Notes, by a young Lady, Daughter of Dr. *Nicholas Carter*, of Deal in Kent. (Birch 1739, 392)



Hence, Algarotti's fictitious appeal "per le Dame" seems to have been taken literally in its English translation. If this was indeed the case, what happened to the gallant language and erotic allusions of the original?

The English translator was extremely consistent in her work, and took a bold step so as to make her translation into a coherent text. She modified, in fact censured, all those traits in which Algarotti's style appeared to run against its supposed appeal to a female public. The two examples quoted earlier are a case in point. The passage about the blind sculptor does not include the second part referring to the female body:

We have the example of a Statuary, who tho' he was blind, yet by the help of his Feeling made tolerably good Likenesses. (Algarotti 1739, I, 153).

A similar intervention was adopted in the example about the refraction of light, where the philosopher's titillating comment was omitted.

This is the very Thing, said she, interrupting me, that I lately observed when I was in the Bath, and I was extremely surprised and puzzled to find out the Reason for it. It is nothing else, answered I, but the Refraction which the Rays suffer in passing from Air into Water. (Algarotti 1739, I, 119).

The result of these interventions makes Carter's translation into an extremely coherent text with greater scientific rigour than the original itself.

Another type of manipulation emerges when the original's enforcement of a radical change in Italy, ideally represented by the inductive methodology of the British scientific tradition, is taken into account. The appeal was not reproduced in Carter's translation, and it is possible to speculate that she was unable to grasp its importance, probably because she was not sufficiently familiar with the socio-historical conditions of the geographical area generally known as "Italy" at that time. Hence, the scope of Algarotti's reforming project was definitely lost in its English version.

This is especially clear in the translation of a passage in which Algarotti compares the backward state of his culture against the dynamic situation of other European countries, which had assimilated the benefits of the modern scientific methods. When Algarotti writes that the progress of the modern age had not reached his country yet, and hopes that it will eventually get there, Carter translates "una volta anco per noi" (literally "for us too, at last") as "once more". Such a banal linguistic mistake made her version diametrically opposed to the main thesis of the original author. Here is the original passage and its English translation:

il Secolo delle cose venga una volta anco per noi, e il sapere non ad irruvidir l'animo, o a piatire sopra una vecchia e disusata frase, ma a pulir serva, se è possibile, e ad abbellir la Società. (Algarotti 1737, XI)

let the Age of Realities once more arise among us, and Knowledge instead of giving a rude and savage Turn to the Mind, and exciting endless Disputes and wrangling upon some obsolete Phrase, serve to polish and adorn Society. (Algarotti 1739, I, XVI)



Algarotti's appeal for renovation not only in the field of scientific knowledge, but also in a wider, though vague, socio-political sense, was not understood by the English translator and remained silent in her version. As a consequence, Carter's translation became an instructive handbook on natural philosophy specifically addressed to a female readership. Even the title seems to be consistent with this interpretation, as in English it reads as follows: *Sir Isaac Newton's Philosophy Explain'd for the Use of the Ladies*, laying a special emphasis on its pedagogical function. This is somehow less apparent in the original Italian: *Il Newtonianismo per le Dame, ovvero Dialoghi sopra la luce e i colori*.

5. CONCLUSION

Women's space of manoeuvre in the press and literary field was still rather restricted in early eighteenth-century Europe. Different developments would take place in different countries in the second part of the century: in Britain, the feminine novel was to emerge slowly, to blossom after the turn of the century, whereas in Italy it became extremely difficult for the generations of women who followed Laura Bassi to enjoy the same kind of scientific career she had had (Findlen 2003, 235). In the last decades of the century, the French Revolution was inspired by the universal principles of freedom and equality, and yet it seemed to be not as sensitive to the issue of women's subordination.

However, rather than stressing the limits of women's participation in the production of knowledge, and consider translation as a limited form of authorship, I would like to question the meaning of authorship itself in the case of such complex works as Carter's translation and Barbapiccola's preface. The dexterous use the latter makes of quotations from numerous authors, together with the depth of her historical perspective when she demonstrates women's role in history, as well as her analysis of the debated connection between knowledge and religion, are symptomatic of an originality of intent that gives shape and body to her project to popularise Descartes. The *traduttrice's* decision not only to put her name to her translation, but also to have her portrait, rather than the original author's, at the front of the book, may be interpreted as an early glimpse of self-awareness (cfr. Findlen 1995, 182-3).

In the case of Carter, whether her manipulation of Algarotti was consciously or unconsciously performed, or, whether it was the product of external pressures (by the commissioner, Edward Cave, and his circle, for example), must remain a matter of conjecture. Yet, as a result of her textual interventions, the contrast between the empirical and the metaphorical reader, which is a manifest weakness of Algarotti's work, is no longer present in the English translation. The empirical reader "borrows" the features of the translator and the handbook's pedagogic intention produces, or rather, projects the image of a new female reader. The fact that this reader, as a woman, belonged to the category of the non-educated readership made her paradoxically more receptive of the innovative power of the empirical scientific approach than her male counterpart. Hence, a new, modern type of female reader, free from the potentially restrictive cultural affiliations which characterised more



traditional categories of cultivated (male) readers, appears to be foreshadowed in Carter's translation of Algarotti.

In both cases women translators mediated, or rather re-mediated scientific texts that needed to be presented in a fresh light in order to reach a new potential readership: their works can possibly be considered as a strategy of text production with at least the same cultural import as original writing. Text production is meant here as a complex concept, combining the idea of individual agency with the cultural dynamics that have moulded it. Not only does this perspective emphasise the fact that meaning is essentially open to negotiation, but it also highlights the creativity of the roles and activities involved in translation. (cfr. Agorni 2005).

Barbapiccola's translation of Descartes' *Principles of Philosophy* was the only complete version in Italian until a new translation appeared in 1967 - by another woman, Maria Garin (Findlen 2005, 46). Barbapiccola herself did not produce other works in the scientific field, but published only a few poems. In spite of this, her reputation as a "Cartesian woman" spread out of the Neapolitan territory, as she was mentioned in Giovan Nicolò Bandiera's (1740) list of women who had distinguished themselves in the fields of science.

Carter's reputation as a celebrated translator was the result of another work of hers, *All the Works of Epictetus, which are Now Extant.. Translated from the Original Greek by Elizabeth Carter* published in 1758. This work brought her financial security (she earned nearly £1,000 for this translation) and social prestige, as she received two Royal visits in the last years of her life. She was considered as one of the most learned women of her time, and her name was included in several anthologies of women's writing.

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NOMINALIZATIONS AND FEMALE SCIENTIFIC WRITING IN THE LATE MODERN PERIOD

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ABSTRACT

The aim of this paper is to study the sex variable in the use of nominalizations, a well-known marker of scientific register, in scientific texts written in English in the eighteenth and nineteenth centuries, and to delve into whether we can identify differences in the use of nominalizations in the writings of female and male scientists of that time. The paper is structured in four parts. Section One provides an account of the situation of women scientists in the late modern period, encompassing and analysis of their situation in the academia and their consideration for intellectual activities. Section Two is concerned with scientific register, female writing styles and nominalizations. In Section Three the corpus and methodology used for this study are presented. This is followed in Section Four by an analysis of data. In the last section, conclusions and suggestion for further research are offered.

KEYWORDS: English scientific register, nominalizations, female writing, historical sociolinguistics, descriptive linguistics.

RESUMEN

El objetivo de este trabajo es el estudio de la variable sexo en el uso de nominalizaciones, un conocido marcador de registro científico, en textos científicos escritos en inglés en los siglos XVIII y XIX, y la profundización en las diferencias en el uso de nominalizaciones en los escritos de los científicos y científicas de la época. El artículo está estructurado en cuatro partes. La primera sección proporciona una descripción de la situación de las mujeres científicas en la época moderna tardía. La segunda sección se ocupa del registro científico, el estilo de escritura femenina y las nominalizaciones. En la tercera sección se presentan el corpus y la metodología utilizada para este estudio. A continuación, en la cuarta sección se presenta un análisis de los datos.

PALABRAS CLAVE: Registro científico en inglés, nominalizaciones, escritura de mujeres, sociolingüística histórica, lingüística descriptiva.



1. WOMEN SCIENTISTS IN THE LATE MODERN PERIOD

The situation for women scientists—or any woman interested in learned activities—was harsh until the twentieth century. According to Schiebinger, the notion that women did not take an active role in science until the twentieth century is a wrong idea that originated in the nineteenth century. In early modern and modern Europe, women had a more active role in science. Even if it is true that their presence in scientific circles was not as ubiquitous as that of men's, women of that time could resort to non-canonical ways to access knowledge and practice science. Scholars (Schiebinger, Burke) have emphasized the importance of prince courts in the Renaissance, together with salons in the seventeenth and eighteenth centuries as alternative places of knowledge with relatively easy access for women. The real implication of women in science, however, remains very difficult to demonstrate without reliable written materials to prove it.

During the Renaissance, authors like Bocaccio, Christine de Pizan and Henricus Agrippa wrote essays vindicating the intellectual aptness of women. In his understanding of a perfect courtier, Baldassare Catiglione proclaimed that men and women should portray different qualities. For him, a lady should be beautiful, cautious, dignified, modest and affable. However, concerning intellectual abilities he did not see differences between men and women and criticized those who asserted that women were imperfect beings.

In the seventeenth century we find women defenders like Margaret Cavendish and Mary Astell. Cavendish's main argument was that women's subordination to men in society was due to a lack of opportunity, which was the result of inappropriate education. At the end of the seventeenth century, Mary Astell, a middle class woman from a merchant family from Newcastle, revolutionized English society. In *A Serious Proposal to the Ladies* (1694) she called on women to widen their intellectual capacities and proposed the creation of a secular convent in which women could cultivate their minds. The idea of an academy for women caused a stir among her contemporaries and Astell received patronage from wealthy ladies—including Queen Anne—to help bring her idea to fruition.

French writers¹ were very prolific during the years of the Scientific Revolution in championing for the equality of women. The importance of these writers is considerable if we take into account that until the eighteenth century anatomists did not undertake a real revision of old traditional opinions about women's anatomy and ability to science. Men and women were thought to be different and theories

¹ A brief account of French works from the seventeenth century dealing with this topic may be: Marie le Jars de Gournay's *Egalité des hommes et des femmes* (1622), Samuel Chapuzneau's *L'Académie des femmes* (1661), Jean de la Forge's *Le cercle des femmes sçavantes* (1663), Louis de Leslache's *Les avantages que les femmes peuvent recevoir de la philosophie et principalement de la morale* (1667), François Poulain de la Barre's *De l'éducation des dames pour la conduite de l'esprit dans les sciences et dans les moeurs* (1674), Bernard Le Bovier de Fontenelle's *Entretiens sur la pluralité des mondes* (1686) and Gilles Ménage's *Historia mulierum philosopharum* (1690).



about humors had been replaced by theories claiming that women were imperfect, not-fully-developed men (Schiebinger).

Apart from all the pieces of work defending women, another indicative point providing a trustful piece of evidence for the active involvement of women in science is the big number of scientific works aimed at women. In England publications like *The Athenian Mercury* (1690-1697), *The Free-Thinker* (1718-1721), and *The Female Spectator* (1744-146) were successful. Perhaps one of the most important scientific journals aimed at women was *The Ladies' Diary*, which was regularly published from 1704 to 1841. It contained almanacs, enigmas, mathematical questions and answers, quests, chronologies and remarkable events of the year, birthdays of the members of the royal family and main kings in Europe.

In most cases, titles of scientific works already contained the specification that the work was directed at women². This interest in the female audience was common all over Europe³ and in some cases we find that those texts were even translated and commented by women. This is the case of Francesco Algarotti's successful book, *Il Newtonianismo per le dame*, which was translated by Elizabeth Carter two years after its publication in 1737. It is clear that in the eighteenth century there was an urge, professed by both men and women to channel women's interests into knowledge and science.

In the eighteenth and nineteenth centuries, the number of publications defending the intellectual ability of women multiplied, especially in France and Germany. The work of anatomists in the second half of the eighteenth century led to the conclusion that there was no intrinsic difference between the nature of men and women. Men and women were considered "perfect in their difference" (Schiebinger 191), each of them displaying their own characteristic features —physical and intellectual strength for the man and motherhood for the woman. This new configuration could perfectly fit into Darwin's evolutionary theory but it failed to secure equality for women, since women were thought to be perfect but hierarchically inferior to men.

² Examples of this may be John Harris' *Astronomical Dialogues Between a Gentleman and a Lady* (1719, contained in *CETA*), Jasper Charlton's *The Ladies Astronomy and Chronology in Four Parts* (1735, contained in *CETA*), James Ferguson's *Easy Introduction to Astronomy for Gentlemen and Ladies* (1768) and Denison Olmsted's *Letters on Astronomy, Addressed to a Lady in which the Elements of the Science are Familiarly Explained in Connexion with its Literary History* (1841, contained in *CETA*).

³ Other scientific books aimed at women in other languages are George Saville's *Avis d'un père à sa fille* (1756), Leonard Euler's *Lettres à une princesse d'Allemagne sur divers points de physique et de philosophie* (1768), Jakob Weber's *Fragmente von der Physik für Frauenzimmer un Kinder* (1779) or August Batsch's *Botanik für Frauenzimmer* (1795).



2. FEMALE WRITING, SCIENTIFIC REGISTER AND NOMINALIZATIONS

Differences in male and female writing styles have attracted the attention of scholars (Labov, Lakoff). According to Mulac, even if it is possible to identify linguistic features that are used differently by male and female authors, it is not possible to consider them markers, but rather tendencies. This has a direct effect on the way texts are perceived. Interestingly enough, Mulac (27) reported⁴ that texts written by women were judged as “[from a] higher social status and more literate” as well as “more pleasant and beautiful”, whereas texts written by men were perceived as more dynamic, “stronger and more aggressive”, which does not differ much from Francis Bacon’s description of female and male writing styles almost five hundred years ago. At this time, women were believed to be incapable of showing abstraction in their thought and, consequently, on their writing. Their writings were considered elegant but not very informative and their style, loose (Moskowich & Monaco).

Even if it is true that differences in formal written texts are more difficult to find, generally speaking it is believed that women tend to make a greater use of features displaying involvedness (Argamon *et al.*, Biber *et al.*, Palander-Colin). This implies an enhancement of the personal sphere and personal relationships. References to emotions are also common (Mulac *et al.*). It has also been shown that women are more attentive to conversation and include more question tags in their speech (Holmes), which could be aimed at controlling the conversation. In a similar light, female writers tend to use more persuasive strategies (predictive modals, conditional subordination, necessity modals and suasive verbs) in formal scientific writing (Crespo). On the other side male writing has been identified as more informational (Argamon *et al.*) and containing more judgements (Mulac *et al.*), which, in some way, could be related to Francis Bacon’s description of the virile style as dynamic and pragmatic.

Concerning scientific discourse the debate over old rationalist styles and new empirical methodologies permeated discourse and allegorical, poetic language was considered unsuited to new scientific methods (Schiebinger 151). Women’s style was thought to be gallant, polite, aristocratic and poetic, as opposed to Bacon’s virile and masculine style. For the promotor of The Royal Society calling something ‘masculine’ was an appraisal, whereas calling it ‘feminine’ or ‘effeminate’ was an insult. For empiricists, man and science were active, they did things and they required energy and power. This idea became imbued in scholarly circles and it definitely affected very negatively women’s involvement in science. As Eger pointed out, in the late seventeenth century this created a dichotomy between those who would accept a peacefully relation between men and women and those who would declare a war of sex.

⁴ For more recent research, see Mulac *et al.*, where their gender-linked language effect hypothesis is again confirmed by measuring empirically the differences according to the sex variable in oral production as reaction to visual stimuli (description of a photo).

The difficulty of the language of science is not only a matter of vocabulary. Writers and readers have to be trained to use a series of lexicogrammatical features, namely passives and nominalizations (Albentosa, Albentosa & Moya, Banks, Halliday, Halliday & Martin, Sušinskienė, Vázquez) that add complexity to the prose and delimit the discourse community. Nominalization is understood as a linguistic expression of a conceptual representation of a process or state of affairs in a nominal form. According to Downing (147) situations and processes can be expressed through nominalizations, as in (1)

(1) From whence it is gathered, that *the apparent progressive Motion of the Fixed Stars* hath gone forward one Degree towards the consequent Signs, in about Seventy Years ſpace (Whiston, 14; emphasis added)

or through finite sentences, as in (2)

(2) Aftronomers know that not only the 12 Conftellations of the Zodiac, but alſo *all the fix'd Stars move from the Weſt toward the Eaſt about 50" in a Year, or one Degree in 71 Years, in Circles parallel to the Ecliptick* (Watts, 34; emphasis added)

Obviously, although in general terms they convey the same meaning, each of these two linguistic encodings have a different structure and fulfill different functions in texts. In (2) *move* controls the syntax of the whole sentence through a system of obligatory valencies and optional adjuncts. Similarly, in (1) *motion* also exerts control over its phrase but it is inserted into a larger sentence. Structure is not so rigid in this case as, by definition, all elements in the Noun Phrase with exception of the head are optional, which allows a more complex arrangement. According to Downing (151), nominalizations tend to appear in written genres because they can establish abstractions, objectivize and stratify the processes they refer to. Their abundance in modern scientific register has thus been seen as a sign of the augmentation of abstraction in modern scientific (Halliday & Martin).

3. CORPUS AND METHODOLOGY

The material for this study was taken from the *Coruña Corpus*. This corpus, which is the product of an ongoing project, is made up of several subcorpora of different scientific disciplines. Each subdiscipline contains around forty texts with ca. 10,000 words each, which makes a total of approximately 800,000 analyzable words for this study.

TABLE 1. NUMBER OF WORDS			
	FEMALE WRITERS	MALE WRITERS	TOTAL
<i>CETA</i>	20,793	389,116	409,909
<i>CEPHiT</i>	30,194	370,935	401,129
TOTAL	50,987	760,051	811,038



The time span covers the eighteenth and nineteenth centuries. For the present work *CETA* (Moskowich *et al.* 2012), the astronomy subcorpus, and *CEPHiT* (Moskowich *et al.* 2016), the philosophy subcorpus have been chosen. These two disciplines had different writing conventions as a result of different evolutions which, at the end of the seventeenth century became especially interesting: Astronomy on the one hand was perhaps one of the most established scientific disciplines when the Scientific Revolution took place and experimented like no other the shift in focus that the revolution brought. Philosophy was as well a well-established discipline that opposed rational thought to religious beliefs but, like other Humanities disciplines, did not embrace the empiricist method and that, too, had an effect on language. *CETA* and *CEPHiT* contain only five texts written by women⁵ out of a total of eighty-two texts. This, however, rather than being a mistake in corpus compilation, reflects the lack of visibility and social acceptance of women scientists in the eighteenth and nineteenth centuries.

This study deals with deverbal nominalizations formed by suffixation. The first stage in the study was the search of the nominalizations, which was carried out with the help of the *Coruña Corpus Tool*, (*CCT*), a search engine that has been designed for a joint use with the *CC*. As the *CCT* does not recognize suffixes but strings of words, the concordances generated included also gerunds and other words ending with these letters, which made a disambiguation process necessary. The first disambiguation was based on word class criteria and eliminated those words that were not nouns. Context reading and semantic disambiguation were carried out at the second stage to sort out the final number of nominalizations considered for study: 18,069.

Nominalizations are abstraction boosters that allow the presentation of abstract ideas and the expression of reason and causality (Downing, Eggins). Their use is usually linked to an increase in ambiguity due to detransitivization processes (Givón) that condenses information by reducing verbal valencies and increasing the level of implicit communication (Mackenzie). Hence, after data analysis it can be concluded that the consideration of female scientists' style was based on social prejudices rather than linguistic evidence.

The key to understand sex-related choices may be to consider how men and women used nominalizations. Argamon *et al.* (321) studied sex-related linguistic choices in formal written texts in English and concluded that "female writing exhibits greater usage of features identified by previous researchers as "involved" while male writing exhibits greater usage of features which have been identified as "informational"." In their study, they considered the use of personal pronouns and

⁵ Sample texts of Margaret Bryan's *A Compendious System of Astronomy in a Course of Familiar Lectures* (1797) and Agnes Clerke's *A Popular History of Astronomy during the Nineteenth Century* (1893) are included in *CETA*. *CEPHiT* includes three samples written by women: Mary Astell's *Reflections upon Marriage: Occasion'd by the Duke and the Dutchess of Mazarine's Case* (1700), Catharine Macaulay's *Treatise on the Immutability of Moral Truth* (1783) and Mary Wollstonecraft's *Vindication of the Rights of Woman* (1792).

of-phrase postmodifiers to reveal traces of women’s involvedness and men’s specificity, respectively. Taking into consideration the results achieved by Argamon *et al.* I adapted the study variables to nominalizations and therefore studied those nominalizations premodified by possessive determiners as well as those with a postmodifying *of*-phrase. A description of the results will now be presented.

4. ANALYSIS OF DATA

Beginning with a general analysis, 18,069 tokens of nominalizations⁶ were found in both subcorpora together.

TABLE 2. NUMBER OF NOMINALIZATIONS						
	FEMALE WRITERS		MALE WRITERS		TOTAL	
	<i>Raw frequency</i>	NF (10,000)	<i>Raw frequency</i>	NF (10,000)	<i>Raw frequency</i>	NF (10,000)
<i>CETA</i>	581	279	7865	202	8,446	206
<i>CEPHiT</i>	628	207	8,995	242	9,623	240
TOTAL	1,209	237	16,860	222	18,069	222

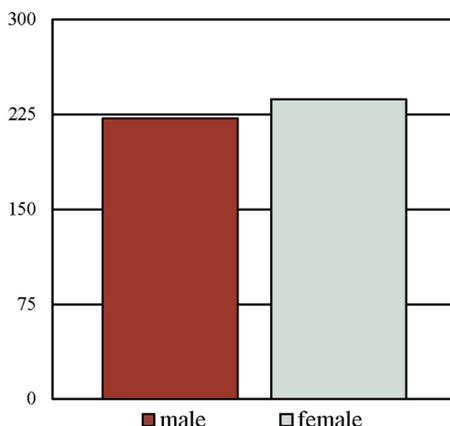


Table 3. Frequency of use nominalizations according to the sex of author (NF 10,000).

The distribution of nominalizations in normalized frequencies depicts a completely different situation. Data show that there is a slight tendency to find a higher frequency of nominalizations in texts written by women (237 nominalizations

⁶ Types will not be considered in this study because one of its goals is to study differences in frequency of use of nominalizations according to the variable of sex of the author. Hence, unless stated, data refer to number of tokens.



per 10,000 words, compared to 222 in male-authored texts, $t = 0,66$). Subcorpus breakdown shows variation: 58% of the nominalizations in *CETA* appear in texts signed by women whereas in *CEPHiT* the frequency of use is higher (54%) in texts written by men. It seems also untenable to claim that in spite of the unequal social consideration of male and female scientists at the time, the assimilation of markers of scientific discourse affected writers in a different way depending on their sex, at least, as far as nominalizations are concerned.

Women writers seem to have opted for nominalizations just as much as their male counterparts did. This contradicts the perception of the way in which women wrote science at the time. In the late Modern period, women were believed to be incapable of showing abstraction on their thoughts and, consequently, on their writing (Moskovich & Monaco) and female writing was usually associated with a flourished style, more apt for literature.

4.1. INVOLVEDNESS IN NOMINALIZATIONS AND POSSESSIVES

After the definite article *the*, possessives are the most frequent type of determiner in nominalization noun phrases in the corpus. The reason for this success lies in the fact that the pairing possessive plus nominalization usually mirrors the same semantic relationship existing between a verb and its subject, where the possessive indicates the agent of the process encoded in the nominalization (Bello). The English SVO sentence pattern is also reflected in those nominalizations with a possessive determiner (3).

(3) The path described by a planet in *its motion round the sun* is called its orbit (Adams, 4; emphasis added).

Other combinations of postmodifying possessive structures and nominalizations as in (4)

(4) [...] and that there is nothing else wanting to the establishing that Motion, and unto the thorough *Conviction of the mostobstinate Adversaries*, but that a Parallax of these Stars might be perceiv'd according to the diversePosition of the Earth in its Annual Orbit: [...] (Whiston 29; emphasis added).

lack this echoing of verbal structures, which in the case of scientific register, has been considered crucial for their higher frequency. Prototypically the information contained in sentences is packed into a nominalization noun phrase which is placed as theme and subject of the following sentence (Ventola 183). The methodic backgrounding of information through nominalized processes allows some degree of systematicity in the balance of backgrounded and foregrounded information and ultimately favors the assimilation of new information (Banks, Downing, Halliday, Ventola) and, as Halliday (1985) noted, this fostered the adoption of nominalizations as markers of scientific discourse.



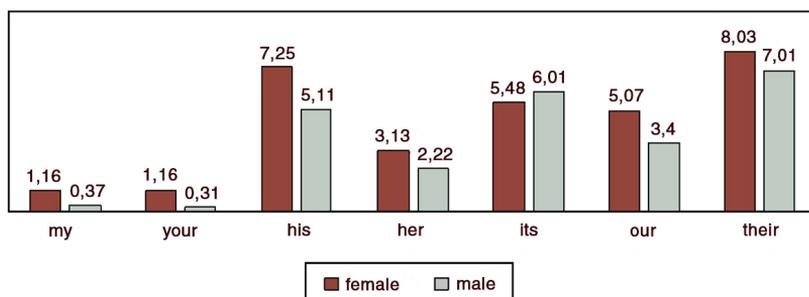


Table 4. Frequency of use of nominalizations and possessive determiners according to the sex of author (NF 10,000).

According to the results and conclusions presented by Argamon *et al.*, formal texts produced by women tend to contain a higher frequency of possessive structures that reinforce personalization and involvedness in their speech. After data analysis there seems to be indeed a preference for women to include more possessive determiners premodifying nominalization, as female texts contain a normalized frequency of 31.32 nominalizations paired with possessives per 10,000 words, whereas in texts written by men the normalized frequency is 24.47 ($t = 0,5$). This trend affects all determiners except the neuter third-person singular *its*, which is more frequent in male-authored texts (5.48 nominalizations per 10,000 words, 52%) than in texts written by women (6.01 nominalizations per 10,000 words, 52%).

Each type of possessive has different pragmatic and textual functions that dictate their frequency of use. First person possessive determiners are usually used to enhance rhetorics. Pragmatically, first person singular *my* highlights the individuality of the author, as in (5)

(5) In like manner, the utmostpleasure of which the imagination is fufceptible by a poetical narrative or exhibition, is a thing, in *my judgment*, not inconceivable. (Campbell, 10; emphasis added).

whereas the plural *our*, as in (6)

(6) [...] as in revolving in very long ellipses, they are sometimes too remote for *our inspection*, their greatest distance from the Sun being far beyond the orbit of the GeorgiumSidus, as these bodies are not much larger than our Moon (Bryan, 94; emphasis added).

can be read as a guild codification where writers can place themselves as members of the scientific community⁷. Data show that female writers clearly favor the use

⁷ The plural *our* can also be a rhetorical device to refer to the author himself and the community to which the determiner refers may be society or the population rather than only the scientific community.



of this type of nominalization premodifier. In both cases, women tend to favor involvement with both their readers and the community. However, the singular *my* is clearly more frequently found in female writers' texts with a proportion of 3:1 (1.17 per 10,000 words, 75% in texts written by women and 0.38, 25% in texts written by men, $t = 0,07$) whereas the frequency of *our* in texts produced by women (5.07 per 10,000 words, 60%) and men (3.4, 40%) seems more homogeneous ($t = 0,8$). Here we can find two antagonistic tendencies: on one side female writers encourage involvement in their writings through the use of *my* but, on the other side, the sense of belonging expressed in *our* may be a more delicate feeling to convey given the strong social refusal against women scientists at the time.

The use of second person possessives is dictated by register and text-type. In some way, the use of *your* is also a stylistic choice but it is only found in learner's texts, namely dialogues, textbooks and lectures, usually emulating direct speech as in (7)

(7) *YOUR Objection* is juft, laid I, Madam if you confider the thing after the Sun was actually Rifen and juft before his Setting (Harris, 28; emphasis added).

Second person possessives make relationships explicit and show greater involvement of the author towards the reader. There is indeed a higher frequency of this type of possessive paired with nominalizations in female-authored texts (1.17 per 10,000 words, 79%) than in texts written by men (0.32, 21%) ($t = 0,2$).

Third-person possessive determiners clearly outnumber the rest of possessives but the difference in frequency of use is not sex-related. Indeed, the fact that the referent of the determiner can be found in the text makes these nominal groups useful lexical cohesion devices. The combination of third-person singular possessive and nominalization usually mirrors a preceding sentence where the possessive was a nominal group functioning as subject and the process is expressed in the form of a verb, as in (8)

(8) Though *Copernicus* thus simplified so greatly the Ptolemaic theory, *he* yet found that the idea of circular orbits for the planets would not explain all the phenomena; *he* therefore still retained the "cycles and epicycles" that Alfonso had so heartily condemned. For forty years *this illustrious astronomer* carried on *his observations* in the upper part of a humble, dilapidated farm-house, through the roof of which *he* had an unobstructed view of the sky (Steele, 24; emphasis added).

The differences in frequency of all third-person possessive determiners are determined by the gender of their referent. Data show that masculine *his* (12.36 per 10,000 words) and neuter *its* (11.51) are more frequent than feminine *her* (5.35). This should be also understood as a consequence of the exclusion of women from science although it does not reveal misogynist attitudes in writers. The distinction between animate and inanimate referents is crucial because whereas there seems to be no difference in the use of inanimate referents, the predominance of male scientists at the time explains the higher frequency of *his* in texts. Its frequency in texts written by women (7.25, per 10,000 words, 59%) and men (5.11, 41%) is rather balanced and it is possible to find similar references to famous astronomers such as



Ptolemy, Copernicus, Brahe, Galileo, Kepler, Newton and Halley or philosophers in all texts, as in (8).

Similarly, women (3.13 per 10,000 words, 59%) and men (2.22, 41%) seemed to use the feminine *her* in a similar way ($t = 0.7$). In this case, the lack of women scientists at the time restricts the frequency of the determiner. However, it is still possible to find animate referents in the generic lady or woman—the generic *man* applied to the human species and *God* are also found as referents of *his*— or personifications such as *Nature* or *Athens*. In astronomy texts, names of celestial objects are considered feminine or masculine and therefore it is common to find feminine possessives in phrases referring to Venus and the Moon and masculine *his* alluding to the Sun or Mars.

Male and female writers seem to use feminine and masculine possessives as nominalization premodifiers in a similar way. No trace of a possible misogynist attitude in texts written by males was detected, as both *his* and *her* have the same percentage distribution: *his* has a frequency of use of 7.25 (59%) per 10,000 words in texts written by women and 5.11 (59%) in texts written by men whereas the normalized frequency of *her* is 3.13 (41%) in female-authored texts and 2.22 (41%) in male-authored texts. Similarly no bias to favor references to other women have been found in texts written by women, which may be explained by the lack of conscience about women scientists as a group in this period. Women tend to favor the use of possessives even if in this case the cohesive function of possessives minimizes the difference. However, the situation is reversed in the case of the neuter *its* as this is the only possessive that is more frequently used by men (6.02 per 10,000 words, 52%) than by women (5.49, 48%)

Predominance of *its* in male writing (frequency of 5.49 per 10,000 words, 52% in male writers) may indicate the preference of male writers to objectivity as opposed to the preference of female writers to highlight human or human-like connections in their texts. The results are consistent with the hypothesis confirmed by Argamon *et al.* that male authors are more likely to indicate or specify.

Concerning subcorpus variation, several trends can be described. On the one hand similar results have been found in the distribution of the normalized frequencies of *my*, *your*, *his* and *their* according to the sex variable. Both *CETA* and *CEPHiT* show similar distribution for first person singular *my*: in both cases women favor the inclusion of the possessive, whose normalized frequencies oscillate between 79% (0.96 per 10,000 words in *CETA*) and 72% (1.32 per 10,000 words in *CEPHiT*). Similarly, the second person *your* is also favored by women in both subcorpora. In this case a higher frequency of *your* can be reported in female astronomers (85%, mean frequency of 0.66 per 10,000 words), whereas the percentage of use of female philosophers is lower (69%). In the case of *his*, both *CETA* and *CEPHiT* show the same percentage (59%), which again confirms the tendency of women to use more possessives. The frequencies of use of *their* by women in *CETA* (50%) and *CEPHiT* (57%) are also close.



TABLE 5. FREQUENCY OF USE OF NOMINALIZATIONS AND POSSESSIVE DETERMINERS IN BOTH SUBCORPORA ACCORDING TO THE SEX OF AUTHOR (NF 10,000)

	<i>CETA</i>		<i>CEPHiT</i>	
	FEMALE AUTHORS	MALE AUTHORS	FEMALE AUTHORS	MALE AUTHORS
<i>my</i>	0.96	0.25	1.32	0.51
<i>your</i>	1.92	0.35	0.66	0.29
<i>his</i>	6.73	4.78	7.61	5.47
<i>her</i>	1.92	4.13	3.97	0.21
<i>its</i>	10.58	8.06	1.98	3.88
<i>our</i>	5.77	1.28	2.31	5.63
<i>their</i>	7.28	7.34	0.33	6.68

On the other hand, in the case of the third person *its* distribution results in both corpora give apparently different results: whereas in *CETA* there is a higher frequency in texts written by women (10.58 per 10,000 words, 57%), *CEPHiT* shows a higher frequency in male-authored texts (3.88, 66%). The use of third person determiners is normally determined by textual concerns and, in the case of *its*, the lack of a gendered referent makes it possible to exclude direct sociolinguistic explanations for its use in texts. The possessive *its* usually serves to specify the properties of the thing or process it refers to. These results then confirm the hypothesis that male authors tend to exhibit more specification features (Argammon *et al.*).

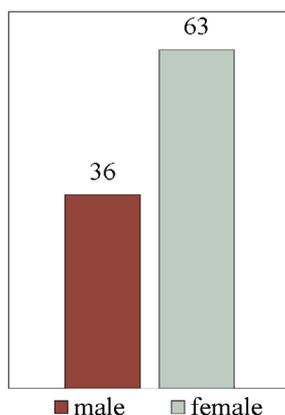


Table 6. Frequency of use of nominalizations postmodified by an *of*-phrase according to the sex of author (NF 10,000).

Finally, *her* and *our* show disparity of results in both subcorpora. In the case of *her*, male astronomers included a higher frequency of the possessive than women (mean frequency of 4.13 per 10,000 words in texts written by males and 1.92 in those written by females), whereas in the philosophy subcorpus, 95% of occurrences of the possessive premodifying a nominalization (3.97 per 10,000 words in texts written by women, 0.21, 5% in male-authored texts) were found in texts written

by women. The reason for this difference may be related to the topic of the texts, as some celestial objects (Venus, The Moon) require a feminine possessive and hence their high frequency is not dictated by sociolinguistic concerns. In the case of *our*, women in *CETA* tend to use the possessive more frequently (mean frequency of 5.77 per 10,000 words, 82%), whereas in *CEPHiT* almost three quarters (5.63 per 10,000 words, 71%) of *our* paired with a nominalization are found in male texts.

4.2. SPECIFICATION AND NOMINALIZATIONS

According to Argamon *et al.*, post-head noun modification with an *of*-phrase is an indicator of male writing, as part of the tendency of male authors to provide specification in their texts (also confirmed by Mulac and Lundall and Biber). Their corpus consisted of 604 documents from the *British National Corpus* (BNC) that included both fiction and non-fiction texts. Data analysis has shown that this hypothesis cannot be applied to nominalizations in our corpus, as represented in Table 6.

In total, there are 5,081 nominalizations postmodified by an *of*-phrase, which represents the 28% of all nominalizations. 64% of occurrences were found in female-authored texts. Similar results are found after subcorpora breakdown: 70% of occurrences in *CETA* and 53% of those in *CEPHiT* were found in texts written by women.

The reason why *of*-phrase postmodifying nominalizations cannot be used as reliable specification features of male style is connected with the verbal features encoded in nominalizations. As nouns, nominalizations do not show signs of voice and tense as part of the decategorization process (Hopper & Thompson 1980) they undergo. However, information about the process in the form of former verbal valencies is in many cases still retained. In previous studies (Bello) it has been shown that agents are the most frequently retained group and can appear as promodifying possessives, as in (9)

(9) The direction of the meridian may be secured at every instant by observations, and although local difficulties may oblige us to deviate in *our measurement* from this exact direction, [...] (Bradford, 90; emphasis added).

or postmodifying prepositional phrases, as in (10)

(10) The fixed stars are distinguished from the planets by being more bright and luminous, and by continually exhibiting that appearance which we call the scintillation, or *twinkling of the stars* (Bonnycastle, 44; emphasis added).

The role of postmodifying *of*-phrases then is not only that of providing specification of their heads but also including information about the process. Hence there are instances of objects (11)

(11) [...] 59 Seconds, will be the mean Motion for two Days, which stands against the 2d of January, and thus by the continual *Addition of 4 Minutes, 59 Seconds, 18*



Thirde, the mean Motion of the preceding Day, you will have the mean Motion of the succeeding Day [...] (Hodgson, 88; emphasis added).

Information about circumstances, which are traditionally encoded as adjuncts in verbal realizations is also very frequently found in postmodifying prepositional phrases although these are not introduced by *of* but rather other temporal and spatial prepositions, as in (12)

(12) Near this Confellation there are severall unformed Stars, which in the year 1679. Mr. Edmund Hally, in memory of Charles II. King of Great Britain, &c. who was preferred by his *Hiding in an Oak*, reduced them into a Confellation, and called it Robur Carolinum (Morden, 36; emphasis added).

The complexity and multiplicity of functions of postmodifying *of*-phrases in phrases headed by nominalizations might have excluded their use as providers of specification and indicators of male writing.

5. CONCLUDING REMARKS

After data analysis it is possible to conclude that there is a slight tendency to find a higher frequency of nominalizations in texts written by women. However, statistical significance tests show that there is no evidence of differences in the frequency of use of nominalizations according to the sex of the author. Women in the corpus used this marker of scientific discourse as much as men did. Taking into account that nominalizations have been defined as abstraction boosters, the claim that women used a loose style in writing and were incapable of abstract thought cannot be therefore sustained according to data.

There are however differences in the way women and men used nominalizations in the corpus. Women's tendency to show involvedness in writing has been confirmed in the higher frequency in the use of first and second person possessives. Men's tendency to indicate specificity could not be seen in a higher frequency of use of post-head nominalization specification with an *of*-phrase, probably because nominalizations are a special type of words and the information included in their modifiers relates to the description of a process and is required by the context where the nominalization appears. The use of third person possessives paired with nominalizations showed some light evidence for specification, especially in the neuter *its*.

After these revealing results further research could be expanded to cover a higher number of texts and other features of scientific register, as well as other features that could confirm or refute the hypothesis that women make a greater use of features displaying involvedness and emotions whereas men tend to be more judgmental and informational (Mulac). The description of the language used by late Modern English female and male scientists is still an open question.

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ON WRITING SCIENCE IN THE AGE OF REASON

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ABSTRACT

Female authors of scientific works written in English were just a few in the eighteenth century in comparison with the increasing production of male writers. Their limited presence in the scientific panorama of the period could, therefore, account for the lack of research on how these women wrote or the sort of linguistic strategies they were familiar with from a present-day perspective. Some external considerations should be also reckoned as contributing to this situation such as a prescriptive behaviour for each of the sexes. By the comparison of four linguistic parameters expressing overt persuasion in texts written by male and female authors from the *Coruña Corpus of English Scientific Writing*, I will concentrate on the way in which eighteenth-century women writers of science on the one hand, and men, on the other, make use of argumentation/persuasion strategies in order to ascertain the truthfulness of their propositions and to attract the readers' attention.

KEYWORDS: Female scientific writing, eighteenth century, persuasion, argumentation.

RESUMEN

Las autoras de trabajos científicos escritos en inglés eran solamente unas cuantas en el siglo dieciocho en comparación con la creciente producción de los escritores. Su limitada presencia en el panorama científico del período podría explicar la carencia de trabajos de investigación sobre el modo de escribir de estas mujeres o el tipo de estrategias lingüísticas que empleaban en sus escritos. En el estudio del uso de la lengua, es interesante tener en cuenta ciertas consideraciones externas a los propios usos lingüísticos, como son las prescripciones de comportamiento establecidas para hombres y mujeres que puedan jugar un papel importante. A través del estudio de cuatro parámetros lingüísticos que expresan persuasión en textos escritos por hombres y mujeres recogidos en el *Coruña Corpus of English Scientific Writing*, este trabajo se centra en el análisis de cómo hombres y mujeres emplean estas estrategias con objeto de determinar la veracidad de sus proposiciones y atraer la atención del público lector.

PALABRAS CLAVE: escritura científica femenina, siglo dieciocho, persuasión, argumentación.



INTRODUCTION

This paper discusses how certain argumentative and persuasive strategies, generally reckoned to indicate so (Biber 1988, 1995; Biber and Conrad 2009; Atkinson 1999; Mischke 2005, Nesi 2009, Włodarczyk 2010, Moskowich and Crespo, 2012), were used by eighteenth-century male and female writers of science. This discussion will focus on a quantitative and qualitative comparison of the sort of strategies and the degree of use either men or women made of them in their works.

For this purpose scientific texts have been taken from three of the current sub-corpora of the *Coruña Corpus of English Scientific Writing* (henceforth, *CC*). The *CC* has been designed as a tool for the study of language change and variation in English scientific writing in general as well as within the different scientific disciplines, and contains texts produced between 1700 and 1900, excluding medicine¹ (Crespo 2015). This time span is intended to reflect the establishment of the empirical approach to science in the seventeenth century, leading to a modification in scientific discourse, and ends at the time of a further shift, some two centuries later, when the evolution of science and society, through the Enlightenment and the Scientific revolution, led Huxley (1898) to claim the need for a “special” scientific discourse (Moskowich 2012).

Although men and women both tended to observe the linguistic considerations commonly present in scientific works, I contend that women were more prone than men to the use of personal strategies given their naturally subjective character (Holmes). For this analysis I have selected eighteenth-century text samples from Astronomy, Philosophy and Life Sciences. As a matter of fact, my working hypothesis also contemplates that both discipline or subject-matter and the genre used to address audiences with different levels of knowledge or different social roles can help explain more in detail the general results of the analysis. Whenever possible I will resort to the prefaces of their works as an aid to exploring their attitudes as scientific writers.

The paper will be divided into the following sections: after the introduction, Section 1 will present a brief overview of the social status of women “scientists”

¹ By way of summary, three main parameters of compilation have been followed: classification, time-span and degree of representativeness. No random selection has been made but this has been based on certain external parameters to ensure fruitful linguistic analyses. From the point of view of thematic grouping, we have adhered to the current UNESCO classification of science as a starting point, though the compilers have borne in mind important differences in how science was viewed before and after Empiricism, which is especially visible in eighteenth-century samples. Indeed, the authors are compiling independent sub-corpora which share a similar structure, organisation and mark-up (Moskowich and Crespo 2007; 2012; Crespo and Moskowich 2010): *CETA*, *CEPhiT*, and *CELiST*. One of the peculiarities of these corpora is that, apart from the texts themselves fulfilling the same external criteria for the purpose of representativeness, they include metadata files with information about the author and the text itself to which the sample belongs. In addition, a corpus management tool has been implemented to facilitate the use of different kinds of searches of all the sub-corpora. It works like most concordance programmes, but the *Coruña Corpus Tool* incorporates special features adapted to the characteristics of the *Coruña Corpus* (Crespo and Moskowich 2010).



confronted with that of men and their cultural milieu. Section 2 will cover the methodology and the corpus material selected for analysis. An analysis of these data will then be provided in Section 3. I intend to examine possible differences between male and female discourse, considering as variables the particular scientific discipline and the genre used to convey information. Finally, concluding remarks will form part of section 4.

1. WOMEN AND SCIENCE IN THE EIGHTEENTH CENTURY

At first, women of a high rank were able to take part in so-called “scientific circles”, where men used to meet; the atmosphere being one of uncertainty for all participants. But this uncertainty was accompanied by a growing interest in the observation and analysis of all kinds of phenomena without following any clear parameters or rules. Everything scientific, from meetings to debates, came into fashion in the last quarter of the seventeenth century for those moving in the highest circles of society, and thus certain women were able to participate in such events (the Duchess of Newcastle, Lady Ranelagh among others).

On the contrary, men devoted to scientific issues were members of the gentry or the aristocracy who had been educated and their discourse, a genteel one, was perceived as true and reliable. They represented a social group admired and respected by the majority of the population. In particular some of the male authors included in this study were members of the Church, being their professional activities mostly religious services (Whiston, Watts, Costard); some others devoted themselves to teaching (Wilson, Bonnycastle, Harris) but many had shared a previous formal training in Mathematics, Physics, Geology or Life Sciences by institutional means (Steward, Ferguson, Hill). The socio-cultural background for men and women at the intermediate stage in their education is radically different. Men can evolve independently; women are subject to external conditionings. In the private sphere or in small circles the work done by women is accepted and even praised but in the public sphere society obstacles the development of women’s science (Hunter, 2005). This is a social prejudice against the female sex which does ignore status, cleverness or wisdom.

Hunter (2005) claims that women were devoted to practicing science in the household domain pushing science developed by women to the background. Nevertheless, they really performed scientific tasks, as Bathsua Makin explains in *An Essay to Revive the Ancient Education of Gentlewoman* (1673, 35):

To buy wooll and Flax, to die [sic] Scarlet and Purple, requires skill in Natural Philosophy. To consider a Field, the quantity and quality, requires knowledge in Geometry. To plant a vineyard, requires understanding in Husbandry: She could not merchandize, without Knowledge in Arithmetick: she could not govern so great a Family well, without Knowledge of Politicks and Oeconomicks: She could not look well to the ways of her Household, except she understood Physick and Chirurgery: She could not open her Mouth with Wisdom, and have in her Tongue the Law of Kindness unless she understood Grammar, Rhetorick and Logick.



Women's exclusion from scientific knowledge runs parallel to the process of the institutionalisation of science which developed between the last part of the seventeenth century and throughout most of the eighteenth century (Solsona i Pairó 1997, 86-87) with the creation of societies and specialized associations to which women were not admitted even if highly-esteemed as was the case of Boyle's sister, Lady Ranelagh, or Caroline Herschel, a century later. Nevertheless, the dissemination of science among the growing number of literate people also included the tentative participation of women in these matters. In fact, "from 1730 onward there was a European-wide effort led by Newtonians (...) to find a female audience for science. British periodicals appeared specifically aimed at making science accessible to women" (Jacob 2003, 206). The *Female Spectator* was one of these, but women also attended lecture courses and endeavored to find sponsors to write textbooks.

Samples from both male and female works, included in the CC, will be studied in the pages that follow to compare the use of argumentative/persuasive strategies.

2. THE CORPUS MATERIAL

The core of the methodology used in this paper lies in the study of some of the linguistic features that authors have generally agreed to transmit persuasion (Biber 1988, 1995; Biber & Conrad 2009; Atkinson 1999; Mischke 2006; Nesi 2009; Włodarczyk 2010; Moskowich and Crespo 2012). The expression of persuasion allows for the study of the extent to which the author is present in his/her writings, exerting pressure to convince the reader or to make him participate in an *a priori* unidirectional communicative process.

For this paper, a preliminary approach to persuasive or argumentative strength in scientific writing, predictive and necessity modals, suasive verbs and conditional subordinators have been considered.

TABLE 1. LINGUISTIC FEATURES (FROM BIBER 1988)

PREDICTIVE MODALS	NECESSITY MODALS	CONDITIONAL SUBORDINATORS	SUASIVE VERBS
<i>Would</i>	<i>Must</i>	<i>If</i>	agree, allow, arrange, ask, beg, beg, command, decide, decree, demand, desire, determine, enjoin, entreat, grant, insist, instruct, intend, move, ordain, order, pledge, pray, prefer, pronounce, propose, recommend, request, require, resolve, rule, stipulate, suggest, urge, vote
<i>Shall</i>	<i>Ought</i>	<i>Unless</i>	
<i>Will</i>	<i>should</i>		
Contracted forms*			

* In the case of contracted forms (*'till* and *'ll*), there is no way of knowing whether they are contractions of *will* or of *shall*, and for this reason I have treated them separately.

As a result of quantifying the frequency of occurrence of the linguistic features selected I feel I will be in a position, on the one hand, to provide a general depiction of the use of persuasive strategies in scientific texts and, on the other, to



offer more peculiar and interesting data about women's and men's scientific writing by using variables such as the genre of the samples and the discipline involved. For the qualitative analysis other aspects also mentioned by Biber (1988, 70) will be taken into account where necessary: "Subject-matter, purpose, rhetorical structure, and style in addition to situational parameters" such as the relation between communicative participants, the relation of the participants to the external context and the relations of the participants to the text itself..." will be considered in those cases in which they are useful for the interpretation of data (Biber & Conrad, 2009).

In my analysis, as we will see in Section 3 below, figures will be normalised to 1,000 to provide more accurate results.

I have worked initially with 608,658 words, which correspond to the total number of words recorded for the three disciplines analysed, namely Philosophy, Life Sciences and Astronomy in the eighteenth century. Thus far, the different sub-corpora that will be examined are:

SUB-CORPUS	DISCIPLINE	TOTAL No. OF WORDS	MALE WRITING	FEMALE WRITING	
<i>CEPhiT</i> (Corpus of English Philosophy Texts)	Philosophy	200,022	169,860	30,162	15.09%
<i>CELiST</i> (Corpus of English Life Sciences Texts)	Life Sciences	200,557	190,480	10,077	5.00%
<i>CETA</i> (Corpus of English Texts on Astronomy)	Astronomy	208,079	197,816	10,263	4.93%
TOTAL		608,658	558,156	50,502	9.04%

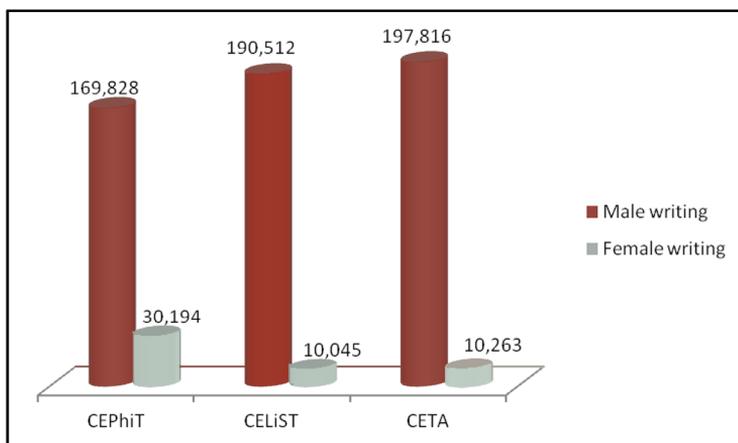
As can be seen in Table 2, only 50,502 words, corresponding to 9.04% of all the samples recorded belong to women's texts whereas 558, 156 (91.70%) belong to samples written by men.

The scant number of words from texts written by women can be explained, on the one hand, by several socio-external factors: the political, cultural, socio-economic and religious environment of the period, as well as the well-known practice of women leaving their names off a work or using a male pseudonym (Lareo 2011, Moskowich 2012); and, on the other, by looking at the specific requirements of corpus compilation applied to the CC: for an author to be included in the corpus it was necessary that some kind of biographical data be added to the metadata section, and in most cases of female authorship this information was difficult to obtain.

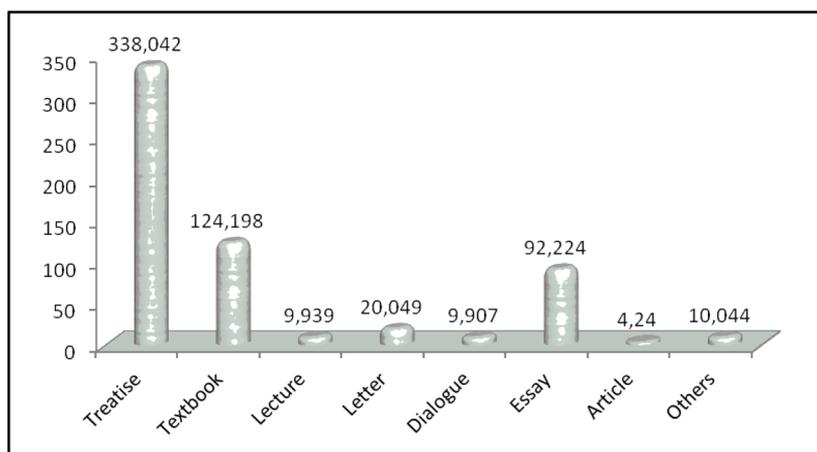
The distribution per discipline of the total number of words can be observed in Graph 1.

Although it is undeniable that academic prose production was certainly a male task, it is worth noting that the distribution, however similar, is not exactly the same in all disciplines. As shown in Graph 1, Philosophy contains the highest number of samples of female authorship. It falls in the field of the Humanities, which seems to have been a typical area of activity for women. Moreover, the period





Graph 1. Distribution per discipline of eighteenth-century male and female writing.



Graph 2. Words per genre in general.

under analysis here coincides with a moment in history when the vindication of women's rights was gaining importance in the social discourse, not only but mostly in authors within this field (Agassiz was a botanist but was worried about women's education and their social role).

If we look at the second variable we will employ in the analysis, that of genre, the distribution is as shown in Graph 2.

More than half the total number of words (55.54%) represents the genre treatise. Textbook (20.4%), essay (15.15%) and letter (3.29%) come next. Treatises,

then, were the most common texts in our samples. We assume that the kind of genres used by the authors included in the *CC* and their distribution could serve as a guidance of the sort of genres preferred in general terms.

For the sake of comparison I have crossed this variable with sex and the results are displayed in Table 3:

TABLE 3. WORDS PER GENRE DISTRIBUTED ACCORDING TO SUB-CORPUS AND SEX

	<i>CEPhiT</i>		<i>CETA</i>		<i>CELiST</i>		TOTAL
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
Treatise	109,628	20,117	47,672		150,58	10,045	338,042
Textbook	10,064	_____	93,858	10,263	10,013	_____	124,198
Lecture	_____	_____	9,939	_____	_____	_____	9,939
Letter	_____	_____	9,975	_____	10,074	_____	20,049
Dialogue	_____	_____	9,907	_____	_____	_____	9,907
Essay	50,136	10,077	12,180	_____	19,831	_____	92,224
Article	_____	_____	4,240	_____	_____	_____	4,240
Others: dictionary	_____	_____	10,044	_____	_____	_____	10,044

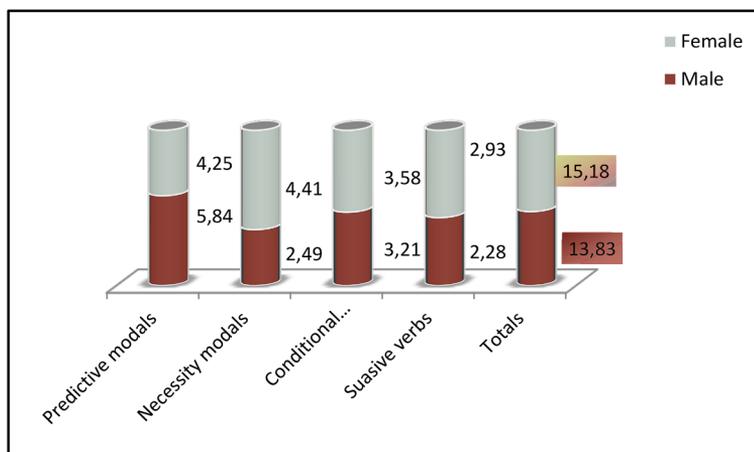
A similar preference for treatises can be observed if we just look at female works. The remaining samples belong to the categories textbook and essay which is in line with the overall textual patterns described for male authors. So long as these genres coincide in the case of men and women it is reasonable to think the rhetorical formats which are going to be followed but we might wonder whether the linguistic uses will be also the same. This is something to be answered in the results and discussion section.

Searches were carried out with the aid of the *Coruña Corpus Tool* (henceforth *CCT*) but in many cases, automatic searches were also checked manually, a procedure also mentioned by Biber (1988, 67). Moreover, in the case of suasive verbs all the verbal forms were contemplated (ending in *-s,-ed,-ing* or irregular forms).

Manual disambiguation has produced an important difference in some cases between the number of tokens that could have been found and those which were actually representative of each linguistic feature. Interestingly enough, this phenomenon is to be observed in predictive modals and in suasive verbs, as will be explained in sub-section 3.1 below.

In what follows I will examine the significance of those persuasive strategies used by eighteenth-century authors, the differences between male and female writers and how the expression of persuasion is affected by discipline or genre.





Graph 3. Persuasive markers in *CETA*, *CELiST* and *CEPhiT*.

3. RESULTS AND DISCUSSION

The total number of forms expressing overt persuasion which have been found in my material amounts to 8,491, which corresponds to 13.95 instances per 1,000 words (nf).

Cases found in male writings amount to 13.83 in normalised frequencies which contrasts with the 15.18 forms retrieved from female texts. Women are assumed to be more involved than men and, hence, more engaged with their writings (Argamon *et al* 2003). In the light of this claim, I could say that this is more so when writing on science since they feel the necessity of paving their own way in a male-dominated world. This goes against the empiricist canon of objectivity which guided eighteenth-century science but goes in favour of seeking the trustworthiness or reliability on the readers' part so predicated by Bacon's and Boyle's doctrine.

Although, obviously, these results reveal that women resort to more persuasive strategies than men, they must be taken with care since on closer inspection different results for each individual linguistic feature will be determined as can be seen in Graph 3 below:

As can be deduced, women seem to prefer necessity modals in the first place (4.41), followed by predictive modals (4.25) and conditional subordination (3.58). The expression of persuasion on the part of male authors focuses on predictive statements which include the corresponding modals. It is interesting to note that the most salient distinctive feature in both male and female writing lies in the expression of modal meanings.

In the following pages I will present an individual analysis of each linguistic feature analysed. The first of these features is, precisely, that of predictive modals.

3.1. PREDICTIVE MODALS

The three types of predictive modals searched (*will*, *shall* and *would*) have all been found in our samples. The general counts (including *'ll*) reveal that a total of 3,710 instances have been traced; of these, 3,422 (6.13 nf) have been found in texts written by men whereas 288 (5.7 nf) belong to texts by women. Thus, there does not seem to be a dramatic distance between male and female writers although predictive modals are clearly more abundant in the former.² *Shall* and *will* represent two modes of expressing prediction: *shall* conveys extrinsic prediction whereas *will* transmits volition or intrinsic prediction. According to Coates (1983) “will ranks high in the scale of confidence” and this might have compelled male authors to use it and comply with the goal of argumentation in scientific writing: influence the addressee by configuring a system of significant values and conceptual relations. In addition, *will* reinforces the validity of an assertion provoking a reaction in the reader (Beaugrande and Dressler, 1981, 184). Table 4 accounts for the raw and normalised frequencies of predictive types male and female authors have used according to discipline or subject-matter:

TABLE 4. USES OF PREDICTIVE MODALS IN MALE AND FEMALE WRITING PER DISCIPLINE

MALE	CETA	Nf	CEPhiT	Nf	CELiST	Nf	TOTAL	Nf
Will	1187	6.00	407	2.39	484	2.54	2240	4.01
Would	332	1.67	338	1.98	133	0.69	803	1.43
Shall	130	0.65	137	0.80	112	0.58	379	0.67
	1649	8.33	882	5.19	729	3.82	3422	6.13
FEMALE	CETA	Nf	CEPhiT	Nf	CELiST	Nf	TOTAL	Nf
Will	42	4.09	111	3.68	0	0	153	3.02
Would	15	1.46	76	2.51	1	0.09	92	1.82
Shall	14	1.36	29	0.96	0	0	43	0.85
	71	6.91	216	7.16	1	0.09	288	5.70

As for the three types expressing prediction in descending order of frequency, *will* (3.93) comes first followed by *would* (1.47) and finally by *shall* (0.69). The results of each individual item are displayed in Table 5:

² After using *CCT*, manual checking found that not all the cases corresponded to verbal forms. *Will* could belong to the nominal category or it could have a different meaning.



TABLE 5. PREDICTIVE MODALS: RAW AND NORMALISED FREQUENCIES

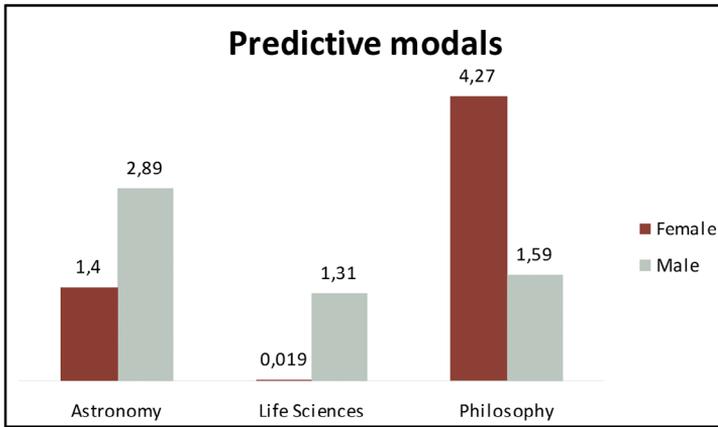
PREDICTIVES	RAW FIGURES	Nf/1000
Will	2393	3.93
would	895	1.47
shall	422	0.69

Comparing normalised frequencies of men and women, I have detected that, although the order of general frequencies is maintained, the presence of one predictive modal or the other varies: *will* is more often used by men (4.01) than in women (3.029). A different situation is found with *would*. Cases in women writers amount to 1.82 whereas in men writers the figure remains in 1.47. The same applies to *shall*: women present 0.85 cases whereas men present 0.67. *Would* ranks low on the scale of confidence, paraphrasing Coates (1983), since it conveys the meaning of remote possibility. The proposition containing this modal is not likely to happen and this improbability derives in a weak persuasive force. Likewise, *would* expresses tentativeness and politeness which yields a trait of cooperativeness between writer and reader. Women are more empathetic than men, with a more categorical and imposing style (Cameron, 2009). The implication of the author in the expression of prediction is lower in the use of *shall*. Persuasion, in this case, causes a weaker reaction in the reader since the proposition reveals a general assumption and not the particular intention or the private opinion of the author.

As noted in the introduction to Section 3, above, I have also included discipline as one of the variables in the analysis, since I think scientific writing may be discipline-dependent (Moskovich, 2013). In this sense, some epistemological restrictions imposed by a discipline on the author's choices in text production could be observed (Garzone, 2004). Findings here are interesting. Writers on astronomy matters are the leaders in the use of predictive modals (8.26) followed by philosophy writers (5.48) and life sciences writers (3.63). It is shocking that a more observational and experimental science such as Astronomy allows for a more personal participation of the author trying to convince the reader of the truth of his/her propositions. Yet, we could think that this has to do with the period in which these texts were written: the empiricist procedures and techniques are beginning to be settled, it is the initial stage of a new movement which will gradually set out a particular discursive method giving birth to the specific scientific register.

The same order in the frequency of use of predictive modals in the different disciplines applies to both male and female authors except for philosophy. The latter (7.16) surpass the former (5.19). This discrepancy lies in the nature of the discipline itself: philosophy forms part of the humanities according to the UNESCO classification (1988) of sciences and it allows for more authorial presence, the manifestation of enthusiasm (or lack of it) and personal commitment. This is especially so when the topic is one of vindication, morality, beliefs, ethic principles. All these topics leave space for the author's stream of ideas explained through deep argumentation and reasoning which is characteristic of the soft sciences. As Hyland (2005, 187) contends, "...writers (...) in the humanities and social sciences taking





Graph 4. Predictive modals in men's and women's writings per discipline.

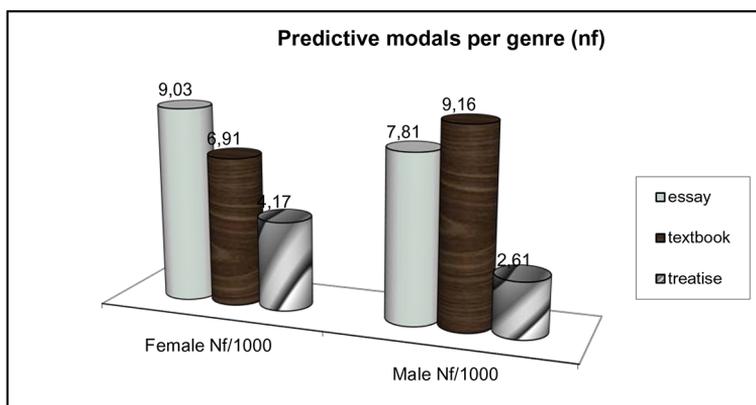
far more explicitly involved and personal positions than those in the science and engineering fields". Therefore, if we compare both sex and discipline we can note that it is precisely the group of female authors of philosophy (mainly vindicating a different role for women in society) the one that stands out over the rest:

The analysis of predictive modals as one of the parameters in the dimension concerning persuasion and argumentation is in accordance with what might be expected, given that the two disciplines with the highest frequency of occurrence, Philosophy and Astronomy, are those in which their own epistemological properties induce authors to influence readers. Philosophy is a highly argumentative discipline, and whereas Astronomy itself may be grouped with other observational sciences, the genre selected by the author here (textbook) requires to a certain extent the use of persuasive strategies to attract the reader's attention and foster adherence to the topic. It is a way of disseminating knowledge, by the implication of the target addressee. In the sample representing Life Sciences (Blackwell, 1737, *A Curious Herbal, containing five hundred cuts of the most useful plants which are now used in the practice of physick. Vol 1*) description and condensed explanations prevail. This particular treatment of the topic could be the reason for the low number of occurrences here.

As for genres, Table 7 below shows the irregular distribution of the modal forms expressing prediction.

TABLE 7. PREDICTIVE MODALS PER GENRE (NORMALISED FIGURES)						
GENRE	PREDICTIVE MODALS (FEMALE)	Nf/ 1000	PREDICTIVE MODALS (MALE)	Nf/ 1000	TOTAL	Nf/ 1000
Essay	91	9.03	642	7.81	733	7.94
textbook	71	6.91	1044	9.16	1115	8.97
treatise	126	4.17	804	2.61	930	2.75





Graph 5. Predictive modals per genre.

The normalisation of figures reveals that modals abound mainly in textbooks, followed by essays and treatises. This is clearly seen in Graph 5:

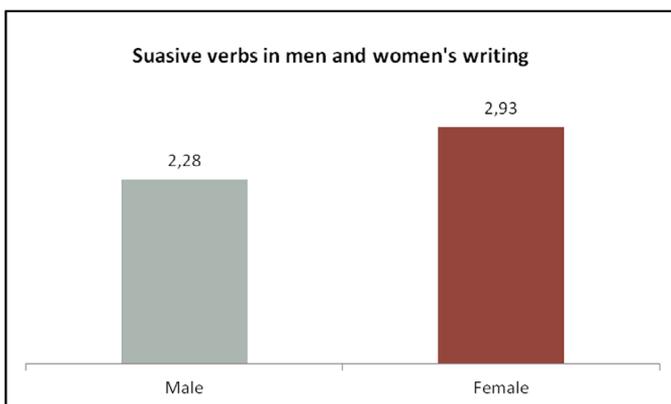
The characteristics of each of the genres play a part here. Treatises represent consolidated knowledge previously agreed upon by members of the epistemic community. Essays occupy intermediate levels at the pyramid of knowledge promoting the exchange of 'wisdom' whereas textbooks tend to be informative. The presence of these modals implies a decrease in the level of objectivity normally attributed to scientific discourse (Garzone, 2004) since authors may choose to "violate the principles of scientific expression to enhance the persuasive force of their text" (Sokol 2006, 44) for the sake of trustworthiness. Treatises are addressed to a readership that is placed at the same level of the author within the epistemic community. In them the author's intention is to disclose his/her findings without being influential on anyone, transmitting well-accepted and established knowledge. Textbooks are oriented to learners with different levels of knowledge. Authors may feel the necessity to reassert themselves and to make use of argumentative mechanisms to strengthen their position in the teaching-learning process and persuade the readership to rely on their discourse. In terms of the target audience, then, predictive modals predominate in texts which aim to move and persuade the reader to agree on the author's viewpoint, as in textbooks and essays.

The second feature involved in the analysis is that of suasive verbs.

4.2. SUASIVE VERBS

I have traced a total of 1,422 instances of suasive verbs in our material which are distributed as follows: 1,276 have been found in texts written by men and 146 in texts by female authors. The normalisation of figures reveals that 2.28





Graph 6. Suasive verbs in men and women's writing.

forms occur every 1,000 words in male texts whereas this figure rises to 2.93 when we work with female writings:

Suasive verb forms, then, are more frequently used by women than by men in eighteenth-century scientific works. This might agree with the female authors' necessity to reaffirm their presence in the texts by means of an overt expression of persuasion in contradiction with the assumption of tentativeness mentioned for the lower presence of predictive modals. They need to be more persuasive to the eyes of the scientific community to validate their claims, although, unconsciously, they may be separating themselves from some of the canonical patterns of empiricist discourse on being their texts imbued with this evident manifestation of authorial presence.

According to the list of suasive verbs found in Biber (1988) and Quirk *et al* (1985), many of the expected types were not recorded and some others either did not belong to the lexical category we were examining, or, despite being verbs, were not used with a suasive meaning³. Examples (2) to (4) illustrate some of these suasive uses of verbs:

- (1) deviating from my settled rule of conduct in all I <instruct> you in by communicating that which i did not fully (Bryan 1797,104)

³ Of all the suasive verbs proposed, 71 types have not been found at all. It is worth noting that, on occasions, the explanation for this absence is that the suasive meaning is recorded later than the date in which the text was published. This is the case with *suggest* according to the *OED*. In other cases the suasive meaning of certain verbs was developed during the eighteenth century, and thus was not yet of common use among contemporary writers. An example of this is *stipulate* with the meaning of "To make an express demand for something as a condition of agreement," first recorded in 1790.



- (2) And for those other little things that <move> their Envy and Ambition, they are of no Esteem with a just Considerer, nor will such as violently pursue, find their Account in them. (Astell 1700, 49).
- (3) refitting the injuries of the air and weather I now <propose> a more sure and certain method by which the most (Blair 1723, 7).

Allow, *determine*, and *require* are the types that appear most frequently, with 175, 265 and 237 tokens each. The suasive meanings of these verbs are recorded in the *OED* in the following terms:

<i>Determine</i>	†7. <i>trans.</i> To settle or fix beforehand; to ordain, decree; to ordain what is to be done. b. <i>fig.</i> To direct, impel, give a direction or definite bias to. a. To order, instruct, or oblige (a person) to do something.
<i>Require</i>	intr. To make a request or demand. b. <i>trans.</i> To demand (a thing) authoritatively or as a right; to demand, claim, or insist on having (something) <i>from</i> or <i>of</i> someone.†c. <i>trans.</i> To ask for (something) as a favour; to beg, entreat, or request (a favour).
<i>Allow</i>	a. <i>trans.</i> To accept as true or valid; to acknowledge, admit, grant. Also: (of a statement) to enable (another statement) to be true or valid.

Examples 5 to 7 below illustrate these uses in the samples under survey:

- (1) motion of the fixed stars it is fit that we <allow> the precession of the equinoctial point especially when not only (Whiston 1715, 20)
- (2) their situation magnitudes distances and motions and enables us to <determine> with precision the length of years months and days and (Adams 1777, 1)
- (3) more and generally the education of their younger children may <require> the joint attention of the parents for many years after (Hutcheson 1755, 161)

Sex differences in the usage of suasive verbs are illustrated in Graph 8 below containing normalised figures.

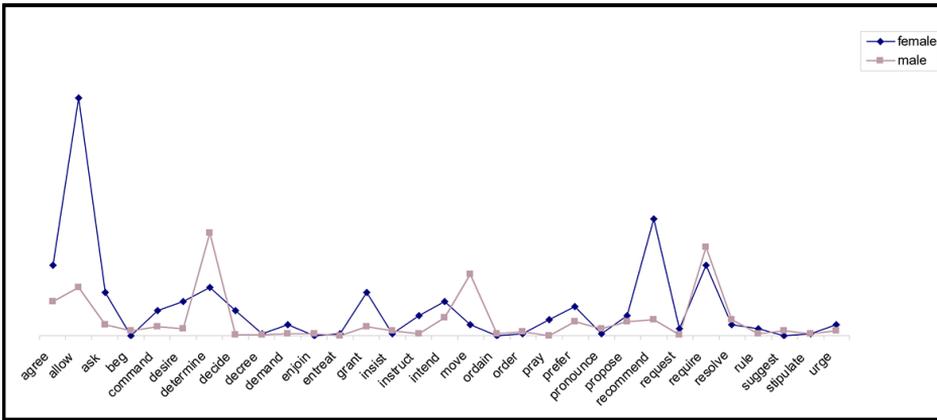
From the data obtained we can draw the conclusion that there is an uneven distribution of suasive verb forms in texts produced by men or women. The tendency in male writing is to use verbs such as *allow*, *determine*, *move* or *require*. Women prefer *agree*, *allow*, *ask*, *grant*, *intend*, *prefer* or *recommend*. On closer inspection, the histogram then, reveals, that the range of lexical forms used by women is wider than that used by men. Might this be symptomatic of greater lexical richness in works by women, further research is needed to answer this question but this could be the beginning.

As for the variable genre, the distribution of suasive verb forms is as Graph 8.

TABLE 8. SUASIVE VERB TOKENS PER GENRE (NORMALISED FIGURES)

GENRES	SUASIVE VERB TOKENS (FEMALE)	Nf/ 1000	SUASIVE VERB TOKENS (MALE)	Nf/ 1000
essay	35	3.47	256	3.11
textbook	19	1.85	250	2.19
treatise	90	2.98	869	2.82





Graph 8. Male/Female uses of suasive verbs.

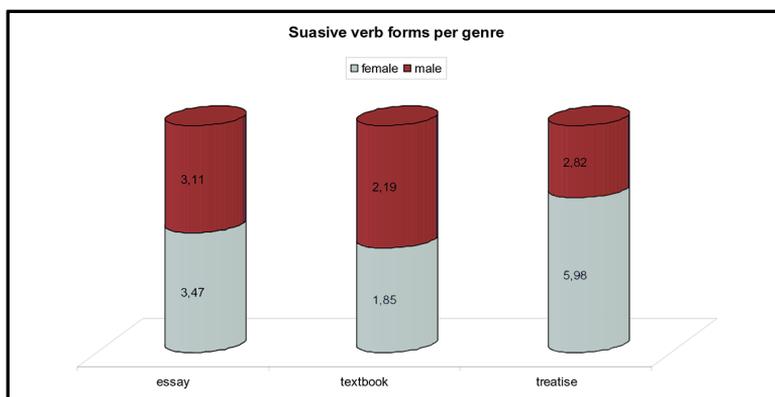
The counts for both men and women writers have yielded similar results as for the order of frequency: essay is the genre with the highest number of suatives (3.47-3.11), followed by treatise (2.98-2.82), where the author's concerns about being credible and presenting actual facts or theories when addressing the reader are clearly important. Textbook comes last (1.85-2.19). Female uses of suasive verb forms surpass those of male uses in both essay and treatise but the reverse applies for textbook. Men authors seem to be more concerned with argumentative strategies than women only in handbooks conceived of for instruction with a descriptive and informative goal. Similarly, in essays and treatises, as pieces addressed to the same epistemological community as the writer, these features seem to be more pervasive. Normalised rates might suggest a direct relation between the type of genre selected by the author and the greater or lesser presence of these features.

Though both Table 8 and Graph 9 indicate the presence of suasive verb tokens, the abundance of types must be noted, especially in female works. Thus, 23 different types have been found in the essay, the sample by Astell (1700). The sample of textbook writing from Bryan contains 15 different types. It might be noted that certain types such as *allowed* present 30 tokens in the text sample from the observational sciences Bryan represents.

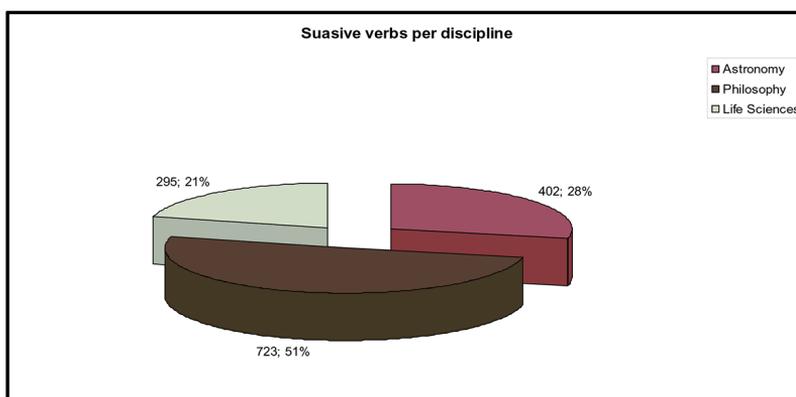
Treatises are better represented as a genre in our corpus since the genre is represented by four authors (Blackwell, Scott, Macaulay and Wollstonecraft) and automatic searches yielded 64 different types. Several types that are *hapax legomena* (see section 4.1), some are very common (*asks*, *decides*), but others are less so (*decreed*, *entreat* or *stipulated*). This argues in favour of the lexical variety of female writing, as mentioned above (see also Moskowich's paper in this special issue).

The lowest number of suasive verb forms to be found in textbooks may be due to the fact that authors, when writing textbooks (informative) do not have to convince or persuade but rather to describe or inform their audience.





Graph 9. Use of suasive verbs per genre.

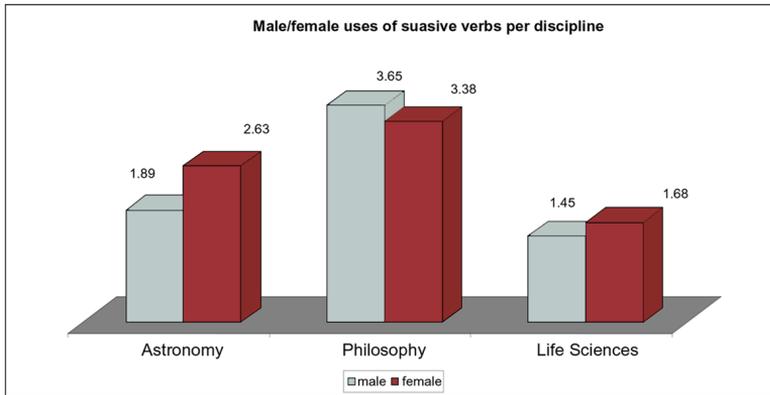


Graph 10. Suasive verbs per discipline.

The last variable to be examined here is discipline. Graph 10 below reminds us of the predominance of suasive verbs in texts pertaining to the area of the Humanities: Philosophy.

As noted earlier, the nature of the discipline itself and the topics it deals with might provide the appropriate explanation for this predominance. This is connected with the fact that more women include more suasive verb forms in their writings on Philosophy than on any other discipline as Graph 11.

The presence of a higher proportion of suasive verbs in female writings is attested in the case of Astronomy (1.89-2.63) and Life Sciences (1.45-1.68). Notwithstanding, it is in philosophy that this proportion barely diminishes with regard to men (3.65-3.38).



Graph 11. Male/female uses of suasive verbs per discipline.

Conditional subordination is another linguistic device that can be used to gain endorsement to the author's claims (Warchal 2010, 141; Puente & Monaco 2013). How women and men resort to this device will be analysed in the pages that follow.

4.3. CONDITIONAL SUBORDINATORS

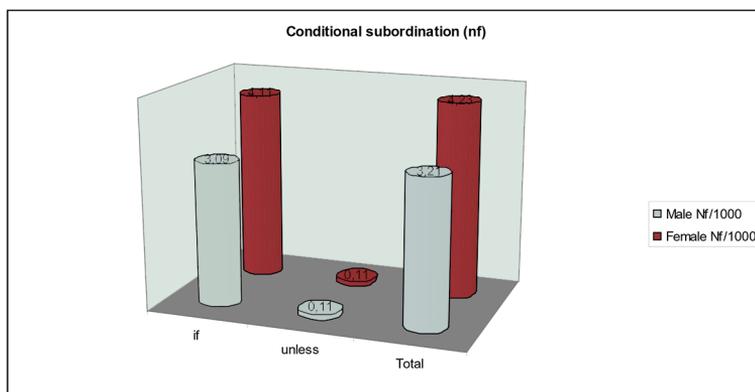
The two types of conditional subordinators analysed are *if* and *unless*. The 2006 tokens found are very irregularly distributed, since 1938 correspond to *if* whereas only 68 correspond to *unless*. Conditional clauses are used for discourse framing and, I should add, for authorial positioning in terms of an "assessment of the advisability or likelihood of an event presented to persuade the addressee" (Biber 1988, 111). Both raw and normalised frequencies are displayed in Table 9 below:

	MALE	Nf/ 1000	FEMALE	Nf/ 1000	TOTAL	Nf/ 1000
If	1730	3,09	208	4,11	1944	3,19
Unless	62	0,11	6	0,11	70	0,11
Total	1792	3,21	214	4,23	2014	3,3

There is a discrepancy in the use of conditional subordinators which can be appreciated in Graph 12.

Female authors resort to the use of conditional clauses (4.23) more often than men (3.21) when we come to scrutinise the frequency of occurrence of the type





Graph 12. Use of conditional subordination by male and female scientists.

if: Conditional subordination manifests the principles of logical argumentation and inherent reasoning which form the underpinnings of empiricist science. Women seem to make an effort to demonstrate they can also adapt to modern times and follow the dictates of the new science. In this sense we can interpret that women are status-conscious (Romaine, 1994) in eighteenth-century society. Equally frequent is the use of a more formal counterpart to express conditionality, *unless*, (0.11 in both cases), the scarcity of which could only be explained by the necessity to comply with the principles of clarity and simplicity praised by their precursors and the authors' final goal: the spread of knowledge.

If and *unless* have been found in all genres in our samples except for textbooks in female writing. Tables 10 and 11 below display raw figures and their corresponding normalised frequencies:

TABLE 10. CONDITIONAL TOKENS PER GENRE IN FEMALE WRITING						
FEMALE	if	Nf/1000	unless	Nf/1000	TOTAL	Nf/1000
Essay	57	1,12	4	0,07	61	1.2
textbook	17	0,33	0	0	17	0.33
treatise	84	1,66	2	0,039	86	1.7

TABLE 11. CONDITIONAL SUBORDINATORS PER GENRE IN MALE WRITING						
MALE	if	Nf/1000	unless	Nf/1000	TOTAL	Nf/1000
Essay	312	0,55	15	0,02	327	0,058
textbook	364	0,65	9	0,016	373	0,668
Treatise	924	1,65	36	0,064	960	1,71



General counts evince that women writers clearly surpass men writers in the use of conditional subordination in essay (1.2 vs 0.058). However, the reverse is true in the case of textbook (0.668 vs 0.33). In treatise the difference is hardly appreciated (1.71 vs 1.7). As suggested above, essays represent the kind of genre which admits hypothesis and allows for the testing of truths. Essays are more dialogic among members of the epistemic community and provide free space for debate and ongoing discussion, they allow for the verbal expression of experimentation and in this sense are to be more amenable to the incorporation of this kind of linguistic strategies: A is fulfilled if...; If B develops, then A...; something could happen if... A higher number of occurrences in essays also transmit a higher degree of cooperation and negotiation with the discourse community. As stated above, treatises convey well-accepted knowledge, so hypothesise occurs more rarely. The purpose of a textbook is not to argue in favour or against theories or concepts but it should limit to the teaching role of transmitting knowledge. Under these conditions, women seem to be more argumentative and agreement-seeking than men when writing essays, maybe because they have to write as scientists but also as women and they have to advocate this double role in contemporary society. To demonstrate they can be the equals of men, to be listened, they have to emulate male strategies.

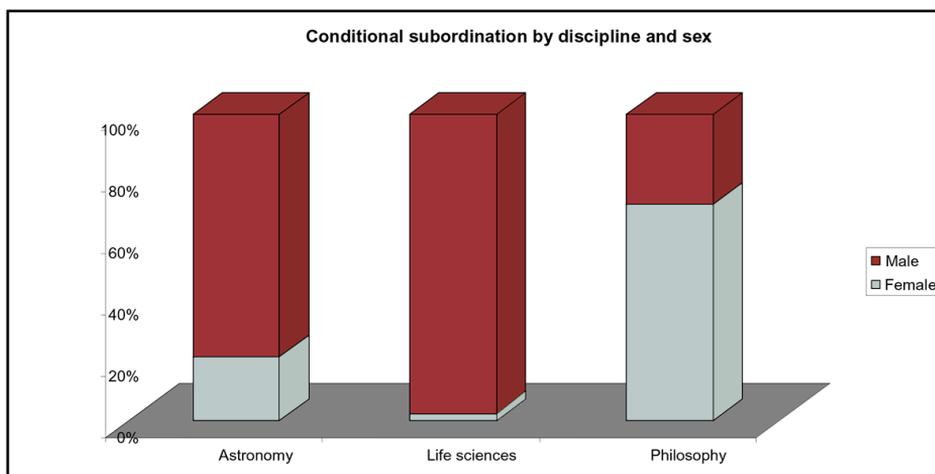
It is worth mentioning, in this sense, that *unless* is used only on 6 occasions by women, all of them by Mary Wollstonecraft in *A Vindication to the rights of women*. This use is related to the strongly argumentative nature of her work, in which she struggles to shake the collective consciousness of women and make them wake up from their lethargy regarding their position in society. The topicalisation provoked by the use of *unless* has, then, obvious pragmatic, even, socio-political, intentions.

As in previous features, the next variable to be scrutinised is the scientific domain or discipline to which samples belong.

TABLE 12. CONDITIONAL TOKENS PER DISCIPLINE				
DISCIPLINE	CONDITIONAL TOKENS (FEMALE)	Nf/1000	CONDITIONAL TOKENS (MALE)	Nf/1000
Astronomy	17	0.33	701	1.25
Life sciences	1	0.019	416	0.74
Philosophy	146	2.89	675	1.2
TOTAL	164		1792	

Table 12 shows the normalised figures for the occurrence of the conditional subordinators under examination in the three sub-corpora. Subordinators clearly predominate in Philosophy, the argumentative discipline *par excellence*, in the case of female authors (2.89). Samples from other disciplines only contain instances of *if*. Once more, it seems the case that topicalisation may be playing a part as a rhetorical device typical of this particular field (see Graph 13).





Graph 13. Conditional subordinators per genre and sex.

In the case of male authors it is the field of astronomy that stands out (1.25) closely followed by philosophy (1.2), where the use of *unless* is more prominent. (see table 13 below).

TABLE 13. <i>IF</i> AND <i>UNLESS</i> PER DISCIPLINE IN TEXTS BY MALE AUTHORS						
MALE	<i>CETA</i>	Nf/1000	<i>CEPhiT</i>	Nf/1000	<i>CELiST</i>	Nf/1000
If	688	1.23	637	1.14	405	0.72
Unless	13	0.02	38	0.068	11	0.019

Astronomy agrees with the kind of observational and experimental field which calls for this logic argumentation, especially because of its application to navigation and other utilities which promoted social advancement. Suffice it to say that some of the samples in *CETA* deal with navigation and the creation of instruments and all this was expressed by a mathematical language (Crespo, 2012).

There is an overwhelming difference on the use of conditionals between men and women writing about astronomy and life sciences. Such a difference could be interpreted as a sign of women fulfilling their expected female role in delving into traditionally-men issues but being more persuasive in a field which fitted best their final goals.

Still, to draw a more complete picture of persuasion and argumentation in eighteenth-century scientific writing and how this differed in male and female authors, we will tackle the fourth linguistic feature in detail: modals indicating necessity.



4.4. NECESSITY MODALS

Three necessity modals, *must*, *ought* and *should*, as also mentioned by Biber (1988), have been studied as linguistic elements conveying persuasion.

Table 14 below sets out the number of tokens found for each type:⁴

NECESSITY MODALS	FEMALE TOKENS	Nf/1000	MALE TOKENS	Nf/1000
must	124	2.45	850	1.52
ought	32	0.63	102	0,18
should	125	2.47	472	0.84
TOTAL	281	5.56	1425	2.55

The number of occurrences shows a clear tendency towards the use of strong modality forms, with *must* and *should* prevailing over *ought*. This may be related to a stronger authorial presence (Von Fintel, 2006) in texts where the intention is to move or influence the addressee. This, of course, contradicts the apparent objectivity of scientific discourse, as described, for example, by Vassileva (2000, 9) when she states that the author “is expected to remain hidden behind facts, research results, tables, formulas and the like”. In this paper not only have we found a good deal of necessity modals but it also seems that the use of necessity modals is clearly subject-matter dependent, as we will note later.

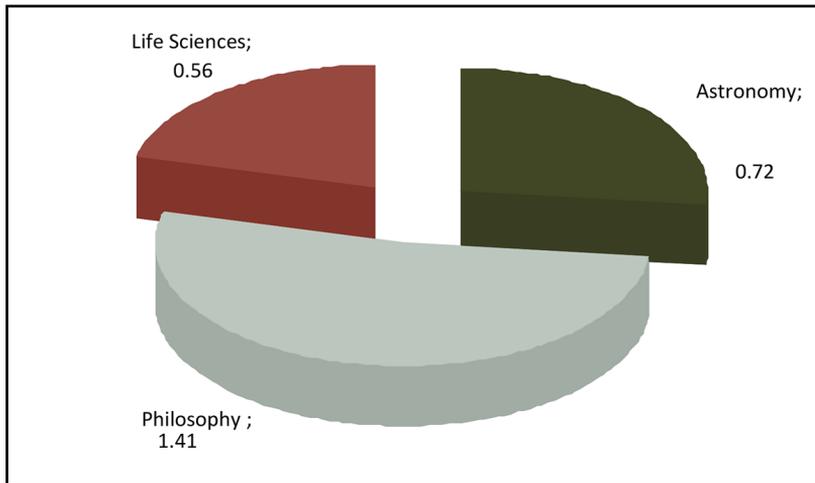
On a scale from weak to strong, *must* and *should* express a different degree of obligation. *Must* represents the highest value of imposition in this scale since as Kech and Biber (2004, 21) have argued, the ‘obligation meaning of *must* (is) used to convey information with certainty and authority’ whereas the obligation implied by *should* is much weaker. This central modal expresses requirement (Vine, 2001) merged with an idea of tentativeness (Palmer, 1990) and this reduces its imposing nature. In texts by women both central modals double or triple their presence when compared with texts by men.

As regards genres, normalised figures show that more formal ways of conveying scientific information, such as essays or treatises, occupy the first and second position respectively on the scale. Nonetheless, occurrences in essays almost double those in treatise.

The presence of necessity modals in the different genres is manifested in table 15 below.

⁴ As in the case of predictive modals, some contracted forms (*shou’d*) have been found as variants or alternative spellings.





Graph 14. Necessity modals per discipline.

TABLE 15. NECESSITY MODALS PER GENRE				
GENRE	NECESSITY MODALS (FEMALE)	Nf/1000	NECESSITY MODALS (MALE)	Nf/1000
essay	74	7.34	273	0.48
textbook	38	3.7	172	0.30
treatise	153	3.02	833	1.49

A possible explanation of this is that essays are more restricted in scope than textbooks or treatises and authors may feel the need to convince their audience of the very specific issue they are dealing with. However, treatises, frequently containing a general treatment of a topic, tend to present information with a more descriptive and informative purpose and have a weaker argumentative force, exerting less of an influence on their interlocutor in the communicative process.

As for discipline, our analysis reveals that philosophy (1.41) contains the highest number of occurrences (normalised), followed by astronomy (0.72). Not surprisingly, life sciences comes last with only 0.56 occurrences in normalised figures, as can be seen in Graph 14.

Normalised figures reveal that the presence of necessity modals in our corpus follows the stronger to weaker scale, *must* occupying the highest position, followed by *should*, and finally *ought*. In principle we might think that the argumentative character of philosophy as a discipline would lead it to be first in its use of modals indicating strong necessity. Normalised figures, however, show that it is the discipline of astronomy that contains the greatest proportion of *must* forms. The only female author, Margaret Bryan, had to convey the idea of Laws governing

the Universe, general truths. Also, her work, a collection of lectures that she had given to students, was transcribed in the form of a textbook, and the written version may have preserved some of the argumentative and persuasive features of her oral delivery. The rest of the findings in Table 15, above, are to be expected, and are in keeping with authors' intention and epistemological constraints, clearly illustrated by the very low use of *must* in life sciences.

4. FINAL REMARKS

The eighteenth century was a crucial time in the development of science in the Anglophone world, and especially so for the involvement of women in intellectual work. Their need for society's recognition can be inferred from the way they used language.

From the findings discussed in the previous sections I can conclude that to convince their readership building up a scientific text with coherent and consistent argumentation, authors have mainly resorted to strategies of modality. The analysis of persuasive markers may be interpreted in terms of function and context or situation. The linguistic strategies expressing persuasion that have been studied are not equally used by male and female authors in our corpus. The expression of modality occupies the top on a rank scale for frequency of occurrence: modals of prediction being first and followed by modals of necessity. In the third place I have found conditional subordination and, finally, suasive verbs. However, this general order is altered when we consider the sex of the author. First and foremost, it should be noted that, generally speaking, female authors use a higher proportion of these strategies than male authors but this is not true for each of the strategies individually considered. Necessity modals, conditional subordination and suasive verbs are more often employed by women whereas predictive modals seem to be more characteristic of male writing.

The mechanisms used by women writers, taken into account that suasive verbs are the least frequent strategy, might be the linguistic corollary of the pressure eighteenth-century society exerted on women which compelled them to stand out so as to be minimally considered. To the well-known principles of scientific writing in the Restoration period, objectivity, clarity and conciseness, women had to add subtlety to their discourse. The avoidance of suasive verbs highlighted this necessary subtlety. In this sense I contend that their persuasive or argumentative force was not necessarily overt but was somewhat veiled.

From the many possible options denoting persuasion and argumentation, I have chosen to carry out my study at a microscopic level; indeed, to the linguistic features of his dimension 4 I have added two variables, genre and discipline, as possible factors in the characterisation of male vs. female scientific discourse.

Another conclusion is that persuasive strategies are dependant on extra-systemic circumstances. It might be assumed, then, that these strategies are discipline- and genre-constrained: the topic dealt with, the authors' intention, the target readership are all factors that have an effect on the choice of linguistic elements and



this effect is not felt exactly the same by both men and/ or women writers. The latter are additionally subject to the limitations imposed by society on their sex.

The features examined in the four parameters considered here occur mainly in essays, the genre in which they intended to exert the same kind of pressure on readers with the rapid and continuous development of science as is the case in works by men. We have also observed that the way in which the different linguistic features under study appear has a more or less parallel behaviour in essays and textbooks (in their use of predictive modals) and treatise and essay (in their use of suasive verbs) with some discrepancies: conditional subordinators abound in treatises and textbooks by men and necessity modals in essays and textbooks by women.

Disciplines have also been seen to behave differently, with philosophy containing more strategies for the overt expression of persuasion, as expected. Even though philosophy texts are the ones with the highest numbers for these indicators thus corroborating Hyland's studies on disciplinary discourses (2000), and given that it is a vindicative genre *par excellence*, suasive verbs are the least represented linguistic feature. This could lead us to believe that an open manifestation of persuasion is not in itself an overt feature of female scientific writing in the eighteenth century.

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MARY HARRISON'S BOOK OF RECIPES. WOMEN AND HOUSEHOLD MEDICINE IN LATE 17TH CENTURY*

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ABSTRACT

The present article traces the history of manuscript production and transmission of medical knowledge practised in the household environment. To this end, a hitherto unexplored compilation of medical recipes by Mary Harrison in Glasgow University Library Manuscript Ferguson 61 was scrutinised. Her manuscript illustrates how early modern women's medical writing was produced and circulated at the time it was written. The recipe compilation is to be seen as a dynamic artefact which expands with time. Likewise, the language and the structure of the medical recipes in her manuscript are explored in context to trace their development since Middle English times as a way to evidence similarities and variations with older and contemporary compilations.

KEYWORDS: Women's writing, recipe books, Early Modern English Medicine, Mary Harrison, MS Ferguson 61.

RESUMEN

El presente artículo indaga sobre la historia de la producción manuscrita y la transmisión del conocimiento médico en el entorno doméstico. Con este fin, se examina una colección de recetas médicas inexploradas escritas por Mary Harrison y conservadas en la Biblioteca de la Universidad de Glasgow en el Manuscrito Ferguson 61. Su manuscrito ilustra cómo se producía la escritura médica de las mujeres del periodo moderno temprano, así como la circulación de los textos manuscritos en el momento en que se escribieron. La recopilación de recetas debe entenderse como un objeto dinámico que se va expandiendo con el tiempo. Del mismo modo, el lenguaje y la estructura de la colección de recetas médicas se examinan en contexto para estudiar su evolución desde el periodo del inglés medio con el fin de poner de manifiesto semejanzas y divergencias con recopilaciones anteriores, así como con otras contemporáneas.

PALABRAS CLAVE: Escritura de mujeres, libros de recetas, Medicina en inglés moderno temprano, Mary Harrison, MS Ferguson 61.



1. WOMEN MANUSCRIPT CULTURE IN EARLY MODERN ENGLAND

The present study discusses the context in which a hitherto unexplored compilation of recipes in Glasgow University Library Manuscript Ferguson 61 was written. It also investigates the structure and linguistic features of the recipes to trace their development by checking continuities and patterns of variation. Glasgow University Library Manuscript Ferguson 61 is from an unspecified date in the seventeenth century. The text is written in English, on paper, in several hands. It measures 20 cm × 16 cm and contains 188 pages, some of which are blank (pages 135 to 169).

Little is known about its owner, but Mary Harrison wrote on a fly-leaf: “Mary Harrison her Book 1692”. It is a book of recipes, chiefly medical, but some cooking recipes and other household recipes can also be found. An earlier hand than that of Mary Harrison numbered pages 1 to 40 and wrote the recipes on pages 1 to 39. Mary Harrison wrote the majority of the other recipes, numbering all the recipes from 1 to 330 and providing an index on pages 170 to 175 for recipes numbered 1 to 277. Regarding the date of writing, the date 1699 is given with a recipe for the plague on page 55. The *Oxford Dictionary of National Biography* provides four entries for Mary Harrison, none of which agrees with the dates attested in the manuscript.¹

There are also names of people from whom recipes have been gathered. They include Mr Mathias (recipe number 12), Lady Palgrave (number 21), Lady Lake (number 34), Madam Harrvey (number 112), Lady van de Ants (number 130), Lady Levett (number 139), Mr Knowles (numbers 164, 258), Dr Coxe (numbers 169, 170), Lady van de Ants (number 230), Goodman Dykes (number 231), Lady Sharlowe (number 232), Mrs Atleye (number 256), Dr West (number 316), Mrs Shervill (number 317), Mr Sumers Limner (number 318), Mrs Napps (number 319) and Goody Wesbrook (number 328). Other names appearing in the collection are Mrs Greenhill (page 59) and Nancy East (page 130).

Some references are too vague, such as those to Mr Knowles or Dr Coxe. According to the *Oxford Dictionary of National Biography*, there is a Knowles, Gilbert (1667–1734), Roman Catholic priest and botanist, but it is difficult to establish a relationship with Mary Harrison. Regarding Dr Coxe, one of the references matches the dates: Coxe, Daniel (1640–1730), physician, natural philosopher, and colonial adventurer, but again no indication of acquaintance can be claimed. Likewise, several entries are found for Greenhill, but there is no way to know whose relation Mrs Greenhill is, if any of the following: Greenhill, Henry (1646–1708) and his brother Greenhill, John (1644?–1676), portrait painter; Greenhill, Thomas (*fl.* 1698–1732),

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¹ The *Oxford Dictionary of National Biography*, although quite comprehensive, mainly includes the names of well-known public figures. Thus, only if Mary Harrison or her family were prominent in public life are expected to appear in the dictionary.



surgeon and author and Greenhill, William (1597/8–1671), independent minister about whom the *Oxford Dictionary of National Biography* states “It is not known whether Greenhill ever married”, making it unverifiable whether there was a Mrs Greenhill. No information about the other people mentioned can be retrieved from the *Oxford Dictionary of National Biography*. Thus, the only data available to date the text is that provided by its author, Mary Harrison, who dates it at the end of the seventeenth century. The analysis of the language in the text is also consistent with that period of time, as will be seen below.

When readers come across such a text, some questions may come up to their minds: Who was Mary Harrison? Why did she write the book? Who was the book aimed at? Why medical recipes? Was the book for private use? These are some of the questions that may arise when first encountered with such a text.

The question about Mary Harrison’s identity has already been addressed. She was probably a wealthy woman near the top of the social scale, taking the fact that she could not only read but also write, given that just women of a certain status would be able to do it. At the time, women were often educated within the family context, but only when the family’s socio-economic situation permitted. According to Gibson (“Renaissance Women’s Manuscripts”), unlike reading, “writing tended to be a skill taught to better-off women (often by private writing masters); partly it’s because the manuscripts that have survived have tended to do so because they were part of collections belonging to families prominent in public life”.

Why did she write the book? It was common for women to write information on notebooks that could be later on bound into books, especially connected with the running of a household. If it was an account book, it would be shared with her husband. Involvement in the planning and cooking of meals may lead women to write down recipes and not just cooking recipes, but also recipes for medicine. This kind of books, where practical information is included, could be a way of gathering their knowledge on the topic to pass it down to their daughters or maybe it was from Mary Harrison’s mother from whom she inherited the book and that would explain why a previous hand wrote and numbered the pages before Mary Harrison did. Hunter (2002: 514) states that the writing of such books was common practice. Therefore, the book could be a gift from mother to daughter, but would also be shown to guests, allowing them to copy some recipes and also obtaining some others from them. It is a fact that several people contributed to Mary Harrison’s volume, as evidenced by the different hands that can be identified. Thus, in one of the recipes it states: “Mr Sumers Limner told me this when hedrawed spouses Mo: Clerkes & mine”. This is the only place where a male voice can be heard.

If we judge Mary Harrison from our 21st century perspective, she cannot be considered a scientist, but she was a medical practitioner. Until the foundation of the Royal Society (1660) and specifically the Royal Society of Medicine (1805), there was lack of institutionalization of science. Most women’s scientific writings were of an instructional nature. She does not write a treatise explaining her motivation, or defending the role of women in the house and in the practice of medicine, but surely she may have discussed some of the remedies with her friends and acquaintances and have recorded those that were particularly useful.



Who was the book aimed at? Taavitsainen (2009, 194) claims “texts from one genre, such as recipes, can occur in several traditions” and considers recipes to be written for heterogeneous audiences. She adds that they are self-contained and not dependent on the adjacent recipes. Thus, “recipes are found in multiple contexts, both on their own and embedded within a wide range of texts” (2009, 196). Women, like Mary Harrison, would have gathered all this information from different sources to put it together in a practical household book containing instructions on how to look after their family members and servants, but also other members in the household, domestic animals, as well as other household related issues. This could be passed down from mother to daughters or daughters-in-law, but would also be shared with servants, and probably also shown to visiting friends and relatives, maybe lending it out for copying or even allowing some of these friends and relatives to write on it. It follows from this that texts in seventeenth-century manuscripts were not just for private use but were passed around and copied. Therefore, the recipe collection is not merely a repository, but an active, dynamic compilation that would create new texts. In the same way it could be the origin of other texts, the manuscript could be erased, expunged and altered, as Jones claims (36). Short additions to a given recipe are by no means unusual. Often the author inserts a sentence in the middle or at the end of a recipe to specify a relevant aspect of the preparation phase or the qualities of the ingredients. According to Jones, this fluidity as documents may have led to “their being ignored or downplayed” (36), but “they constitute our primary source for understanding the gathering, circulation and dissemination of medical information among lay people in early modern England” (36).

Why medical recipes? Throughout the seventeenth century the quantity of material written by women is more substantial than before, “ranging from compiled recipes, remedies, and advice of various kinds, as a reflection of their role in running what were often large and complex households” (Salzman). According to Johns, “the ability to treat ailments was also a recommended duty for housewives” (284). Among the responsibilities of the early modern English housewife was the care of her family and household (Hunter 1997, 99), so a book like this surely proved valuable in treating diverse disorders which could affect household members. Leong and Pennell consider “the primary arena for medical treatment in the premodern era was the household” (134) and so did Taavitsainen *et al.* (2011, 20). Therefore, the domestic treatment was used to cure or alleviate conditions before the intervention of any external practitioner. Only when this failed or in cases of extreme situations, commercial paid medical practice was resorted to. Additionally, the duty of a good housewife was not only to care for her family and servants but, as Christians, women also had to help the sick in the locality (Leong 147; Leong and Pennell 135). Thus, Mary Harrison may have practised medicine as part of her charity activity as well. Hunter records a well attested history of health-care work carried out by wealthy aristocratic women, largely in the context of country estates or semi-rural areas (1997, 100).

We now know that manuscript circulation was wider and more public than usually viewed and manuscripts were by no means considered inferior to printed books. Hunter assures us that “many manuscripts written by women in the form of



diaries, novellas, verse, household receipts, as well as science and medicine, circulated among aristocratic and gentry families” (2002, 524). Leong and Pennell (138) also mention this process of dynamic circulation whereby:

Instructions to make medicaments for all sorts of ailments and illnesses were exchanged during social visits, circulated in letters, and were recorded into bound notebooks. Sometimes they were even merely bundled together as batches of paper. The onward circulation of individually inscribed recipes and prescriptions, indeed of entire manuscripts, provided other compilers with an important source for their own collections.

In addition, if a book contained recipes from prestigious well-known people, this would add authoritative value to it legitimising its contents. The way in which women contributed to the spread of knowledge needs reappraisal. In fact, Pennell (253) contends that:

The ways in which women read, intervened in, and communicated recipes, are certainly as important to understand in the history of early modern cultures of knowledge as the ways in which their natural philosophical contemporaries deployed such texts at the heart of their experimental revisionism.

Hunter remarks that for aristocratic women there was no need to have their books published because “ladies of their status didn’t need the receipts: they could afford to buy in the services of physicians, surgeons and apothecaries; they had servants to prepare household goods” (1997, 100). Nonetheless, even if their recipe manuscripts were not published they wrote them down for several reasons (1997, 102-103):

Aristocratic ladies would have had, therefore, a number of reasons to practise, to write down and discuss receipts and remedies. It passed the time and was a social medium for exchange, a leisure activity. Medicinal and household science is still necessary in terms of country life, both for the women themselves and the community on their estates. Possibly, the responsibility of aristocratic ladies of the sixteenth century for these practices led to emulation of them by the new courtiers and gentry. For some, the responsibilities were part of a devotional exercise in serving the community. In any event, such work allowed women to function in public in the restricted sense of going out to perform a public service; and in doing so offered them a rare opportunity to leave the private sphere of the house.

Regardless of women’s motivations, their role in domestic medicine is undeniable. In fact, some scholars also felt the need to revise early modern women’s contributions by spearheading the construction of databases of women’s manuscript texts, like the *Perdita Project*, which will allow researchers to tell the stories of women, like Mary Harrison, who would have remained in oblivion otherwise.



2. THE RECIPE COLLECTION

The manuscript contains about 330 recipes, although erroneously the author skips numbers 280 to 289 passing from 279 to 290. Likewise, sometimes a number can be repeated, as at the end of the text where 329 is written in ink and then, two other recipes have been added in a different ink. The last two recipes are numbered in pencil as number 329, again, and 330. The recipes in the manuscript are chiefly medical, but recipes for cattle (numbers 223, 231, 254, 260), poultry (numbers 291, 293, 301), calves (number 294), horses (number 180) and pigeons (number 106) are also included. There are also household recipes; for instance, number 279, “Stuff to rub mens shoos & bouts with to prevent soking in water” and number 318, “To clean pictuers when durty”. Even if a small number of recipes can be regarded as cooking recipes at first sight, such as numbers 10 and 16 for broths and number 13 for “Pepper Cakes”, there is often a therapeutic purpose. In the case of the broth in number 10, it is recommended for strengthening and the recipe for “Pepper Cakes” is followed by a section which specifies “The uses of it”, where the cakes are claimed to be good for digestion, as well as for the brain and to restore your memory.

The recipes in MS Ferguson 61 are grouped thematically, inasmuch as the remedies for a specific disease tend to be gathered together. Nonetheless, the organisation does not follow the *de capite ad pedem* order, as the same disease is referred to on different pages. For instance, the compendium begins with a remedy to “knitte a vainey causeth one to spit Bloud” and “For Pising A Bed” follows, while later on the reader can find remedies for headache, rheumatism and several other diseases. This confirms the idea present in Taavitsainen, whereby the classical structure from head to toe “applies to a limited extent only, and recipe collections are more heterogeneous than has been anticipated” (2001a,106).

The author included an index at the end of the manuscript to find her way through the compilation, especially due to the fact that the first pages were not written by her. The contents coincide with those included in other contemporary recipe collections, such as remedies for cuts, bruises, burns, colds, coughs, digestive disorders and headache (Leong and Pennell 135). The manuscript may have been subject to expungement and erasure. In fact, after number 200, the index includes the following:

- 201) Syrup of Mallows
- 202) a Cauld Head
- 203) for the Ague
- 201) for the Scuruy
- 202) For A Consumption
- 203) A fine Cordial

The first three recipes numbered 201, 202 and 203 are not present in the collection. They may have been originally there and the page containing them was later removed. Another curiosity is the fact that page 9 is numbered 9 on the recto side and on the verso side as well, which implies from number 10 onwards the pages



on the right side of the book contain the even numbers, while the odd numbers are on the left side pages of the volume. Some other inconsistencies of this kind are found, as when a recipe is not numbered. This is the case of a short recipe between numbers 310 and 311 entitled “To stop Bleeding of a Wound”. Indeed, this could be a draft copy, what some scholars term “waste book”, given that not much planning seems to have been done before starting writing it. Besides, pages 135 to 169 inclusive are blank, as if the compilation was to be continued.

Although several new medical theories appeared in the last decades of the seventeenth century (Wear 1989; 1992), they did not “produce better cures than the old Galenic ones” (1992, 121). The therapeutic procedures were similar to those used in the Middle Ages. In fact, humoral theory with hot and cold elements, the medical prevailing system in the Middle Ages (Taavitsainen 2006), is still very popular in this period, as attested by Mikkeli and Marttilla (14) and Taavitsainen (2011). Thus, recipes for cold and hot humours are found in Mary Harrison’s book (number 219 for a cold humour and numbers 69 and 322 for a hot humour). Following Hippocrates, there are four basic elements (fire, water, air and earth) and four qualities (hot, cold, wet, and dry). This is connected to the four bodily fluids (blood, phlegm, yellow bile and black bile). In addition, there was a correlation between the prevailing fluid or humour in an individual and the temper he or she had. Thus, the abundance of black bile made a person melancholic. On the contrary, if the dominant humour was phlegm, the person was phlegmatic, sanguine if there was too much blood and choleric if his or her body contained too much yellow bile.

Diseases were the result of imbalance of humours. Thus, medicine in medieval and early modern English times was considered a technique or method of restoring health through the recovery of the lost balance. The different ways of solving the imbalance were by blood-letting, using leeches, or by means of a specific diet which helps to excrete the superfluous fluid, among others. This explains why herbs are included in medical treatises, as the ingestion of some of these herbs made people healthy. There are general remedies that are good for any kind of disorder, while others are quite specific. Ingredients, usually herbs, were considered to have some qualities and classified according to their temperature and moistness.

2.1. STRUCTURE OF THE RECIPES

In order to analyse the structure of the recipes and their linguistic features, samples from the recipe collection in Mary Harrison’s book have been selected. The author’s spelling conventions have been fully respected throughout the transcription. We will see that the structure of the recipe has evolved very little since Middle English times. As described by previous scholars (Alonso-Almeida 1998-1999; Eggins 68; Taavitsainen 2001a, 86; Mäkinen 160, among others), the structure of recipes tends to follow the general pattern:

1. Title or medical purpose
2. Ingredients



3. Preparation
4. Application
5. Efficacy Phrase

2.1.1. *The title*

The title indicates what the remedy is for. The most usual title found in MS Ferguson 61 is *for* followed by a noun, a part of the body, as in *for ye hands*, an *-ing* form as in *for bleeding* or, usually the name of the disease, as in *for the Cholick* or *For the Stone*. An infinitive phrase as title is also found, as in *To stop Bleeding of a Wound* or *To Make Marygold Water*. Just on two occasions the title appears as *A remedy for* (numbers 3 and 313). In four recipes the title is not present, as the remedy is a continuation of the previous one beginning with *for the same* (numbers 41, 132, 248 and 259). The formula *an other* in the title is attested in several instances, as well (e. g. recipes number 53, 80, 265, 204 and 271).

A typical example of a recipe in MS Ferguson 61 can be seen in recipe number 326:

(1)for a sore mouth
 put in-to an Egg shull honey and a bitt
 of Allam as big as a small nut beat
 to powder, set it to stew in Embers stirring
 it all y^e while, annoynt the mouth
 there wth often

2.1.2. *Ingredients*

As can be seen in the example above, the solution to the problem is offered after the title, providing the ingredients, which are usually plants, combined with the juice of fruits or other liquids, such as wine, vinegar or water which are needed to prepare the recipe. As in example (1), sugar or honey may be added as well. On some occasions, material from animals is used, especially grease or lard. Sometimes ingredients appear in a list without specifying the quantity to be used (number 185 “balme, spermint, worm wode, & barduns”), whereas some other times a vague specification by means of a quantifier as “a little powder of a roch allem” is used or by comparing the size with a well-known ingredient “as big as a nut.” Often one or two spoonfuls are recommended, as in number 329, “2 spoonfullsof Blue Courrants”, but in the specification of the ingredients some special weights and measures can be used. The old system of Troy weights is still in use in this period, as pounds, ounces and drachms are employed. The system of Troy weights is referred to in Getz (xxxviii):

This consists of pounds, ounces, drachms, scruples, and grains (1 pound = 12 ounces; 1 ounce = 8 drachms; 1 drachm = 3 scruples; 1 scruple = 20 grains; 5,760 grains = 1 pound).



For liquids, pints are usually mentioned, as in “Take halfe a pint of the oyle of olive” (number 69) as well as quarts, as in “put these into 5 quarts of water”. Nonetheless, lack of explicitness and absence of proper quantifications are the rule, as noted by Görlach (1992, 130), even if his statement was meant for cooking recipes, it can also be applied to medical recipes, as Getz notes (xxxviii). Examples of less specific measures, such as “as much as will” (numbers 108 and 328, for instance), are also recorded.

2.1.3. *Preparation*

The preparation section provides instructions in relation to the combination of ingredients. In the preparation phase, specific culinary verbs and other non-specific verbs are often found. Thus, among the culinary verbs *boil*, *beat* and *pound* are recorded with various frequencies. Among the non-culinary verbs the most usual verb is *take*, but others like *mix*, *bruise* and *turn* appear as well.

In the technical aspect one also learns about the different utensils that were used at the time when cooking. Thus, apart from dishes, glasses, plates, pots and pans, other containers, such as *mortars* or *limbecks*, are mentioned.

Other specialised technical terms refer to medicine. Obviously medical compounds are also quite technical. Most of them are decoctions which involved the boiling of the herb in water so as to extract the substance, but often plasters, where a cloth is anointed with a concoction, are used; likewise, oxymels with honey and vinegar and ointments and powders are frequently employed. All these “topical drugs” are commonly used as therapeutic treatment for burns, warts and canker, among others. On the contrary, the “internal drugs”, which comprise suppositories, electuaries, laxatives and purgatives constitute therapeutic solutions for eyes, swelling, worms, dropsy, head ache and other diseases (Alonso-Almeida 2014, 36).

2.1.4. *Application*

This section presents a less well-defined organisation of information. It describes how the remedy is to be used. It often includes its use, dosage and duration. The expression of duration is omitted when the effects of the medicines are immediate; otherwise it is indicated by means of days and nights or the times the procedure is to be repeated, as in “clenese y^e child's mouth wth it twice or 3times a day”(number 329a), “take3 days and rest 3 days” (number 329b). Often it also specifies the time of the day when it must be applied. If this is present, the most frequently mentioned periods are mornings and nights, as in “20 drops on suger night & morning” (number 324).



2.1.5. Efficacy Phrase

A further element that is optional in the structure of recipes is the efficacy phrase or evaluation of the treatment. This final phrase offers a validation for the proposed remedy. Very often this is present in medieval recipes either by means of a future tense or with the general formula *he will be healed* or in Latin *sanabitur*. It can also be present in Early Modern English medical recipes as set phrases or by means of free formulation (Mäkinen). A usual set phrase is “proved by me” or *probatum est* (Jones 36). In Mary Harrison’s collection, the efficacy phrase is not usually present at the end of the recipe, although it does sometimes appear, as in recipe number 329 for a child’s sore mouth where the efficacy is evidenced by the final verb phrase that specifies the nature of the ailment: “it will wath the mouth”. Occasionally, the effect is introduced within the text or, as in recipe number 13, after it with a heading that specifies “The uses of it”:²

(2) This Decoction is good to eatte allwayes beefore and
after meatte for it will cause disgestion and turne
your meatte to pure bloud besides this isdooth expell
all windinesse and all groose humors cold and Raw
that are in the belly or stoomake it will Dissolve
them without paine and keepe vapers from the braine
and restoowe your memory, tho Lost beefore

To sum up, in this section we have examined the structure of the recipe in Mary Harrison’s book, which may be represented following Eggins (40) in a linear diagram:

Title ^ Ingredients ^ (Quantities) ^ Preparation ^ (Application) ^ (Efficacy),
where ^ indicates fixed order and () optional stage.

2.2. LINGUISTIC FEATURES

In terms of the linguistic characteristics of recipes, Görlach (“Text-types and Language History” 746 and “Text Types and the History of English”, 125) lists eight grammatical features examined to define the text types:³ the form of the head-

² This stage, where the qualities of a particular product are mentioned, is labelled as *virtues* by Alonso-Almeida (2013). Unlike Alonso-Almeida’s corpus where this stage is recurrent, in Mary Harrison’s book is exceptional.

³ The concepts of genre and text type have been used indistinctively by different scholars so that a recipe is often labelled as a genre and as text type. For this reason several authors have tried to distinguish them according to specific criteria (e.g. Görlach 1992 & 2004; Taavitsainen 2001a & 2001b; Alonso-Almeida 2008, among others). Alonso-Almeida establishes the difference between the two claiming that “genre is differentiated from text type in the sense that genre is externally defined, whereas text type is characterized according to internal linguistic criteria” (2008, 10).

ings, sentence length, the use of imperative or other verbal forms, use of possessive pronouns with nouns referring to ingredients and implements, deletion of objects, the temporal sequence and possible adverbs used, sentence complexity, marked use of loan words and of genteel diction. We have already dealt with some of these features when referring to the structure of the recipe, so now other linguistic characteristics, which have not been covered above, will be mentioned.

2.2.1. Use of verbal forms and possessive pronouns

In the ingredients and preparation sections, the opening element is often a verb in the imperative form, such as *take*, *mix*, *put* or *turn*, followed by a number of noun phrases or other verbal forms connected by *and*. In the preparation phase other verbs in imperative are also found, such as *bruise* or *smash*. Some other significant verbal structures are introduced by *let*, which in late Middle English recipes present a coercive meaning and is considered to be similar to an auxiliary verb in Present Day English (Alonso-Almeida 2014, 44). The syntactical pattern of these verbs is summarized in as *let* + object + infinitive, as seen in the following instances:

- (3) then let it be cold a little (number 13)
- (4a) let these be beaten into A fine powder [...]
- (4b) let it boyle a little [...]
- (4c) let two take it out (number 69)
- (5) let it coul (number 327)

In recipes the addressee is usually a second person singular, so it is also common to see the use of possessive pronouns with ingredients, implements or to refer to the part of the body to which the remedy must be applied. Thus, recipe number 13, where how to prepare pepper cakes is explained, is addressed to a second person singular and the possessive *your* in an abbreviated form is used:

- (6) beate y^r long pepper time ginger annyseedes
and licerish into fine powder and search them
through A peere of Laird and bruse y^r other pepper

Görlach mentions that the use of possessive pronouns with ingredients is not frequent, while the alternation of the article, either definite or indefinite, is common (1992, 749). In recipe 69 we find the alternation of both procedures “put them into

Likewise, Taavitsainen states that “Recipes are a well-defined procedural genre with a clear writing purpose. They give instructions on how to prepare medicine, a dish, or some household utility like ink” (2001a, 86). In turn, Görlach characterises the recipes according to some specific linguistic criteria, and subsequently refers to *recipes* as a text type (2004 & 1992). Thus, when referring to these linguistic characteristics, Görlach’s denomination is used.



the oyle and set it upon A temperatt fire and when you have boyled it moore halfe an hour ad to it one ounce of y^r oyle”.

2.2.2. *The temporal sequence*

Very often the process must be carried out following specific steps in a given order, so there is a temporal structure marking what must be done first, as in the example below with *first*. Some other times the writer uses linking particles, such as *and*, *before*, *till*, *when* and *then*, and *after*. In recipe 153, several of these linking particles are used:

- (7) Dissolve it first in Cold Balm Water and then mixe altogether when you drinke itt sweeten it wth sugar

When the conjunction *and* is employed, it often has a temporal meaning similar to *then* (Taavitsainen, “Middle English Recipes” 98; Alonso-Almeida, “A Middle English Medical Remedy” 45), rather than implying the simultaneity of actions, as in recipe number 69:

- (8) put them into the oyle and set it upon A temperatte fire and when you have boyled it neere halfe an houre ad to it one ounce of y^r oyle off it er if the soare bee inflamed or impostumd other wife Leave out the oyle and let it boyle a little space after that oyle is in then take it of from the fire and put into it one quarter of an ell of three quarter Cloth

2.2.3. *Use of specialised terminology*

The lexicon of MS Ferguson 61 does not differ from the lexicon in other remedy books of the period, as can be seen in the number of Latin and French terms in the collection. The presence of these words suggests that the background is of a continental origin.

In terms of denominations for medical conditions and disorders, according to their etymology in the *Oxford English Dictionary* (OED), the terms can be grouped as coming from:

- 1) Latin or French with various degrees of anglicisation: *gout* < OF. *goute*; *dropsy*, shortened form of *idropesie* < OF. *idro-*, *ydropsie*; *palsey* < OF. *paralisie*, *-lysie*; *consumption*, partly from French *consumpcion* and partly from Latin *consumptiōn-*, *consumptiō*.
- 2) Latin via Old English: *feuer* < OE *fefer*, *feofor* from L. *febris*; *canker* < OE *cancer*, L. *cancer*.
- 3) Old English: *ache*, *burn*, *cough*, *web*, *wart*.



As can be seen, the majority of the names of diseases in MS Ferguson 61 are of French and Latin origin, but there are other sources as seen in the examples above. Likewise, other areas of meaning on which Latin and French exerted a great influence are medicinal ingredients and compounds. Thus, the following items are from French or Latin:

Medicinal products: *lard* < OF. *lard*; *oyle* < ONF. *olie*, OF. 12th c. *oile*, *oille*; *suger* < OF. *çucre*; *vinegar* < OF. *vyn egre*; *wine* < L. *vinum*. Although this item was already present in OE, it is mentioned as one of those terms that Germanic tribes brought with them from the Continent when they settled in Britain.

Plant names which are given in an anglicised form: *betayne* < F. *bétoine*, ad. late L. **betonia*; *centorye* < L. *centaurium*; *cinnamon* < French *cinnamome*, also in 16th cent. *cinamonde* < Latin *cinnamōmum*; *clove* < Middle English *clow(e)* < French *clou*, Latin *clāvus*; *coriander* < French *coriandre* < Latin *coriandrum*; *egremony* < OF. and L. *agrimōnia*; *peese* < L. *Pisum (sativum)*; *rosemary*, apparently a folk-etymological alteration of *rosmarine*, after *rose* and the female forename *Mary*; *sage* < Middle English *sauge* < French *sauge* < Latin *salvia*.

Medicinal compounds: *glister/clyster* < French *clystère*, or Latin *clyster*; *medycyn* < Anglo-Norman and Old French, Middle French *medicine*; *ointment* < Anglo-Norman *oinement*; *plaster* < in Old English, probably < post-classical Latin *plastrum*; in later use reinforced by Anglo-Norman *plaistre*, *plastre* medical plaster (second half of the 13th cent.), Anglo-Norman and Old French *plastre*, *plaistre*, Middle French *plastre* building plaster (French *plâtre*); *powder* < Anglo-Norman *podre*, *podre*, *poudre*.

Implements also may also have a French or Latin origin: *mortar* < In Old English < classical Latin *mortārium*; in later use probably largely re-borrowed < Anglo-Norman *mortier*, *morter*, *mortir*, *mortor* and Middle French *mortier* receptacle for pounding; *limbeck* < ME *lambyke*, aphetic form of *alembic*, of multiple origins. It is partly a borrowing from French *alembic* and partly a borrowing from Latin *alembicus*.

Some other terms regarding the fields mentioned above come from Old English: Ingredients such as *honey*, *wax* and *water*; plants like *barly* < OE *berlic*; *fennel* < Old English *finuġl*, *finule*; *wheaten* (adj.) < OE *hwæte* and implements, such as *glass* < Old English *glas*; *pan* < OE *panne* and *pot* < OE *pot(e)*.

2.3. SOME OTHER LINGUISTIC NOTES

Other language features documented in the compilation are typical traits of the period. For instance, the way in which possession is conveyed. In Early Modern English, possession could be expressed by means of an *-of phrase*, the so called *possessive dative* or by means of the *possessive case*. In Manuscript Ferguson 61 the three of them coexist. The most frequent one is the *-of phrase*, but the *possessive dative* is found in “Mary Harrison her book”. Finally, when the *possessive case* is used, as in “for a child's sore mouth” (number 329), no apostrophe is present.

Likewise, some contractions are used. The most common one is *y^r* with superscript <e> for the definite article, but *y^r* or *yo^r* for *your* and *y^r* for *that* are often



found. *With* and *which* are also usually abbreviated as *wth* and *w^{ch}*, respectively. Occasionally *them* will appear as *y^m*.

Similarly, omissions and practitioner's argot are common, as in Pennell's opinion "the user must respond from the basis of common sense and knowledge"(238). This is particularly evidenced in the index, where many remedies appear in an abbreviated form. Abbreviations are marked by means of semicolon as in *Sy:* for "Syrup", "A str: Broth" for "A strengthening Broth", *Bol:* for "Balsam", "a fine lo:" for "a fine lounge water"; "for y^e G: Sickness" for "For the Greene Sickness" or "for a ch: rupter" where *ch:* stands for "childs" and finally, "Syrup of B: horne Bew" for "Syrup of Buckthorne & Berries".

Spelling is by no means fixed, inasmuch as several spelling variants can be found for the same item. The spelling alternation is found in the writing of one single author, and in the preferences shown by the initial writer of recipes 1 to 102 and Mary Harrison's own index. In this way, in recipe number 9 the title reads "For the Hed Ake", while in the index the title for this recipe appears as "for the head Ack" and in other recipe as "Head ach" (number 65). Thus, spelling variants are found profusely. For instance, *syrup* is written as, *syrup*, *serurip* and *surrup*. One term that also shows variability is *ointment* that is recorded usually as *ointement*, but also as *oyntement* and *oyntment*.

3. CONCLUSIONS

Considering some of the implications of the story being told in the previous pages, several conclusions can be drawn. On the one hand, the possibility of approaching early modern women's writing from a different perspective must be considered. Early modern women's manuscript writing was not viewed at the time as less prestigious than printed books and was proven to have a wide range of projected and actual readers. Likewise, the manuscript is not a static compilation but one that interacts with the author and with many other contributors; an artefact that is capable of being constantly changed and which would be the crib for other texts.

In addition, Mary Harrison's book highlights the role played by women in the preservation of medical knowledge. Seventeenth century women have been shown to gather the relevant information in collections that were passed down from generation to generation. Women were responsible for practising medicine within their own household, but also within their localities as part of their duties as housewives and devoted Christians. The story of these women is worth being told. Mary Harrison's book is just an example of a woman practitioner, like many others, whose task bears witness to the relevance of women in the practice of medicine in the early modern period.

On the other hand, the inspection of Mary Harrison's recipes has revealed some facts; namely that the old tenets on medicine, such a humoral theory, were still in use. It has also been confirmed that the recipe structure remains unaltered showing the same constituents that were already present in medieval recipes; namely, title, ingredients, preparation, application and efficacy phrase. Nonetheless, the ef-



ficacy phrase is less frequently found in her book than in other recipe compilations of the period. Regarding the linguistic features of the recipes, the traits found in the collection demonstrate that it contains the characteristics which are mentioned by other scholars for recipes, such as prevalence of imperative forms, use of second person pronouns with ingredients and implements, sequencing of the time by means of temporal adverbials and specific terminology with a marked use of loanwords.

Finally, despite recent efforts, there is still considerable misrepresentation of early modern women's writing. Thus, some reconsideration is necessary in order to regard early modern women's writing as a body of knowledge and an object of academic scrutiny. As the *Perdita Project* is doing, academia should engage in a conscious recovery of a series of buried and neglected writers and genres, which deserve recognition, to assess their individual worth and their collective value as women authors.

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BRITISH WOMEN TRANSLATORS AND THEIR PRACTICE OF CENSORSHIP IN NINETEENTH-CENTURY TRANSLATION

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ABSTRACT

This article shows how and why censorship was practiced in translated and edited texts of two British 19th-century translators, Sarah Austin and her daughter Lucie Duff Gordon. They were recognised translators from the German and French languages, Duff Gordon eventually receiving more credit for her writing than translation. As mother and daughter, they were obviously influenced by each other and both probably could have contributed more to the history of translation if it were not for one's fear of publicity and the other's health. They were not only mediators between the cultures (German, Egyptian and English), languages, texts and minds of the time. They also made substantial contributions to British society and the intellectual circles of the age, not only through their translations, but also with the aid of their cross-cultural ideas in the fields of writing and thought production where women were considered inferior for many centuries and in the domains where only men had a substantial social voice. This paper shows that both women had power and freedom with the decision-making process to introduce censorship into their translations as well as their writing.

KEYWORDS: women translators, censorship, editing, text abridgment, writing, 19th century.

RESUMEN

Este artículo proporciona una visión general del trabajo y la vida de dos traductoras inglesas del siglo diecinueve, a saber, Sarah Austin y su hija Lucie Duff Gordon. Ambas fueron reconocidas traductoras de alemán y francés, aunque Duff Gordon obtuvo mayor reconocimiento por sus escritos que por sus traducciones. Como madre e hija, ejercieron influencia mutua en sus trabajos y ambas probablemente podrían haber contribuido más a la historia si no fuera el temor a la publicidad de una y la mala salud de la otra. No eran sólo mediadoras entre las culturas (alemana, egipcia e inglesa), las lenguas, los textos y la mentalidad de la época. Eran más que eso, ya que su voz destacaba socialmente entre los círculos intelectuales británicos de la época a través de la traducción, y destacaba también por sus ideas interculturales en el campo de la escritura y el pensamiento, campos en los que las mujeres habían sido consideradas inferiores durante muchos siglos y donde sólo los hombres habían sido escuchados. El artículo muestra que ambas mujeres tenían poder y libertad en la toma de decisiones a la hora de censurar tanto sus traducciones como sus textos escritos.

PALABRAS CLAVE: mujeres traductores, censura, edición, compendios, escritura, siglo diecinueve.



1. INTRODUCTION

An account of the history of translation will usually also reflect the history of translation practice. What is more important than who translated what, when and why however is the importance or influence of a translation or translator on the history of translation and/or history overall. Pym argues about the humanisation of translation history, where four central issues are seen as key: the reason, i.e. why translation was produced; the object, i.e. who the translator was; interculturality or the cultural belonging of translators; and priority of the present, i.e. the reasons for researching the history of translation (30-45).

The role of women in translation practice has been acknowledged and documented by a number of researchers (Agorni; Chamberlain; Delisle and Woodsworth; Dow; Flotow; Kawashima; Robinson; Schaeffner). If women were deprived of the opportunity to conduct research and practice science and philosophy for a long period of time in history, they were often practicing and actively engaged in translation. Translation in fact was one of the few fields in which women could show their expertise. Over the span of history, women translators in the West have been investigated to a substantial extent although some researchers still consider this field neglected (Agorni 181; Bacardi and Godayol 144; Martin 1; Tyulenev 77), especially in relation to women translators of less popular languages than English or French. Therefore, the interest in women's translating agency has been for the past 25 years or so increasing not only in Europe but also in other countries around the world (Malena 1).

Translation from the perspective of censorship has not been given adequate attention (Merkle *et al.* 9). In 19th-century Europe, censorship in translation was not a new concept. In many European countries, it was long practiced both institutionally and individually. Translators were engaged in censorship for different reasons. Some of them manipulated their translated texts in order to be published (Pajares 289). Merkle *et al.* (11) argue that censorship cannot be completely separated from translation. Thus, the purpose of this paper is to uncover the translation and related practices in respect of censorship by two famous British women translators of the 19th century, Sarah Austin (1793-1867) and her daughter Lucie Duff Gordon (1821-1869). The main issues discussed in the paper are the following: what were the other practices that British women translators exhibited alongside translation; what were their approaches and attitudes towards translated and edited texts; and how was their translation practice affected by the fact that they spent a substantial period of their life outside Britain. The paper concentrates on Sarah Austin and Lucie Duff Gordon, both of whom translated and were forced to spend time outside their mother country, England. The extent to which these two women modified the texts they translated will also be touched upon, and the scope of contribution made by women to particularly male-dominated domains will be noted: legal and sociological by Sarah Austin and political and historical by Lucie Duff Gordon. Their exceptional contributions prove that they were "far from being victims [and] helped to uphold the patriarchal social order" (Bisha *et al.* in Tyulenev 78), like a great many other women in other countries through a number of writing-related activities.



2. SARAH (TAYLOR) AUSTIN: TRANSLATOR AND EDITOR

Of the two women to be discussed in this study, Sarah Austin's life and work have been most extensively studied. There are a few contemporary research papers (Goodman; Johnston), encyclopaedic articles (Lewes; Shattock) and books (Stark) examining Sarah Austin's life and work in detail. A more extensive review of Sarah Austin's life is given by Lotte and Joseph Hamburger in their book *Troubled lives: John and Sarah Austin*. However, in some of these works, Sarah Austin's name is credited along with her husband's, a man regarded by some to have been a gifted personality (Clive 312) and by others a mere shadow, mostly due to his melancholic nature and weak mental health in comparison with his wife's talents (Lewes 58). Relatively few studies have been primarily concerned with Sarah Austin as an authority on translation taking into consideration her "most prolific, manipulative and subversive" nature of translation (Stark 15). Her translation of Hermann Fürst von Pückler-Muskau's *Tour in England, Ireland, and France by a German Prince* has been given exceptional attention by Johnston (101-113), where the historian outlines in detail the circumstances behind the publishing of the volume, revealing much about the translator's personal life and character. Two other books, Victor Cousin's *Report on the State of Public Instruction in Prussia* translated from German (1834) and *On National Education*, a collection of official documents commented and translated from French (1835) by Sarah Austin have also been given scrutiny by Goodman (425-435).

Arguably among the best known German to English translators, Sarah Austin was born in 1793 in Norwich, England, to the yarn maker and hymn writer John Taylor and his wife Susanna. Sarah was both beautiful and smart, inheriting her talents from her mother (Lewes 57). She was also strong-minded and hardworking (Harman). Her talents and beauty were clearly transmitted to her daughter, Lucie Austin Duff Gordon, famous for her *Letters from Egypt*, and her granddaughter Janet Ross, a prominent historian and biographer. Benjamin calls them "a bloodline of remarkable achievement" (Benjamin 25). Sarah Austin travelled and lived outside her native England for a substantial period of time, spending more than 20 years abroad. Between 1827 and 1848, she lived in Germany, Malta, and France.

Sarah translated, edited, commented and wrote in the domains and on the issues very much in touch with the political and social system in England at the time. It is not at all extraordinary that Sarah has been praised by both notables of the day and contemporary researchers as an exceptional first-class translator from German (Goodman 429; Johnston 101; Lewes 57). She went to live in Germany, admired the German way of life and the country's governmental and educational systems. She became friends with many German intellectuals of the period, wrote and translated about German social values and wanted to introduce German cultural standards to the English elite (Goodman 427, 430; Johnston 101-111; Waterfield 42, 49, 61). It may be maintained that Sarah Austin's time spent living in Germany enormously influenced her translations, mostly in terms of the nature of the texts she chose to introduce to English society.





Sarah was tireless in her devotion to her husband and his work, especially after his death, when she undertook to revise and publish his writings, most notably *Lectures on Jurisprudence*, published in 1879 (Waterfield 149). She improved his poorly written essays to such an extent that they assured him a long lasting recognition (Lewes 58). Her husband was not the only family member whose texts Sarah volunteered to edit and revise. Her only daughter, Lucie Duff Gordon, was an author of two collections entitled *Letters from Egypt*, the first of which was also revised by her mother (1865). The letters were not only of a personal nature, they were also a portrayal of life in Egypt. This demonstrates that Sarah Austin was well versed in many topics and domains and was a talented editor. Besides that, by editing her daughter's letters, Sarah was able to secure her honour and good name, which at the time might have been undermined by trivial but thoughtless openness. Her granddaughter, Janet Ross, writes in her memoirs about her mother Lucie that Sarah "was obliged to omit much that might have given offence and made my mother's life uncomfortable—to say the least—in Egypt. Before the end of the year the book went through three editions" (Duff Gordon, "Lady Duff Gordon's Letters from Egypt: Revised Edition" 17). Lucie's translation of *Stories of the Gods and Heroes of Greece* was published under her mother Sarah's name (1845), which she also revised and edited. It can be, thus, argued that Sarah Austin was very much devoted to her family and, by revising the writings of her husband and her daughter, helped the family to build—and retain—a good reputation. Bearing in mind that Sarah belonged to (or rather established) an intellectual gathering of some of the great minds of the period, including eminent politicians, jurists and writers (Lewes 57), and that wherever she went to live she made friends with many intellectuals, it is only natural that she wanted nothing to cast a shadow on her family's good name.

Another example that supports the idea of Sarah Austin's desire for a flawless reputation is her removal of eccentric material in the translation of Hermann Fürst von Pückler-Muskau's *Tour in England, Ireland, and France by a German Prince*. The 'eccentric' material basically consisted of erotic accounts and anecdotes, which she herself defined as "never meant to be published" in a letter she wrote to the publisher John Murray (Johnston 104). Sarah took the liberty of censorship in this translation and was even reproached, to put it mildly, by the author himself for such arbitrariness (Johnston 109-110).

Besides, Sarah was a successful editor not only of her husband's legal texts and daughter's letters, but also of other kinds of text, including *Memoirs of the Reverend Sydney Smith by his daughter, Lady Holland, with a Selection from his Letters* (2 volumes, a total of 930 pages, 1855). In the preface to the edition of the second volume, published in 1855, she writes:

I have generally omitted not only the usual formulae at the conclusion of letters, but many continually recurring expressions of kindness and affection, friendly greetings, domestic news sought and communicated. They show his kindly recollections of great and small, but their repetition would occupy much space, and might become wearisome to the reader. (xiii)

In the context of her craving to maintain her daughter's name and to establish fame for her husband, this particular passage might imply that Sarah had her own strict views towards what was meant to be publicised and what was not. And in her assessment most probably, the memoirs of a reverend could do more harm than appropriately build a reputation for the great talents he had. This sustains the idea that she might have cared a lot about position and honour and she did what she could to protect them from the potentially unfair judgements of society.

Nonetheless, credit to Sarah Austin should undoubtedly be given for her outstanding translations from German and French during the 1840s. Her granddaughter, Janet Ross, writes in her memoirs of her own mother Lucie, Sarah's daughter, "[l]eft much alone, as her mother was always hard at work translating, writing for various periodicals and nursing her husband" (Duff Gordon, "Lady Duff Gordon's Letters from Egypt: Revised Edition" 5). This paints Sarah Austin in a good light not only as a hardworking translator; she was on the whole a woman of diligence and heartiness in whatever she took to.

Although regarded by many as the most prominent German to English translator of the period, Sarah could equally well translate from French. All of her translations, both from German and French, were in the political, historical and sociological domain. Sarah Austin's translation and editing practice was of commercial nature (Johnston 101), and most probably the evidence for such a claim is obvious. However, the fact that all her translations were in one way or another related to her political and social views and values cannot be overlooked.

Being praised and appreciated by notable people of the time, Sarah Austin did everything she could to "distance herself from the outrage which was bound to be caused" by any gossip in relation to her translated authors (Stark 150). She tried to maintain her reputation unquestioned using a variety of methods. For example, she did everything to ensure her name remained unmentioned on the title page of the English edition of Pückler's letters. She even went so far as to remove considerable amounts of text without acknowledging the fact to her unaware readers, something Pückler found particularly infuriating (Stark 150). She might have done this for different reasons: in fear of exposing her own personality, thus making her name vulnerable for reprehension and criticism or fear of presenting awkward ideas and language to a very conservative society or fear of not being published at all (bearing in mind her financial shortages and her constant persuasion of publishers to undertake her translations for publication).

Her habit of removing potentially compromising text and dissociating herself from the ideas expressed in the texts she translated in fact contradicted the translation theories advocated at the beginning of the 19th century. Being one of the best translators of the period who was so much fascinated by the German tradition, Sarah Austin could not be unaware of the ideas towards translation maintained in the period of German Romanticism by Friedrich Schleiermacher, Wilhelm von Humboldt, Johann Wolfgang von Goethe, Johann Gottfried von Herder and others. Goethe, for example, indicated that the goal of the translator was to "make the original and the translated text as identical as possible so that one is not meant to replace the other, but to act in its place, a mode in which the original can still be seen 'shining



through” (Stark 50). The philosopher Johann Gottfried von Herder, whose ideas influenced many famous 18th and 19th century scholars, in his work *Fragments on Recent German Literature and Volkslieder* claimed that the primary goal of a translator was to faithfully reproduce the meaning (Forster). Sarah was very well acquainted with these ideas, not least because she lived in Germany for a substantial period of time. She admired Goethe and appreciated his reviews (Johnston 105). Besides, Sarah believed that only the Germans understood “the morality of translating” (Stark 72). Therefore, Sarah Austin’s practiced removal of uncomfortable original ideas during the process of translation seems to be incongruous with the principles and postulates professed by the prominent translation theorists and philosophers of the time. She expressed many times in her letters and prefaces to translations that as a translator she had a privilege to have no opinion (Raumer in Stark 38), but exactly the opposite of what she did—an accurate rendering of all the original ideas of the authors she translated— would have been ‘no opinion’. Through her censorship, removal and changes made to the translated text, Sarah Austin expressed quite firmly her own attitudes and approaches to a number of social phenomena. On the other hand, she believed that these changes and manipulations were justifiable because translators were free to choose instead of demonstrating “rigid fidelity” to the text (Stark 49). In terms of practiced censorship and the abridgment of text, Sarah Austin’s translations would have better conformed to the 17th century translation postulates when the idea of *les belles infidèles* was advocated.

Even though Sarah Austin took the responsibility of abridging, changing and removing text when she translated or edited, it was not always that she practiced such censorship. In her daughter Lucie Duff Gordon’s translation of Berthold Niehbur’s *Stories of the Gods and Heroes of Greece* (published in 1843), which she undertook to edit, Sarah Austin writes:

The translation is, as nearly as may be, literal. The translator has tried to keep to the style of those who know how to narrate for children and childlike men; where each sentence is a simple uninvolved statement, and the sentences are bound together by the most direct and inartificial links.

Having carefully ascertained the accuracy of the translation, my task was at an end. I found nothing to alter, and was rather tempted to envy the youthful freshness and courageous naïveté of the style. (v)

As the editor of her own daughter’s translation, Sarah here reveals that the text was not changed, which implies that condensation, abridgment and omission of text might have been within the general practice of 19th century translating and editing. Otherwise, why would an editor need to state that no modifications had been introduced? On the other hand, this also sides with the idea that only particular subjects and topics were subjected to such substantial alterations. Since the text Sarah Austin was editing had been written for children and had been translated by one of nearly the same age, which she marks in the preface, there were no reasons to introduce serious revisions and substitutions as it could in no way expose the author, translator and editor to criticism.



Having said all the above, it might be conceived that Sarah Austin had very scrupulous views that did not allow her to display anything discreditable about those whose works she undertook to edit or translate in her aspiration for esteem and reputation. Along the same lines, she might have done so in order to disguise any pitfalls of those great men whose texts she revised as well as to safeguard her own name.

3. LUCIE DUFF GORDON: TRANSLATOR AND WRITER

The well-known translator and writer Lucie Duff Gordon has received as much attention as her mother, Sarah Austin. Her life and work have been rather considerably examined, mostly because she was an extraordinary woman who was too open-minded and modern for the times she lived in (Foster 16). She is often claimed to have been the most genuinely open (Foster 16) woman who led a very “radical lifestyle” while in Egypt (Logan 452). Waterfield writes that “[s]he had instead a quality—an attitude to life—which makes her a member of the twentieth rather than of the nineteenth century” (2). The first to record her life was her own daughter, Janet Ross, who gave a detailed account of Lucie’s life along with her grandmother Sarah Austin’s and great grandmother Susanna Taylor’s, in her book *Three Generations of English Women* published in 1888 and its follow-up *The Fourth Generation: Reminiscences by Janet Ross* published in 1912. In 1937, the journalist and publisher Gordon Waterfield published a book, *Lucie Duff Gordon in England, South Africa and Egypt*, which was a very substantial biography. In modern times, interest in this outstanding and noteworthy figure has not decreased, resulting in a biography by Katherine Frank in 2007, a 1992 research study devoted solely to Lucie Duff Gordon by Helen Wheatley and a few papers where she was given slightly less attention (Foster; Logan; Tucker).

Lucie Duff Gordon was born in England, but spent much of her childhood in Germany where she learned to speak German alongside her native English. Unfortunately, due to illness, later in life she had to leave the continent and went to live in Egypt, where she spent seven years between 1862 and 1869. Lucie was brought up by her mother, Sarah Austin, in the same educational spirit that she herself had been raised by Lucie’s grandmother, Susanna Taylor (Waterfield 9). However, unlike her mother Sarah, Lucie was bored by the things girls were taught at the time: sewing, knitting and music. She was also uninterested in the talks and discussions of the prominent figures of the time, who gladly visited her mother’s intellectual salon (Waterfield 35). Instead, she loved animals and was extremely fond of reading. Left much to herself by the mother who was constantly struggling to earn an income for the family, Lucy grew to be intelligent, self-confident and independent, which her mother would always wish to secure as she felt Lucie was “not like the children of the upper classes” (Waterfield 9).

Lucie’s translations are well known. As a child, she learned German and began her career as a translator quite early. Like her mother before her, she specialised in translations from German and French. One of the reasons Lucie undertook



translation was, as in the case of her mother, earning money. For this same reason, she published a few translations from German and French together with her husband Alexander. Besides, like her mother, she was always interested in the possibility of translating the books she was reading (Waterfield 99). However, while her mother always thought of the German language as superior and would have liked to introduce Germanisms into English for the purpose of reforming the language (Stark 50), Lucie would doubt whether certain pieces written in English could have been properly rendered into German: “nor would it be easy to translate—a lively, brilliant and rather insolent style is very hard to put into German above all” (Waterfield 99).

Lucie did some editing as well: H.C.L. von Sybel’s *The History and Literature of the Crusades* (published in 1861) was translated by Lucie’s daughter Janet Ross, and Lucie contributed to Janet’s first translation by editing the volume. However, although Lucie could and occasionally did editing, her translation and writing practice is much more widely known about and acknowledged.

Mostly she translated historical and political texts, although there were a few literary prose renderings. One of the first of her translations to be published was the German historian Berthold Niebuhr’s *Stories of the Gods and Heroes of Greece*, which appeared in 1843 under the name of her mother, Sarah Austin, and, the next year, a translation of Wilhelm Meinhold’s *Mary Schweidler: The Amber Witch*, followed by *The French in Algiers* in 1845 (Ross 7). Lucie Duff Gordon’s translations were often referred to as masterpieces and she herself, like her mother, was known by her contemporaries to be a translator of genius (as noted by editor Morley in the preface to *The Amber Witch* translated by Lucie Duff Gordon and published in 1844) and a remarkable woman of the time (noted by J.W. Mackail in the introduction to the 1928 edition of *The Amber Witch*).

Although too open-minded, tolerant and progressive for the time she lived in, like her mother again, Lucie did not completely refuse the possibility of text omission and censorship. The translation of Baron von Moltke’s *The Russians in Bulgaria and Rumelia in 1828 and 1829* from the original German and published in 1854 is attributed to Lucie Duff Gordon (and considered to be her last translation), although there is no reference to the name of the translator in the book itself. The preface is written and simply signed The Translator.

My first intention was to make an abridgment of the book—leaving out all purely military details—but as I proceeded in the work I was so much interested by the vivacity and clearness with which even technical matters are described, that I thought even those among my readers who are as ignorant of the art of war, as I am myself, would have cause to regret their omission. I have therefore only condensed some of the political speculations relating to bygone events, and left out a few unimportant passages. <...>

Thus the correctness of the version of Baron von Moltke’s book now offered to the English public has been secured; but the Translator must crave indulgence towards any inelegance of style caused by the endeavour to make the book as clear and as short as possible. (iv)



Although the translator explains the reasons for abridging and condensing the text, i.e. for leaving out parts of the text, mostly those related to military matters, the feelings of regret by the translator herself or those arising from the readership for omissions were pre-contemplated, as the passage suggests, and the idea of the removal of parts of text might have been speculated as inappropriate. However, the translator indicates that “a few unimportant passages” were left out, which might imply that she had either the permission to abridge or decided herself on what to render and leave out. If such removal of parts of the text could be attributed to the latter reason, then how did the translator decide which passages were to be left out, especially taking into consideration the fact that she admitted her ignorance in the subject? Was it personal choice? Or was it the realisation that a translator was not a mere mediator, but an individual of decision and voice? The translator also confessed to having omitted some political speculations concerning past events, which might suggest she was well acquainted with the history and the current political situation in the country and might have feared to introduce some debatable issues, possibly attracting more attention. This might also support the idea that the decision not to translate political speculation could have been made for the sake of maintaining her, or her family’s, name unexposed to criticism or condemnation, just like the decision to conceal the name of the translator. The justification of possible inelegance of style by the fact that the book had been intended to be very short again might imply that there were more than a few omissions.

In the preface to her translation of Anselm Ritter Von Feuerbach’s *Narratives of Remarkable Criminal Trials* published 1846, Lucie Duff Gordon also admits to having abridged the text. She writes:

I have selected those trials which appear to me to possess the greatest general interest, and, in obedience to the suggestions contained in a most interesting article in the last-named journal, I have abridged them to little more than half their original length. I hope that I have nevertheless succeeded in preserving the main outline of every trial, filled up with just so much of detail as will serve to give a tolerably faithful picture of crimes common to all nations, treated in a manner very widely differing from our own. (x)

It is not surprising that Duff Gordon does not apologize for her abridgment and even indicates the length to which the trial descriptions were condensed. This might have been a regular practice. On the other hand, the idea of a possible inadvertent disregard for detail might be sensed in her craving to preserve a main outline that still retains an adequately precise picture of events.

Waterfield (1937) argues that Lucie most probably would have only found a little fame for translation and more as “a talented and attractive hostess”, if it were not for her illness, which forced her to move and live in Egypt (3). The historian stresses Lucie’s strength as an outstanding writer with exceptional qualities (*ibid.*). In Egypt, although still involved in translation and editing, she could not resist the temptation to reveal her perfect literary talent. Unlike her mother, who always feared and thought she was not capable of writing herself, Lucie wrote two collec-



tions of letters: *Letters from Egypt*, 1863-1865, edited by her mother and published in 1865 in England and the United States,¹ and *Last Letters from Egypt*, edited by her daughter, Janet Ross, and published posthumously. For modern researchers, the *Letters* collections offer a lot more than the usual travel writing of British women at the time: “The letters of Lady Duff Gordon, who lived in Upper Egypt in the 1860s, provide the kind of source material that can be used to explore Egyptian attitudes as well as her own British ones” (Wheatley 82). Wheatley finds Lucie Duff Gordon’s writings capable of revealing “subtle and complex interactions between cultures” (82), Egyptian and British, most probably because Lucie was extremely open, vivid and straightforward in disclosing the peculiarities of Egyptian life. It seems that she did enjoy her observations of life in Egypt and the Egyptian people and was satisfyingly overt in her writings where she often asked for tolerance towards Egyptian life and culture (Wheatley 98). The receptiveness and broad mindedness revealed in her letters most probably would not have been welcomed by her mother Sarah Austin who edited her text to omit the most dangerous and open observations. On the other hand, Lucie most probably did not mind her mother editing her letters since, although she felt content with her translations, she was not exactly satisfied with her writing style (Frank 299-300).

A number of historians and researchers have judged Lucie Duff Gordon to have been a distinguished travel writer. Her translations, although excellent, appreciated and republished, might have been for the most part overlooked and consequently underestimated. Upon closer scrutiny, they might demonstrate the internal conflict that a lively, independent and well-educated woman of poor health went through living in the middle of two very different societies. On the one hand, Lucie Duff Gordon was obliged by society, her education and above all by her mother to adhere to rigid attitudes and values. On the other, she spent a substantial period of her adult life in Egypt, a society of brutal but elemental power and beauty, where her own innate liberty was almost certainly uplifted and unsuppressed.

4. FINAL IMPLICATIONS

Sarah Austin and Lucie Duff Gordon are recognised British women translators of the 19th century. On the subject of their views on translation, as revealed in the prefaces and introductions to the translated and/or edited texts they worked on, both women practiced similar methods in their translations. Although Lucie Duff Gordon was a generation younger than Sarah Austin and most probably is naturally expected to have been more liberal, it might be said that, like her own mother, she regularly practiced abridgment, omissions and similar modifications—i.e. censorship—of the texts she translated. Through such practices, the women made their voices heard; by abridging and removing parts of original texts, which

¹ Private edition (Frank 322).



possibly discuss some of the dangerous and controversial issues of the time, they unveiled their fears, values and attitudes.

Both translators spent years abroad. Sarah Austin admired the German way of life and its political system and wanted to introduce German values into English society. For this reason, she translated and edited a number of political and socio-logical texts; almost all of her translations demonstrated certain political and social judgments and points of view. Lucie Duff Gordon was more interested in history than politics, which is revealed through her acknowledgement in the prefaces of translated volumes that she omitted political speculations, thus demonstrating her indifference or ignorance of politics. Duff Gordon's residence in Egypt seems to have inspired her to more than just translate. She also contributed to travel literature with her own writing about the Egyptian way of life. Thus, it may be stated that living abroad essentially influenced the translation and related practices of both women.

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LEXICAL RICHNESS IN MODERN WOMEN WRITERS: EVIDENCE FROM THE *CORPUS OF HISTORY ENGLISH TEXTS**

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ABSTRACT

This paper addresses the issue of lexical density and its popularity after the arrival of corpus linguistics and its methodology. In fact, this is now one of the most frequently used descriptive tools in the analysis of register and genre. Researchers have often trusted lexical density as it is quantifiable and measurable by applying a formula and this has made its use very popular both for scrutinising grammatical and lexical forms and their frequencies. Lexical richness is a related concept although it does not refer exactly to the same. This paper aims to examine lexical richness, understood as the degree of variety of terms used in texts written by women during the eighteenth and nineteenth centuries. To this end, I will analyse samples drawn from the *Corpus of English History Texts (CHET)* to see whether the communicative format (genre) of the sample has any influence on vocabulary in a discipline with discursive patterns that were not probably as standardised as those of other fields of knowledge.

KEYWORDS: Lexical richness, late modern English, scientific writing, Coruña Corpus, women authors.

RESUMEN

Este artículo aborda el tema de la densidad léxica y su popularidad desde la llegada de la lingüística de corpus como metodología. De hecho, es una de las herramientas descriptivas que más se usan en el análisis de registros y géneros. Los investigadores han recurrido a ella a menudo, ya que es cuantificable y medible por medio de una fórmula y esto la ha hecho que se use muy a menudo tanto para el análisis de palabras gramaticales como léxicas. La idea de riqueza léxica es un concepto relacionado con el de densidad léxica aunque no son exactamente lo mismo. Este artículo se centrará en la riqueza léxica, entendida como el grado de variedad de términos usados en unos textos concretos, los escritos por mujeres en los siglos XVIII y XIX. Con tal fin, analizaré muestras extraídas del *Corpus of English History Texts (CHET)* para comprobar si los formatos comunicativos (géneros) influyen sobre el vocabulario en una disciplina cuyos patrones discursivos no estaban tan desarrollados como en otros campos del saber.

PALABRAS CLAVE: riqueza léxica, inglés modern tardío, escritura científica, Coruña Corpus, autoras científicas.



INTRODUCTION

The development of corpus linguistics has meant that lexical density is now one of the most frequently used descriptive tools in the analysis of register and genre. As a quantifiable parameter to which a particular formula can be applied, it can be employed to assess either functional or lexical words. A closely related concept is that of lexical richness, and although the two terms have been often used interchangeably, they are not necessarily the same. This paper aims to examine lexical richness, understood as the degree of variety of terms used in particular texts, and to do so in texts written by women during the eighteenth and nineteenth centuries. To this end, I will analyse samples drawn from the *Corpus of English History Texts (CHET)* to see whether genre has any influence on vocabulary in a discipline that might be considered less standardised than many others. In what follows, section 1 will briefly provide the context in which the texts under scrutiny were produced, as well as describing the social circumstances of women and the broader situation of science writing at the time. Section 2 will explore the idea of lexical richness and will present the initial hypothesis of the study, plus the methodology. A description of the corpus follows in section 3, after which the analysis and results are presented. Finally, section 5 will offer some concluding remarks.

1. SOME BACKGROUND ON SCIENCE IN LATE MODERN ENGLISH

Although today's scientific discourse is said to be highly conventionalised, this has not always been so. The structure *IMRD* (Introduction, Method, Results and Discussion) of research articles, which is found in experimental studies of all kinds, is often accompanied by particular linguistic features, including lexical ones, that convey specific communicative purposes (Swales; Biber and Finegan). Also, as Monaco (forthcoming) notes, "Another example [of conventionalised style] could be the linguistic and stylistic guidelines for the submission of manuscripts to scientific journals, which tend to vary according to the scientific discipline dealt with. Although such conventions of language and style may appear as established *ad hoc*, most of them had been developing for decades, and some for centuries, before consolidating into what they are nowadays."

I have argued elsewhere (Moskowich, "Morfología flexiva" 625) that it is this tendency towards standardisation that characterises scientific writing at the beginning of the late Modern English period. It is at this time that authors in general start to prefer the use of the standard variety of the language, independently of their

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geographical origin, thus ignoring their own dialectal idiosyncrasies, and it is also the time when academics, grammarians and lexicographers try to “fix” and “correct” the English language. Yet this tendency in language in general may not have affected scientific writing to the same extent, since English had been adopted as a valid language for the transmission of knowledge only one century earlier, alongside the gradual abandonment of Latin for this purpose. Moreover, Crombie (95) notes “linguistic inertia” as “evidence of continuity with earlier forms of thought, whatever changes the requirements of successful scientific practice may have brought about.” And this seems to have occurred in spite of Bacon’s desire to improve the English language in order to make it suitable for the expression of science. In his works *The Advancement of Learning* (1605) and *Novum Organum* (1620), he claimed that “in order to progress beyond medieval sophistry, knowledge would require a new type of speech, a plain and unadorned style of writing capable of carrying the truth of the world in as direct a manner as possible” (Montgomery 74). Contrary to Crombie’s idea of linguistic inertia, others have claimed that the members of the Royal Society adopted Bacon “as their linguistic messiah” (Montgomery 75). Perhaps the truth is somewhere between these two points of view, and the unadorned style advocated by Bacon was to be seen more in syntactic structures than in the choice of particular lexical items, where the constraints of particular scientific disciplines were often determinant.

During the seventeenth to nineteenth centuries, fields of knowledge were conceived of very differently from the way they are today. In fact, Newton was not considered to be astronomer, mathematician or physicist (Monaco, forthcoming) but rather a *natural philosopher*, that is, someone who “had a breadth of comprehension, perceived analogies and other irregularities, derived rules that explain phenomena, and predicted the future”, and who also combined “accuracy of observations”, “precision of judgment”, and “speculative curiosity” (McCormack 17). Other disciplines, falling outside the experimental realm, were not considered science at all. History (or historiography) is not generally regarded a science at all and was certainly not regarded as such in the eighteenth and nineteenth centuries, when science was essentially associated with the observation and explanation of the natural world.

In the period under study here, the eighteenth and nineteenth centuries, women were excluded from this official world of “real” science. For this reason, the *Coruña Corpus of English Scientific Writing* contains eight female authors in the *Corpus of History English Texts (CHET)* whereas only two in *CETA (Corpus of English Texts on Astronomy)* (Moskovich *et al.*), reflecting the scientific, social and hence linguistic reality in Modern times.

Women were not readily accepted in the world of knowledge until very recently. Even Margaret Cavendish, frequently mentioned in the literature as an active member of seventeenth-century scientific circles together with her husband, was never received as a full member of any academic or scientific society. It was perhaps often the case that scientific circles were no more than the result of a fashionable habit of the high classes, with women also affected by this. Indeed, according to Crespo (103), there were two main reasons for women’s participation in science: the fact that they and their families belonged to high social strata; that science at the time was a



non-institutionalised activity, often considered a hobby or part-time occupation and thus not something in itself serious or important. The women I have included for this study all enjoyed the kind of very favourable personal circumstances conducive to becoming history writers. Crespo (105) claims that “the fathers of our female writers normally occupied important social posts, being bankers, landowners, members of parliament or merchants interested to a certain extent in intellectual matters.” This is exactly the case of one of the eighteenth-century authors under study here, Sarah Scott, whose background accurately matches this description. The case of Elizabeth Justice is different, but also one of educational privilege; her father was one of those people concerned with ladies’ education and sent her to a boarding school, as well as providing her with a private tutor. Women in the nineteenth century saw some social changes regarding their position, but access to education was still for a small minority. Both Scott and Justice wrote texts of an instructional character, Scott’s work being addressed to children, whereas Justice’s travelogue included observations on everyday life, and Crespo (104) has argued that the latter presents significant differences from comparable works by contemporary male authors.

The first of the authors whose work will be considered from the nineteenth century, Mercy Otis Warren (1728-1814), did not receive any formal education until she attended a preparatory school with her brothers in Massachusetts. This was a pattern seen in other early American women writers from comfortable families, where male relatives encouraged studying and writing within the confines of the home (*ODNB*). By contrast, Lady Maria Callcott (1785-1842) attended school from very early and was an enthusiastic student, studying Latin, French and Italian, among other disciplines. Lucy Aikin (1781-1864) and Alice Cooke (1867-1940) are the only writers in the corpus recognised as historians by the *ODNB*. The latter also read extensively in French, Italian and Latin. Elizabeth Sewell (0815-1906), in turn, was first sent to a school when she was four and received formal education until she was fifteen, when she returned home to help with the education of her two younger sisters. This was a turning point in her life since it marked the beginning of her interest in the education of middle-class girls. We do not have any information about the early life and education of Martha Freer. As regards Alice Cooke, not only did she receive formal education in schools for girls but also attended Victoria University of Manchester.

Even with formal training and university degrees, women were generally excluded from official seats of knowledge and worked at the lower end of the scientific scale. They were not admitted to any of the institutions and societies founded throughout the seventeenth and eighteenth centuries (Solsona i Pairó 86-87). Exclusion from institutionalised science served to reinforce these women’s desire to spread knowledge to those who were similarly pushed into the educational background, and may have had an effect on the language they used to convey knowledge to their audience.

According to Crespo (105), most female authors share certain notable characteristics in their writings: the new empirical and observational approaches to science which provoked the use of expressions such as “I observ’d” (Justice xiv), and “I flatter myself, that my imparting to general curiosity what in my researches



I have been able to discover concerning it” (Scott XIII); positive references to the female sex (Margart Bryan, author included in *CETA*); allusions to the vices, virtues and religious morals of the time, in prefaces such as that in Justice’s (1739) work. It is perhaps because women’s claims to equality, including intellectual equality, were still questioned that many of them felt they could play a role in society by writing for the weakest (children and other women), this in an attempt to make their audience conscious in a subtle way of the real role women play in human development. It seems that such an orientation must have been accompanied by particular ways of using language, and in this sense their vocabulary may reflect the kind of intellectual richness which they were not otherwise allowed to show.

2. LEXICAL RICHNESS AND METHODOLOGY

While late Modern English is a period of lexical innovation often fostered by social and technological developments, my concern here is not with such innovation but with lexical variety or richness. My initial hypothesis is that texts contain fewer different types as they become more specialised, since some terms are always preferred as being appropriate to refer to particular extra-linguistic entities in specific domains. That is, lexical richness decreases over the course of time as vocabulary becomes more discipline-related. Although I agree with Smitherberg and Kytö (129) that genre is an indispensable parameter in historical linguistics, its role as a limiting factor will not be explored in the present study since my sample is a small one, certainly not sufficient to produce any definitive results in this respect. Besides, genre may not be a constraint if we consider that genres have not always been well delimited, as shown for the genre “letter” by Kytö and Romaine (213), where they found that substantial differences could be observed within the genre as a result of revisions made by authors: “professional letters can be highly informational and are often written and revised with care. Thus, they often show a greater degree of lexical variety and informational density compared with personal letters.” We also know that the vocabulary of English increased from the eighteenth century onwards, especially with the introduction of new terms adopted from other languages arising from contact through colonisation and commerce. Such an increase did not stop in the following hundred years (Görlach 1999, 93), and indeed, “many of the new words in the *OED* from the Late Modern English period reflect recent advances in technology” (Tieken-Boon van Ostade 65). It is therefore my intention to look at whether specialised texts reflect the growth in vocabulary in general or, rather, if there is some kind of stagnation due to the adoption of history-related terminology imposed by genre. This will be done by assessing texts in search of the true extent of their lexical variety, density or richness.

Some discussion seems in order here, since, as mentioned above, lexical richness and lexical density are often used as interchangeable terms. The latter is very clearly defined in computational linguistics as the estimated measure of content per units, either functional or lexical, and is calculated according to a formula the results of which are used in discourse analysis as a parameter varying across registers



and genres. In general terms, the calculation establishes the proportion of lexical (nouns, adjectives, verbs, adverbs) tokens in relation to the total number of tokens in the text. However, while this measure provides a good portrait of informational density (that is, the proportion of lexical and functional words in the text), it does not really express the idea of variety as such, that is, the many different terms that can be found in a particular sample. For this, Peirce's 1906 type-token distinction, in which a descriptive class is distinguished from the elements that instantiate that class, is fundamental. In terms of linguistic variety, types (the class or lexeme) and not only tokens¹ (each use of a form) must be taken into account. Content analysis, in Krippendorff's (24-31) concept of the term, may also be said to be at stake in dealing with the analysis of vocabulary in its context, if we assume that the words mentioned most often (that is, with the greatest number of tokens) are those reflecting important concerns in the texts. There are also other ways to measure lexical richness, such as Brunet's Index (W), Honore's Statistic (R) and Type-Token Ratio (TTR). The latter has been seen to be unsatisfying in some studies on child language (Richards 1987) and has been said not to be directly related to what one would consider a rich language², yet it may be useful when dealing with samples of a similar size as the ones under study here, and hence it will be used for this study. However, TTR analysis will be complemented with typical frequencies using normalised figures, as well as with a detailed account of each text, a more typical approach in microscopic analyses.

3. CORPUS MATERIAL

The data for the present analysis has been taken from the *Corpus of History English Texts (CHET)*, a beta version of one of the sub-corpus of the *Coruña Corpus of English Scientific Writing (CC)*, henceforth). The samples meet all the criteria already employed for the other subcorpora, that is, they are text samples of approximately 10,000 words published between 1700 and 1900, all written directly in English so as to avoid any interference from other languages or mistakes derived from translation, and only one sample per author has been collected to avoid the abundance of any particular idiosyncratic linguistic features. Each sample is accompanied, as is the case with other subcorpora in the *CC*, by a file with extralinguistic information, relating to both the author and the text itself, including genre, date of publication and bibliographical information (for the text), the place where the author acquired her (scientific) linguistic habits, her age when the work was published, and her occupation (Moskowich 2012, 36).

¹ Ignoring Quine's (180) claims, *token* and *occurrence* will be used to refer to the same entity in this paper.

² Mike Scott, the developer of Word Smith Tools, claims that Shakespeare's TTR is certainly not high (http://www.lexically.net/downloads/version5/HTML/index.html?type_token_ratio_proc.htm).



CHET contains, at the moment of writing this paper,³ 404, 511 words, split equally between texts published in the eighteenth and the nineteenth centuries (see Table 1 below).

TABLE 1. WORDS PER CENTURY IN CHET	
Words in the 18th c.	201,951
Words in the 19th c.	202,560
total words in CHET	404,511

Of the forty authors whose writings have been compiled in *CHET*, only eight are women. The total number of words of the texts under examination, then, is 81,578, representing 20.17% of the total. This seems to be in accordance with the social and historical context of women during the late Modern English period as described in section 2, especially so if we consider that only two of these eight women published their work during the eighteenth century, thus representing one quarter of all the material for this study.

Table 2 below provides details of the eight works under survey here, including the genre to which the texts have been ascribed in the compilation process.

TABLE 2. WOMEN AUTHORS IN CHET				
DATE	WORDS	AUTHOR	WORK TITLE	GENRE/TT
1739	10,005	Justice, Elizabeth	Voyage to Russia: describing the Laws, Manners, and Cuftoms, of that great Empire, as govern'd, at this prefent, by that excellent Princefs, the Czarina. Shewing the Beauty of her Palace, the Grandeur of her Courtiers, the Forms of Building at Petersburgh, and other Places: with feveral entertaining Adventures, that happened in the Paffage by Sea, and Land. York: printed by Thomas Gent	Travelogue
1762	10,114	Scott, Sarah	The History of Mecklenburgh, from the Firft Settlement of the Vandals in that Country, to the Present Time; including a Period of about Three Thoufand Years. London: printed for J. Newbery	Treatise
1805	10,214	Warren, Mercy Otis	History of the rise, progress and termination of the American revolution. Interspersed with Biographical, Political and Moral Observations. In three volumes. Vol. i. Boston: printed by Manning and Loring, for E. Larkin	Treatise
1828	10,332	Callcott, Maria	A Short history of Spain. In two volumes. Vol. II. London: John Murray	Treatise
1833	10,013	Aikin, Lucy	Memoirs of the Court of King Charles the First. In two volumes. Vol. i. London: printed for Longman, Rees, Orme, Brown, Green, and Longman	Treatise

³ The material is referred to as a beta version of *CHET* because some texts for the nineteenth century are still under revision, which might eventually alter the word counts for some samples slightly.



1857	10,037	Sewell, Elizabeth Missing	A first history of Greece. New York: printed by D. Appleton and company	Textbook
1860	10,102	Freer, Martha Walker	History of the reign of Henry iv. King of France and Navarre. London: printed by Hurst and Blackett, publishers	Treatise
1893	10,761	Cooke, Alice M.	The Settlement of the Cistercians in England. The English Historical Review, vol. 8, No. 32. (625-648). Oxford: Oxford UP	Article

As can be seen, there is not much variety regarding genre or choice of text type⁴ on the part of authors. It is not only a question of the popularity of particular genres at any point in time, but also that such choices may have been provoked by factors such as text reception. In other words, the fact that we have one travelogue and one article versus five treatises and a textbook may be in direct relation to the key role of women writers in the transmission of instruction (usually found in treatises) rather than in the advancement in knowledge (typically represented by articles) during the two centuries. Graph 1 below illustrates this distribution.

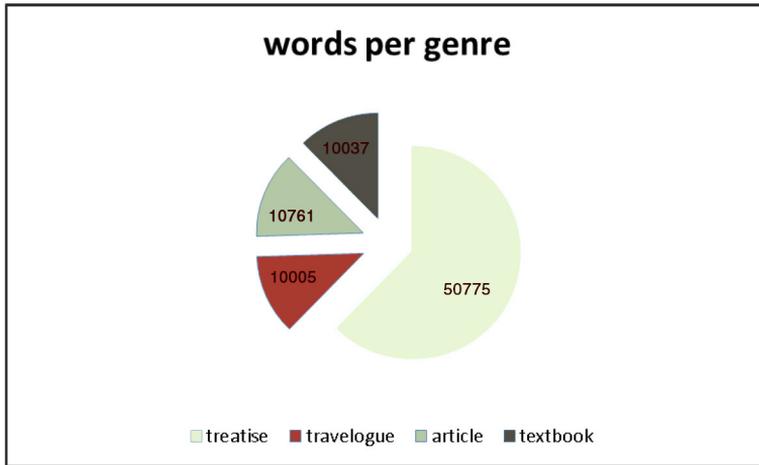
Curiously, the genres to be found at both endpoints of the period under survey are precisely those most representative of their time: travelogue was greatly in vogue as an identifiable written form in the eighteenth century but the term itself had almost collapsed and nobody uses it any more, whereas in the nineteenth century the article was blooming as the means of scientific communication *par excellence*, and treatises, which tended to offer fuller surveys of particular fields of knowledge, were also very numerous.

An analysis of these samples from the point of view of their lexical diversity will be presented in the following section, using frequency lists and type-token ratios (TTR) as tests of diversity in their vocabulary. Since this ratio is highly text-length dependent, in the sense that the longer a text is, the lower the TTR will automatically be (Arnaud, 1984), the samples contained in the *CC* have the advantage of all being of a similar size and are therefore easily comparable. However, frequencies will be normalised to 10,000 words to ensure optimal comparability.

After generating individual frequency lists with the Coruña Corpus Tool, the lists were exported to Microsoft Excel 2010. All different forms, that is, both content words and function words, have been considered for this survey. Some variability within forms (counted as different types) may occasionally arise not as a result of an author's decisions but by those of the editor or printer, for example in spelling alternations such as the use of <s> and <ʃ> in *sun* and *ʃun*. However, other differences, such as the use of abbreviations (*em* for *them*, for instance), may indicate the author's wish to provide variety and thus make her writing a little more vivid, to avoid repetition, or to achieve a better prose rhythm in the case of texts intended to be read aloud in schools. Table 3 below shows the number of different forms

⁴ The concepts of genre and text type will be used interchangeably here, in that the differences between them are not relevant for the purpose of this research.





Graph 1. Genres in women's history writing.

initially identified (Types raw) and those left after removing figures and editorial marks by compilers (Types cleaned) for each text.

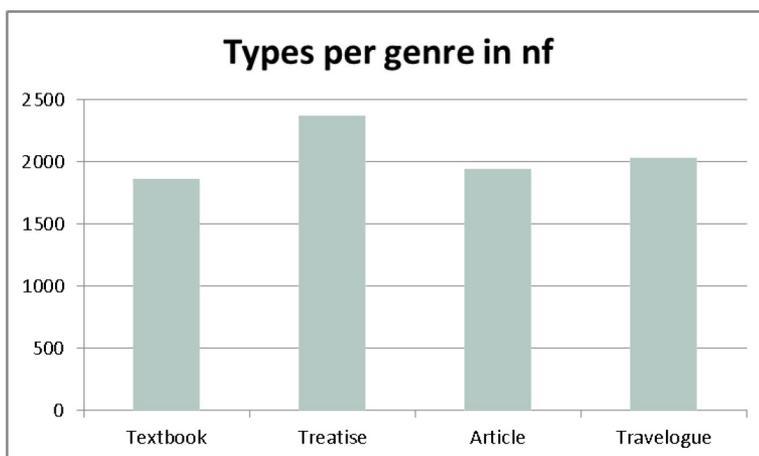
TABLE 3. TYPES FOR CONSIDERATION IN SAMPLES				
AUTHOR	GENRE/TT	WORDS	TYPES_RAW	TYPES_CLEANED
Sewell, Elizabeth M.	Textbook	10,037	1,870	1,861
Scott, Sarah	Treatise	10,114	1,996	1,981
Justice, Elizabeth	Travelogue	10,005	2,045	2,028
Cooke, Alice M.	Article	10,761	2,409	2,088
Callcott, Maria /lady	Treatise	10,332	2,390	2,358
Warren, Mercy Otis	Treatise	10,214	2,480	2,463
Aikin, Lucy	Treatise	10,013	2,659	2,603
Freer, Martha Walker	Treatise	10,102	2,668	2,610

The following section will provide an analysis of these data.

4. DATA ANALYSIS

Since the size of the corpus under analysis is small, the study requires a microscopic orientation. To this end, each text sample has been dealt with individually, following the methodology described in section 4 above, followed by some detail analysis.





Graph 2. Distribution of types per genre, in normalised frequencies.

The first thing to be observed (see Table 3 above) is that the number of types within each sample ranges from 1,861 (in 10,037 words) in Sewell's text to 2,610 (in 10,102 words) in the sample from Martha Freer. The difference in the number of types in these two samples does not seem to be caused by sample size, since all samples in the *CC* contain around 10,000 words. Time as a variable can also be disregarded, as it does not seem to have any direct influence on my data; only three years separate the publication of the two works containing the highest and lowest number of types (published in 1857 and 1860, respectively). So, where does the difference lie? Genre seems to be a determining factor, since the work containing the least varied vocabulary is a textbook and the one with the greatest use of different terms is a treatise. In fact, Table 3 seems to reveal a gradience here which establishes some kind of correlation between genre and lexical diversity, thus: textbook, travelogue, article, treatise. This sequence is disrupted only by the sample from the text written by Sarah Scott in 1762 (*The History of Mecklenburgh*). The fact that this work had two editions in its very year of publication suggests it was very popular. Although a treatise, Scott's book is certainly close to its readers in style and content, offering anecdotes from the everyday lives of the historical characters she portrays, as the author herself recognises as one of her aims in the preface: "They all required, with the most ardent curiosity, for anecdote[s] concerning the house of Mecklenburgh" (Scott, *The History of Mecklenburgh* IX)

In this sense, the work may be said to be an atypical type of treatise. So, with the exception of Scott's work, we can see that genre, more than any other variable, seems to be a plausible cause of the difference in lexical richness to be found in the samples under survey. Graph 2 provides a general overview of the distribution of vocabulary as used by female authors across genres:



Although sample size is very similar in all cases, types have been normalised (per 10,000 words) in order to confirm our first impressions of the data. In fact, we observe that the number of different terms contained in each of the four genres shows that these genres can be arranged in decreasing order, with treatises first (2,366.22 nf), followed by the travelogue by Justice (2,026.98 nf), article (1,940.34 nf) and textbook, with has the least rich vocabulary (1,860.11 nf). However, it is the type-token ratio that will yield the clearest picture of the vocabulary in the different genres.

The calculation of the TTR as set out in Table 4 confirms the idea that genres can be somehow sorted in decreasing order of lexical richness, and at first sight this seems to be in relation to the level of technicality of texts. Indeed, it might be said that genres are chosen precisely according to such technical level.

GENRE	TTR
Textbook	18.6011757
Treatise	23.6632201
Article	19.4034012
Travelogue	20.2698651

So, we have seen that normalisation of frequencies provides the same initial results as the TTR. However, given that there are relatively few women represented in the *CHET*, a more detailed analysis may be needed to be sure that none of the text extracts here is skewing the findings due to the linguistic idiosyncrasies of particular authors. Such idiosyncrasies might explain the fact that although treatises are usually highly technical texts addressed to members of the same epistemic community as the author, one particular treatise in our data is the second least lexically rich sample.

Görlach (2004) defines treatise as a “Discussion of a topic including some methodological issues”, a definition that coincides broadly with those provided by the *OED* and other dictionaries. In fact, the *Merriam-Webster Dictionary* defines the term as “a systematic exposition or argument in writing including a methodical discussion of the facts and principles involved and conclusions reached <a *treatise* on higher education>.” Such a definition, and its implications for the richness of the vocabulary employed, cannot be applied to the treatise by Sarah Scott, unless we simply consider this text an “Account” or a “tale (as proposed by the *Merriam-Webster Dictionary* as an obsolete meaning of the term), a description which seems like a far more adequate one of *The History of Mecklenburgh, from the Firft Settlement of the Vandals in that Country, to the Present Time*.

It is surprising that the difference in the number of types for the genres article (in principle a genre used to address specialised readership within the scientific community) and travelogue (a piece intended for a wider audience) is very small: article has a TTR of 19.40% and travelogue one of 20.26%. Following this trend, textbook is the category expected to show least variety. Textbooks are conceived of as a means of instruction, and therefore they must repeat ideas and words so that



readers assimilate them. At the same time, we will see that in our sample the book is clearly addressed to children, which may also imply that vocabulary has been deliberately restricted.

For the third level of analysis, I intend to consider individual texts. In each of them I have scrutinised the use of *hapax legomena* and of those types with four tokens or fewer, in that these are indexical of lexical variety. I have also looked into the most abundant forms, both functional and content words, since these will provide important information as to the communicative intentions of the texts. Finally, I have tried to establish some kind of relationship between genre and vocabulary, looking for possible constraints imposed on the latter by the former. Table 4 below offers a general overview of the lexical structure of the samples. In it we can see the genre or text type to which the work belongs, the number of types contained in the sample (those labelled “cleaned” in Table 5, that is, excluding numbers and editorial marks by the corpus compilers) and the *hapax legomena* in each text extract.

TABLE 5. USE OF *HAPAX LEGOMENA* IN TEXTS BY WOMEN FROM *CHET*

WORDS	AUTHOR	GENRE/TT	TYPES CLEANED	HAPAX LEGOMENA
10,037	Sewell, Elizabeth M.	Textbook	1,861	975
10,114	Scott, Sarah	Treatise	1,981	1,087
10,005	Justice, Elizabeth	Travelogue	2,028	1,206
10,761	Cooke, Alice M.	Article	2,088	1,203
10,332	Callcott, Maria /lady	Treatise	2,358	1,370
10,214	Warren, Mercy Otis	Treatise	2,463	1,451
10,013	Aikin, Lucy	Treatise	2,603	1,659
10,102	Freer, Martha Walker	Treatise	2,610	1,622

The first thing to note here is that in all the texts more than half the words are *hapax legomena*, that is, they are used only once. This ranges from 52.4% in Sewell’s textbook to almost 64% in Aikin’s treatise. This itself serves as an answer to one of my research questions, namely, the degree of dependence between genre and lexical richness, assuming that this is twofold. On the one hand, more technical sorts of texts (and the more so as textual categories become more standardised) should exhibit greater lexical variety. On the other hand, this same standardisation would probably cause a preference for certain terms over others, since we know that domains or disciplines tend to have a typical vocabulary associated with them (Coxhead and Nation 5-7). In the case of the eight texts under study here, we can see that the assumption of technicality seems to be true, in that the textbook tends to use fewer types and repeat them more often, whereas the treatise does exactly the opposite. However, the intermediate numbers indicate that this is not absolutely true, since Scott’s travelogue (with 59.5%) contains more *hapax legomena* than the article by Alice Cooke (57.6%) and also more than the three treatises by Sarah Scott, Maria Callcott and Mercy Warren (with 54.1%, 58.1% and 58.9%, respectively).



According to these TTRs, neither discipline nor genre can be identified as the cause for such irregular distribution of *hapax legomena*.

The specific kind of vocabulary found in a text may also be illuminating, and thus we will turn to this now, going from those samples containing the greater number of different types to those with the smaller. In 1857, Sewell wrote a textbook on the history of Greece, and mentioned in the preface that her intention was to provide children with an easy and understandable history of Greece. The genre, then, may have demanded a relatively greater than average use of repetition, and thus less variety. It seems that this might explain why her sample is the least rich lexically. In fact, the thirty three most frequently repeated words which she uses are function words such as *the, to, of* and *and*. The frequency list generated by the Coruña Corpus Tool shows that the most frequent content words are *Athens* (39 tokens), *Cyrus* (38 tokens), *Athenians* (34 tokens) and *Alcibiades* (33 tokens), all proper names. The text may thus reflect not only the constraints of subject matter, but also of the readership and pedagogical tendencies of a time where history was conceived of as a succession of deeds carried out by particular individuals rather than a conjunction of social or economic forces and their interpretation. In fact, although we have seen above that Sewell's *hapax legomena* are the lowest, these include very "exotic" items such as *Aeolis* as well as very common ones such as *weak, repeat, buy, leave* and *stone*. Also, there are few types ranging from 2 to 4 tokens, which seems to indicate that her vocabulary is also less varied than that of the other authors considered.

Sarah Scott's treatise, contrary to what we have just seen, does not have many repeated function words. In fact, there are only 18 types for functional words such as *the, for, a* and *in*, and immediately after these the frequency list shows the first content words, *king* (72 occurrences), *Mecklenburgh* (65), *Albert* (55) and *Duke* (50). Again, all these highly frequent content words make reference to particular characters or places, in accordance with the subject matter and following the trends of the discipline at that time in Europe.

The article by Alice Cooke came out in 1893, a moment at which this particular genre was blooming as an essential part of scientific dialogue. The frequency list here shows that the 20 most frequent terms are function words and the most frequent content word is the noun *order* (56 tokens). At first sight, this may suggest that Cooke is different from the other authors we have seen inasmuch as she is not making constant reference to particular concrete entities or people but rather to an abstract entity, in this case perhaps notions of social order. However, the second most frequent word in Cooke's vocabulary is *Cistersian* (51 tokens), hence we see that *order* is simply the collective noun for groups of religious people. It is worth mentioning that the third most frequent content word, with 43 occurrences, is the French term *citeaux*, no doubt in connection with the subject matter of the work. As shown in Table 5 above, this sample has the lowest *hapax legomena* count (1,203) after the textbook. If we assume that the level of technicality in a text is somehow related to the amount of single occurrences of terms, in that this increases lexical richness, how can we account for such a low *hapax legomena* count in this text, when we consider articles to be a genre typical of nineteenth-century scientific communication? Maybe one of the arguments mentioned earlier should be reconsidered



at this point: that specialised genres and specialised disciplines tend to create their own dominion-specific vocabulary, thus avoiding the use of the kind of linguistic resources that would naturally lead to increased variety.⁵ The hypothesis of a relation between the number of *hapax legomena* and specialised genre on the one hand, and subject matter constraints on the other, is reinforced by the analysis of the *hapax legomena* in Cooke's text, where we discover that many such items are place names or very common terms such as *useful* or *speak* which occur only once in the whole sample. This seems to confirm that she tends to repeat more technical terms because there are no synonyms for them. Besides this, there is an abundance of terms used only twice (335 types), three times (165 types) and four times (86 types), including in the latter group words such as *then* and *themselves*. This analysis seems to show that the author makes use of synonyms for non-specific words where no important shade of meaning will be lost, yet repeats those terms which are domain-specific, since the new trends of scientific and academic writing in the nineteenth century demands the use of a specialised lexicon associated with specialised, technical texts.

Among the *hapax legomena* employed by Callcott in her treatise, we find some terms that are not so unusual or specialised. Such is the case of *stirred*, *accusers* or *survey*. Very striking is the case of *across*, with one single use in all the 10,000-word sample. Callcott's richness of vocabulary is to be also seen in the fact that many terms (430 in all) are used only twice in the whole extract. Some of them are loans (*vizir*) and their exoticism may explain their infrequent use, whereas others are common, familiar English words such as *used*. Their scarcity may therefore be accounted for by the desire on the part of the writer to avoid repetition, as was the case with Cooke, except when this is strictly necessary, that is, with technical terms when there is no synonym available. As for the content word Callcott uses most frequently, this is *Ferdinand* (following 25 types on the frequency list representing functional categories). *Ferdinand* appears 53 times and is followed by *King* with 46 tokens, and is a clear illustration of the text's subject matter and arguments.

In Warren's treatise, the most frequent content word is *general* (with 46 tokens) following the 23 more frequent (functional) types such as *the* and *of*. *General* is followed by *British* (27 tokens), *army* (25), *Rome* (24) and *inhabitants* (also 24). Once more we see subject matter determining lexicon choice, but on this occasion the most frequent terms denote collective rather than individual referents. The work itself, *History of the rise, progress and termination of the American revolution. Interspersed with Biographical, Political and Moral Observations*, deals with a topic where collective entities are as important as individual heroes, and this may determine vocabulary choice. As a treatise, it contains a high proportion of *hapax legomena* (451) and also of other types not frequently used. Thus, there are many types with

⁵ Let us consider our own practice when writing papers on linguistics. We find that words that have synonyms in general language use tend to lose such synonymy under the demands of precise scientific expression. Thus, in the current paper I cannot easily resort to the use of the various synonyms for *type* in non-specialised English, such as *class*, *sort* or *kind* when expressing *type* in its discrete linguistic sense.



only two tokens (4,444), with 3 tokens (190) and with 4 tokens (91). Among the *hapax legomena* used by this North American writer, we can find very common words such as *according* and *commerce*, as well as others such as *allure* and *exemption*.

My analysis of Elizabeth Justice's 1739 travelogue *Voyage to Russia* reveals that she does not use many *hapax legomena*, and hence her writing is not as rich as those of others from a lexical point of view. In fact, many of the terms we find only once are spelling variants of other forms (*'tis*, *'twould*) and in fact might have been produced not by the author herself but by the editor or the printer. On the other hand, there are certain types with many repetitions (function words such as *the* or *of*). This extract is particularly illuminating in that the frequency list shows that the eighth most frequent type is not a function word⁶, but the personal pronoun *I*, with 147 tokens. This is evidence, once more, of the power of genre and subject matter on vocabulary choice. *Voyage to Russia* is a travelogue, and in this sense is almost a diary, a narration where the author is present at all times. In turn, subject matter may also have some influence on genre selection and tone, and consequently on vocabulary. Following the pronoun *I*, *great* (with 42 tokens) and *place* (with 33 tokens) are the two most frequent content words, both of which have a relatively vague meaning. As for the terms that are not often repeated throughout the sample, we should mention that 296 types have only 2 tokens, 165 types have only 3 tokens and 94 types are used only on four occasions. It is striking that, this being a travelogue, one of the less frequent types in the text is the word *road*, used only once in the whole sample.

The treatise by Martha Freer, published in 1860, contains 1,622 terms that are used only once, a very high number of *hapax legomena*. These include extremely common words one would expect to find frequently in a history book, such as *year*, and loanwords from French (*étudier*). Also abundant are types with less than four occurrences. Thus, the sample contains 435 different types with only two tokens, 189 with 3 and 95 terms that are used only four times. These figures point at a desire on the part of the author to avoid repetition. At the other end of the frequency list here, among the types with most tokens, the ten first words are function words, as expected. Immediately after these, *King* is the first content word with the highest level of use, appearing 105 times, and we also find, though with far less use, *Henry* (56 tokens), *Duke* (55) and *Majesty* (with 35 tokens), a vocabulary clearly focused on particular individuals in clear opposition to the sort of lexicon denoting collective referents noted in Warren's work. However, for a study of the contrastive discursive patterns denoting social or political tendencies in American and European history books, a larger corpus would be needed.

Finally, the richest text, in terms of containing the highest number of types, is *Memoirs of the Court of King Charles the First*, by Lucy Aikin. The first twenty-

⁶ It is generally accepted that the first ten lines (therefore, terms) of a frequency list generated by a concordancer can be disregarded for the analysis of content, in that they will normally be function words.



three most frequent forms are all functional forms, and, not surprisingly, these are followed by the content word *King*, thus indicating that subject matter plays an important role in vocabulary choices here. However, we must not forget that two other determining factors are to be found in the work of this author. On the one hand, together with Cooke, she is one of the only two women in my material recognised as a historian by the *ODNB*, and as such she may be addressing a specialised readership and therefore resorting to a more varied vocabulary, the shades of meaning she believes such readership can grasp. On the other hand, the sample of her writing here, despite its title, is a treatise, and genre has also been seen to be a determining factor. So, these two elements, and not just subject matter, may also have some kind of influence on her choice of words.

5. CONCLUSIONS

According to the analysis of the *Oxford English Corpus* carried out jointly by *Oxford Online* and the *Oxford English Dictionary*, *the* is the most common word in the English language, and the same is true of my material. All the texts analysed, not surprisingly, are characterised by having functional words as the most frequently found tokens, *the* being the first in all cases. However, there are some differences among them. When counting content words in decreasing order of frequency we can see that they appear with different distributions, and that these may be directly related to subjectmatter as well as to genre.

As Tse and Hyland (177) claim, the use of community discourses helps speakers become members of social groups, defining them in relation to others. They go on to argue that institutional contexts privilege certain ways of making meanings, and it is in this sense that I have used the words “specialised vocabulary” and “domain-specific vocabulary.” In a way, using a particular set of words helps create some kind of professional identity. But the women whose works I have studied here, although discipline-insiders, operated outside institutionalised circles due to the circumstances in which they lived in the late Modern English period. Tse and Hyland also claim that discipline is an important source of variation (179) and this is why I have chosen to study one single discipline and to explore what happens within it. Language choice seems to be heavily influenced by discipline and subject matter much more than by gender, and thus I have chosen not to compare gender-related language but language, vocabulary in particular, and to do so within the discipline of history at its very beginnings as an independent field of knowledge, after the emergence of Empiricism, once science had stopped being a *totum revolutum* and when different branches with their own rules began to appear.

My analysis seems to indicate that the language of these female authors is influenced not only by the genres they are using, but that these are chosen precisely because of the writers’ intended readerships. Following the tendency noted by Jücker and Kopaczyk (2), I believe that the use of language by authors must not be considered in isolation but rather through considering it within its community and social-cultural context. In this sense, the authors here may have been constrained



quite severely when writing by the thought of whom they were addressing. In other words, the choice of vocabulary is conditioned by subjectmatter and genre and the latter, in turn, may be influenced by the potential or expected readership, since language use depends on the social and historical context of speakers constituting a particular epistemic community.

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FROM CARMEN BURGOS SEGUÍ TO EMILIA PARDO BAZÁN: A REVIEW OF NINETEENTH-CENTURY SPANISH WOMEN TRAVELLERS

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ABSTRACT

Nineteenth-century Spanish women travellers have mostly remained in oblivion for almost two centuries. Nine women travellers bent the strict rules of the Catholic Spanish tradition, travelled abroad, became pioneers in their disciplines and left written accounts of their achievements. Carmen Burgos, Eva Canel, Sofía Casanova, Teresa Escoriza, Emilia Serrano, Carolina Coronado, Concepción Gimeno, Eulalia de Borbón and Emilia Pardo Bazán developed their careers mainly in journalism and literature. Their accomplishments include being the first Spanish female editor, the first female professional journalist, the first woman traveller to cross a whole continent on her own, the first female war correspondent, or the first female member of the *Ateneo de Madrid*. This paper sheds light on their individual stories so that their memory is not forgotten.

KEYWORDS: Women, Travellers, Nineteenth century, Spain, Travel literature.

RESUMEN

Las viajeras españolas decimonónicas han permanecido en el olvido durante casi dos siglos. Nueve mujeres desafiaron la tradición católica imperante en la España del siglo XIX, estudiaron, se labraron una profesión y viajaron al extranjero. Muchas de ellas fueron pioneras en sus disciplinas: la primera corresponsal de guerra española, la primera redactora española, la primera periodista profesional, la primera mujer en ser aceptada como miembro del Ateneo de Madrid. Estas nueve mujeres, Carmen Burgos, Eva Canel, Sofía Casanova, Teresa Escoriza, Emilia Serrano, Carolina Coronado, Concepción Gimeno, Eulalia de Borbón y Emilia Pardo Bazán, que desarrollaron su carrera profesional principalmente en la literatura y el periodismo, tienen una historia que merece ser contada. Este artículo vierte luz sobre su trayectoria y sus circunstancias individuales para que sus hazañas no permanezcan en el olvido.

PALABRAS CLAVE: Literatura de viajes, mujeres, viajeras, España, siglo XIX.



1. INTRODUCTION

Studies on European travellers to Spain, and the perception of Spain from the British or French —to mention the most relevant— points of view are large in number; there is vast bibliography on the subject. Studies on Spanish travelling have traditionally centred on male peregrinations, exploration and expedition journeys to exotic lands. In the nineteenth century, however, the delicate Spanish economic and political situation motivated that travelling abroad was an unusual tendency.

Despite the difficult situation, a small group consisting mainly of journalists and writers continued to travel either on official missions or for pleasure (Nadales 2009, 59). Due to the strict traditional values still fiercely settled in Spain, very few women were part of this group. They broke the norms and pioneered in their fields, becoming role models for other women in the period. Nine different women with varied personalities and living experiences, most of them shared a passion for travelling, writing and advocating for women's rights. This chapter portrays these singular women in depth: Carmen Burgos, the first Spanish female editor and, along with Sofía Casanova, the first Spanish female war correspondents; Eva Canel, considered the first Spanish woman professional journalist; Teresa Escoriaza, an avid traveller, war correspondent, journalist and language teacher in North America; Emilia Serrano crossed the American continent from Canada to the Patagonia and became the only woman who travelled across the whole hemisphere in the 19th century, and the only Spanish woman who travelled on her own along the western hemisphere in that century; Carolina Coronado was a prominent Romantic writer and was considered “a female Bécquer,” which was a singular characteristic of her emotional European trips; Concepción Gimeno de Flaquer devoted most of her literary efforts to writing articles to disseminate her ideas in defence of women, and she was the founder and editor of several publications in Spain and South America where she expressed her political and social opinion; Princess Eulalia de Borbón was an avid traveller who bent the rules of the Spanish royal family not only by travelling incessantly but also by criticising the court in her polemic publications on education, the defence of women's independence and social affairs; finally, Emilia Pardo Bazán, probably the most famous of the nine women discussed in this chapter, was the most popular woman and acclaimed writer in the intellectual sphere of the nineteenth and first quarter of the twentieth century. She travelled through Europe, wrote poetry, essays, newspaper articles, books and novels, taught contemporary literature at university and she was the first female member of the *Ateneo de Madrid*.

These are the protagonists of this paper, a selection of the few women travellers who challenged the social, political and cultural tradition, fought for women's rights and pioneered in their field. Their history, their travels, their moves, and their written records deserve to be remembered.



2. TRAVEL IN NINETEENTH-CENTURY SPAIN

The concept of travelling existing in Spain in the second half of the nineteenth century could be synthesised in this quote from Emilia Pardo Bazán (1892, 220), famous Spanish writer and well-known traveller, as already mentioned: “Viajar por vocación se considera aquí índice de extravagancia; algo que se acerca a la manía. Y es porque, en concepto del español, todo viaje representa una suma de contrariedades y de gastos muy superior a los goces que puede reportar.”

As Ford also stated, there was not a love of travel in nineteenth-century Spain, and just a few could afford travelling by pleasure. He travelled more than three thousand kilometres throughout Spain and stated (2004, 81, 194) that “El español, criatura rutinaria y enemiga de innovaciones, no es aficionado a viajar; apegado a su terruño por naturaleza, odia el movimiento tanto como un turco” and also “los indígenas [los españoles], que rara vez viajan como no sea por necesidad, y nunca por divertirse.”

However, with the industrialisation and improvement of the means of transport, nineteenth century marked the beginning of travelling for pleasure, the will to visit already explored places and add a personal vision (the recently popular *Impressions*). Besides, among certain intellectual spheres there was a need to construct and reinforce a positive Spanish national identity.

In line with this, the readers of travel literature increased, and aside from the personal accounts and impressions, it was common to find different travel guides aimed at different types of travellers. In fact, one of the women travellers analysed, Emilia Serrano, published in 1860 a travel guide in encyclopaedic format of England, Scotland and Ireland for Americans (*Manual, o sea guía de los viajeros en la Inglaterra, Escocia e Irlanda para uso de los americanos*).

Overall, although few people travelled for pleasure in Spain, dozens of journalists, scientists, writers, diplomats, among other professions, left written records of their professional trips and journeys. All those publications contributed to feed and create a travel literature reader, who was essential for the development of the genre as we know it today.

3. WOMEN TRAVELLERS IN NINETEENTH-CENTURY SPAIN

While there were some previous exploration journeys and pilgrimages, not until mid-nineteenth century did women travellers leave meaningful written records of their journeys. This coincides with the period in Europe when female travel and travel writing underwent a dramatic increase led by the British (Jenkins 4).

Before going into the lives of the travellers, it is necessary to briefly remind the reader that in the nineteenth century women from Europe—and, in fact, from all over the world—faced strong restrictions due to their gender, which, of course, affected their opportunities to travel. The situation was even more difficult for Spanish women due to the strong influence of the Catholic Church, according to which women should have a subordinate role, their role being that of mother and



their only domain their house. Their subordinate condition was still established as such in the Spanish Civil Code of 1889, where is stipulated that “a married woman must obey her husband” and, thus, husbands were legally in control of women’s finances, independence and even their children. Not until the Second Republic in the second quarter of the twentieth century did these stipulations change.

Concepción Arenal and Rosario de Acuña, two of the first Spanish feminists constantly criticised the situation of the 19th-century woman in Spain in their articles and statements. Rosario Acuña repeatedly referred to their situation as “slavery” and Concepción Arenal, in her work *La mujer del porvenir* (56-57), summarised the situation of Spanish women in the last half of the 19th century as follows: “The most virtuous and enlightened woman is considered by law inferior to the most depraved and ignorant man; not even a mother’s love, when she is widowed inspires confidence in the legislator that she will do as much for her children as a man. An incredible absurdity! Such is the force of custom, that we greet all these injustices with the name of right.”

4. SELECTED SPANISH WOMEN TRAVELLERS (1820-1891)

In order to illustrate the situation of women travellers in the nineteenth century, I have selected nine Spanish travellers born between 1820 and 1891 who wrote about their travel experiences and published them along the nineteenth and early twentieth century.

Spain was undergoing a difficult economic and political situation and thus travelling was a limited option both for men and women, especially for the latter due to social conventions. As we will see in the bios of the women, only privileged upper-middle class women could afford travelling. Most of them were journalists and writers, and the odd one out is a member of the Spanish Royal family, Eulalia de Borbón, worth being included in the selection due to her passion for travelling and her unconventional life.

4.1. JOURNALISTS: CARMEN BURGOS, EVA CANEL, SOFÍA CASANOVA, TERESA ESCORIAZA, EMILIA SERRANO

The most frequent profession among travellers in the 19th century was that of journalists. It was a conflictive period and journalism blossomed thanks to the improvement of means of transport and the increase of newspapers, journals and independent magazines. A few women challenged the Spanish restrictions and pioneered not only in their writings, but also in their travelling abroad.



4.1.1. *Carmen Burgos Seguí (1867-1932)*

Carmen Burgos y Seguí was one of the strongest voices defending women's rights during her life. As a journalist, she is considered the first female editor, and one of the first female war correspondents.

She left her hometown and her husband after the death of one of her sons, and moved to Madrid with her daughter. There she studied, became a teacher, and worked long hours teaching and writing for as many publications as she could manage. She entered into the literary circles and soon her work and her modern, progressive ideas became well known.

She worked for *El Heraldo de Madrid* and travelled to Morocco in 1909 to inform about the war. She especially travelled through Europe and America starting in 1905 when she was awarded a grant. She gave talks and lectures in Europe, America and Spain defending gender equality, suffrage, pacifism, and speaking against death penalty. She also wrote for *La Correspondencia de España*, *El País*, *ABC*, and as an editor in *El Heraldo* and *Nuevo Mundo de Madrid*. During the First World War she travelled through Europe and published her itinerary and impressions in her book (1916) *Peregrinaciones. Suiza, Dinamarca, Suecia, Noruega, Inglaterra, Portugal* (Nadales 61). Before that, she had published *Por Europa* (1909) and *Cartas sin destinatario* (1910).

She also travelled across the Atlantic, to Argentina, where she gave lectures on Spanish art (*Impresiones de Argentina* [1914]) and in the first quarter of the twentieth century she went to Mexico and Cuba, and wrote several articles about it in *La Esfera*.

She was a prolific writer and wrote both fiction and non-fiction about very diverse topics under the pseudonym Colombine; she used her works to express her strong opinion on the issues concerning the situation of women. She lived long enough to see all her efforts advocating for female suffrage succeed in 1931, when The Constitution gave women the right to vote during the Second Republic.

4.1.2. *Eva Infanzón Canel (1857-1932)*

Agar Eva Infanzón Canel is considered one of the first Spanish women professional journalists. She left her hometown in Asturias when she was very young and moved to Madrid with her mother after the death of her father. Her relationship with journalism began after meeting her husband, Eloy Perillán y Buxó, a journalist, writer and playwright, who edited the satirical journal *La Broma*. He was banished due to his subversive writing and he exiled to Montevideo. Eva Canel stayed in Madrid and became the editor of the journal. She also started writing under different pseudonyms so as to avoid the same fate as her husband. A year later she joined him in Uruguay and both founded a new cultural magazine, *El Petróleo*. By then, she was a professional journalist. Years later they moved to Peru, where they edited *Las Noticias* and also collaborated in other existing journals and magazines. In one of those publications, *El Semanario del Pacífico*, she collaborated with Emilia Serrano —another Spanish traveller included in this paper.



After a short period back in Madrid, her husband left for Cuba, where he died. She moved to Havana and established a satirical review called *La Cotorra*. According to Catharina Vallejo, she was soon employed as a newspaper writer and was sent to Chicago to the 1893 Columbia World Exhibition as an official correspondent for several peninsular newspapers (*El Día* from Madrid, and *La Ilustración Artística* from Barcelona), as well as the Havana Chamber of Commerce. Apart from her work as an editor, journalist and correspondent, Eva Canel wrote several volumes on travel writing, including a collaborative work on her experiences as a war correspondent and also as a secretary of the Spanish Red Cross during the Cuban-Spanish-American war of 1895-1898, in which she strongly supported Spain's position (Vallejo). Once the Cuban war was over, she travelled again, first to Spain and then to Argentina. There, in Buenos Aires, she resumed her active role: she published several novels, memoirs, and essays; gave talks and lectures all through Central and South America (Argentina, Chile, Peru, Mexico, Panama, Brasil, Uruguay), collaborated with a few newspapers and founded two periodicals, *Kosmos* and *Vida Española*, where she wrote two series of travel articles, "Cartas fluviales" and "Por las Pampas." Her final trip was to Cuba, in 1914, where she published her impressions from her travels in postcolonial Cuba in *Lo que vi en Cuba* (1916).

4.1.3. *Sofía Pérez Casanova (1861-1958)*

Sofía Pérez Eguía y Casanova is considered one of the first Spanish female war correspondents. Born in A Coruña, she soon moved with her family to Madrid, where she grew up, studied and entered the literary circles of the capital. In those intellectual circles she met her husband-to-be, a Polish diplomat and philosopher, Vicente Lutoslawski, with whom, after getting married in 1887, she moved to Poland. Despite the distance, she kept close contact with Spain and her hometown, where she would spend every summer. Thanks to the diplomatic career of her husband and, above all, her personal and professional interests, Sofía travelled through Europe, learnt several foreign languages and worked as a journalist, becoming—as previously mentioned—one of the first Spanish women war correspondents.¹ She informed of the suffragist movement in Britain, the development of the bolchevique party in Russia, both the First and the Second World Wars, and the Soviet occupation. She wrote chronicles and gave her unique perspective of the major European historical events of the first half of the twentieth century writing for the most important national and international newspapers and periodicals: *ABC*, *La Época*, *El Liberal*, *El Mundo*, *El Imparcial de Madrid*, *Galicia*, from Spain, and the

¹ Carmen Burgos had been the first Spanish female correspondent when she covered the war in Morocco in 1909, but Sofía Casanova reported both the I World War and the Russian revolution, among other events.



international newspapers *Gazeta Polska*, from Poland, and *The New York Times*, from The United States of America.

She was a long-time correspondent for the newspaper *ABC*, and she wrote hundreds of reports on the tragic events. Due to her language skills, she managed to interview Trotski, Minister of Foreign Affairs at the time. She publicly declared herself as a pacifist, anti-war woman, and she worked as a Red Cross nurse in Warsaw, where she experienced the war horror in first person. She used to say she was both a victim and a witness.

Her career was acknowledged by the intellectual circles, where she gave numerous talks and lectures on international affairs and the situation of the women; her home also valued her trajectory and the Galician Royal Academy appointed her a member as early as 1906.

Being proficient in several foreign languages, she translated classical works from Polish and Russian into Spanish. She voiced the importance of education, foreign language learning and acquisition in every lecture and public event she participated in.

A prolific writer, she published poetry, novels, short stories, children's books, a play, a collection of social, cultural and political essays, and more than a thousand articles in newspapers, magazines and periodicals. Some of her most relevant articles published in *ABC* between 1915 and 1936 include "La mujer española en el extranjero" (Madrid, 1910), "De la Revolución Rusa" (Madrid, 1918), "Impresiones de una mujer en el frente oriental de la guerra europea" (Madrid, 1919), "La revolución bolchevista. Diario de un testigo" (Madrid, 1920) and "El martirio de Polonia" (Madrid, 1946). Her extensive collection of works, considered an excellent source of research material, is nowadays being studied and thoroughly analysed.

4.1.4. *Teresa Escoriaza y Zabalza (1891-1968)*

Teresa María de la Concepción Escoriaza y Zabalza was also a woman ahead of her time. She was raised in an upper-middle class family and received a higher education both in Spain and abroad (she studied in France and England).

Her strong personality, non-conformist character and will to improve the life style and situation of women, increased her passion for travelling. In 1917 she went to the United States, and started to make a living as a foreign (Spanish and French) language teacher in Connecticut, Pennsylvania and New Jersey. During that time she collaborated in several Spanish grammar books and learning methods. Her life changed in 1919 when she started working for the newspaper *La Libertad*, where she wrote very successful chronicles entitled "Desde Nueva York" under the pseudonym Félix de Haro. In them she described different aspects of the American society and lifestyle. By 1920, she was sent as a war correspondent to Morocco to report the Spanish-Moroccan war. Her chronicles were compiled and published in the volumen *Del dolor de la guerra (Crónicas de la campaña de Marruecos)*. Her name started to be notorious, and she continued writing for other media: *Informaciones*, where she started writing about women's rights and the defence of female intelli-



gence; *Radio Ibérica*, where she participated in several conferences for women and a French course (that would later be published as *Curso elemental de francés*). Due to her success in the radio, she soon became not only one of the first female voices in the Spanish radio but also one of the first radio defenders of women's rights; she is also a pioneer in the use of radio for educational means. Just as Sofía Casanova, she also worked as a translator and translated several novels from French into Spanish. She also wrote a few introductions on women writers, —including one about Carolina Colorado, another traveller included in this selection— and a novel set in New York depicting social contrasts and her own vision of the Russian revolutionary ideological trends (*El crisol de las razas*, 1929).

When the Spanish Civil War broke, Teresa Escoriaza decided not to go back to Spain. Fully aware that her republican and liberal ideology would have no place in her home country, and she stayed in New Jersey. She obtained the North American citizenship and made a living as a Spanish and French teacher at Montclair State Teachers College, where she became one of the most popular and admired teachers of the institution.

Aside her chronicles, some of her most relevant articles include “La mujer vale tanto como el hombre,” “Desde Nueva York,” and “Del dolor de la guerra.”

4.1.5. *Emilia Serrano García (Baronesa de Wilson) (1843-1922)*

Emilia Serrano García, also known as Emilia Serrano de Wilson or Baronesa de Wilson, was a writer, a journalist and, above all, a traveller. She was raised in an upper-middle class family and lived most of her youth in Paris, where she made acquaintance with the most relevant writers and intellectuals of the second half of the nineteenth century. Her economic situation allowed her to be a prominent traveller. She married the Baron of Wilson but she soon was widowed and decided to focus on travelling. In 1865 she went to America and travelled from Canada to the tip of South America, Patagonia. She was the only woman who travelled across the whole hemisphere in the 19th century, and the only Spanish woman who travelled on her own along the western hemisphere in that century. She recorded her American travelling experiences in three comprehensive volumes: *América y sus mujeres* (1890), which is considered the first comprehensive study of the American woman; *América en el fin de siglo* (1897) and *Maravillas americanas* (1910). She also travelled through Europe and wrote a travel guide in encyclopaedic format, of England, Scotland and Ireland for Americans (*Manual, o sea guía de los viajeros en la Inglaterra, Escocia e Irlanda para uso de los americanos* (1860) (Jenkins 19).

As regards her writing aside travelling, she wrote the first anthology of American writers including both masculine and feminine voices (1903) (Nadales 62-63). She also wrote poetry, essays, and collaborated in newspapers and periodicals of the time, both as a writer and as an editor.

Emilia Serrano spent most of her life travelling on her own for the joy of travelling. She could thus be considered the paradigm of true traveller.



4.2. WRITERS: CAROLINA CORONADO, CONCEPCIÓN GIMENO DE FLAQUER, EULALIA DE BORBÓN, EMILIA PARDO BAZÁN

In this section I have included those women travellers whose main professional interest was writing and literature, the exception being princess Eulalia de Borbón, since, although she wrote profusely, her professional career was not such for obvious reasons.

4.2.1. *Carolina Coronado Romero de Tejada (1820-1911)*

Unlike the previous travellers discussed, Carolina Coronado Romero de Tejada was neither a chronicler nor a passionate traveller —at least not at first— but, as Jenkins states, “a melancholy traveller” (Jenkins 14). During the Romantic period, the therapeutic benefits of travel encouraged women to leave home and rely on travel as a cure for their poor physical or emotional health. Carolina travelled through Europe, as suggested by her father, to alleviate her depression and improve her knowledge of the world. As it was common for Romantic writers, she was attracted by landscapes and places associated to death, and these places would be dominant in her written accounts. She started writing poetry as a child, and has been considered “a female Bécquer,” as Pato concludes.² Her progressive political views affected her work, since it was censored by the Spanish conservative powers. Her home, nonetheless, was one of the refuges of the liberal literary intellectuals of the country and she was acquainted with the well-known authors of the period. She managed to publish some of her work and acquire relative popularity. Her poems were published in 1843 and later editions included more of her verses. Regarding her prose, she wrote fifteen novels and a few theatre plays.

As regards her travelling accounts, her most relevant works include *Un paseo del Tajo al Rhin descansando en el Palacio de Cristal* (1851), *Anales del Tajo: Lisboa, descripción en prosa* (1875), and a series of articles in epistolary form published in *La Ilustración*.

4.2.2. *Concepción Gimeno de Flaquer (1850-1919)*

Concepción Gimeno y Gil de Flaquer was born in Saragossa, also in the home of an upper-middle class family, and soon moved to Madrid, where she shared literary acquaintances with Carolina Coronado. While she started writing novels, she devoted most of her literary efforts to writing articles to disseminate her ideas in defence of women. Many articles followed her first “A los impugnadores del

² PATO, Silvia. “Carolina Coronado y el Silencioso” in *Culturamas*, 2015. <<http://www.culturamas.es/blog/2014/01/12/carolina-coronado-y-el-silencioso/>>.



bello sexo,” in *El Trovador del Ebro* (1869). Her many articles were published all over the country in *La Mujer* (Madrid), *La Madre de familia* (Granada), *El Correo de la Moda* (Madrid), *El Mundo Ilustrado* (Barcelona), *Flores y Perlas* (Madrid), and *La Ilustración de la Mujer* (Barcelona). She also edited and founded several cultural magazines: *La Ilustración de la Mujer*; and edited, along with her husband, journalist and businessman, *El Álbum Iberoamericano*, where she also wrote the section “Crónica femenina y feminista.”

After living in Spain and Portugal, she travelled to Mexico, where she lived with her husband between 1883 and 1890, and there she edited *El Álbum de la Mujer*. It was a cultural magazine that connected both sides of the Atlantic, including famous female writers of the period, such as Faustina Sáez de Melgar and Josefina Pujol de Collado, among others. They also published well known texts from popular Spanish authors, such as Emilia Pardo Bazán.

Back in Spain, Concepción Gimeno directed *El Álbum Iberoamericano* between 1890 and 1892, and continued writing until 1909. It was a miscellaneous publication that included both scientific and literary articles, and also political and sociological texts.

Once settled back in Madrid, Concepción Gimeno was introduced by Juan Valera into the *Ateneo Científico y Literario de Madrid*, where she was one of the first women to give a lecture. She gave several talks and lectures between 1890 and 1903. They were published in a volume, and their titles included: *Las culturas indígenas mexicanas*, *Civilización de los antiguos pueblos mexicanos*, *Mujeres de la Revolución Francesa*, *Ventajas de instruir a la mujer y sus aptitudes para instruirse*, and *El problema feminista*. She also gave talks in other Spanish and foreign institutions: *Iniciativas de la mujer en higiene moral social*, in Spanish Hygiene Society, and *La mujer italiana en el arte y en la historia*, at the *Associazione della Stampa* in Rome, as well as other talks in Latin America.

As regards other publications, though she also published novels, her best work is considered to be a selection of her social and political essays and articles on philosophy, sociology and law. She was influenced by great literary authors such as Balzac, Zola, and Pérez Galdós. Her social and ethic commitment with the regeneration of the woman was evident along her life.

4.2.3. Princess Eulalia de Borbón (1864-1958)

Princess Eulalia de Borbón was the youngest daughter of Queen Isabel II and her position in the royal family allowed her to fulfil one of her passions: travelling. She travelled incessantly both for pleasure and on official visits as a member of the royal family. Her nomad disposition allowed her the nickname *la princesa andante* (the errant princess). She frequently represented the royal family in official trips: she went to London to Queen Victoria’s Jubilee celebration. In her published *Memoirs* (1935) she claimed that her most important trip was her diplomatic mission to the Americas in 1893. First she made an official visit to Cuba, Spain’s most—and last—important American colony, it was a delicate mission because the island was



on the verge of revolution. Princess Eulalia became the highest-ranking member of Spain's royal family ever to visit the realm's colonies in the Caribbean. The second part of her trip was a visit to North America; she represented the Spanish royal family at the 1893 World's Fair held in Chicago, an event that commemorated the four-hundredth anniversary of the discovery of America. Her impressions of that trip to America were published as a collection of letters as *Cartas a Isabel II: Mi viaje a Cuba y Estados Unidos*.

She was educated in France and her life in Paris made her an unconventional Spanish princess, but a modern cosmopolitan young woman, highly educated —she spoke five languages—, literature lover, avid traveller, and defender of women independence. She strongly criticised the royal family, behaving like a progressive woman of the nineteenth century; she published her polemic thoughts on education, the independence of women, the equality of classes, socialism and tradition, among other topics. She was not interested in life at the palace and travelling became her escape. Her independent nature made her scandalise the court and the whole country when she divorced her husband in 1900. After her separation in 1902 she devoted her life to travelling, her true passion according to her Memoirs, and writing. In the first quarter of the twentieth century she travelled incessantly across Europe and published all her impressions in *Courts and Countries after the War* (1925). Some of her previous and polemic publications include *The Thread of Life* (1912) and *Court Life from within* (1915).

4.2.4. Emilia Pardo Bazán (1851-1921)

Emilia Pardo Bazán (Countess of Bazán) was the most acclaimed Spanish woman writer of the late nineteenth and early twentieth century. She was a passionate traveller, especially throughout Europe. Her father was a modern progressive man, and due to that fact, along with her thirst of independence and adventure, she was educated in a modern fashion and she could travel for her own personal satisfaction. She studied foreign languages; she had in fact studied at a French school, and lived with her family in Spain and France, which fostered her passion for travelling. She was a precocious intellectual: she started writing poems, articles and essays when she was a teenager; at 22 she had already travelled through France, Switzerland, Italy, and Austria, where she visited the International Exhibition, and had written records with her impressions. Instead of focusing on “female tasks” she learnt foreign languages, read national and foreign authors, and wrote. In 1876 she won a literary competition in Galicia and became popular. She then started writing for national newspapers, and her works got published. Soon she became the editor of *Revista de Galicia*, a cultural literary review. But her travelling passion did not diminish: she went back to Paris, met Victor Hugo and read Zola. She continued to write essays and polemic articles on realism and naturalism on conservative journals, in short becoming well known all over the country. At the same time she travelled across Europe to bring fresh ideas to Spain. Her novels *Los pazos de Ulloa* (1886) and *La madre naturaleza* (1887) were very successful; her travel articles published in *El*



Imparcial or *La España Moderna* were also very popular. She became the first female member of the *Ateneo de Madrid* and there she gave several lectures on politics and the European literary panorama. Her interests also included edition and publishing; she edited *Nuevo Teatro Crítico*, and directed a collection of volumes for women, *La Biblioteca de la Mujer*. As her trajectory suggests, she was openly concerned with the defence of women's rights and, as Pato states, another of her accomplishments on this matter was her prologue to *La esclavitud femenina*, the Spanish translation of *The Subjection of Women* by John Stuart Mill.³

Her personality and intelligence opened the doors of almost all the intellectual circles, but being a woman she could never be a full member of the Spanish Royal Academy.

Emilia Pardo Bazán was also commissioned to go abroad by a few newspapers to write chronicles of relevant events of the period, such as the World Exhibition held in Paris. Her short stories and essays on foreign newspaper and cultural magazines have been compiled and have been studied by researchers in the last decades. Her presence on the cultural arena of the 19th and 20th centuries both in Spain and France made Emilia Pardo Bazán an essential character. Her presence was also felt at university, since 1916 when the minister of Education created a post on Contemporary literature for her at Madrid Central University.

Among her travel works, it is worth mentioning the following publications: *Nuevo Teatro Crítico: De mi tierra* (1888), *Al pie de la torre Eiffel* (1889), *Por Francia y Alemania* (1889), *Cuarenta días en la exposición* (1901), *Por la Europa católica* (1902).

5. CONCLUSION

The strict norms and prevailing Catholic traditions in nineteenth-century Spain did not pave the way for a generation of women travellers. Unlike other European countries, Spanish women had to fight both their families and social conventions to be independent, have a career —other than motherhood—, and travel abroad. The few women who could do it mostly belonged to the upper-middle classes or aristocracy. Despite their privileged economic condition, most of them were in a permanent struggle to succeed in their careers and, unfortunately, their effort has been consigned into oblivion for almost two centuries.

The main objective of this paper has been to shed some light to the accomplishments of nine Spanish women travellers, most of whom were pioneers in their field. Thus, we have rescued the memory of Carmen Burgos, Eva Canel, Sofía Casanova, Teresa Escoriaza, Emilia Serrano, Carolina Coronado, Concepción Gimeno, Eulalia de Borbón and Emilia Pardo Bazán, and their achievements: the first Spanish female editor both in Spain and abroad, the first Spanish female war

³ PATO, Silvia. "Emilia Pardo Bazán: entre libros y cocinas" in Culturamas, 2015. <<http://www.culturamas.es/blog/2014/11/09/emilia-pardo-bazan-entre-libros-y-cocinas/>>.



correspondents, the first Spanish female professional journalists, the first woman traveller to cross a whole continent, America, on her own, and the only woman to have travelled across the whole hemisphere in the 19th century, a prominent Romantic female writer, and the first female member of the *Ateneo de Madrid*. All of them defended women's rights, their independence and disseminated their opinion and socio-political discomfort in their abundant publications at home and abroad.

In spite of their achievements, out of the nine travellers reviewed in this chapter, only Emilia Pardo Bazán and her work have been studied profusely. The rest have been mainly forgotten until very recently. These women and their accomplishments should not remain in oblivion.

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THE MIGHT OF 'MIGHT': A MITIGATING STRATEGY IN EIGHTEENTH AND NINETEENTH CENTURY FEMALE SCIENTIFIC DISCOURSE*

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ABSTRACT

Apart from the practical function of efficiently exchanging knowledge, scientific writing is also used to convey persuasion by using a number of pragmatic strategies that help authors gain acceptance for their claims. Such strategies include the acknowledgment of other authors and their opinions, politeness directed towards the reader, and hedging, this is, the mitigation of certain claims that may otherwise sound too categorical by means of various linguistic devices, among them, modal verbs. This paper analyses the use of the modal verb 'might' as a mitigating device in eighteenth- and nineteenth-century English scientific writing. The text samples used for this study are taken from the *Coruña Corpus of English Scientific Writing*. Variables such as scientific discipline, genre, sex and origin of the author, as well as date of publication have been considered in the analysis.

KEYWORDS: Scientific writing, historical linguistics, corpus linguistics, pragmatics, mitigation, modality.

RESUMEN

Además de la función práctica de intercambiar conocimientos, el discurso científico tiene una función persuasiva que se refleja en ciertas estrategias pragmáticas que contribuyen a que un texto científico sea aceptado por los lectores. Estas incluyen el reconocimiento de otros autores y de sus opiniones, el uso de la cortesía dirigida hacia el lector, así como el *hedging*, o la mitigación de ciertas afirmaciones que, por sí solas, tienden a sonar de forma categórica. Esto se consigue mediante diversos elementos lingüísticos, entre ellos los verbos modales. Este artículo analiza el uso del verbo modal 'might' en su función mitigadora en el discurso científico inglés de los siglos XVIII y XIX. Las muestras de texto utilizadas en este estudio pertenecen al *Coruña Corpus of English Scientific Writing*. En el presente análisis se han considerado variables tales como disciplina científica, género, sexo y origen del autor, así como el año de publicación del texto.

PALABRAS CLAVE: discurso científico, lingüística histórica, lingüística de corpus, pragmática, mitigación, modalidad.



INTRODUCTION

The final demise of scholasticism during the seventeenth and eighteenth centuries introduced a new requisite for scientists beyond correctness and methodological soundness to ensure that their claims would be accepted by the scientific communities: peers must be actively persuaded to accept. Consequently, since then, scientists have had to adapt the way in which they presented their claims, developing a series of strategies, such as conveying humility and modesty, respecting and circulating conflicting opinions, or recognising previous contributions in the field, among others. This gave rise to the distinctive profile of a now conventionalised scientific register.

One of such strategies is mitigation. Mitigation is a phenomenon whereby claims are toned down so that they would not sound too categorical or as if they were being imposed on others as established knowledge. Mitigation is realised at the linguistic level by a series of different devices, including verbs of cognition ('believe', 'think'), adverbs ('roughly', 'probably'), conditional clauses, and, among many others, modal verbs.

Modal verbs are particularly useful for mitigating purposes in that they encode a large array of semantic nuances with a limited range of structures, not only introducing information about the probability of a statement, but also conveying uncertainty on the part of the speaker, as well as a series of rhetorical functions, such as politeness. The aim of this work is to analyse the uses of one such modal, 'might', in eighteenth and nineteenth century scientific writing, with special attention being paid to its use by women authors.

In order to do so, three of the subcorpora (*CETA*, *CEPbiT* and *CELiST*) of the *Coruña Corpus of Scientific Writing* will be searched for uses of 'might', which will then be analysed. The analysis will present two parts, one in which the distribution of the uses of 'might' will be examined according to a series of parameters (sex and origin of the author, discipline, genre and date of the text), and a second where the uses of 'might' by women authors will be looked at in more detail, paying attention to its context.

In what follows, Section 1 introduces the historical context of science and scientific discourse in the eighteenth and nineteenth centuries, with special attention being paid to women authors. In Section 2 the concept of mitigation in scientific discourse is presented and the adequacy of the term 'hedge' as referring to these mitigating devices is discussed. Section 3 reviews the relationship between modality and mitigation, with a particular interest in the uses of 'might' as defined in the literature. Section 4 describes the corpus and the methodology used in the study,

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while Section 5 presents the analysis of the results and, finally, Section 6 offers some provisional conclusions and suggestions for further research.

1. SCIENCE AND SCIENTIFIC DISCOURSE IN THE LATE MODERN PERIOD

Life in medieval Europe was dominated by the Church, and so was scientific knowledge. The paradigm of knowledge imposed by the Church during this period was known as scholasticism. It was developed by Saint Thomas Aquinas, and it was characterised by a dogmatic study of classical sources, always in a strict compliance with the Word of God – which was written and, consequently, discussed in Latin.

Scholastic knowledge lived in a perpetual circle of sterile controversies which, however, did not question the Canon. Change came by the late sixteenth and early seventeenth centuries, when two new streams of learning appeared: rationalism, which tried to explain a wide range of physical and metaphysical matters through logic; and empiricism, a new paradigm in which knowledge was to be acquired from real-world experience, rather than by reasoning. Although rationalism and empiricism coexisted for a period of time, it is the latter that would cause the ultimate shift in scientific thought through a number of “self-conscious and large-scale attempts to change belief, and ways of securing belief, about the natural world” (Shapin 5). This set of changes would later be referred to as ‘Scientific Revolution’.

The development of the Scientific Revolution was influenced by several other factors taking place from the sixteenth century. One of them was the growing interest in practical rather than theoretical and ineffective knowledge: artisans (builders, surgeons, painters), prompted by a desire to apply knowledge to the real world and improve the quality of life, started their self-education, becoming engineers or anatomists, and consequently contributing to the development of established science.¹ At the same time, the indisputable authority of the Church (and the Bible) over science started to be undermined. This was helped by the popularisation of practical knowledge and the spread of alternatives to clergy-controlled institutions of learning, although perhaps the most important factor was the development of the printing press. This caused an expansion of knowledge, first among the literate minorities and gradually among the popular masses, which also started receiving education thanks to the foundation of schools.

These parallel processes of change eventually led to the development of a desire to change the ways in which the natural world was studied. Thus, a number of natural philosophers tried to establish a new scientific program, based on experimentation and the challenge of a long-established trust in authorities, living

¹ In fact, this was advocated by both Erasmus and Leonardo Da Vinci, who defended the return to the classical ideas that encouraged the study of the different arts and crafts with the purpose of enlightening.



or dead. A key aspect of this was the creation of new places of learning which conformed to this new method. The Roman *Accademia dei Lincei* was one of the earliest, established in 1609, whereas the *Accademia Naturae Curiosorum* in Berlin and the *Académie des Sciences* in Paris would not open until the second half of the century. The *Royal Society* of London, founded in 1660, was one of these new places of learning. Its ranks were filled mostly by amateurs, who formed a scientific community and were encouraged to report their scientific discoveries and expose them to the criticism of their peers. This meant that the Royal Society not only promoted the study and practice of science, but also contributed to the emergence of English as its language, replacing Latin, until that moment the only legitimate instrument for the transmission of knowledge.

Soon after its creation, the desire to standardize the scientific reports presented before the Society appeared. Sir Francis Bacon proposed a model for them, based on observation and experiment, and Robert Boyle defended a new scientific genre, the experimental essay, ruled by five basic characteristics: brevity, lack of assertiveness, perspicuity, simplicity of form, and objectivity (Gotti 2001). Although most natural philosophers at that time, including Boyle himself, digressed from this established model in a number of occasions, these five rules may be regarded as a goal that scientific writing would be gradually achieving along the two centuries that followed, until a standard scientific discourse was established in the early twentieth century.

However, those who presented their work in institutions such as the *Royal Society* would not only have to present scientific evidence to back their reports, but they would also have to persuade their peers to accept it. Persuasion would, then, gradually become an indispensable part of scientific discourse (Bazerman; Allen, Qin, and Lancaster; Moessner), adopting different forms and changing slowly as the scientific community gained professional scientists: during the late seventeenth and most of the eighteenth centuries, and despite the fact that the Royal Society was conceived for anyone who would call himself a natural philosopher, independently from his socio-cultural background (Sprat 427), the Royal Society was still a genteel society, composed of gentlemen whose word alone was, in principle, a guarantee of truthfulness. However, from the late eighteenth century onwards the growing importance of the scientific method and the professionalisation of science reduced the power of that gentleman's word considerably, to the point that *who* carried out the experiment was nowhere near as important as the experiment itself. This was reflected in the emergence of a series of persuasive strategies in scientific discourse, including the mitigation of categorical statements (Hyland 1996), the inclusion of the scientific community in the report ('we' replacing 'I'), or the shift from an author-centered to an object-centered kind of discourse (passive voice replacing 'I'; Atkinson 1996).

The institutionalisation and professionalisation of science along the nineteenth century was followed by another massive opening of schools, libraries and new universities, as well as special institutions where certain less privileged groups of society (such as children from poor families, working classes, or women) could also access education and specialisation. Female education, all in all, was still deficient



in many ways and this constituted a particular difficulty for women who wanted to pursue a scientific career. The next section will be devoted to the role of women in the recent history of western science.

1.1. THE CASE OF WOMEN SCIENTISTS

In the seventeenth and eighteenth century, science was indeed a gentlemanly activity in all senses – including that of ‘gentlemanly’ as restricted to men only. Even if during the Renaissance women did have some access to learning, either in guilds or in convents (Schiebinger 1987), their scientific practice would usually be restricted to medicine and to obstetrics in particular. Bearing in mind the religious prejudice against knowledgeable women in the Middle Ages —when a genuine interest in astronomy could serve to accuse a woman of witchcraft—, it is not surprising that female scientists would be granted due recognition at a very slow pace.

During this period, the role of women was confined to the household where they would be daughters, sisters, wives, or mothers. Their interest in learning was looked at with some suspicion and often discouraged and, even though privileged girls who were raised in cultured families could in some cases receive private tuition at home, universities were restricted to the male public.² In the nineteenth century, the Victorian morals contributed even further to the reinforcement of patriarchal ideals that banned women from leading an active social and cultural life (Abir-Am and Outram) and it was uncommon, if not impossible, for a woman to have a profession.

Some women, however, would undertake a teaching position in female schools or in private homes. This was often the case of young girls who failed to “marry well” and could no longer be supported by their families, although there were also a few learned women who were truly concerned with female education and dedicated their efforts to instructing children and less privileged women. One such woman was Margaret Bryan, an English astronomer who, albeit married and a mother, devoted her life to learning and instruction and published her works in the eighteenth century. Male scientists also sometimes had their wives, sisters, or daughters trained as their research assistants, although their contributions were not publicized and their names were not published (Schiebinger 1989; 2003).

Despite all this, there were a number of ladies who, even at that early period, studied the laws of nature in solitude and left the world an invaluable legacy in the fields of philosophy (such as Margaret Cavendish, Mary Wollstonecraft), life sciences and, particularly, botany (such as Elizabeth Blackwell, Elizabeth Agassiz), or mathematics (such as Ada Byron) (Slack; Shteir 1987; 2008; Barker-Benfield; Richards). However, it would not be until the late nineteenth century that female

² An exception occurred in Italy, where two outstanding scientists, Elena CornaroPiscopia and Laura Bassi, obtained a university degree and a professorship, respectively.



scientists would be able to openly dedicate their lives to research and occupy a teaching position in an institution of higher education.

The few works signed by female scientists would often undergo an initial stage of distrust, and it was not uncommon for the authors of those works to apologise in the prologue for “daring” to undertake such an enterprise and to recognise the help of a male relative, as if their condition of women implied that they were less capable to conduct scientific research and had little right to publish their writings. These open politeness strategies would be often further strengthened by a more covert persuasive tone across the text, often through hedging conveyed by consensus-seeking devices such as modal verbs or conditional structures (Crespo). This does not seem surprising, considering that even male scientists made use of persuasion in their writings in order to help them gain acceptance in the scientific community.

As already explained, in this paper we are going to look at the modal verb ‘might’ as used in eighteenth- and nineteenth-century male and female scientific texts, focusing on its mitigating power in the latter, which shall be analysed in detail, considering several factors. The theoretical framework for this study is described in the following section.

2. MITIGATION IN SCIENTIFIC WRITING

Scientific writing is characterized by a permanent tension between two needs felt by scientists: that of presenting their research as a unique contribution to a field and promote its particularities and simultaneously, needing to move their peers towards accepting their contributions as valid. This means that scientific writing can be conceived as a negotiation between readers and writer, in which writers have to assert and mitigate their claims at the same time in order to maximise the possibility of reaching an agreement. This aim of moving one’s readers towards consensus is achieved by means of a series of strategies, such as emphasizing the writers’ belonging to a community, recognising shared knowledge and others’ works, assuming the existence of more than one point of view (Crompton; Hyland 1998), avoiding categorical claims, using a non-confrontational tone, or conveying respect, modesty and politeness (Hyland 1998; 2000).

These different strategies materialise in a series of linguistic devices which are characteristic of scientific writing, such as modal verbs, verbs of saying, passive sentences, nominalisations, mental state predicates, and epistemic adverbs and adjectives. Warchal (141-142) groups these devices in five sets of rhetorical or pragmatic strategies which play a role in the tension between individualism and consensus: inclusive-‘we’ constructions, common knowledge markers, attitude markers, certainty markers (also called emphatics), and hedges.

Inclusive-‘we’ constructions and common knowledge markers are used to emphasize the existence of a shared set of knowledge and values. The function of the former is helping authors to position themselves and their readers as members of “the same group of experts” (Warchal 142), whilst the latter (which include evaluative adjectives and expressions of attribution including textual references) are used



to refer to knowledge which the readership is assumed to share (Koutsantoni) and to promote the claims by indicating that they are “based on knowledge shared by other members of the academic discourse community working in the same field” (Warchal 142).

Attitude markers are used to express the author’s affective values in relation with the content, contributing to guide the interpretation of the reader (Hyland, *Hedging in scientific research articles*) by establishing a background of assumed attitudes in relation to which the claims have to be considered. They include evaluative adjectives and adverbs, modals expressing obligation and negative evaluations of previous research (Koutsantoni). Certainty markers, on the other hand, are used to express the confidence of the author towards their findings, and thus avoiding a possible disagreement by predisposing readers to accept the claims presented (Hoey 33). They are realised by expressions of probability, modals and verbs of cognition in the first person.

Finally, hedges are defined as “expressions that tone down the force of a statement by limiting the commitment of the author to the expressed proposition” (Warchal 142). Hedges are used to distinguish claims from established knowledge (which does not need hedges as it is undisputed) as well as to leave open the possibility of differing points of view. However, Warchal’s classification overlooks the problems inherent to the concept of ‘hedge’. These problems are that, despite the important body of literature on the subject (Lakoff; Fraser; Brown & Levinson 1978; Myers; Hyland 1994; Salager-Meyer 1994; 1998; Crompton; Lewin; Alonso Almeida), scholars have not been able to reach any kind of consensus about either its definition or the set of structures considered as its members. These two aspects are analysed in what follows.

2.1. THE PROBLEMATIC CONCEPT OF ‘HEDGE’

Hedges have been characterised as “a concept that evades definition” (Lewin 165). The attempts to define the concept in the literature have produced often contradictory results, and the borders with related phenomena reflecting involvement of the writer have not been well defined. Moreover, there is no consensus on the members of the category, and even the criteria to identify linguistic elements as hedges are considered as arguable.

The term ‘hedge’ was coined by Lakoff to refer to linguistic structures, such as ‘sort of’, ‘quite’... “whose job is to make things fuzzy or less fuzzy” (194), although six years earlier Weinreich (163) had already identified “metalinguistic operators” such as ‘true’, ‘real’, ‘so-called’, ‘strictly speaking’, or ‘like’, which correspond with a similar idea. From the 1980s (Fraser, Myers, Salager-Meyer 1994), hedges were defined as an expression of the author’s desire to present themselves as diplomatic or modest, echoing Brown and Levinson’s (“Universals in language usage: Politeness phenomena”, *Politeness: Some Universals in Language Usage*) politeness model and presenting hedges as a strategy to avoid face-threat, in this case the one the author would suffer if they were to be seen as imposing a particular interpretation of the facts



on the reader. Brown and Levinson themselves define 'hedge' as "a particle, word, or phrase that modifies the degree of membership of a predicate or noun phrase in a set; it says of that membership that it is partial, or true only in certain respects, or that it is more true and complete than perhaps might be expected" (*Politeness: Some Universals in Language Usage* 145).

However, from the 1990s onwards hedging has most commonly referred to a conventional phenomenon of academic style by means of which authors tone down the strength of a claim to avoid disagreement (Taavitsainen "Genre conventions: personal affect in fiction and non-fiction in early Modern English"), as part of a set of fixed strategies such as the ones included in Warchal's model above. Other authors, such as Crompton, dissent from the view that hedges express the attitude of the speaker towards a proposition, considering instead that they are used by a speaker "to explicitly qualify his/her lack of commitment to the truth of a proposition he/she utters" (281). Thus, Crompton would only consider terms such as 'possibly' or 'probably' as hedges, leaving out terms such as 'fortunately'. Hyland (1998) joins both points of view, considering that hedges are "any linguistic means used to indicate either (a) a lack of complete commitment to the truth value of an accompanying proposition, or (b) a desire not to express the commitment categorically" (1998, 1).

A further problem is that hedging has been frequently confounded with other phenomena, such as 'stance', 'evidentiality', and 'metadiscourse', which are also related in one way or another with authors' involvement. These concepts, moreover, have received several definitions, some of them contradictory, and some overlapping with each other, and their limits are, again, fuzzy. Thus, 'hedge' appears as a concept which cannot be defined easily. However, it is evident that, despite this difficulty, it has been used profusely as a label with which different phenomena have been named. In Alonso's words, "the notion of hedging has been used as a stock category, often used to account for unclear strategies in discourse showing some degree of epistemic modality" (199).

In fact, hedges can be realised by several structures at the linguistic level. For instance, for Brown and Levinson (1978, 146-166) hedging "can be achieved in an indefinite number of surface forms", including adverbs ('roughly', 'probably'...), adverbial clauses ('that's how it is', 'in fact'), verbs of cognition ('I believe'), conditionals, or even prosody or gestures. Similarly, Hyland distinguishes between lexical hedging (expressed by means of lexical devices, such as epistemic lexical verbs, modal auxiliaries, adjectives, adverbs, and nouns) and strategic hedging, or "hedging strategies", expressed by means of "questions, conditional clauses, and contrast markers, as well as a limited range of formulaic phrases" (1998, 103).

However, there is no consensual approach about how to identify members of the category beyond the different classifications of hedges. A possible solution was proposed by Crompton, who created an operational definition of 'hedge'. According to him, hedges are expressions whose change would render the truth-value of the proposition unchanged, whilst, at the same time, increasing the commitment of the writer. Although this definition would lead to an unequivocal identification of the members of the category, it would also narrow the category too much, as criticized by Salager-Meyer (1998, 228), who defended the fuzziness of the concept and that



the identification of hedges was to be based on contextual analysis. Alonso (204) shares this position, defending that “[t]he analysis of context is not only necessary, but unavoidable if one really wants to highlight the cases of hedging with any degree of confidence.”

It seems therefore that the term ‘hedge’ can be considered problematic in that several of its definitions are too fuzzy, and others, such as the one by Crompton, seem too narrow. Consequently, in order to avoid falling in either definition gap, this study will analyse modal uses in relation to the pragmatic effect they produce, this is, the mitigation of the force of the claim, avoiding the use of the label ‘hedge’, although the pragmatic effects of these linguistic devices as defined in the literature will, of course, be taken into consideration.

3. MITIGATION AND MODAL VERBS

The mitigating power of modal verbs³ is considered a particular resource in academic discourse (Gotti & Dossena), which takes advantage of modalisation to introduce information about the probability of a statement, to convey uncertainty, to express the range of probabilistic outcomes in conditional settings, or to distance the author from the propositional content by means of expressing the claim in a less categorical way (Ferguson), among others. Modal verb forms, such as ‘may’, ‘might’, ‘can’, ‘should’, ‘must’... usually convey meanings related to notions such as ability, permission, necessity, or obligation (Biber *et al.* 73, 483-497). Regretfully, though, there is no biunivocal relation between modal forms and modal meanings. On the contrary, each modal verb form can express several modal meanings at once, and each modal meaning can be conveyed by several modal forms. This has led to an important number of different classifications in the literature.

Early classifications were characterised by their exhaustiveness. Jespersen, for instance, distinguished among eighteen⁴ different moods. However, most classifications in the literature (Lyons; Palmer 1990) distinguish between ‘epistemic’ and ‘deontic’ modality. Epistemic modality is used to express the speaker’s knowledge, belief, commitment or opinion towards the truth of the statement and is related to meanings of certainty, possibility, or certainty of falsehood. Deontic modality is related to the authorised, obligatory, or necessary possibility or impossibility of actions performed by morally responsible agents (Lyons 823), and is thus related to

³ Although modality is actualised in language mainly through the use of modal verbs, this notion, defined as “the grammaticalization of speakers’ (subjective) attitudes and opinions” (Palmer *Mood and Modality*16) or “the degree of possibility (or permissibility) attached to a statement” (Vihla 17) is not exclusive to modal verbs, being also conveyed by adjectives “it is possible that...”, adverbs “Probably...” or nouns “there is the chance that...”

⁴ Jussive, Compulsive, Obligative, Advisory, Precative, Hortative, Promissive, Permissive, Optative, Desiderative, Intentional, Apodictive, Necessitative, Presumptive, Dubitative, Conditional, Hypothetical, and Potential (Jespersen 320-321).



meanings of obligation, permission, and prohibition. Sometimes a third type related to the notions of real world ability or intention of action, ‘dynamic’ modality (Palmer 1990; Papafragou), is added.

There are also some models that offer a different classification. Von Wright distinguishes between two other types of modals apart from deontic and epistemic ones: ‘alethic’ and ‘existential’. Existential modals express an existing or potential property of a subject (or lack thereof), and are thus similar to some of the uses of dynamic modals. Alethic modals, widely discussed in Papafragou, are similar to epistemic modals, but they are used to express objective (rather than subjective) certainty, possibility or falsehood, and would then only be used to refer to established scientific laws, general truths, and logical inferences. Table 1 below shows the types and degrees of modality distinguished in von Wright, following Vihla (25).

TABLE 1. TYPES AND DEGREES OF MODALITY IN VON WRIGHT			
ALETHIC	EPISTEMIC	DEONTIC	EXISTENTIAL
necessary	verified	obligatory	universal
possible	not falsified	permitted	existing
contingent	undecided	indifferent	(particular)*
impossible	falsified	forbidden	empty

* ‘Particular’ was added to the degrees of existential modality by Vihla herself.

Another classification is that by Coates, who distinguishes between epistemic and ‘root’ modalities. The latter type groups together dynamic and deontic modals in a single group. According to Coates (55), epistemic modals are those “concerned with the speaker’s assumptions or assessment of possibilities, and in most cases it indicates the speaker’s confidence or lack of confidence in the truth of the proposition expressed.” Root modals, in turn, are those conveying “meanings such as permission and obligation, and also possibility and necessity” (Coates 55).

3.1. USES OF ‘MIGHT’

As explained above, the different types of modality are not expressed by exclusive markers, but, on the contrary, a single modal verb may express more than one meaning and a given meaning may be expressed by more than one form. This is the case with ‘might’. It can express two different meanings, as shown in examples (1-2) below:

- (1) Might I ask whether you intend to stay?
- (2) This might hurt a little, but just for a second.

These two examples represent a deontic and an epistemic use, respectively. The deontic use (1) is looking for (rhetorical) authorisation, this is, it is asking for permission to perform an action, in this case to ask the addressee whether they intend to stay. The epistemic example (2) expresses the speaker’s belief about a statement, this is, their judgment about the possibility of the event, hurting a little, to happen.



Some authors would also distinguish a third meaning, shown in (3) below, in which 'might' would be a dynamic modal:

(3) This species might be found in the North of England only.

This example would be expressing the real world status of the entity being judged, in this case, informing about a characteristic (that it might be found in the North of England) of the subject, the species.

In scientific writing, however, most uses of 'might' are epistemic, while deontic uses appear only in discourse management contexts. This is the case of example (4) below, in which the author is guiding their audience towards a particular part of the discourse. This is of course, particularly productive in face-to-face interaction, such as that in lessons, discourses and conference presentations.

(4) If you might take a look at the median palliative index.

The frequent use of 'might' as an epistemic modal, is, however, hardly surprising, as the relation between mitigation (or hedging) and epistemic modality has long been identified in the literature. According to Taavitsainen ("Evidentiality and scientific thought-styles: English medical writing in Late Middle English and Early Modern English"), early experimental essays were already characterized by their non-assertiveness, containing features which conveyed a non-prescriptive point of view, among which the key one was the use of epistemic modality. Hyland (1994, 240) defends that hedges chiefly express epistemic modality (a notion primarily developed in Lyons), and that they are related to the speaker's "unwillingness to make an explicit and complete commitment to the truth of propositions" (Hyland 1998, 3). Thus, by using the different epistemic modals, the author is able to encode different degrees of probability, but also indeterminacy, thus avoiding the imposition of a particular interpretation on the reader. It must be remembered, however, that this expression of mitigation by means of epistemic modality is not restricted to modal verbs, being also frequently encoded by epistemic lexical verbs such as 'suggest', 'indicate' or 'predict', which are considered to be "the most transparent means of coding the subjectivity of the epistemic source" (Hyland 1998, 119), as well as by epistemic adjectives ('possible', 'unlikely'...) and adverbs ('generally', 'presumably', 'probably', 'evidently').

Dynamic uses are more difficult to distinguish in that there is an inherent ambiguity between epistemic and dynamic uses in scientific modals, as shown in example (5) below, taken from Hyland (1998, 111):

(5) This could be sufficient for hemoglobin to function in the facilitation of diffusion of O₂... (D1: 638)

= a) I believe it is possible that this causes the effect (epistemic) OR

b) In some circumstances it is possible for the effect to occur (dynamic)

These instances show that the distinction between dynamic and epistemic modality is rather weak in written formal discourse. According to Hyland, this sort



of ambiguity in scientific writing might be strategic: whether the actual meaning is epistemic or not, the authors are distancing themselves from the proposition, this is, they are mitigating it.

As already explained, some authors in the literature, such as Coates, distinguished between epistemic and root modalities, the latter comprising both dynamic and deontic modals. However, in this case, this classification seems unhelpful. If only, dynamic 'might' seems more similar to epistemic than to deontic modals, and subsuming deontic and dynamic modals in a single type would hinder the very characteristic deontic uses of 'might'. Consequently, the study will use a two-type classification such as those by Lyons or Palmer (1990) and only two functions of 'might' will be distinguished, the deontic and the epistemic one. Both functions have mitigating readings, but they are different, with the use of deontic 'might' expressing a higher level of politeness in a requirement, whilst epistemic 'might' has more to do with either lack of confidence over the certainty of the event or with an attempt to tone claims down.

4. CORPUS USED IN THE STUDY

This study uses the *Coruña Corpus of English Scientific Writing* (henceforth *Coruña Corpus* or *CC*). The *Coruña Corpus* is a "purpose-built electronic corpus conceived of as a resource for the study of scientific writing in English" (Moskowich 35), consisting of several twin subcorpora, one for each discipline, sharing the same design and principles of compilation. It covers the period between 1700 and 1900 at a rate of two c.10,000-word samples per decade and discipline, totalling c.400,000 words per subcorpus.

The corpora used in this study are the *Corpus of English Texts on Astronomy* (*CETA*), the *Corpus of English Philosophy Texts* (*CEPhiT*) and the *Corpus of English Life Sciences Texts* (*CELiST*). These three corpora contain 122⁵ samples of texts in total, adding up to 1,215,003 words. These three disciplines have been selected because they provide a representative picture of the uses of scientific register as a whole when considered in common, but, at the same time, they are also sufficiently different from one another so as to provide the opportunity to compare different styles in each of them: astronomy used to be an observational science, characterised by the presence of careful descriptions of observations and mathematical analyses. Life sciences, whilst not disregarding observation, focused on experimentation and classification, creating taxonomies by means of analysing similitudes and differences

⁵ There are two more texts that would be expected. This is because *CETA* contains four shorter texts, which do not reach the 10,000-word threshold by themselves, but which are included so that the word count in that given decade is maintained. These four short pieces (such as Wilson's 1774 article "Observations on the solar spots" published in the *Philosophical Transactions*) are included *in toto* in order to introduce other types of works which are also representative of the production of the discipline at the time.



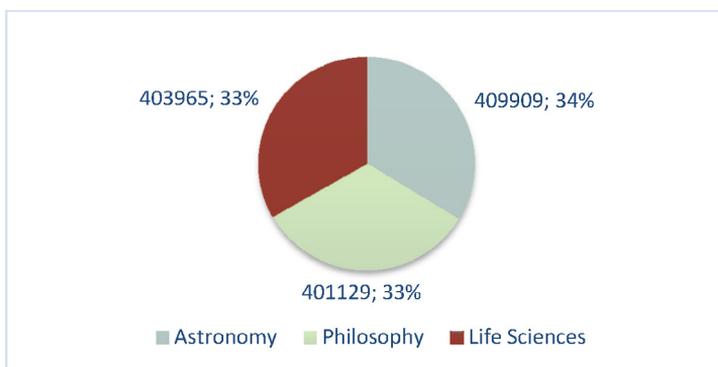


Figure 1. Words per discipline in the corpus.

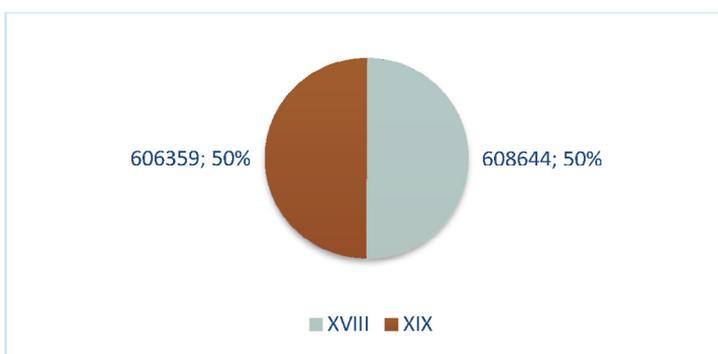


Figure 2. Distribution of words in the corpus per century.

between classes. Finally, philosophy was more of a speculative science, relying on the elaboration of arguments by means of the logical development of discourse from given premises.

As can be seen in Figure 1 below, *CETA* comprises forty-two samples and 409,909 words, *CEPhiT* presents forty samples and 401,129 words, and *CELiST* contains 403,965⁶ words and other forty texts.

This analysis comprises both the eighteenth and nineteenth centuries in their entirety. There are the same number of samples (sixty-one) from each century, and, as shown in Figure 2 below, samples from both centuries contain a similar number of

⁶ The different number of words in each discipline is the result of the fact that the samples contain *approximately* and not *exactly* 10,000 words, thus allowing for slight differences. These differences will also be present in all the other parameters presented below, thus explaining the lack of round numbers.



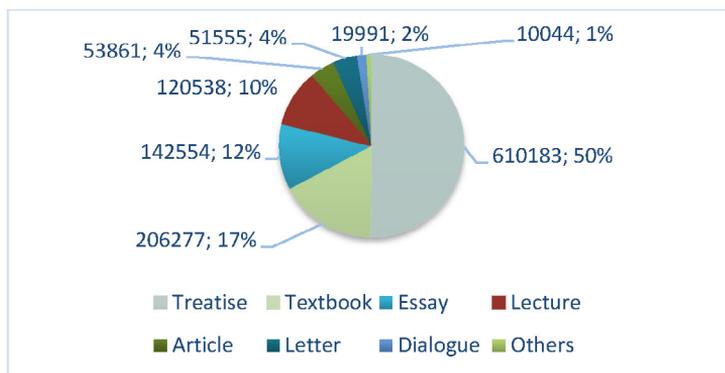


Figure 3. Distribution of samples and words per genre.

words: samples from the period between 1700 and 1800 add up to 608,644 words, and samples from the nineteenth century total 606,359 words.

The genres of the samples have also been taken into account. As shown in Figure 3, there are sixty-one treatises, adding up to 610,183 words; twenty textbooks (206,277 words), fourteen essays (142,554 words), twelve lectures (120,538 words), seven articles (53,861 words), five letters (51,555 words), two dialogues (19,991 words) and one sample from a dictionary, which appears under the label “others” and contains 10,044 words. This distribution tries to provide a representative picture of the genres used in scientific writing at the time, reflecting the dominance of treatises, the importance of textbooks in the drive for popularising scientific knowledge, as well as the evolution in the genres used for communicating science, with the gradual disappearance of genres such as letters and dialogues which were more characteristic of the previous scholastic paradigm, and the first uses and gradual popularisation of articles, which would later dominate scientific writing.

The samples selected represent the entirety of native English-speaking areas at the period, comprising (as shown in Figure 4 below) fifty-six samples from works written by English authors (556,885 words), twenty-eight samples from Scottish authors (276,331 words), sixteen samples from North American authors (158,170 words) and ten samples from Irish authors (101,723 words). A further twelve samples (121,894 words) are labelled as “others.” This label includes two different groups of authors, those who have been educated in several countries, being influenced by more than one diatopic variety, and those about whom there is no definite information.

Finally, the last parameter and perhaps the most relevant is that of sex. As shown below in Figure 5, there is a clear majority of samples written by men, 110 out of 122, adding up to 1,091,025 words. This is in keeping with the reality of the time, in which female science writers were still very much on the minority. There are twelve samples by female authors in the corpus, adding up to 123,978 words.



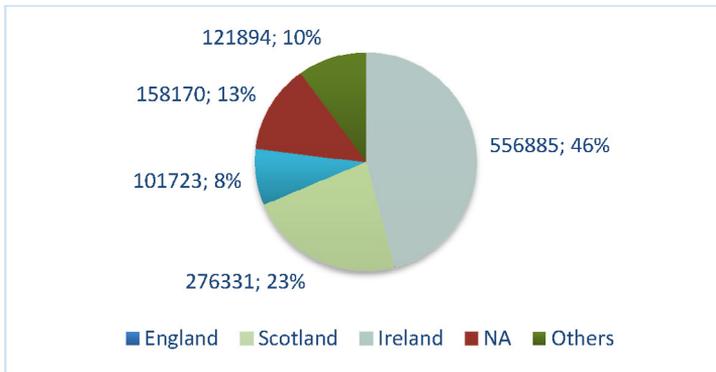


Figure 4. Distribution of words per provenance of the author.

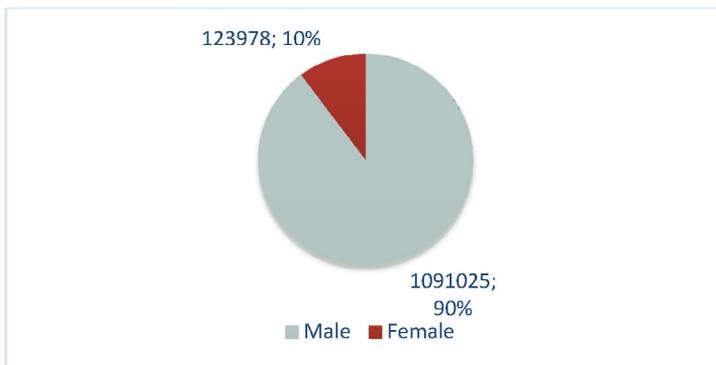


Figure 5. Distribution of words per sex of the author.

4.1. METHODOLOGY

In order to obtain the data to analyse, searches for ‘might’ were conducted with the help of the *Coruña Corpus Tool* (henceforth, *CCT*), a corpus management tool specifically designed for its use with the texts of the *CC* “to help linguists to extract and condense valuable information for their research” (Parapar & Moskowich 290). The searches have been conducted in two stages.

First, the uses of ‘might’ in all texts were counted. Since the *Coruña Corpus* was not tagged for parts of speech when this research was carried out, it was impossible to refine the results of the searches *a priori*, and it was necessary to manually disambiguate the list of occurrences obtained with the *CCT* in order to eliminate possible uses of the searches which did not correspond with the desired set of data.



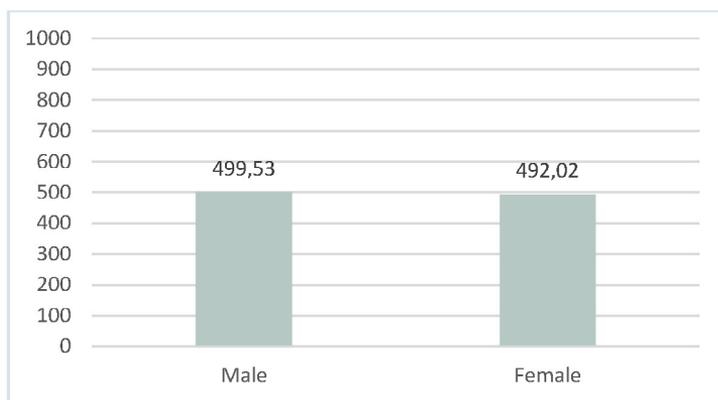


Figure 6. Uses of 'might' per sex of the authors. Normalised figures (N=1,000,000).

In this case, occurrences were examined to exclude potential appearances of 'might' as a noun, but no cases were found. After the disambiguation process ended, the total number of cases was 606.

Second, a new query was conducted using the function of the *CCT* which allows to search by metadata, in order to obtain the cases of 'might' used by female authors, which were then extracted with sufficient context so that it would be possible to analyse them in detail. The number of cases obtained were 61.

5. ANALYSIS OF THE RESULTS

The analysis of the results will be divided in two parts. First, the results for the uses of 'might' in the whole corpus will be classified on account of six parameters: sex of the authors, diachronic evolution, discipline of the text, discipline of the text and century of the sample, genre of the text, and origin of the author. Second, the 61 uses of 'might' in female-authored texts will be analysed in detail, taking into account whether they are examples of epistemic or deontic modality and examining their context meticulously in order to find characteristic usages.

5.1. GENERAL ANALYSIS

Since the uses of 'might' in female-authored text are going to be the object of the second part of the analysis, it seems adequate to start by comparing the uses of male and female authors. As can be seen in Figure 6 below, both sexes show a strikingly similar proportion of use: men scientists use 'might' 499.53 times per million words, whilst women use it just a little less frequently, 492.02 times per million.



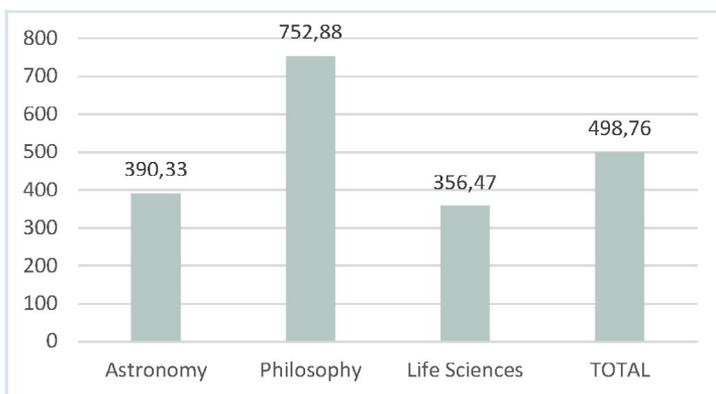


Figure 7. Uses of 'might' per discipline. Normalised figures (N=1,000,000).

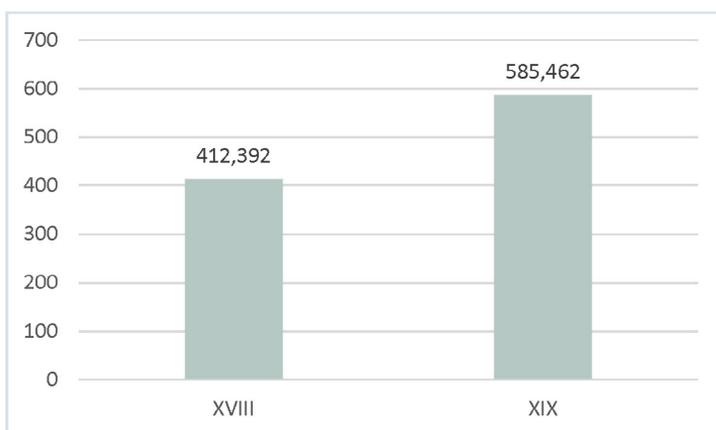


Figure 8. Uses of 'might' per century. Normalised figures (N=1,000,000).

'Might' is then used in a similar proportion by both men and women, although this does not preclude differences in their particular uses.

Other parameters do, however, show more notorious differences. This is the case of the discipline to which the sample belongs: philosophy samples use 'might' almost twice as frequently (752.88 uses per million) as astronomy (390.33) and life sciences (356.47), as can be seen in Figure 7 below. A possible explanation for this is the more argumentative nature of philosophical discourse, which would then require a higher level of mitigation than those of astronomy and life sciences, which, in turn, are more descriptive.

The most notorious differences are found in the analysis of the parameter of diachronic evolution. As can be seen in Figure 8 below, there is an important



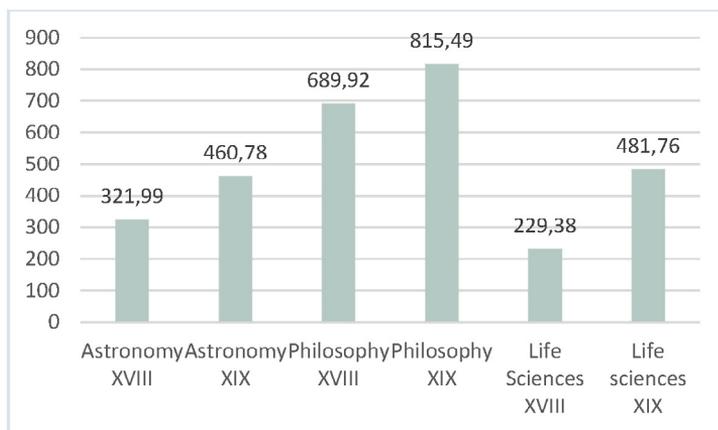


Figure 9. Uses of 'might' per discipline and century. Normalised figures (N=1,000,000).

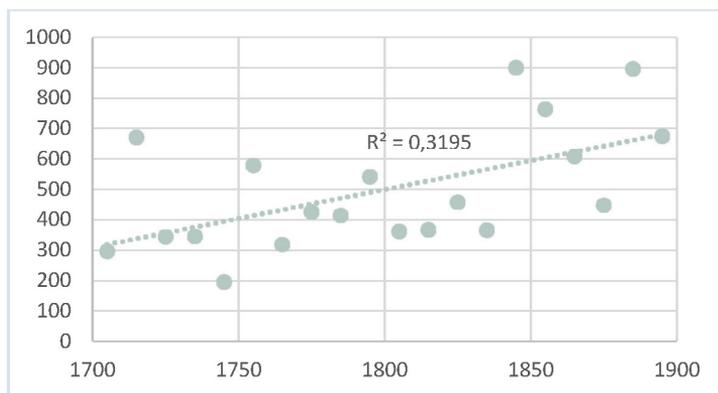


Figure 10. Diachronic evolution in the use of 'might' per decade. Normalised figures (N=1,000,000).

increase in the proportion of use of 'might' over time, from 412.39 uses per million in the eighteenth century to 585.46 in the nineteenth.

Moreover, as shown in Figure 9 below, this increase appears in all three disciplines, being most notorious in life sciences (from 229.38 uses of 'might' per million in the eighteenth century to 481.76 in the nineteenth), although it is also important in astronomy (321.99 in the eighteenth century and 460.78 in the nineteenth) and philosophy (689.92 and 815.49).

If the use of 'might' is analysed by decades instead of centuries, the picture gets even clearer, as there is an evident increase in the proportion of use over time, as can be seen in Figure 10. In fact, if the results are tested in order to examine



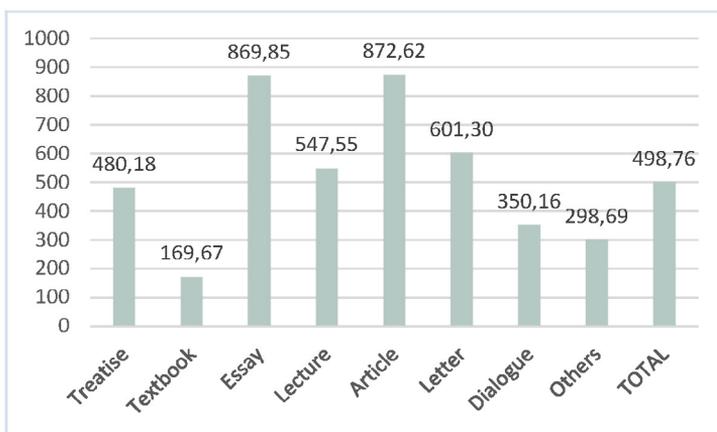


Figure 11. Uses of 'might' per genre. Normalised figures (N=1,000,000)

whether the diachronic evolution is a statistically significant factor explaining the variation in the use of 'might', the results of the statistical test applied to the data (linear correlation) indicate that the diachronic evolution explains 31.95% of the variation in the use of 'might' between the different decades, and that this variation is statistically significant ($R^2=0.3195$, $p<0.05$). Thus, diachronic variation may be shown as a statistically significant factor to explain the use of 'might' in the corpus.

On the other hand, as shown in Figure 11, the results reveal important differences between the genres: articles (872.62 uses per million) and essays (869.85) present a substantially more frequent use of 'might' compared to the average, whilst textbooks (169.97) show a remarkably smaller presence. Letters (601.30), lectures (547.55), treatises (480.18) and dialogues (350.16) show a proportion of use more in line with the average in the corpus.

The higher proportion of 'might' in articles is coherent with its increasing use over time, as articles become more and more common as the period progresses. On the other hand, textbooks usually transmit knowledge as if it were unquestionable, and thus it does not seem surprising that 'might' should not appear as frequently there.

Finally, in what has to do with the origin of the author (Figure 12), the results show that texts belonging to Irish and North American authors contain a smaller proportion of 'might' than the average (334.24 and 341.40 uses per million, respectively), whilst English and Scottish authors appear to use 'might' only slightly more frequently (511.78 and 559.87, respectively). In any case, these differences are not as notorious as in the case of genre.



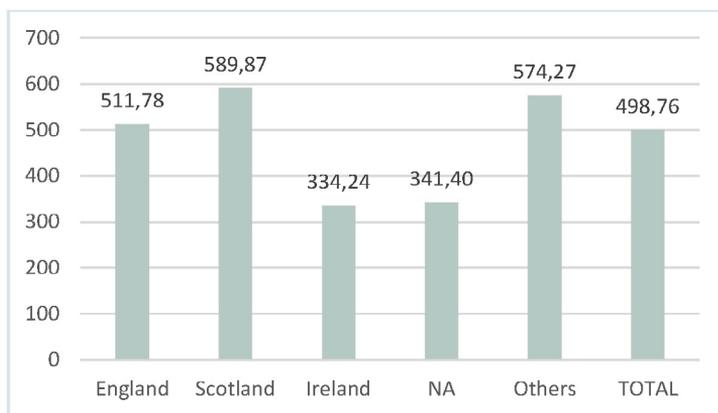


Figure 12. Uses of 'might' per geographical origin of the authors. Normalised figures (N=1,000,000).

5.2. USES OF 'MIGHT' IN TEXTS BY FEMALE AUTHORS

There are 61 uses of 'might' in the twelve samples written by women authors. Out of these 61 cases, there is no single use of 'might' as a deontic modal, and, consequently, all instances are considered epistemic. There are, however, some uses in which 'might' could be deemed a dynamic modal, such as 20 (3883)⁷ below, although these readings are far from clear:

20 (3883) That of Mercury at the time of his inferior conjunction might also be observed, as at that time he appears like a dark spot on the Sun's disk.

All in all, as already explained, the frequent ambiguity found in scientific writing between epistemic and dynamic readings of modal verbs may be considered a strategy by means of which authors distance themselves from their claims, either because they want to encode the probabilistic nature of the claims or because they want to tone them down. Thus, it is clear that all uses of 'might' in texts by female authors are mitigating. However, there are differences in the immediate grammatical contexts in which these uses appear, and an examination is required in order to find whether there are particularly common environments of use. In order to do so, three parameters have been analysed: the nature of the structure in which 'might' is used (main or subordinate clause, with their different types), the nature of the reference

⁷ The identification number of the examples is provided by the CCT. The first number identifies the sample in the list of samples in the *Coruña Corpus*, and the number between brackets identifies the position of the searched word (in this case, 'might') in the sample.

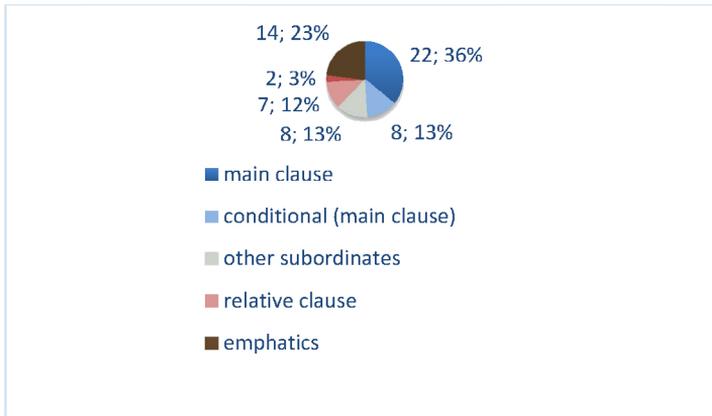


Figure 13. Types of structures in which 'might' is used in the female samples of the corpus.

of the subject (personal or referring to an object), and the grammatical form of the verb introduced by the modal (infinitive, perfect infinitive or passive infinitive).

Regarding the nature of the structure, there is an almost split distribution: there are 30 uses of 'might' in main clauses, and 31 in subordinate ones. Out of the 30 uses in main clauses, perhaps the most interesting trend is that there are eight instances of 'might' in conditional constructions, all of them in the apodosis. Out of the 31 uses in subordinate clauses, most (14) are examples in which 'might' is used in the complement clause of a mind-process verb or construction ('suppose', 'estimate', 'cherish', but also constructions such as 'hence arose the idea that'), a further seven uses appear in relative clauses, and two as complements of constructions playing the role of emphatics ('be granted', 'it is certain'). The detailed results are shown in Figure 13 below.

In what has to do with the reference of the subject, most 'might' uses (37) present a non-personal subject, normally referring to the object of the research. A further nineteen uses present a personal subject. These nineteen cases are very different, as shown in Figure 14 below. Five uses refer to a third person, about whom something is said. There are three uses of 'I', in which the author speaks in the first person, and a further two of 'we', in which the author rhetorically includes the audience. Both 'I' and 'we' uses function as reports of experiences and beliefs of the author. Finally, there are nine uses which seem to encode general or impersonal subjects. Three of them use 'one', and six use other references, such as 'a poet', 'the Lady', 'a man', or 'he'. There are, as well, four further cases which are categorised as others. These include cases whose subject is syntactically impersonal, such as 'there', as well as a case of a subject which is a relative pronoun which has the whole previous clause as its referent.

Finally, in what concerns the grammatical form of the verb introduced by 'might', there are 26 cases of regular infinitives, 25 cases of passive infinitives and



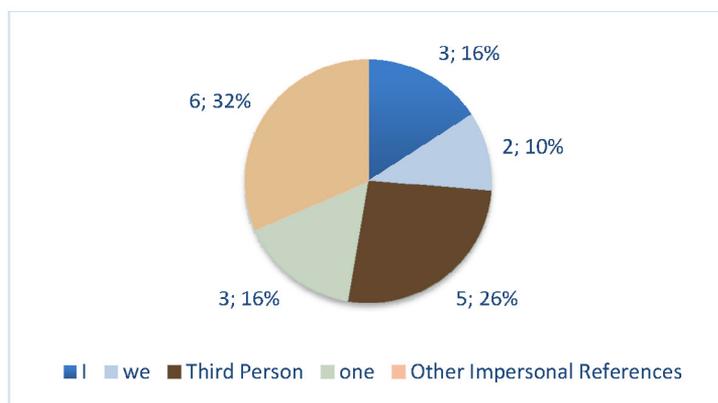


Figure 14. Types of personal subjects of 'might' in the female samples of the corpus.

10 cases of perfect infinitives. The number of passive infinitives is remarkable, as the results show a much more common use than in the language as a whole (see Pullum 71-72).

6. PROVISIONAL CONCLUSIONS AND FURTHER RESEARCH

The results obtained in the present study show that the distribution of 'might' does not vary according to the parameter of sex, but, on the contrary, is more influenced by the parameters of genre, discipline, and, particularly, diachrony. The results concerning this latter parameter have been demonstrated as statistically significant, indicating a tendency towards an increase in the use of 'might' as time passes.

Regarding the particular uses of 'might' in texts by female authors, it was shown that this modal verb appears frequently in certain environments, such as conditional clauses or complement clauses of a mind-process verb, and that it is also frequently used with passive infinitives and impersonal or object-referring subjects. Apart from that, during the examination of the cases, and even though it was not included in the parameters being analysed, it was found that there was a high percentage of mental process verbs among the different infinitives introduced with 'might'.

A common feature of all these uses is that they have all been characterised as linguistic devices with mitigating effects, as explained above. Thus, it may be considered that mitigation, in Hyland's words (*Hedging in scientific research articles* 157) "require[s] a 'more or less' rather than an 'all or nothing' account"⁸. This is,

⁸ Hyland used this quote to refer to the particular attribution of mitigating properties to single linguistic devices, a context which is different, but perfectly compatible, with the one used in here.



mitigation, rather than an isolated feature encoded by single devices, is an accumulative one, in which different devices work together to express a common drive, that of mitigating the force of a claim, and thus, together with other linguistic devices encoding the other pragmatic strategies used in scientific writing, achieve the best reception possible for a scientist's research.

All in all, these results only show part of the picture, in that a comparison with the instances of 'might' by male authors is needed to assess whether this mitigating device is used differently in men's and women's scientific writing. This will be the object of further research, in which the co-occurrence of the modal verb 'might' with other mitigating devices, such as probability adverbs, among others, will also be examined.

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BECOMING VISIBLE: MARGARET CAVENDISH'S AND APHRA BEHN'S NEW WORLDS

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ABSTRACT

The telescope and microscope are two of the most recognizable and long lasting emblems of the new scientific method that emerged in seventeenth-century Europe. Their value and reliability was a topic of great debate among seventeenth-century professional and amateur scientists. Margaret Cavendish, the Duchess of Newcastle and Aphra Behn both offered critiques of experimental science and its reliance on enhanced observation. Their opposition can be linked to their status as women who were frustrated by the limitations placed on women's education. Despite their informal educations, Cavendish and Behn contributed to the discourse of natural philosophy in many ways, including the creation of imaginative prose works which satirize the male-dominated profession while simultaneously demonstrating their desire to be full participants in the project of natural philosophy.

KEYWORDS: Natural philosophy, Experimental Science, Translation, Travel writing, Gender.

RESUMEN

El telescopio y el microscopio son dos de los emblemas más reconocibles y duraderos del nuevo método científico del siglo XVII. Su valor y precisión fueron tema de debate entre los científicos profesionales y amateurs de entonces. Tanto Margaret Cavendish, duquesa de Newcastle, como Aphra Behn fueron reticentes a admitir una ciencia experimental basada en la mera observación. Su oposición puede responder a las propias limitaciones impuestas a la formación de las mujeres. A pesar de lo informal de su trayectoria educativa, ambas contribuyeron al discurso de la filosofía natural en diversa manera presentando una sátira contra la profesión dominada por hombres, al tiempo que demuestran su deseo de participar plenamente en el proyecto de la filosofía natural.

PALABRAS CLAVE: Filosofía Natural, ciencia experimental, traducción, escritura de viaje, género.



The telescope and microscope are two of the most recognizable and long lasting emblems of the new scientific method that emerged in seventeenth-century Europe. While today both are accepted tools of the trade and widely accessible in classrooms, laboratories and museums (and perhaps soon the dollar store, as a folding paper microscope has recently been developed with production costs of under a buck), their value and reliability was a topic of great debate among seventeenth-century professional and amateur scientists. Revolutionary scientists such as Galileo and Robert Hooke felt compelled to publish works such as *The Starry Messenger* and *Micrographia* to describe the processes and results of using these visual technologies, both men writing in great detail and including pictures to help the reader “see” what the scientists were looking at through their magnifying lenses. Not everyone, however, was convinced. Margaret Cavendish, the Duchess of Newcastle, wrote her *Observations upon Experimental Philosophy* and its accompanying *Description of a New Blazing World* in direct opposition to Hooke’s tome, arguing that telescopes and microscopes offered distorted images and only looked at the surface of objects. Similarly, Dr. Baliardo, the object of Aphra Behn’s satire in her dramatic farce *The Emperor of the Moon*, appears on stage with “all manner of Mathematical Instruments, hanging at his Girdle” and requires his servant to lug about a telescope, “twenty (or more) Foot long” to feed his ridiculous obsession with observing the moon and spying on its inhabitants.

Although Cavendish and Behn were not the only critics of experimental science and its reliance on enhanced observation, it may not be coincidental that two women, both of whom were fascinated by the developing discipline of natural philosophy and also frustrated by the limitations placed on women’s education, articulated their opposition to this growing practice. When scientific observations and experiments were performed in the laboratory, access was restricted across class and gender lines, restrictions that were underscored by Cavendish’s hotly debated and highly dramatized visit to a Royal Society performance of experiments in the spring of 1667. As Jo Wallwork explains, Cavendish’s request to attend a demonstration led to great consternation among the all-male membership of the Royal Society. Even though they ultimately agreed, her visit forced her into the position of a spectator, who could watch but not participate, and it is little wonder, then, that she would develop her own philosophy that promotes conversation, experience, and imagination over experimentation (43-48).¹ We have no evidence that Behn was allowed into the anatomy theaters or laboratories. Though she had close relationships with numerous members of the Society, these friendships did not mean she had access to their places of scientific learning. Indeed, when she writes in thanks to Thomas Creech, whose translations of classical texts gave women access to scientific learning, her poetic praise is tinged with regret that she was unable to join future members of the Royal Society Ma at “sacred Wadham,” the Oxford College where Creech

¹ Peter Dear also comments on the exclusion of women from the Royal Society, pointing out that other options, such as salon culture, existed that were more welcoming to women (127).



studied with budding natural philosophers Thomas Sprat and Christopher Wren under the wardenship of John Wilkins.²

Despite their informal educations, Cavendish and Behn were fascinated by the field of natural philosophy and contributed to it in many ways, including the creation of imaginative prose works, the aforementioned *Blazing World* by Cavendish and Behn's translation of Bernard le Bovier de Fontenelle's *Entretiens sur La Pluralité des Mondes*, which she retitled *The Discovery of New Worlds*. This work features a conversation between an unnamed speaker and his curious female student, Madam the Marquise, about the potential for life on the moon and other planets. It also begins with a meandering preface, "An Essay on Translated Prose," in which Behn justifies her use of the vernacular, offers a theory of translation, and weighs the merits of Copernican and Ptolemaic principles. Modelled on contemporary travel narratives, both real and imagined, *The Blazing World* and *The Discovery of New Worlds* follow several trends in scientific writing. In describing for the reader what most are unable to see firsthand, travel literature was increasingly linked with the work of scientists during the seventeenth century. As Judy Hayden puts it, "language, science, observation, and literary discourse merge in the early modern travel narrative," a connection that Francis Bacon himself highlighted in his *Advancement of Learning* (8).³ While the Royal Society sought to regularize travel narratives into a specific format with the hopes of establishing the credibility of such reports (Hayden 8), the challenge of this attempt mirrors the complaints directed towards reliance on telescopes and microscopes; both question the premise that objective, direct observation is possible and worthwhile in the pursuit of truth.

By turning to fiction, Cavendish and Behn lay no claim to fact, but instead try to depict the search for truth. Their works satirize the male-dominated profession while simultaneously demonstrating their desire to be full participants in the project of natural philosophy. Moreover, these fictional worlds serve as invitations to other women, similarly excluded from sites of formal scientific education and experimentation, to learn about contemporary debates about the nature of the universe and to imagine themselves as active participants in conversations on these topics. What Cavendish's and Behn's audiences can see is limited neither by their eyesight nor the available technology. At the same time, both writers make themselves prominent and visible as authors, using their forays into natural philosophy as part of their self-fashioning project to acquire lasting praise and fame.

Within the last twenty years, Margaret Cavendish's scientific writings have drawn significant critical attention, and we no longer need to make the point that no one takes her seriously; however, during her lifetime and long after, she was

² Behn's poem to Thomas Creech is, "To the Unknown Daphnis on his excellent Translation of *Lucrece*." For more, see my *Women as Translators in Early Modern England* (105-106).

³ Anne Thell notes that Cavendish recognized the power of travel writing and also understood "the new scientific investment in the form" (18).





generally viewed as somewhat ridiculous.⁴ Her skepticism towards both empirical methodologies and the mechanistic theories espoused by the likes of Thomas Hobbes and Rene Descartes has been well documented;⁵ her ambivalent and classist views about the place of women (other than herself) within the social hierarchy are the recent subject of much debate. Linking the two concepts, Lisa Sarasohn interprets Cavendish's skepticism about methodology as an assault on traditional authority and a "weapon in her battle for the recognition of female intellectual quality," arguing that Cavendish understood natural philosophy more generally as providing room for the reappraisal of the role of women (289-90). For Sarasohn, Cavendish's emphasis on the natural versus the mechanical view of science can be linked to a belief in gendered expectations, but she points out that Cavendish, who believed men and women were created as equal, focused on the social conditioning that leads to women's inferiority (295-98). In contrast, Jaqueline Broad sees Cavendish holding on to more traditional scientific theories, particularly the Galenic view of women's natural, physical inferiority; however, such a belief did not stop Cavendish from refuting claims that pregnant women caused deformities in their offspring and appealing to "common reason and experience in defense of women" (49). Eve Keller sees in both Cavendish's critique of experimental science and its claims to certainty and her commitment to organic materialism the emergence of a "proto-feminist critique" of male-dominated epistemological practices (451), a conclusion that Deborah Boyle finds flawed. Noting that Cavendish is not necessarily opposed to mechanist theory, Boyle argues that while Cavendish does distinguish her work from that of male scientists such as Hobbes and Descartes, she still finds the practice of observation valuable when done correctly and her concern with microscopes and telescopes is that they may misrepresent nature and give only surface information about the objects under scrutiny (204-206). For Boyle, then, the only aspect of Cavendish's efforts that might warrant the feminist label is her advocacy for "women's involvement" (223) in scientific exploration, based on her confirmed belief that "the study of natural philosophy could benefit women" (226).

Such advocacy is visible in Cavendish's frequent expressions of frustration with women's limited educational opportunities such as in the prefatory material that accompanied her *Observations upon Experimental Philosophy*. In her address to the reader, Cavendish uses conventional humility, though she does this in such a way to make clear that her shortcomings are the result of unequal treatment, writing "But that I am not versed in learning, nobody, I hope, will blame me for it, since it is sufficiently known, that our sex being not suffered to be instructed in schools and universities, cannot be bred up to it" (11). She then proceeds to detail the difficulties

⁴ For a discussion of the critical reception of Cavendish's work, both in her own day and in the twentieth century, see Eileen O'Niell's introduction to Cavendish's *Observations Upon Experimental Philosophy*.

⁵ See for example, Denise Tillery, "English Them in the Easiest Manner You Can": Margaret Cavendish on the Discourse and Practice of Natural Philosophy," and Sarah Hutton, "In Dialogue with Thomas Hobbes: Margaret Cavendish's Natural Philosophy."

she had reading other authors' philosophical works because of their "hard words and expressions," describing herself as needing assistance with the difficult vocabulary and arguing that such authors would be better off writing in Latin if they are only going to use the "hardest words and expressions which none but scholars are able to understand" (12). With this unapologetic defense, Cavendish strategically exposes the hypocrisy of the Royal Society, which claims a dedication to openness and accessibility and yet maintains a tight hold on its distribution of knowledge and information, and she contrasts her own style as truly democratic, promising that even though she now understands such challenging expressions, she shuns "them as much in my writings as is possible for me to do, and all this, that they may be the better understood by all, learned as well as unlearned; by those that are professed philosophers as well as those that are none" (12).

Cavendish concludes this section of her address with a more subtle swipe at the "professed philosophers," condemning them not just for being elitists with their language but also dishonest. In promising that she will not put on airs in her writing to appear more learned than she is, Cavendish also agrees not to "deceive the world" nor to depict herself as a "mountebank in learning." Although the deception she promises to avoid is that of self-presentation, her comments about not obscuring her opinions and rendering "them more intricate instead of clearing and explaining them" (12) point to the ways in which complex language can serve as a disguise for a paucity of ideas and knowledge.⁶ For Cavendish, the importance of philosophic writings lies within. It is the ideas that count, not the surface appearance, and she asks her readers to excuse her writing errors and "express their wisdom in preferring the kernel before the shells" (12). This focus on what lies beneath the surface is central to Cavendish's distrust of Hooke's microscope and the experimental philosophy he practices, a distrust that is central to her *Observations* and evident too in her more fanciful accompaniment, *The Blazing World*.

Much of the first part of *The Blazing World* depicts conversations between the human-turned-Empress and the various hybrid creatures whom she encourages to study and specialize within the arts and sciences. The narrator explains that the bear-men are the Empresses' experimental philosophers, and as such they use telescopes to add to the knowledge presented by the astronomer bird-men. Immediately the telescopes cause confusion and discord:

But these telescopes caused more differences and divisions amongst them than ever they had before, for some said they perceived that the sun stood still and the earth did move about it; others were of opinion that they both did move. Some counted more stars than others; some discovered new stars never seen before. (268)

⁶ Tillery offers a useful reading of these prefatory comments, explaining that Cavendish depicts this private tutoring session as a substitute for the formal education that she is excluded from and also is arguing for women's inclusion in the scientific realm (272).



The bear-men's quarrels lead the Empress to demand that they all go "to the very end of the Pole that was joined to the world she came from" to try to see any stars in it, but again they cannot agree on what they have observed and continue their arguments. Finally, the Empress "began to grow angry at their telescopes," and demands that the bear-men break them and imitate the behavior of the bird-men, who earlier had conversed and debated with her, presenting their experiential perceptions and even disagreeing with each other, but without the dramatic conflict that marks the bear-men's debates. The Empress's complaint that the bear-men's telescopes "are false informers and instead of discovering the truth, delude your senses" echoes Cavendish's critiques in her *Observations* in which she speaks of telescopes and microscopes as "deluding glasses" ("To His Grace, the Duke of Newcastle") that may identify spots on the sun or moon or locate a new star, but offer "no great benefit or advantage" to man ("The Preface to the Ensuing Treatise" 9). By creating a utopian romance and focusing on what the readers can only see in their imagination, Cavendish bypasses the challenges she feels are caused by a reliance on telescopes. As Elizabeth Spiller points out, constructing her natural philosophy as a fiction solves the problem expressed by Galileo himself of the limits of observation (210). In writing *The Blazing World*, Cavendish offers "a defensive response to the technology and scientific methodology exemplified by the telescope" and presents the act of reading as a radical alternative to the limiting practices within the scientific field (Spiller 218).

Missing from the Empress's and Cavendish's complaints is any discussion of gender specificity when it comes to the use or misuse of these lenses, though her imagined world is one with clear gendered distinctions that eventually provides a model for liberating practices within the field of natural philosophy. Though not fully human, all of the hybrid creatures are clearly male. The women are not distinguished by specific animal traits, but all are described as having "quick wits, subtle conceptions, clear understandings and solid judgements" (289) and become devout converts to the Empress' religion. They are inspired by her excellent preaching but do not participate in active conversations with her as the male scientists do. Not until the arrival of her scribe, the fictional Duchess of Newcastle, does the Empress engage in philosophic discussion with another woman. Indeed, the shift that occurs after the Empress decides she wants to make her own Cabala and brings the Duchess of Newcastle to the *Blazing World* functions as a remedy to the male-dominated universe. As intellectual equals, they discuss the nature of the Empress' Cabala and become Platonic lovers, "although they were both females" (308). The Duchess recommends creating a "poetical or Romancical Cabala, wherein you may use metaphors, allegories, similitudes etc. and interpret them as you please" (308) and later asks how she too can become an "empress of a world" (309), a dream she can accomplish best, not by conquering a world, but by creating one. The emphasis on imagination and literary creation demonstrates what Marguerite Corporaal refers to as "the function of the term 'fancy' in Cavendish's writing on science." (150). Corporaal understands Cavendish's objective here as bringing together the two seemingly opposite realms of rational, experimental science and fanciful, literary production, so that she might make up for her inadequate preparation in natural



philosophy and challenge “dominant gender constructions,” all the while creating “the impression that she will not claim further rights for herself as a woman or the female sex in general” (150-154). Similarly, Lisa Walters reads this moment as offering an alternative to the Royal society’s emphasis on vision and experiment, an alternative where “original thought trump[s] learned authority” and women’s imagination provides a “more inclusive understanding of knowledge” (391).

Both Cavendish and her husband celebrate this notion of learning through imaginative exploration in their introductions to *The Blazing World* while also highlighting Cavendish’s authoritative role. In his praise poem, William, the Duke of Newcastle, compares his wife to Columbus and finds she is superior. She has not merely found a world, but her “creating fancy thought it fit/ To make your world of nothing but pure wit. / Your blazing world beyond the starts mounts higher, / Enlightens all with a celestial fire.” Cavendish herself discusses her decision to add to her philosophical observations a “piece of fancy,” which she defines as a “voluntary creation or production of the mind” (252) and describes as “romancical” (using the same adjective later mentioned by her doppelganger to characterize the Empress’s Cabala). Like her husband, Cavendish underscores her originality, pointing out that her new world is not like Lucian’s “or the Frenchman’s world in the moon” (252) before her final rhetorical move of including her audience in this endeavor.⁷ At the end of her address to the reader, Cavendish specifies a female and noble audience, with whom she would share her imagined “rocks of diamonds” and gives a final nod to the creative powers of all her readers, concluding, “I have made a world of my own, for which nobody, I hope, will blame me, since it is in everyone’s power to do the like” (253). In this moment Cavendish achieves seemingly contradictory objectives. She reinforces her hierarchical vision of society and imagines herself as the pinnacle of that hierarchy —she is, after all, “Margaret the First”— while simultaneously demonstrating a democratizing intent to invite other women to participate in scientific conversations.⁸

Despite Cavendish’s emphasis on her inventiveness and her insistence that she does not base her work on that of other authors, we can see many links between her original works and the translations produced by Aphra Behn.⁹ In Behn’s preface

⁷ Here Cavendish is referring to Cyrano De Bergerac’s *Histoire comique contenant les états et empires de la lune* (1657) an important predecessor for Fontenelle’s work that I will discuss shortly. Isabelle Clairhout and Sandro Jung call this emphasis on originality and authorial self-fashioning a “survival strategy in a constant struggle against erasure” (732). Despite her claims for originality, Cavendish borrowed heavily from others, as Sarasohn points out (293-294); thus we can understand her work as linked to the work of translators such as Aphra Behn.

⁸ Dear rightly points out that *The Blazing World* imagines not just a hierarchical society but also a hierarchical “transfer of knowledge” in which the Empress gains her power from her husband just as Cavendish did. He concludes that the Empress ultimately maintains “the fundamental gender order of Cavendish’s own world, one that the duchess showed no real interest in challenging” (141).

⁹ Behn and Cavendish have only just recently been discussed together as addressing similar concerns and themes in their writing. In *Utopian Negotiations: Aphra Behn and Margaret Cavendish*, Oddvar Holmesland does just that, noting in his introduction some of the many connections between





to her translation of Fontenelle's *Entretiens sur La Pluralité des Mondes*, she begins by comparing herself to Cicero who, "when he undertook to put Matters of Philosophy into Latin" instead of Greek justified his endeavors by explaining that "those who were not Philosophers would be tempted to the Reading of it, by the Facility they Would find in its being in the Latin tongue" (87). In translating into English a work concerned with astronomy, Behn makes the subject of natural philosophy accessible to those with limited education as Cavendish promises to do with her avoidance of difficult language and expressions. Also like Cavendish, Behn uses her preface to highlight women's limited education, which she then connects, not to their difficulties with hard vocabulary but rather their inability to read Latin. Additionally, she uses translation as her excuse for entering into scientific discourse. She is "only" translating the words of a reputable male author, and it is Fontenelle's depiction of a female speaker that serves as implicit permission for Tyler to serve as his amanuensis. Some of Behn's scientific education may indeed have come from translating Fontenelle's treatise, which is staged as a dialogue between an unnamed speaker and his curious student, Madam the Marquiese. The Marquiese is much like how Cavendish describes herself as needing instruction from a male mentor. Seeing this connection, Violetta Trofimova suggests that Behn was deliberately following in Cavendish's footsteps and reads the Marquiese as a "new example for a woman interested in science" who is witty and intelligent, but not as eccentric or ridiculous as the Duchess (91-92). Like Cavendish, the Marquiese is curious about the potential for life on the moon and other planets, and although this fictional conversation does not depict any trips *to* these new worlds, it does exhibit numerous tropes of travel writing. Without being able to observe any extraterrestrial beings, Fontenelle's speaker relies on the principle of resemblance to speculate about the likelihood of life on other planets, and he makes frequent analogies comparing possible aliens to natives of the so-called New World, reflecting much of the imperialistic beliefs and practices that often went hand in hand with both scientific and geographic discoveries. In subtly changing the title to *The Discovery of New Worlds*, Behn highlights this connection, and reminds us of her own interest in the discovery of earthly new worlds evident in works such as *Oroonoko* and *The Widdow Ranter*.¹⁰ Like Cavendish, she uses her works to help her audience see what the telescope cannot show them and imagine their creative potential; like Cavendish, Behn also makes her authority visible, but often at the expense of her translated subjects.

Behn's attitude towards the telescope is most explicit in her farce, *The Emperor of the Moon*, which I mention above. Both Judy Hayden and Al Coppola have discussed Behn's satire of the scientific "virtuoso," whose obsession with looking at

the two women. As I do, Holmesland recognizes the authorial self-fashioning that is central to their careers, seeing evidence of this project in their utopian works such as *The Blazing World* and *Oroonoko*.

¹⁰ Notably, Karen Bloom Gevirtz looks at *Oroonoko* as a text interested in the natural world that builds on Behn's knowledge of natural philosophy. She points out that the novel is concerned with questions of experimentation and knowledge of the self and argues that it finally shows the impossibility of objective, impartial observation (85-98).

the moon makes him blind to what really matters in the world.¹¹ She offers a more complex approach to the topic of scientific observation in *The Discovery of New Worlds*, in which the narrator and the Marquise study the moon unaided. Their initial conversation focuses on the ways in which natural philosophy must fill the gap between what we can observe and what we want to know. In their first night's conversation, the narrator goes on at length to explain this concept to his pupil:

All philosophy is grounded on two Principles, that of a passionate thirst of knowledge of the Mind, and the weakness of the Organs of the Body; for if the Eye-sight were in perfection, you could as easily discern there were Worlds in the Stars, as that there are Stars: On the other hand, if you were less curious and desirous of knowledge, you would be indifferent, whether it were so or not, which indeed comes all to the same purpose; but we would gladly know more than we see, and there's the difficulty: for if we could see well and truly what we see, we should know enough; but we see most Objects quite otherwise than they are; so that the true Philosophers spend their time in not believing what they see, and in endeavouring to guess at the knowledge of what they see not. (96)

In his rather convoluted way, the narrator suggests that our limited ability to see is more than compensated by our imaginative abilities as well as our attempts to figure out the truth based on what we can see. He continues this discussion with an elaborate opera analogy, comparing philosophers to engineers who know how all the behind-the-scenes “Ropes, Pullies, Wheels and Weights” work to convey the spectacle and then bemoaning his impression that philosophy has “become very Mechanical” (98). On the one hand, he suggests such a mechanical view pales in comparison to a “more sublime *Idea* of the Universe,” but on the other, he worries that most people have a mistaken admiration of Nature because they see it as a “kind of Miracle” (98). The Marquise responds with an analogy of her own, and her response that she “esteem[s] it more since I knew it is so like a Watch” and finds Nature all the more admirable because it “moves upon Principles and Things that are so very easie and simple” (98) seems to offer a palatable middle ground, an understanding of scientific properties based on reason and common experience. She also suggests that such an understanding is possible for all who put their mind to it.

Despite her elevated class status and the narrator's perspective that she understands the universe better than “most People,” the Marquise, with her common sense approach and experience-based reasoning, functions as a kind of every woman and stand-in for Fontenelle's and Behn's audiences. As such, her portrait can be vexing at times. Following the exchange about observation, the narrator embarks upon an explanation of the movement of the planets showing the Marquise how Copernicus used a similar combination of observation and

¹¹ Coppola suggests that the play seeks to curb “misplaced spectatorship and enthusiastic credulity,” which had implications far beyond the field of natural philosophy (484). Holmesland also discusses the play and again observes the satire on what he calls “optical empiricism” (214).



experience to develop his theory that the earth and other planets rotate around the sun. The narrator continues to use analogies and promises, so as not to frighten his female student, and to “soften” his explanation. His frequent patronizing attitude towards the Marquiese is part of what Judy Hayden speculates would have been infuriating for Behn when translating Fontenelle’s work (2015, 178).¹² However, Behn offsets this unflattering view of women in her prefatory “Essay on Translated Prose,” in which she offers herself as an independent thinker capable of mathematical and scientific calculations.¹³ Behn criticizes Fontenelle depiction of the Marquiese, saying he must create a complete fabrication in order to depict a woman of such limited learning and intellect, whom he makes “say a great many very silly things, tho’ sometimes she makes Observations so learned, that the greatest Philosophers in Europe could make no better” (77). She also offers her own comparison of the Ptolemaic and Copernican models as part of a discussion of why the Bible should not be invoked in scientific debates. For example, Behn challenges the claim of Father Tacquet, a French Jesuit and mathematician who argued that only the Copernican model can support the passage in Joshua 10.12 in which the sun and moon are said to stand still at Joshua’s command so the Israelites would have enough light to guide them:

If the Sun did not move, according to the System of Ptolemy, where was the necessity of the Moon’s standing still? For if the Moon had gone on her Course, where was the Loss or Disorder in Nature? She having, as I demonstrated before, so little Light, being so very near her Change, would have recovered her Loss at the next appearance of the Sun, and the Earth could have suffered nothing by the Accident; whereas the Earth moving at the same time, in an Annual and Diurnal Course, according to the System of Copernicus, would have occasioned such Disorder and Confusion in Nature, that nothing less than two or three new Miracles, all as great as the first could have set the World in Order again: The regular Ebbings and Flowings of the Sea must have been interrupted, as also the Appearing of the Sun in the Horizon, besides many other Inconveniences in Nature; as, the Eclipses of the Sun and Moon, which are now so regular, that an Astronomer could tell you to a Minute, what Eclipses will be for thousands of Years to come, both of Sun and Moon; when, and in what Climates they will be visible, and how long they will last, how many Degrees and Digits of those two great Luminaries will be obscured. (83-84)

The knowledge required to formulate these claims gives a taste of the intellectual virtuosity on display in Behn’s preface, a display that contradicts Fontenelle’s

¹² In drawing a connection between *The Emperor of the Moon* and *The Plurality of Worlds*, Hayden argues that Behn ridicules the concept of life on other planets just as she satirizes Dr. Baliardo’s obsession with the possibility of life on the moon. While I agree that Behn may not have agreed with everything in Fontenelle’s work, I do not see evidence that she seeks to undermine the premise of the entire project.

¹³ Hayden notes that in Fontenelle’s work, the Marquiese hesitates to do math (178).



narrator's view of women and highlights the success of Behn's own self-education and self-fashioning project.

Behn's prefatory display is quite different from Cavendish's description of the difficulties she had reading scientific texts, but like Cavendish, Behn also considers the potential for fancy as a contrast to the experimental methods of the new science. On the third night of *The Discovery*, the conversation turns to technological innovations. Although they are discussing the possibility of life on the moon and other planets, the narrator doesn't mention telescopes. Instead, he draws a comparison between new worlds in space to what one might see using "the late invention of Glasses call'd Microscopes" (134), which illuminates worlds heretofore unseen and unimagined. Unlike Cavendish's critique, the narrator's discussion of microscopes is full of wonder and delight as he describes the "thousands of small living Creatures" living in certain liquids and characterizes a tree leaf as "a little World inhabited by such invisible little Worms" who see the leaf as a vast environment with "hills and Valleys upon it." For the Marquise, who is similarly enchanted by this idea, the potential of microscopes and other worlds fuels her imagination even as it suggests her limitations. As in *The Blazing World*, the concept of "fancy" emerges but instead of viewing imagination as creative and limitless, the Marquise initially asks how one's imagination can comprehend the variety of nature, to which the narrator responds, "let us be satisfied with our Eyes" (135). By the end of the conversation, however, the Marquise is not satisfied with her eyes, and her belief in the creative potential of her imagination seems to have increased. She tells her teacher that she can represent in her mind the "odd Characters and Customs for these inhabitants of the other Planets. Nay more, I am forming extravagant shapes and figures for 'em: I can describe 'em to you; for I fansie I see 'em here" (137). Without dismissing the value of the microscope, Behn's translation still places value on the female imagination to understand the natural world.

Although I have suggested above that the Marquise represents a kind of egalitarian "every woman," a Eurocentric worldview quickly emerges in *The Discovery of New Worlds* as a whole, when she and her teacher imagine inhabitants of these extra-terrestrial new worlds in comparison to the natives of the "new" worlds on earth, reflecting the conflagration of imperialist beliefs and practices and scientific and geographic discoveries. Their conversation is full of racist views that are somewhat, but not completely, ameliorated in Behn's translation, and we can see that here too Behn relies on her sense of personal and national superiority as part of her authorial self-fashioning. For instance, in an early discussion about the possibility that men live on the moon, the speaker talks of men traveling to the Americas and finding the inhabitants there "to be hardly Men, but rather a kind of Brute in Humane shape, and that not perfect there" (121). He imagines it would be similar should explorer encounter men and women on the moon and then goes on for almost twenty more lines, repeating and elaborating his point that the inhabitants of the moon, like those of other earthly worlds, could not possibly be as rational and wise as Europeans. Meanwhile, the Marquise barely gets a word in edgewise. When she finally does, her comment seems, in comparison, not only more concise but more compassionate than her instructor's; "We are then secure enough... that the Inhabitants of the



Moon will never guess what we are; but I wish we could attain to the knowledge of them; for I must confess it makes me uneasie to think there are Inhabitants in the Moon, and yet I cannot so much as fansie what kind of Creatures they are” (121). In a later conversation about the inhabitants of Mercury, the speaker suggests they must be mad for their proximity to the sun, and he compares them to “our *Negroes*,” who “they never think, and are void of all Reflection, and they only act by Chance, and by the suddain Impulses” (138). Despite his reliance on the scientific method of observation and hypothesis, the speaker’s racism —his surety of European cultural superiority— is unmistakable in this analogy. In a comparison of Behn’s translation to Fontenelle’s original text, Line Cottagnies suggests that Behn makes the narrator more forceful and assertive in his racial attacks while using her preface to distance “herself from Fontenelle’s most contentious hypotheses” (22). It is true that in the preface, significantly during her characterization of French as overly ornate, Behn offers a model of racial relativism that may serve as an antidote to the distastefulness of her translated narrator’s disdain for the natives of Africa; “I do not say this so much to condemn the French, as to praise our own Mother-Tongue, for what we think a Deformity, they may think a Perfection; as the Negroes of Guinney think us as ugly as we think them” (76). Her somewhat more palatable view is echoed by the Marquiese, who in a debate with her teacher, champions women of brown or dark complexion despite her own fair skin.

Subtly, however, Behn’s preface also suggests her belief in her superiority to inhabitants of the new world and in that way she may be more like Fontenelle’s than she first appears. These sentiments are evident in Behn’s rather strained explanation of why it is most difficult to translate from the French. To make her point, she offers a history of language in which she focuses on European countries on relatively equal political footing. Her discussion of the origins of modern languages recognizes the trend of conquering nations imposing their languages on vanquished peoples:

The Italian, as it is nearest the Latin, is also nearest the English: For its mixture being composed of Latin, and the Language of the Goths, Vandals, and other Northern Nations, who over-ran the Roman Empire, and conquer’d its Language with its Provinces... the Spanish is next of kin to the English, for almost the same Reason: Because the Goths and Vandals having over-run Africk, and kept Possession of it for some hundred of Years, where mixing with the Moors, no doubt, gave them a great Tincture of their Tongue. (73-74)

By including this narrative in an essay on translation, Behn suggests a connection between military conquest and translation, and presents an early view of translation as a kind of “ethnographic violence” (Venuti 41). Behn recognizes the relationship of language and power in the imperialist encounter and her historical account anticipates the work of post-colonialist translation theorists, such as Ngugiwa Thiongo, who argues that when nations meet as oppressor and oppressed, “the oppressor nation uses language as a means of entrenching itself in the oppressed nation” (31). But Behn does not lament this history of violent and linguistic conquest; rather she describes it as a necessary step in the development of



early modern European languages. When she later refers specifically to conquered peoples of the new world, her focus on the appearance of the “Negroes of Guiney” signals her interest not in the language of the Africans of Guinea but in their bodies. Despite her politically correct reminder that beauty is simply a question of standards and perspective, Behn’s insight into the imperialist history of translation and her off-the-cuff dismissal of the linguistic or intellectual abilities of Africans suggest that she may not be as sympathetic towards the conquered inhabitants of the new world as some of us would wish. Instead, Behn manipulates nationalist and colonialist discourses to create a hierarchy that replaces or supplements the gender hierarchy and allows a literate Englishwoman to occupy a higher literary status than she otherwise would.¹⁴

In a 2004 dissertation on women scientists, Michelle Healy plays with Lawrence Venuti’s formulation of the invisible translator by naming her project *The Cachet of the “Invisible Translator.”* Healy’s main point is to explore how women, including AphraBehn, contributed to the early dissemination of scientific works, using both the perceived secondary status of translation as well as their prominence as writers to make translated texts visible.¹⁵ In Healy’s formulation, the translator still remains largely invisible, and yet Behn’s career is marked by a desire for visibility, and, I would argue, her turn towards translation, of materials scientific and not, is part of her authorial self-fashioning trajectory.¹⁶ We see a similar impulse in the writings of Margaret Cavendish, whose desire for recognition and praise has been oft remarked upon.¹⁷ Both women’s interest in being seen goes hand-in-hand with their exploration of what it is possible to see. Their scrutiny of technological developments, their entry into scientific discourse, and their fascination with the discovery and creation of new worlds suggest that for at least a handful of seventeenth-century women, the field of natural philosophy provided access to a public intellectual space even as it created barriers to entry. To overcome such barriers, Cavendish and Behn focus on what women can know through unassisted vision combined with common sense, and they help their readers see further, not by looking through telescopes or microscopes but through reading, writing and imagination.

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¹⁴ Cavendish’s ideas about race have been discussed in relation to the multi-colored inhabitants of her *Blazing World*. See for example, Cristina Malcolmson, *Studies of Skin Color in the Early Royal Society*.

¹⁵ Healy’s title alludes to Lawrence Venuti’s *The Translator’s Invisibility: A History of Translation*, a foundational text in translation studies.

¹⁶ I discuss more fully how I understand translation as central to Behn’s self-fashioning project in my chapter on her in *Women Translators in Renaissance England*.

¹⁷ Holmesland offers a useful summary of commentary on Cavendish’s desire fame, pointing out that critics often takes Cavendish to task for such a “patriarchal” desire (86-87).



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MISCELLANY

PROSTITUTION, IDENTITY AND THE NEO-VICTORIAN: SARAH WATERS'S *TIPPING THE VELVET**

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ABSTRACT

Sarah Waters's Neo-Victorian novel *Tipping the Velvet* (1998) is set in the last decades of the nineteenth century and its two lesbian protagonists are given voice as the marginalised and "the other." Judith Butler's notion of gender performance is taken to its extremes in a story where male prostitution is exerted by a lesbian woman who behaves and dresses like a man. Therefore, drawing from Butler's theories on gender performance and Elisabeth Grosz's idea about bodily inscriptions, this article will address Victorian and contemporary discourses connected with the notions of identity and agency as the result of sexual violence and gender abuse.

KEYWORDS: violence, prostitution, *Tipping the Velvet*, bodily inscriptions, performance, Judith Butler, Elisabeth Grosz.

RESUMEN

La novela neo-victoriana de Sarah Waters *Tipping the Velvet* (1998) está situada en las últimas décadas del siglo XIX y sus dos protagonistas lesbianas reciben voz como marginadas y «las otras». La noción de performatividad de género de Judith Butler es llevada hasta los extremos en una historia donde la prostitución masculina es ejercida por una mujer lesbiana que se comporta y se viste como un hombre. Por tanto, utilizando las teorías de Butler sobre la performatividad del género y la idea de Elisabeth Grosz sobre inscripciones corpóreas, este artículo tratará de acercarse a discursos victorianos y contemporáneos relacionados con las nociones de identidad y agencialidad como resultado de la violencia sexual y el abuso de género.

PALABRAS CLAVE: violencia, prostitución, *Tipping the Velvet*, inscripciones corpóreas, performatividad, Judith Butler, Elisabeth Grosz.





The aim of this article is to explore issues of sexual identity and violence in the world of prostitution in the Victorian past and their reflection on our contemporary societies. In particular, the analysis of sexual abuse will be the object of discussion in Sarah Waters's *Tipping the Velvet* (1998) in terms of agency and identity. Set in the last decades of the nineteenth century, the novel's two lesbian protagonists, Nan King and Kitty Butler, try to find their own place in Victorian society as women who are considered as "the other." They are given voice as the marginalised, following the Neo-Victorian trend of re-writing the history of those whose lives were not found in the mainstream historical record. Judith Butler's notion of gender performance is taken to its extremes in a story where male prostitution is exerted through a woman who behaves and dresses like a man, but who will also become the victim of sexual violence and abuse. Therefore, drawing from Butler's theories on gender identity and Elizabeth Grosz's idea of bodily inscriptions, this paper will address Victorian and contemporary discourses connected with the notions of sexual identity and agency as the result of sexual violence and gender abuse, and of the prostituted body as the site of vulnerability and dependency of "the other."

In an interview with Abigail Dennis in September 2007, Sarah Waters explained that the fascination with the Victorian period has to do with its relevance to the present. In the same interview, she stated that culture and society are provisional, temporary things, and history is a process, so that gender, sexuality and class are not fixed and change from one period to another. (Dennis 45, 48) And this is precisely what Neo-Victorian writers have tried to convey in their narratives of the nineteenth century, especially attracted by the secret and the forbidden. What they pretend to do with their fiction is the revision through the representation of silenced issues and to fill in the gaps the lack of traces and archives have left to our imagination. Accordingly, writers and readers "become fused in historical fiction, as both share the desire to read, know, interpret and repossess the past." (Heilmann and Llewellyn 139) Following Heilmann and Llewellyn, historical fiction can be interpreted as the most essential form of postmodernism because it continuously contests the very fabric of the past and, by implication, of the present. There are several aspects that we share with Victorians: our own modernity, the crisis of categories and the interest in history (141, 143); similarly, Waters states that her work shares our contemporary culture's "double vision" of the Victorians: she thinks that, on the one hand we feel that it is a period very close to us, and, on the other,

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it is completely strange because we have many stereotypes about the time which on many occasions are wrong. (Wilson 286) Therefore, Neo-Victorian writers look at the Victorian past to re-evaluate, re-write and revise the Victorian era seeking “not so much to reproduce the great Victorian culture as to establish a form of dialogue with it.” (Heiberg Madsen 105) In other words, it uses the past to bring to the present aspects of our contemporary societies which were then at the centre of debate; themes like race, criminality, gender and sexuality become the focus of analysis in Neo-Victorian texts, subverting the marginality of these deviant elements in the Victorian novel and society with the aim to approach our own present anxieties.

In this sense, Sarah Waters makes use of a historical method in her fiction that allows her to explore the social, political and sexual discourses at their initial stages, and when she reconstructs the world of Victorians, she combines historical data with literary images, detecting affinities with the present. Her aim is to trace a genealogy; she wants to bring back to the present the secret preoccupations of the Victorian mind that still haunt our present. She wants to bring to light the lives of the marginalised resorting to details, events and emotions; she talks particularly about the stories of women, lesbians, criminals and destitute people in the process of text-making. (Constantini 18-20) As a lesbian writer, Waters portrays homosexuality as normal in her novels; she is concerned about challenging “a patriarchal view of history and women’s bodies, desires and emotions within it.” She wants to make that challenge through “rewriting or at least engaging textually with the written histories of previous generations” (Llewellyn 195). Historical fiction has the power to claim a sexual plurality in the Victorian past and simultaneously to question the sexual politics of our post-modern era.

Waters herself affirms that her lesbian protagonists are capable to find ways in which to engage with their sexuality in Victorian society, at a time when the idea of lesbianism did not exist. (Dennis 41) She is interested in both the historical continuities and discontinuities that allow rich and alluring portrayals of a queer past. Consequently, queer historical novels have the important role of filling the gaps in the historical record, giving an account of possible ways of experiencing same-sex desire in Victorian England. In particular, Waters’s *Tipping the Velvet* makes its readers think about similarities and differences between past and present concepts of the word *queer* and therefore reflects upon the past and present continuities and discontinuities of same-sex desire (Koolen 2010, 372-373). The presence of the lesbian issue is stressed in the novel by the continuous use of the term *queer*, which in the past had the meaning of “funny” or “strange,” but which has the connotations of “homosexual” or “deviant” in our contemporary societies. The narrative of *Tipping the Velvet* is given in retrospect in the first person from the main character’s perspective, and allows the reader to enjoy the erotically charged lesbian fantasy; although the protagonists, Nan and Kitty, keep the distance from their music-hall audience, they involve the contemporary readership in their private lesbian lives and loves (Neal 68). The very title of the novel, *Tipping the Velvet*, is a slang Victorian expression which makes allusion to an erotic activity known as *fellatio*, both practiced by heterosexual and homosexual couples. However, in the case of Sarah Waters, the words of the title clearly allude to the lesbian practice known



as *cunnilingus*.¹ The novel fights against traditional ways of ordering the past and defining identities, but it belongs to a tradition raising questions about realism and representation. It can be interpreted as a picaresque novel and a *Bildungsroman* but with a female protagonist and a lesbian tale. In fact, Nan transforms herself from an oyster-girl to a dresser and a music-hall artiste, then to a *renter*,² a sex-slave, and finally to a housewife/parent and a socialist.

To talk about gender performance, we need to revise Judith Butler's theories about sex, gender and performativity and to refer to her three major works which have influenced enormously contemporary notions of sexual identity: *Gender Trouble: Feminism and the Subversion of Identity* (1990), *Bodies that Matter: On the Discursive Limits of "Sex"* (1993), and *Undoing Gender* (2004). Taking the tradition of theoretical thinkers like Simone de Beauvoir, Julia Kristeva, Luce Irigaray, Michel Foucault and Monique Wittig as a starting point, Butler wanted to question concepts of gender and sex based on binary systems. She wanted to contest the feminist notion of the 1970s that the sexes were defined by biology as male and female, and gender as masculine and feminine (Jackson 131). In *Gender Trouble* she establishes that sex and gender are cultural constructs and that the body has three dimensions: anatomical sex, gender identity and gender performance. Anatomical sex corresponds to the body you are born with, but it does not determine one's gender or one's desire; gender is materialised through repeated performances of social enactments which are conducive to a gender identity. Later, in *Bodies that Matter*, she introduces the idea of performativity being "citational," that is, we construct sex and gender repeating practices, reproducing conventions and following norms. In the novel we find examples of how gender can be performed, especially in the context of the London music-hall of the 1880's; Kitty Butler performs through citation the male gender in her characterization as a music-hall artiste:

She wore a suit —a handsome gentleman's suit, cut to her size, and lined at the cuffs and the flaps with flashing silk. There was a rose in her lapel, and lavender gloves at her pocket. From beneath her waistcoat shone a stiff—fronted shirt of snowy white, with a stand-up collar two inches high. Around the collar was a white bow-tie; and on her head there was a topper. When she took the topper off —as

¹ *Cunnilingus* is an oral sex act performed on a female. It involves the use by a sex partner of the mouth, lips and tongue to stimulate the female's clitoris, vulva or vagina. A female may receive cunnilingus as part of foreplay before sexual intercourse, during intercourse, or as intercourse. The term is derived from the Latin words for the vulva (*cunnus*) and tongue (*lingua*). *Cunnilingus* may be accompanied by the insertion of finger(s) or a sex toy into the vagina, which allows for the simultaneous stimulation of the g-spot, and/or into the anus. There are numerous slang terms for *cunnilingus*, including "DATY" (for "dining at the Y"), "drinking from the furry cup" and "muff-diving." It is also commonly called "eating someone out," "eating pussy" or "licking someone out." Several common slang terms used are "giving lip," "lip service," or "tipping the velvet," a Victorian pornographic term for *cunnilingus*.

² *Renter* is the Victorian word for a young male prostitute. Those who had a more feminine appearance were known as *mary-annes*.



she did now to salute the audience with a gay “Hallo!” — one saw that her hair was cropped. (Waters 12)

Her clothes and her physical appearance are those of a male in her process of performing, citing the male gender, but her body and anatomy are female. In this male impersonation, she needs the connivance of her audience to whom she addresses. This is why in *Undoing Gender*, Judith Butler develops her gender performance theory further adding that gender is not constructed by the performer alone; gender performance is carried out with an audience in mind and this implies certain aspects of theatricality.

Lesbian sexuality and its exploration is one of Sarah Waters's main concerns. As a lesbian writer, she talks very explicitly about sex, and describes sexual scenes between women trying to convey a sense of naturalness about queer desire. Her main character in *Tipping the Velvet*, Nan, goes through three stages in her development as a lesbian subject: in the first stage Kitty means the awakening to same-sex desire and first love; in the second stage Diana means sexual objectification and exploitation; and in the third stage Florence represents mature love and the acquisition and recognition of a lesbian identity. Also, in this last stage, the protagonist develops a sense of community so important for the lesbian debate.

The first sexual encounter Waters describes is that between Nan and Kitty. Despite the fact that this was their first sexual experience together and the beauty of their love-making, the scene is highly erotic and their passion is purely physical. Waters wants to be very explicit, making Nan say things such as “...I felt the brush of her nipples, and of the hair between her thighs” (Waters 104) inducing to sexual excitement, but then describes sex between women, including masturbation, as a form of sexual self-gratification and the gratification of your sexual partner:

Here she was wet, and smooth as velvet. I had never, of course, touched anyone like this before- except, sometimes, myself; but it was as if I touched myself now, for the slippery hand which stroked her seemed to stroke me: I felt my drawers grow damp and warm, my own hips jerk as hers did. Soon I ceased my gentle strokings and began to rub her, rather hard. (Waters 105)

She then describes the moment of climax with “moans, groans and orgasms” (Heiberg Madsen 107). However, this relationship finishes because Kitty does not accept her lesbian identity; she wants to keep her affair with Nan secret and makes her behave just as a friend in front of people. She does not identify with the lesbian community when she says “They’re not like us, at all. They’re *tom*” (Waters 131). With her attitude, she contributes to the stigmatization of lesbian women, and Nan does not like that. Lesbian sexual desire was interpreted in the past by men under four forms: passing women like female soldiers, cross-dressed actresses, free women and romantic friendships; in the nineteenth century, the mannish lesbian established her primary emotional and sexual commitment to women and was the forerunner of the twentieth-century butch (Vicinus 473-477); *tom* and *tommish* were terms used in Victorian times to refer to lesbians, and Kitty cannot bear to be identified with



that on the music-hall stage. Thus, she decides to seek protection and normalization from mainstream society by marrying her manager Walter Bliss.

The end of the relationship with Kitty brings about Nan's first crisis in the novel. She is on her own and she dresses up as a boy to avoid being accosted by men when walking about the streets in the West End. She has contact for the first time with the London underworld and the world of prostitution. Again, Sarah Waters talks openly about an issue which was considered as the Great Social Evil by Victorians.³ Prostitution and its regulation was the object of debate in all the social and cultural discourses of the time, and Waters makes reference to "the gay girls of the Haymarket" and "the lavatories in Picadilly," the Soho and its "houses bearing signs that advertised *Beds Let By The Hour*," Leicester Square or the Burlington Arcade. However, male prostitution, the same as homosexuality, was a muted discourse, and Waters, once more, tries to give a voice to those "deviant" elements of society ignored by history. Because of her male aspect, Nan is taken for a *renter*, and she makes use of her capacity as a male impersonator to behave like a proper male prostitute. This time is Nan who performs the male gender, dressing and behaving as a man in a Butlerian citational sense. Her services are requested in the following words: "Put your pretty arse-hole at my service- or your pretty lips, perhaps. Or simply your pretty white hand, through the slit in my breeches. Whatever, soldier, you prefer; only cease your teasing, I beg you. I'm as hard as a broom handle, and aching for a spend" (Waters 197).

At this stage of her life, she is in command of her own destiny, and she exerts agency in a similar fashion to women prostitutes, who represented a threat to Victorian notions of morality and purity connected with the feminine ideal. As such, they were invading the public sphere reserved for men and exchanging sex in return for money (Nead 106). Nan even makes fun of men's sexual gratification, showing that she does not feel aroused by male desire, ridiculing men's penises and telling her clients what they want to hear. Again, gender performance is taken to its limits and her drag acting is so good that her real sex is not betrayed at any time. Therefore, "sexual desire can be manipulated by the act of cross-dressing" and biological sex is hidden by a gendered style of dress that does not correspond with society's expectations (Neal 65).

Carriages were another scenario for both male and female prostitution, and this is the way in which Nan meets Diana Lethaby for the first time. At this stage of her lesbian existence all aspects of her identity beyond sexuality are denied (Wilson 300). In my opinion, what Waters pretends to show here is that the possibility of the objectification and commodification of the female body can be also present in a lesbian relationship. We could even go further and talk about fetishism and lack

³ For a further discussion on prostitution and its regulation through the Contagious Diseases Acts, see M.I. Romeo Ruiz, "The plots of History and the Rape of the Speculum: The Contagious Diseases Acts and the violation of women's rights." *Historia y Representación en la Cultura Global*. Eds. Carla Rodríguez González and Rubén Valdés Mirayes, Oviedo: KRK Ediciones, 2008, 103-110. Print.



of sexual agency; Diana calls Nan *my tart*, a Victorian word for prostitute. As I have stated before, prostitution means the exchange of sex for money, and, in this sense, Nan becomes a commodity at the service of Diana's wishes. According to Debra Curtis, "sexuality is produced and mediated by culturally specific historical and social processes" (95). She also states that sexual subjectivity is a process that is always on the make, which is never finished and complete, and this is what Waters wants to emphasize in the case of her lesbian characters. With Diana, Nan learns that there are other forms of lesbian desire and that there is a class hierarchy in the Victorian world of lesbians. Diana and her friends belong to a "Sapphic circle," but Nan does not become a member of that group, so her sense of otherness is intensified.⁴ Nan's desire to be admired and to arouse erotic enjoyment in her audience with her performances becomes destructive and dangerous, and connects with contemporary issues of eroticization and consent and the imbalance of power in certain lesbian relationships. Nan becomes the victim of objectification and fetishization, blurring the line between pleasure and sexual exploitation, without any possibility of exerting agency (Koolen 383-384).

Fetishism, based on the assumption that there are "natural" and "unnatural forms" of sexual desire is present in the relation between Diana and Nan, implying that there are legitimate and illegitimate objects of sexual gratification (Curtis 107). The presence of *Monsieur Dildo* in their sexual encounters which Nan describes as "a kind of harness, made of leather: belt-like, and yet not quite a belt, for though it had one wide strap with buckles on it, two narrower, shorter bands were fastened to this and they, too, were buckled." This demonstrates that there are other ways of living the lesbian experience that are not linked with love and respect for the other (Waters 241). Nan is commodified as she continues being a sex-worker because Diana obtains her theatrical and sexual services in return for material and erotic pleasures. Waters describes the sexual scenes between them with a boldness that implies that corruption and immorality are more evident in the upper-classes than in the working-class world of the music-hall; but Nan becomes dependant on Diana's sexual practices and even on hashish, which helps her to accept that she has transformed herself into a kept mistress captive in Diana's universe (Koolen 387). With her, she uses lewd words she had never pronounced before which shocked her. She also discovers that in the rosewood trunk in Diana's bedroom there are other things

⁴ Lesbian women were also called *sapphists* in the nineteenth century. Sappho was an ancient Greek poet who was born on the island of Lesbos. Sappho's poetry centres on passion and love for various personages and both genders. The word *lesbian* derives from the name of the island of her birth, Lesbos, while her name is also the origin of the word *sapphic*; neither word was applied to female homosexuality until the nineteenth century. The narrators of many of her poems speak of infatuations and love (sometimes requited, sometimes not) for various females, but descriptions of physical acts between women are few and subject to debate. Whether these poems are meant to be autobiographical is not known, although elements of other parts of Sappho's life do make appearances in her work, and it would be compatible with her style to have these intimate encounters expressed poetically, as well. Her homoeroticism should be placed in the context of the seventh century before Christ.



related to lesbian sexual practices whose existence she ignored. She finds “a collection of erotic pamphlets and novels” which proves the existence of erotic, medical and literary discourses on lesbian sexuality in the Victorian period (Palmer 73). In fact, doctors and scientists began to approach the issue of women’s same-sex desire in the last decades of the nineteenth century and the beginning of the twentieth, and defined female homosexuality as a sexual perversion or inversion; in this sense, the work of sexologists like Havelock Ellis or Richard von Krafft-Ebing was determining.

With all this, the novel pretends to demonstrate that the idealization of queer environments where there is a sense of acceptance and belonging because they defy homophobic mainstream attitudes is misleading and that exploitation and oppression can be present in these apparently tolerant spaces (Koolen 388). In fact, Nan rebels against Diana’s sexual and class power exerting agency with her for the first time when she protects the slum girl servant Zena from the upper-class Sapphic circle’s gaze and objectification. At the same time, certain beliefs held by the upper-classes in relation to working-class sexuality are made evident, which identified poor people as *the other*, this time concerning lower-class lesbian sexuality- it was thought that poor girls had bigger clitorises similar to a penis because of constant rubbing with other girls in over-crowded dwellings or places of confinement like prisons, workhouses or asylums; similar ideas circulated about black women. Here, we are witnesses to another crucial transition in the formation of Nan’s lesbian identity.

Nan develops her lesbian identity fully when she has a mature relation with Florence Banner, who is a socialist and a philanthropist that devotes her time and energy to help the people in the East End of London. Following Caroline Gonda, we move towards a lesbian theory through reflecting on personal lived experience (113). In this sense, the idea of community has a fundamental role to reach personal liberation and social progress through sexual liberation: Nan and Flo establish a lesbian relationship based on equal and open terms through which they gain agency (Kohlke 9). Nan feels for the first time that she is accepted by her peer group of toms. For this, the episode in the *Boy in the Boat* club represents a crucial moment, showing her that the lesbian gaze can also be desiring and respectful, especially in toms’ working-class communities, where lesbians are not only looked at, but can also return the gaze. In this sense, exploitation and objectification disappear.

The differences between working-class lesbian communities and upper-class Sapphic circles show that there is not just one community but that there are other ways of living the lesbian experience in egalitarian and mutual environments without the competition and hierarchy of the upper-classes (Koolen 390-391). Therefore, Waters tries to avoid relegating lesbianism to an arena outside the dominant culture, and acknowledges differences between lesbians, mainly associated with class. Nan wants to be a tom and asserts her own identity. The idea of a lesbian collectivity is not adopted in a simple or unquestionable form, but it is affirmed (Jeremiah 138-139). In this respect, and according to Judith Butler’s performative view of gender, “it is variation on repetition that constitutes agency,” and agency is always relational, hence the importance of community (Jeremiah 131). As a consequence, Nan can behave and dress like a lesbian when she is with Florence and is accepted by their community based on mutual assistance and respect for diversity and what she calls



“my people.” Nonetheless, she cannot repudiate her past experiences as part of her present persona, and those will continue to determine her future identity.

Because, in my opinion, this novel is also about finding new ways of expressing lesbian love and desire far away from the imitation of binary heterosexual stereotypes which identify sexual partners with the dichotomy subject-object that has pervaded same-sex relationships. Traditionally, desire has been defined in terms of absence or lack of the desired object by the subject in lesbian, feminist and gay studies, following Plato, Hegel Freud and Lacan; according to this tendency, “desire, like female sexuality itself, is insatiable, boundless, relentless, a gaping hole that cannot be filled or can only temporarily be filled; it suffers an inherently dependence on the object(s), a fundamental incompleteness without them” (Grosz 71). But desire has very much to do with the sexual object choice; a lesbian’s primary love interest is a woman, regardless of whether that inclination is eroticized physically. Desire is an act of yearning, of emotional and intellectual movement, of becoming, all of which are realistic elements of lesbian interaction (Engelbrecht 91-92). This is what we find in the relationship between Nan and Flo:

I stood before her, holding the steaming mugs. She had taken the towel from her head, and her hair was spread out over a bit of lace on the back of her chair, like the halo on a Flemish Madonna. I did not think that I had ever seen her hair so loose and full before [...] I looked from her hair to her face—to her lashes, to her wide pink mouth, to the line of her jaw, and the subtle weight of flesh beneath it. I looked at her hands [...] I looked at her throat. It was smooth and very white; beneath it—just visible in the spreading V at the neck of her dressing-gown—was the hint of the beginnings of a swell of a breast. (Waters 402-403)

Desire is a notion that has traditionally been understood in male and heteronormative terms, but it should also accommodate women’s and lesbian desire. What I propose, following Elizabeth Grosz’s ideas, is that desire should be considered as “an intensity, innervation, positivity or force” and understood in terms of “surfaces and interstices.” This notion follows Nietzsche, Spinoza and Deleuze in seeing desire as something primary which creates things, produces alliances and promotes interaction between things and people (Grosz 74-75). In this sense, a woman’s desire for another woman finds the drive of nature and primitiveness in Nan’s thoughts when she is contemplating the object of her love, “all the time averting my gaze from the white V of curving flesh beneath her throat, because I knew that, if I looked at it again, I would be compelled to step to her and kiss it” (Waters 403). Grosz states that there are certain elements of lesbian theory that should be omitted such as sentimentality and romanticism in lesbian relationships, heteronormative models in terms of binary or polarized models, models that give priority to genitality, and patriarchal concepts of what is moral, fair, radical or transgressive. We need to look at lesbian relations and, if possible, at all social relations in terms of “bodies, energies, movements and inscriptions” rather than in terms of “ideologies, the inculcation of ideas, the transmission of systems of belief and representation” (Grosz 77).



Through sexual encounters, lesbian bodies' surfaces are inscribed with desire, a libido which is not innate or given, but productive though not reproductive. In the same fashion, Waters's celebration of lesbian love at the end of *Tipping the Velvet* makes it different from the love which is reduced to a commodity. It is freed from social constraints as the protagonists live in a social space very different from their original backgrounds. Waters explores "the possibilities of self-development offered by love relations both in the Victorian and, by implication, in the present world" and "the transgressive quality of same-sex love makes this exploration more meaningful" (Costantini 34). Lesbian sex and eroticism is explored throughout the novel which becomes in a way a kind of lesbian manifesto.

As a way of conclusion, the analysis of this Neo-Victorian representation of deviant sexuality—lesbianism—which can be found in the novel object of discussion allows us to elucidate the Neo-Victorian project of giving power and voice to those who had been victims of sexual exploitation and violence. At the same time, the reflection in the story of the Butlerian approach to the notion of performativity echoes an outstanding feature of historical recreations of the Victorian past as a mirror in which we can see contemporary anxieties. Sarah Waters engages in an analysis of lesbianism which succeeds in giving agency to women, but simultaneously depicts a homosexual community where prostitution, racial and social discrimination, and sexual exploitation and commodification are painfully present in all discourses and walks of life. Fetishization and masochism form part of Sapphic practices despite Waters's attempts to build a positive construction of the lesbian identity, but violence is a common feature of present and past civilizations. Waters makes a joke on male desires and male sexual behaviour regarding prostitution with her lesbian protagonist assuming a gender identity that allows her to work as a renter in the Victorian metropolis. This gives her power and agency for a time, but victimisation appears soon in the horizon when she returns to the lesbian community and becomes the sexual slave of another woman. However, female sexual desire can be inscribed on bodily surfaces although it seems that the postfeminist belief in female agency and empowerment is a fallacy to a certain extent, as gender oppression and sexual violence at the service of systems of power that discriminate those who are most vulnerable still coexist with evolution and social progress.

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