Mémoires du livre
Studies in Book Culture

The Case of Self-Publishing Science Amateurs and their Quest for Authority in 18th-Century Paris: An Introduction to "Fringe Science in Print: Authority, Knowledge, and Publication, 16th -19th Century"

Marie-Claude Felton

Volume 6, numéro 1, automne 2014

Diffuser la science en marge : autorité, savoir et publication, XVIe-XIXe siècle
Fringe Science in Print: Authority, Knowledge, and Publication, 16th-19th century

URI : https://id.erudit.org/iderudit/1027687ar
DOI : https://doi.org/10.7202/1027687ar

Aller au sommaire du numéro

Éditeur(s)

Groupe de recherches et d'études sur le livre au Québec

ISSN

1920-602X (numérique)

Découvrir la revue

Citer ce document

Felton, M.-C. (2014). The Case of Self-Publishing Science Amateurs and their Quest for Authority in 18th-Century Paris: An Introduction to "Fringe Science in Print: Authority, Knowledge, and Publication, 16th -19th Century". *Mémoires du livre / Studies in Book Culture*, *6*(1). https://doi.org/10.7202/1027687ar

MÉMOIRES DU LIVRE
STUDIES IN BOOK CULTURE

THE CASE OF SELF-PUBLISHING SCIENCE AMATEURS AND THEIR QUEST FOR AUTHORITY IN 18TH-CENTURY PARIS:

An Introduction to "Fringe Science in Print: Authority, Knowledge, and Publication, 16th -19th Century"

Marie-Claude FELTON
McGill

In the early modern period, several learned societies – especially the science academies founded across Europe in the 17th century – strove to assert their authority over scientific knowledge. They assembled the best experts, promoted new discoveries, and established scientific standards. Thus, a relationship between the authorities and the dissemination of knowledge was established relatively quickly through the publications they approved. However, despite these societies' attempt at control, science was not restricted to the learned elite. Especially at the dawn of the Enlightenment, science – here understood as any form of technical and theoretical knowledge – was slowly becoming an integral part of the cultural lives of individuals with diverse interests and backgrounds. To illustrate this new fascination, one need only recall the increasing popularity of "scientific" (or "pseudo-scientific") spectacles, the interest in curiosity cabinets, and the creation of museums and other institutions open to the general public. This enthusiasm is also apparent in the sphere of writing, as indicated by the growth of books and periodicals of a scientific nature. Already by 1735, Voltaire wrote, "Poetry is no longer in fashion in Paris. Everybody is now

playing the part of a mathematician or a physicist."[1] With the rise of literacy more and more amateurs wanted to participate in the great scientific debates and publish their work. Thanks to their efforts, many "marginal" authors established a new voice and promoted their ideas to a new and broader readership.

In light of the growing scientific community within the publishing world, what role did publication play in the dissemination of scientific ideas and the establishment of new dynamics of power and authority between academic institutions, authors, and their public(s)? More specifically, how was the modern concept of "science" forged, and how has it distinguished itself over time from "fringe science," that is, any realm of knowledge considered marginal or outside of the norm set by established scientific authorities?[2] What contribution to science could individuals "at the fringe" of institutions, or of society, make, especially through print? In order to explore some aspects of these broader questions, we have assembled several papers dealing with "fringe science in print"—across continents and over the span of a few hundred years—in the hopes of contributing to the study of scientific authorship.[3] By way of introduction to these individual essays, I propose to first look at the research that inspired me to ask these questions, namely the study of authors who self-published works of a scientific nature at the end of the Old Regime in France.[4] I will then take a brief look at the various case studies here assembled and consider how the questions of authority, science, and print are present throughout the early modern period and beyond.

Science, Authority, and Print: the Case of Self-Publishing Authors in 18th-Century Paris[5]

Established in 1666 by Jean-Baptiste Colbert, the Académie Royale des Sciences held supreme authority over scientific knowledge in France during the Enlightenment. Its mission was to gather the best experts, to promote new research and discoveries, and to set scientific standards.[6] Another important function of the Académie was the dissemination of knowledge, especially through the publication of the works written by its members, and also the ones that gained the institution's coveted approval. For this purpose, the state granted the Académie an exclusive "royal printing

privilège" to be used at its discretion,[7] thus creating an important dynamic of reciprocity between the scientific authorities and the sphere of print.[8]

As the works of several historians—including Roger Hahn, Daniel Roche, and Michael Lynn—have shown, the role and presence of science in France underwent significant changes from the 17th to the 18th century.[9] Whereas the audience for scientific works was rather limited in the 17th century, France, and especially Paris, experienced a substantial growth in public interest in science-related topics during the Enlightenment.[10] Science truly became part of the general urban culture.[11] Examples of this growing enthusiasm include the success of "scientific" or "pseudo-scientific" spectacles, the multiplication of periodicals and personal "curiosity cabinets," the popularity of science curricula and classes, and the creation of museums and other institutions meant for the public.[12]

If the Académie Royale des Sciences could not meet the growing demands of the scientific community as the 18th century progressed, its prominence and exclusivity only rose in consequence.[13] To be elected to the Académie remained the ultimate acknowledgement; every aspiring savant hoped to have his work achieve public recognition through the Académie's approval and to become one of its members. However, with its prestige and limited seats, the Académie would remain a far-away dream for most. This gave rise to an array of alternative institutions devoted to specific scientific fields such as the Académie Royale de Chirurgie (1731), the Académie Royale de Médecine (1777), the Collège de Pharmacie (1777), and a variety of museums and learned societies.

Having failed in their attempts to get the Académie's endorsement, several would-be scientists attacked the institution by publishing books and pamphlets that denounced its tyranny and absolutism. In the end, factors such as the inaccessibility of the Académie (which became more and more elitist), the resulting frustration of rejected savants, and the growing public interest in science – through education, institutions, public events, and print– helped shape a new dynamic between science, authority, and the public in the 18th century. As we shall see, one key contributor to the changing role and place for science at the end of the Old Regime was the increasing power of public opinion in matters of scientific phenomena.

While studying the emergent practice of self-publishing in Paris at the end of the Old Regime,[14] I observed that many of the individuals who took part in this shift between science, authority, and the public had self-published at one time or another.[15] Several author-publishers were indeed involved in science-related developments. Examples include: the creation of new institutions, like the society founded by Court de Gébelin (which will later become the *Musée de Paris*), the emergence of public science classes given by teachers like Robert de Vaugondy, and the prevalence of debates about matters such as the squaring of the circle, new remedies, magnetism or dowsing.

Before going further, I need to specify that my definition of self-publishing is restricted to authors who: 1) owned all the rights to their work (through the purchase of a royal printing privilège), 2) paid for all publishing costs, and 3) personally sold their books from home – or as one could read on the title page, "chez l'Auteur" –, with or without the assistance of a bookseller. Self-publishing certainly played a role in the developments related to authorship, literary property, and the book trade in general, but only at the very end of the Old Regime. The reason is simple: the long-standing legislative ban pertaining to the selling of one's books was only lifted some twelve years before the Revolution with the decrees of August 30th 1777. Until then, only members of the booksellers and printers' guild had the right to sell books in the country. [16] Once writers were allowed to not only retain the rights to their works and to publish independently but, most importantly, to also keep the prospective profits by selling their books personally, many wanted to do so.[17]

In my latest study I demonstrate how self-publishing was not reserved for "outsiders," the "Rousseau des ruisseaux,"[18] nor the other neglected poor devils of the Republic of Letters; author-publishers came from all backgrounds.[19] If their socio-economic portrait was almost identical to that of other writers in the 18th century (with similar proportions of individuals coming from the aristocracy, the army, or working as teachers, secretaries, engineers, craftsmen, etc.), there are certain particularities about what they wrote. A noticeable characteristic of works that were self-published in Paris, especially during the 1770s and 1780s, was their association with technical arts and sciences.[20] Therefore, I wish to stress that we do find many kinds of self-published books about science, or what we would now call "pseudo-

science," from the ones written by well-respected men like the clockmaker Ferdinand Berthoud,[21] the agronomist Antoine Parmentier,[22] the astronomer Edme Mentelle,[23] or the geographer Jean-Baptiste Bourguignon d'Anville,[24] to the ones published by more notorious "quacks."

However, to even qualify as a "savant," an individual had to abide by specific social and cultural codes. Achieving a respectable status within the scientific community could thus represent an intricate affair for many, especially "artisans" – for example the makers of scientific instruments or remedies,[25] and those Steven Shapin referred to as the "invisible technicians"[26] – and the ones who were called "quacks," that is "who transgressed what those in the saddle defined as true, orthodox, regular, 'good' medicine."[27] In any case, whatever their social or cultural background, questions about the relationship between authority and print were central for these *hommes de savoir*, especially if they were marginalized in any way.

In my view, the fact that many "pseudo-savants" and science enthusiasts involved in scientific debates, activities, and institutions also used self-publication as a means of expression was not a mere coincidence. Understood in relation to the several shifts that occurred in the second half of the 18th century— especially the growth of public interest in science, the increasing frustration with the Académie's monopoly, prestige, and exclusivity, the multiplication of printed works related to science, the emergence of the "solitary genius" as a hero figure, and the mounting power of public opinion— the practice of self-publishing was instrumental in the new dynamic between science, print, and the public at the end of the Old Regime. It is my contention that, by self-publishing, many savants could build on new forms of authority with the public. This includes: 1) the authority they had over their text; having sole control over the publishing process, 2) the authority of the "misunderstood genius" v. the all-powerful Académie, and 3) the authority of the public itself, with whom self-publishers could establish a privileged and personal relationship.

The Authority of Print: the Dangers of Piracy

The question regarding the authority of print and its role – revolutionary or not – in the production and reception of scientific knowledge has long been

debated. In her pioneering book *The Printing Press as an Agent of Change* (1979), Elizabeth Eisenstein famously argues that the arrival of print in the 15th and 16th century was at the root of the Scientific Revolution. [28] According to her, the printing press was a revolutionary catalyst that generated an unprecedented dissemination of knowledge, and the creation of a much larger and international scientific community, especially due to the new "fixity" and availability of printed books, and the development of a "print culture." This rich topic has already generated a prolific debate.[29] For the moment, I only wish to pinpoint specific challenges to Eisenstein's broader claims, especially those pertaining to the reliability and authority of print in the early modern period. For example, Adrian Johns argues that the very process of printing was responsible for noticeable (and sometimes meaningful) variations between copies of a same edition, and that the wide distribution of pirated works undermined this notion of "fixity" and reliability, hence, the authority of print.[30]

It is true that, in the case of scientific works, the fear of piracy was very much real, at least from the authors' point of view. Naturally preoccupied with the reception of their works, authors often feared being judged based on corrupt copies that they had no control over. And these "corruptions" were not only seen in counterfeits. As David McKitterick points out, a print shop could virtually become "a house of errors,"[31] and authors often complained – justly or not – that the mistakes contained in their books mainly resulted from the printer's careless work. To that effect, Henri Decremps noted how the reader rarely "made the distinction between the mistakes that are his, and the ones made by the secretary, the copyist, the editor, the printer or the translator."[32] By being more involved in the publication process, author-publishers could highlight the fact that they personally supervised the composition and revisions of their works, and thus guarantee that the content was authentic. Taking charge of the publication venture could then mean having control over the quality and accuracy of both the text and of technical images. This is the argument Chevalier de Beaurain made when he wrote: "I doubled my efforts with pleasure and zeal, persuaded that the Book will be even more worthy of the Public's approbation. I neglected and spared nothing for the perfection of my Maps, as well as for their accuracy, and for the beauty and precision of their execution."[33]

Thanks to their increased control over the publication of their works, author-publishers could thus promote the authority of their books to the reading public. Of course, this was only true if readers bought an original and authenticated copy, from the author, and not a possible counterfeit. This was, for instance, the argument put forth by mathematician Ouvrier Delile, who warned his readers against possible pirated editions:

> Everyone will admit how essential it is, when it comes to a mathematical book whose merit rests principally in the exactitude of its calculations and in the order and arrangement of digits, not to be fooled by Counterfeiters, whose editions are always faulty, not having been revised by the Authors. To avoid surprises, there won't be any copy issued without the Author's signature.[34]

To prevent forgeries (or, at least, ensure that readers had a way to differentiate between authentic and pirated copies), several authors, like Ouvrier Delile, took precautions and signed every copy of their books. Some even went to great lengths to counteract possible counterfeits, for instance by warning readers in adverts to look for specific signs on specific pages,[35] by having each copy marked with their personal seal (for example Trottier, in his book on astronomy),[36] or even, in Decremps' unique case, by using a special "secret ink" that could not be forged by pirates.[37] Through their personal supervision over the publication process, their use of devises to authenticate their copies, and, especially, their ability to sell their books themselves from their homes, author-publishers could thus enhance the authority of their printed works.

If, as Adrian Johns suggests, a printed book could lose some of its authority in the eyes of the most wary and learned readers, who were aware of the potential corruption brought on by counterfeit or poorly published copies,[38] the "authority of print" can, nevertheless, be seen from another angle: the authority an individual gained "through" print. We are especially interested here in how the mere printed form conferred more authority upon a message and its author. Indeed, for authors whose ideas were rejected by established scientific authorities, publishing their views and complaints, especially against the Académie des Sciences, was a way of giving weight to their claims. However, for a great part of the Old Regime, publishing a work that went against the Académie was not necessarily easy. As Sabine Juratic has shown, the collaboration between the Académie and the Parisian

publishers was essential to carry out the prestigious institution's mission of disseminating and promoting the development of science.[39] Not only could the Académie give supreme authority (and validation) to a work by publishing it through its own "royal printing privilège," but, as we shall see, it could also prevent the publication of certain works. For these reasons, self-publishing provided authors who sought authority and legitimacy with an alternative and easier access to print.

Authority Through Print: The Misunderstood Genius v. the Académie

Another significant way several self-published authors tried to gain more authority consisted in publishing their complaints against the Académie des Sciences, while adopting the persona of the "misunderstood genius." The Romantic concept of the solitary genius, to which the writings of Jean-Jacques Rousseau and Denis Diderot contributed, called into question the academies' role as "agents of progress"; the genius, as an independent individual, could now become the real source of innovation.[40] It is precisely through his antagonistic position towards traditional institutions that the misunderstood genius could demonstrate his originality; as a martyr, he was a "tortured individual infused with the fever of enthusiasm that only posterity [would be] capable of appreciating."[41]

In my study of self-publishing, I came across several cases of "savants" who explicitly sought public support through the works they published themselves, and especially by means of their deliberate attacks on the academies.[42] By highlighting their marginality through print, these "fringe savants" would thus embody this "solitary hero" up against the all-powerful (and perhaps deceitful) authorities. This was the case of Louis Maupin, who was unsuccessful in having his invention in agronomy officially approved by the Académie,[43] and also of Guillaume Le Roberger de Vausenville, who strived for many years to have his achievements in geometry recognized by the Académie and to be awarded the coveted prize of 150 000 livres, promised to whomever would solve the famous problem of the squaring of the circle.[44] Despite his efforts however, as Le Roberger explained in a book he later self-published, the academicians not only refused to grant him the award, but, through their control of censorship – several censors were also members of the Académie – they also prevented him from publishing his work for many years.[45] By bitterly complaining about his mistreatment to

the public, Le Roberger clearly challenged the authority of the royal institution. In an address to its members, he wrote:

> Is it by oppression and tyranny that you pretend to assist in the progress of human knowledge? Tell me, please, are you the Legislator? Do you possess the authority to enslave genius to your whims, by making reason bend to your opinions? […] What right have you to intellectual knowledge over anyone else?[46]

Among the savants "at the fringe" who lashed out at the Académie we also find Gabriel Antoine De Lorthe, who claimed he had discovered a new geometric principal in the book he self-published in 1782.[47] Aware that his theories might not be well-received, he asked that his book be read carefully and in its entirety "before, as he put it, you see me as crazy or foolhardy."[48] However, as he feared, his mathematical proof did not convince the academicians. Exemplifying the "solitary hero" in a new edition he published three years later, De Lorthe wrote about the many hardships he had faced in order to "thwart the plot" against him. He also explained how he stood up to his family who "knew that the responses [he] obtained from the various academies were not to [his] advantage, not to him, nor to his work."[49] In response, the frustrated mathematician did not spare the members of the Académie, calling them "vicious and dangerous", "tyrants who only seek to make slaves and find victims", and who form a great "Tribunal of Despots." He wrote: "They have slandered and ridiculed me […] so that the Public would see me as crazy and ignorant."[50] Along the same lines, physician Godernaux declared that he had published his treatises in order to demonstrate the effectiveness of his remedies and to fight "[…] the force of prejudice against the discoveries that are most useful to humanity […], the intrigues, the combined efforts of jealous men and the multitude of enemies […] that must be crushed in order for truth to triumph over falsehood, and for the public good to triumph over individual selfishness."[51]

These few examples illustrate how it is through the rhetoric of the "misunderstood genius," and in a context where public opinion grew in importance, that we can understand why these scorned savants chose to publicize their failures to gain the Académie's recognition, especially in such an unflattering way. The most extreme case I have encountered is that of Pierre-Joseph Buc'hoz, who self-published a myriad of pamphlets[52] in order

to denounce the horrible treatment he had received from academicians who had the audacity, among other things, to declare in newsprint that he had died due to "excessive work,"[53] and to rename a parasitic plant, the "Buchosia foetida," after him. This self-proclaimed "vrai homme de douleurs" wrote: "in the sciences, all is reduced to aristocracy: the academies, the colleges, the societies and even the clubs of today are nothing but aristocratic. Among the doctors, the botanists, the naturalists we only find jealousy, envy, and usurped power by those who crush their kind and stifle the coming germs of arts and sciences […]."[54] Depicting himself as the misunderstood martyr, he wrote at the end of his life:

> I have spent more than twenty years on the making of this work, which is left unfinished; during this period of time, I have suffered all kinds of pains and woes from the revolutions in France and also from the hatred and jealousy of the scientists, academies, and by the secret plots of the booksellers, forever the sworn enemies of living authors; I have nonetheless sacrificed my fortune for the publication of this work […].[55]

Authority Through the Public of Readers

Even if the *Académiciens* would not grant him the recognition he desperately wanted, Buc'hoz could find some consolation in the fact that his many publications reached a wide public of readers, and were even translated into English and German during his lifetime.[56] In fact, this author-reader relation is linked to the last point I would like to stress: how self-publishing captured the changing dynamic between science and the public, especially in two ways. First, through the direct interactions authors had with their readers, who came to them personally to buy their books, and second, in the way many author-publishers rested the validity of their claims – often considered marginal – in the new authoritative power of the public.[57]

As I have mentioned earlier, the Académie had been, for a long time, the sole judge in regards to scientific matter – thus contributing to the establishment of what Thomas Kuhn called "normal science."[58] However, with the growing popular interest in science, public opinion could become an alternative source of legitimacy and authority. As Michael Lynn has shown, the 18th century saw an increase in public involvement in scientific debates, —particularly in anything "spectacular"—an enthusiasm the

Académie des Sciences strived to contain in order to maintain control over what was deemed legitimate.[59] The Académie's role in the evaluation and judgment of the divining rod and of mesmerism are famous examples of the institution's efforts to uphold its leadership.[60] If public opinion was something the Académie was forced to negotiate (and sometimes counteract), it could in turn become an alternative source of authority for savants rejected by the Académie.

The crucial interaction between writers and their public is particularly evident in the case of self-publishing. First of all, such authors sold their books directly from their homes, making it possible for them to establish a very personal and direct relationship with their readers. This type of interaction also afforded authors the possibility of asking for direct feedback – more easily we presume than other writers – and then using favorable testimonies to prove the validity of their claims, as well as to demonstrate the support they received from the public. This is how Le Rouge proceeded, for instance, in his medical treatise on hernias.[61] There are many ways in which personal relationships between author-publishers and their readers were developed: through the in-house sale of books, the encouragement of correspondence (for readers who sought more information, for example), public classes (such as Robert Le Vaugondys' course on mathematics),[62] and even personal assistance (botanist Robert-Xavier Mallet, for instance, offered to help his readers make their own "châssis physique" as described in his book).[63]

The involvement of the public thus became essential for several authors, especially those marginalized by scientific authorities. Among the would-be scientists scorned by the academies, I also came across Dorez,[64] whose cure for breast cancer was deemed even more harmful than the disease itself, and Gardanne Duport, who developed a remedy for venereal diseases. Facing heavy criticism, Duport explained that he had published his treatise in order to :

> […] shut the mouths of the people who, because of mean jealousy or an even more shameful motive of self-interest, discredit the method I use […]. I look only to impartial judges and educated people; their approbation will be the best response against these vile detractors, these lazy hornets who profit from the work of

> industrious bees and seek to destroy the source from which they draw.[65]

Yet getting readers involved was not necessarily an easy feat. D'Acher, the author of a medical book, wrote:

> When a physicist, a chemist or a mathematician announces a new discovery that challenges the established opinions, we as soon see the multiplication of pamphlets. We quarrel, we dispute, we call each other visionary and ignorant; but these quarrels are only found among the learned, and the Public seldom take any part in it.[66]

Evidently d'Acher hoped his publication would encourage readers' involvement in public debates, and thus garner their support for his ideas. With the possibility of a book generating hundreds of supporters, authors "at the fringe" could hope to make their mark outside of the academic sphere. In the words of Carpentier, who wrote in favour of breastfeeding, which was an especially contentious topic[67]: "There are ten of you who wish that I am wrong, but ten thousand who wish that I am right […]. Do you still disapprove of my ideas and say they are false? So be it! Don't read me!"[68]

An Introduction to "Fringe Science in Print": Authority, Knowledge, and Publication, 16th -19th Century

The study of self-publishing offers an interesting historical perspective that highlights some of the shifts characterizing the cultural and social place of science in Paris at the end of the Old Regime. Indeed, with their newfound right to self-publish, many writers, especially "would-be scientists," made themselves known, and established a privileged relationship with a reading public that accorded them a new form of authority. By exploring different aspects of "fringe science in print," this issue brings forth the long-standing and diverse role of the "margin" – be it social, institutional, literary or epistemological – in the establishment of scientific authority, and especially through the agency of print.

Between Savants and Amateurs

The growing public interest in science that occurred in the 18th century depended largely on the production and dissemination of printed works. The way these works were written, and for whom, posed a number of questions regarding the authority of print and who it should actually involve. Should "scientific knowledge" be reserved for the elite and those who worked in established university faculties and academies? Was there, or should there be, a larger public engaged in scientific inquiry, a public found at the margins of the traditional milieu of higher knowledge? These questions are, in many ways, still very much alive today, for example in the dichotomy between established (and expensive) journals such as *Nature*, which is mostly only accessible to highly trained academics, and a variety of affordable and popular magazines meant to make science more accessible to a non-specialist audience.

Throughout this issue, we will see how the intended audience of a scientific work played a significant role in the establishment of authority. In fact, the question of the accessibility of science through print has been the subject of debates since as early as the 16th century. This is what Anne Réach-Ngô illustrates in "Ni savants, ni populaires : la stratégie éditoriale des 'Trésors de médecine' à la Renaissance," in which she studies the editorial choices behind the publication of compilations called *Trésors*. Purposely written in the French vernacular, these anthologies were meant to make medical works accessible to a larger public of readers, but also to legitimate a genre that could be situated at the intersection, and thus at the margin, of both traditional academic writing and popular or commonplace books. Editorial choices bore meaning. After all, it was no accident that Newton chose to publish his *Principia Mathematica* (1687) in Latin while using a particularly unintelligible style.[69] Publishing strategies often determined who had access to what knowledge, and who could engage in the resulting discourse. In the case of the *Trésors*, Réach-Ngô demonstrates how editorial choices could highlight the divide, as well as the blurry line, that distinguished theoretical from practical knowledge, and also emphasize the will to legitimate works of medicine published in the vernacular.

Fringe Science and Fringe Practice

Shortly after they were founded, institutions such as the Académie Royale des Sciences sought to denounce practices that they considered either dangerous, false, or both. One notorious example of a suspicious "fringe science" was alchemy, which in the early modern period still attracted esteemed men of science, while being increasingly relegated to the sphere of superstition. Indeed, at least until the mid-17th century, alchemical arguments still had some influence over modern scientific discourse, even in the writings of the famous "father of chemistry," Robert Boyle.[70] At the start of the 18th century, the fact that the most celebrated man of science and the president of the Royal Society, Sir Isaac Newton, was also deeply invested in alchemy[71] necessarily poses the question of the status of this "science" and its practitioners.

In her paper "La littérature alchimique (1550-1715): écriture et savoir à la marge?," Véronique Adam studies how French alchemists were both celebrated and marginalized in the 16th and 17th centuries, and how they themselves used their published works in order to legitimate their exclusive and secretive knowledge. As she explains, while alchemists sought the cultural and social legitimation of their practice and knowledge, they also used a variety of auctorial devises – such as the deliberate use of pseudonyms and forms of coded texts – which were also meant to marginalize their own writings. In so doing, alchemists wished to protect themselves against the authorities, who increasingly condemned their practice, and also to add mystery to their science, which was reserved for a few chosen sages. In this context, explains Adams, there was a perpetual tension between the imposed marginality of alchemists, and the one they themselves harnessed in their quest for authority.

With the rise of literacy and the increasing access to print, many authors considered as "marginal" developed a new voice and were able to promote their ideas to a broader readership. But what could make a particular savant qualify as an "outsider?" As was the case with alchemists, social and institutional affiliations often determined what gave – or denied – someone authority. Gender was of course another major factor. As several historians have demonstrated, women, despite their marginal position within the learned spheres, played their part in the development of science and the

practice of technical and medical knowledge in the early modern period.[72] Famous examples of women who were able to exert authority in the realm of science, especially through their publications, include Émilie du Châtelet in France[73] and Laura Bassi in Italy.[74]

The subject of gender and scientific authority is explored here by Margaret Carlyle, who studies female practitioners of medicine in 18th-century Paris. More specifically, Carlyle's paper focuses on women's role within the marketplace as producers of medical goods and services, and how this form of "fringe" practice allowed these women to exert their authority outside of, but also in interaction with, learned medicine. How did they use print to establish authority? And, how did they interact with "official" authorities? As Carlyle demonstrates, female practitioners were able to reinforce their authority and expertise through their use of print, especially by means of advertising in newspapers, handbills, medical gazettes, and also portable dictionaries. "By bringing their practice to print," she writes, "enterprising women succeeding in staking out their claim to expertise in a growing and increasingly consumerist, legislated, and policed medical milieu, where the boundaries between 'expert' and 'amateur' knowledge traditions were becoming increasingly blurred."

Authority and the Authorities

As we have seen in the case of author-publishers in Paris, the early modern period was characterised by the increasing importance of old and new institutions of authority in the realm of knowledge. In this context, the opposition between individual savants and established institutions was to be expected. Many would ask what could really justify the academies' supreme authority? And, over what exactly did these institutions have authority? These are also the types of questions asked by Charles Sorel, particularly in his *Science universelle* (1634-1644). As Marie-Florence Sguaitamatti demonstrates, Sorel used several strategies of legitimation for his redefinition of what constituted "scientific" knowledge, and the methods it should use. He also placed a special emphasis on the ways science should be written and disseminated, especially promoting the genre of the encyclopaedia. It is by means of this discourse that Sorel sought to position himself and his views outside of the authority of the Académie Française.

In the study of the relationship that linked science, authority, and "the margin," the confrontation between institutions (such as academies and universities) and the individuals to whom their doors would always remain shut seems obvious. On the other side, however, institutional affiliation did not necessarily guarantee an individual authority; many savants would also need to forge their expertise and influence "from within" these institutions, especially through the agency of print. For instance, if Linnaeus's authority was well established in the field of botany by the second half of the 18th century, it was the result of many years' work. Indeed, as Sandra Moreau explains, when the Swedish natural philosopher, already based at Uppsala University, unveiled his system of classification in *Fundamenta botanica* (1736) it did not immediately gain universal favour. But how did Linnaeus eventually secure his reputation and enforce his new system of taxonomy? Moreover, how did his published system reach not only the well-established academicians and professors, but also a wider public of amateurs? With an analysis centered on his later book *Philosophia botanica* (1751), Moreau explores how Linnaeus forged his authority by framing his innovative system in continuity with his predecessors – thus favoring a positive reception from his peers – and by reaching out to a broader readership of amateurs.

Claudio Grimaldi also shows in his paper how even a well-respected member of the prestigious Académie Royale des Sciences could be in need of strategies to establish the authority of his theories in print. This was the case of Pierre-Simon de Laplace, now known as the "French Newton," who felt he had to justify the legitimacy of his essay on the "science of probability," and also to defend the "accessible" genre he adopted. Yet, the fact that Laplace used his social and institutional status to give weight to his theories, however marginalized they may have been, only demonstrates, once again, the authoritative power of established institutions, especially in relation to print culture.

The Authority of Print, and of Literary Genre

It can be argued that print brought its own forms of validation, but many factors could also either enhance or undermine its authority. In her analysis of Paul Philippe Gudin de La Brenellerie's efforts to finance a second more luxurious edition of his *Poème sur l'Astronomie* (1801), Chantal Grenier brings

forth the question of literary genre and the kind of reception it could generate. Written in the poetic form, Gudin's scientific work did not get much attention when first published since "didactic poetry" was no longer in fashion at that time. Indeed, by the beginning of the 19th century, literary and scientific genres were seen as two distinct spheres. If his *Poème sur l'Astronomie* was somewhat marginalized because of its genre, Gudin could nevertheless use his social network, especially his connections to members of scientific academies, to spark interest in his work. Through other forms of authority – both social and institutional – his writings could thus gain their own respectability.

Literary genre and public reception are also at the core of Elisabeth Plas' study of Alphonse Toussenel's works on zoology. If many authors such as Buc'hoz bitterly suffered from their position as "outsiders," as we saw earlier, Toussenel wanted, on the contrary, to promote the marginality of his work. For instance, Toussenel was proud to say, in his *Esprit des bêtes* (1847) and *Le Monde des oiseaux* (1853), that his "analogical" and "passionate" methods were certainly not taught at the Sorbonne! Moreover, the fact that he changed his editorial style for a later edition of his work, in which he adopted a more literary narrative with many illustrations, speaks to the impact of genre and its reception at the time. As Plas explains, these new editorial tactics bettered Toussenel's reputation, if only as a poet in the eyes of naturalist Jules Michelet, and as a naturalist according to poet Charles Baudelaire.

Authority, Science, and Print at the End of the 19th Century

The tensions that already existed in the 18th century between what we could call "professional science" and what was considered "amateurism"[75] only became greater as the 19th century progressed. That is not to say that amateurs were completely excluded from scientific organizations. Their presence could nevertheless be at the source of increasing conflicts regarding the authoritative function of these institutions and the expected involvement of their members. This was particularly the case for societies that accepted members from the public at large, such as the Société Royale de Botanique de Belgique, studied here by Denis Diagre. Founded in 1862 as a "democratic" society, it was originally envisioned as a social space dedicated to the bourgeois and educated elite interested in botany, and

where amateurs could promote their contributions to the field. As such, the society was first established at the fringe of the official group of national botanists composed of university professors and members of the Académie Royale de Belgique. However, developments such as the professionalization of botany, as well as the marginalization of amateurism within the Société, gave rise to tensions around this institution's vocation. As Diagre demonstrates, these conflicts are especially apparent in the publication of their *Bulletin,* in which the place of essays written by the scientific elite versus those written by amateurs – who were needed for their financial support of the society – was the object of increasing debate. By studying the Société's *Bulletin* from 1862 to 1875, Diagre shows how personal ambitions and the will to increase the scientific standards of the publication were at odds with the original mission of this organization, which was to be an open and accessible space for the learned public. This case study demonstrates how matters regarding the authority of print and what constituted "real" and "amateur" science still continued to pose a number of challenges up until the end of the 19th century.

If the line between science and superstition was blurred in the 17th and 18th centuries – for example in the case of alchemy, dowsing, or magnetism – this delimitation became clearer as time progressed. In the last essay of this issue, we are transported to the very end of the 19th century, and across the ocean, to explore the increasing clash between "hard science" and what was considered "pseudo-science." At that time, efforts were still being made in order to legitimate marginalized fields of knowledge, especially through the authority of print. Were fringe sciences such as hypnotism, telepathy, and clairvoyance to be dismissed? Or, were they the truly groundbreaking fields? These are some of the questions posed in the 1890s by Benjamin O. Flower, an American who not only used fringe sciences to demonstrate the practicality of nonconformist reforms, such as women's suffrage, but also to bring forth the contribution of those marginalized forms of knowledge and their practitioners via the magazine he edited. As Jean-Louis Marin-Lamellet demonstrates, Flower publicized the works of several authors, thus forming an alternative "community of inquiry" meant to push the boundaries of knowledge, and to rehabilitate subjects that were considered to be mere superstitions. To reiterate a question asked by the scorned self-published authors of the 18th century: who really had the authority to marginalize specific spheres of knowledge by deciding what was true or not? Flower

argued that it was above all politics and economic matters that interfered with the true epistemological debate.

Finally, thanks to the following essays, which will take us across time and space, we will be able to appreciate both the evolution and the continuity of the intricate dynamics of scientific authority during the early modern period and beyond. These essays will especially highlight the dichotomy between what was considered "official and authoritative" – either in regards to social status, institutional affiliation, literary genre, or epistemology – and "at the fringe and marginal."

Notes

[1] "Les vers ne sont plus guère à la mode à Paris. Tout le monde commence à faire le géomètre et le physicien," *Œuvres complètes de Voltaire*, t.11, Paris, Firmin Didot Frères, 1861, p. 134; Lettre de Voltaire à Cideville, 16 avril 1735. I would like to thank Professor Marc André Fortin and Valerie Silva for their precious help with linguistic revisions.

[2] Based on the definition of "Fringe" as found in the Oxford dictionary: "The outer, marginal, or extreme part of an area, group, or sphere of activity," http://www.oxforddictionaries.com/definition/english/fringe.

[3] See for example: Adrian Johns, "The Uses of Print in the History of Science," *PBSA* 107, 4 (2013), p. 393-420; Rima D. Apple, Gregory J. Downey and Stephen L. Vaughn, eds. *Science in Print : Essays on the History of Science and the Culture of Print,* Madison, WI, University of Wisconsin Press, 2012; Steven Shapin, *Never Pure: Historical Studies of Science as if it was Produced by People with Bodies, Situated in Time, Space, Culture, and Society, and Struggling for Credibility and Authority*, Baltimore, MD, Johns Hopkins University Press, 2010; Mario Biagioli, Peter Galison, *Scientific Authorship. Credit and Intellectual Property in Science*, New York and London, Routledge, 2003; Marina Frasca-Spada and Nick Jardine, eds. *Books and the Sciences in History*, Cambridge, Cambridge University Press, 2000.

[4] My overview on the subject of science, authority, and print is in part indebted to the symposium "What is a Scientific Author? Cultures of Scientific Publishing" I had the chance to co-organize with professors Ann Blair and Alex Csiszar at Harvard University on May 10th 2013. I wish to thank my generous co-organizers, our guest commentator professor Elizabeth Eisenstein, and all the participants for their brilliant and useful insights on the subject. I also wish to thank the Banting Fellowship of Canada for its generous support, and the Fonds de recherche du Québec – Société et culture for making this research possible.

[5] The basis of my argumentation was first presented at the Society for French Historical Studies conference on April 7th 2013, in a paper entitled "The Savant and his Public: Self-Publishing Amateurs and their Quest for Authority in 18th-Century Paris." I wish to thank my co-panellists Alex Csiszar and Mi Gyung Kim, our chair Ann Blair, and our commentator J.B. Shank for their generous feedback.

[6] See especially "Ch. 3 Integration into the Old Regime," Roger Hahn*, The Anatomy of a Scientific Institution, The Paris Académie of Sciences, 1666-1803*, Berkeley, Los Angeles, Londres, 1971, p. 58-83.

[7] The Académie had the prerogative to publish anything they approved without having to obtain certificates of censorship; Hahn, *The Anatomy*, *op. cit.*, p. 60.

[8] The *Journal des Savants*, published since 1665, also represented an important outlet for the academicians.

[9] For example: Hahn, *The Anatomy*, *op. cit.*; Daniel Roche, "Sciences et pouvoirs dans la France du XVIIIe siècle (1666-1803)", *Annales. Histoire, Sciences Sociales*, 29e année, no 3 (Mai-Juin, 1974), p. 738-748; Michael Lynn, *Popular Science and Public Opinion in Eighteenth-Century France,* Manchester, Manchester University Press, 2006.

[10] Hahn, "Ch. 4 The Growth of Science," *The Anatomy*, *op. cit.*, p. 84-115.

[11] Bruno Belhoste, *Paris Savant. Parcours et rencontres au temps des Lumières*, Paris, Armard Colin, 2001.

[12] See for example: Simon Schaffer, "Natural Philosophy and Public Spectacle in the Eighteenth Century," *History of Science* 21, no 1 (1983), p. 1-43; Michal Lynn, "Enlightenment in the Public Sphere: The Musée de Monsieur and Scientific Culture in Late-Eighteenth-Century Paris," *Eighteenth-Century Studies*, Vol. 32, No 4, (Summer, 1999), p. 463-476.

[13] Hahn, *The Anatomy*, *op. cit.*, p. 108.

[14] Marie-Claude Felton, *Maîtres de leurs Ouvrages : l'Édition à compte d'auteur à Paris au XVIIIe siècle,* Preface by Roger Chartier, Oxford University Studies in the Enlightenment, Oxford, Voltaire Foundation, 2014. I wish to point out that even though my present argumentation is the result of new analysis, several of the cases here presented can also be found in the book.

[15] Sabine Juratic already pointed out the noticeable proportion of self-published science books: "Publier les sciences au 18e siècle : la librairie parisienne et la diffusion des savoirs scientifiques", *Dix-huitième siècle*, 40 (2008), p. 304.

[16] In France, several bookselling codes issued in the 17th and the 18th centuries stipulated that only members of the guild of booksellers and printers could own and use printing presses and engage in book commerce. Although writers could own the rights to their works and pay to have them printed since the 16th century, only the decrees of 1777 finally allowed authors to also sell their own books, thus making the practice of self-publishing

viable. Article 5 stipulated that: "Every author who obtains a *Privilège* in his name for his book, will have the right to sell it at his home […] and will enjoy his *Privilège* for himself and his heirs for ever", *Arrêt du conseil portant règlement sur la durée des privilèges en librairie, Versailles, 30 août 1777* (No 755), Journad, Isambert, Decrusy, eds. *Recueil général des anciennes lois françaises depuis l'an 420 jusqu'à la Révolution de 1789*, t. 26, Paris, Belin-Leprieur, 1826, p. 110. Also see Felton, *Maîtres de leurs ouvrages*, *op. cit.*, p. 17-54. Please note that all translations are my own, unless otherwise indicated.

[17] I have found close to 450 authors who self-published at least one book between 1750 and 1791 in Paris. See also Marie-Claude Felton, "The Enlightenment and the Modernization of Authorship: the Case of Self-Publishing Authors in Paris (1750-1791)," *The Papers of the Bibliographical Society of America*, 105: 4, December 2011, p. 439-67.

[18] Robert Darnton, *Bohème littéraire et révolution: le monde des livres au XVIIIe siècle*, Paris, Gallimard: Le Seuil, 1983, p. 7-43.

[19] Felton, *Maîtres de leurs ouvrages*, *op. cit.*, p. 61-78.

[20] *Ibid.*, p. 56-60; Marie-Claude Felton, "When Authors Made Books: A First Look at the Content and Form of Self-Published Books in Paris (1750-1791)," *European Review of History: Revue européenne d'histoire*, 17:2, p. 246.

[21] Ferdinand Berthoud, *L'Art de conduire et de régler les pendules et les montres*, Paris, l'auteur, 1759.

[22] Antoine Parmentier, *Recherches sur les végétaux nourrissans qui dans tous les temps de disette peuvent remplacer les alimens ordinaires, par M. Parmentier*, Paris, l'auteur, 1781.

[23] For example : Edme Mentelle, *Cosmographie élémentaire, divisée en parties astronomique et géographique. Ouvrage dans lequel on a tâché de mettre les vérités les plus intéressantes de la physique céleste à la porté de ceux même qui n'ont aucune notion de mathématiques*, Paris, l'auteur, 1781.

[24] Jean-Baptiste Bourguignon d'Anville, *Mémoire de M. d'Anville, sur la Chine*, Pékin et Paris, l'auteur, 1776.

[25] Myles W. Jackson, "Can Artisans be Scientific Authors? The Unique Case of Fraunhofer's Artisanal Optics and the German Republic of Letters," in *Scientific Authorship*, *op. cit.*, p. 114.

[26] Steven Shapin, "Ch. 8: Invisible Technicians: Masters, Servants, and the Making of Experimental Knowledge," in *A Social History of Truth: Civility and Science in Seventeenth-Century England*, Chicago, University of Chicago Press, 1994, p. 355-407.

[27] Roy Porter, *Health for Sale: Quackery in England, 1660-1850*, Manchester, Manchester University Press, 1989, p. vi-vii.

[28] Elizabeth L. Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early Mordern Europe*, 2 vols, Cambridge et New York, Cambridge University Press, 1979.

[29] See for example: Anthony T. Grafton, "The Importance of Being Printed. The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe by Elizabeth L. Eisenstein," *The Journal of Interdisciplinary History*, Vol. 11, No 2 (Autumn, 1980), p. 265-286; Roger Chartier, ed. *Les usages de l'imprimé*, Paris, Fayard, 1987; Marina Frasca-Spada and Nick Jardine, eds. *Books and the Sciences in History*, Cambridge and New York, Cambridge University Press, 2000; Adrian Johns, "How to Acknowledge a Revolution," *The American Historical Review*, Vol. 107, No 1 (February 2002), p. 106-125; Elizabeth L. Eisenstein, "Afterword: Revisiting the Printing Revolution," *The Printing Revolution in Early Modern Europe*, 2nd ed., Cambridge, Cambridge University Press, 2005, p. 313-358.

[30] Adrian Johns, *The Nature of the Book. Print and Knowledge in the Making*, Chicago, London, University of Chicago Press, 1998, (esp. p. 5; 30-33; 58-186).

[31] David McKitterick, Chapter 4 "A House of Errors," in *Print, Manuscript and the Search for Order, 1450-1830*, Cambridge, Cambridge University Press, 2003, p. 97-138.

[32] Henri Decremps, *Testament de Jérôme Sharp, professeur de physique amusante*, Paris, l'auteur, 1786, p. xviii; also cited in Felton, "The Enlightenment," *loc. cit.*, p. 456.

[33] "J'ai redoublé d'efforts, & je m'y suis livré avec plaisir & avec zèle, persuadé que l'Ouvrage en sera plus digne des suffrages Publics. Je n'ai rien négligé ni épargné pour la perfection de mes Cartes, tant en ce qui concerne l'exactitude, que pour la beauté & la netteté de l'exécution, & j'espère que le Public en sera content," Chevalier de Beaurain, *Histoire de la Campagne de M. Le Prince de Condé*, Paris, l'auteur, 1774, p. iii.

[34] "Il n'est personne qui ne sente combien il est essentiel, à l'égard d'un Livre de calcul, dont un des principaux mérites consiste dans l'exactitude des opérations & dans l'ordre et l'arrangement des chiffres, de ne pas être trompé par des Contrefacteurs, dont les Editions sont toujours fautives, n'ayant point été revues par les Auteurs. Pour éviter les surprises, il ne sera point délivré d'exemplaire qui ne soit signé de l'Auteur," Ouvrier Delile, *L'Arithmétique méthodique et démontrée, Appliquée au Commerce, à la Banque et à la Finance, avec un traité complet des changes étrangers (....) Quatrième édition, corrigée et considérablement augmentée par l'Auteur*, Paris, l'auteur, 1787, verso de la page de titre.

[35] De Contramont, *Explication des Tarifs du contrôle des actes et de l'insinuation*, Paris, l'auteur, 1780.

[36] René Trottier, *Découverte des principes de l'astronomie … Avec démonstration de l'absurdité de tous les systêmes astronomiques, publiés & enseignés jusqu'à présent*, Paris, l'auteur, 1784, p. 8.

[37] Henri Decremps wrote: "Counterfeiters that will even want to forge my signature will unerringly face the buyers' rebuke and will never be able to fool us since, on top of the visible signature written with ordinary ink on the last page, there is a second one written with a special ink [encre sympathique] newly invented, which can only become black and visible through a secret process." Henri Decremps, *La Magie blanche dévoilée, ou explication des tours surprenants*, Paris, l'auteur, 1784, p. i-ii.

[38] Johns, *The Nature of the Book*, *op. cit.*, p. 30-33; also see his recent and more comprehensive study: Adrian Johns, *Piracy. The Intellectual Property wars from Gutenberg to*

Gates, Chicago and London, The University of Chicago Press, 2009, esp. Ch. 2 and 3, p. 17-56.

[39] Juratic, "Publier les sciences au 18e siècle", *loc. cit.*, p. 301-313.

[40] Hahn, *The Anatomy*, *op. cit.*, p. 139-140 ; Roche, "Sciences et pouvoirs", *loc. cit.*, p. 743.

[41] Hahn, *The Anatomy*, *op. cit.*, p. 140.

[42] Several of the following examples were first presented in my paper "When Authors Made Books: A First Look at the Content and Form of Self-Published Books in Paris (1750-1791)", *loc. cit.*, p. 246-248, and in Felton, *Maîtres de leurs ouvrages*, op. cit., p. 91-100.

[43] See Hahn, *The Anatomy*, *op. cit.*, p. 147-149. Maupin's self-published works include : *Suite et conséquence de "Mon apologie" ou de mon essai sur les obligations réciproques des talents, de la société et de ses membres, avec une lettre sur la plantation ou le rétablissement de la vigne en Angleterre,* Paris, l'auteur, 1785; *Suite et grand succès de mon expérience à Belleville contenant mes adieux aux pays de vignoble, et en conséquence la réduction du prix de mes ouvrages sur la vigne, les vins et les terres*, Paris, l'auteur, 1785; *Projet patriotique sur la vigne, les vins rouges, les vins blancs et les cidres*, Paris, l'auteur, 1787.

[44] Hahn, *The Anatomy*, *op. cit.*, p. 145-147.

[45] Le Roberger, *Supplément à l'Ouvrage intitulé: Essai physico-géométrique*, Paris, l'auteur, 1779, p. 11.

[46] Le Roberger, *Essai*, p. 164, quoted in English in Hahn, *The Anatomy*, *op. cit.*, p. 146-147.

[47] Gabriel Antoine De Lorthe, *Mélange d'Opuscules-mathématiques, ou Nouvelle vue sur la proportion du Costé d'un quarré parfait, avec sa diagonale,* Paris, l'auteur, 1782.

[48] Gabriel Antoine De Lorthe, *Mélange d'Opuscules-mathématiques, ou Nouvelle vue sur la proportion du Costé d'un quarré parfait, avec sa diagonale,* Paris, l'auteur, 1782, p. [2].

[49] Gabriel Antoine De Lorthe, *Mélange d'Opuscules mathématiques,* Paris, l'auteur, 1785, p. 54.

[50] Gabriel Antoine De Lorthe, *Mélanges d'Opuscules mathématiques*, Paris, l'auteur, 1785, p. 4-9.

[51] Godernaux, *Abrégé des pièces justificatives de plusieurs épreuves faites en France, en Angleterre, à Liège, en Pologne &c. &c. des poudres de M. Godernaux*, Paris, l'auteur, 1790, p. iv.

[52]For example: Pierre-Joseph Buc'hoz, *Disseration sur l'aristocratie botanique, et sur celle des différentes incorporations, principalement des savans, des médecins et des gens de lettres, &c. Pour servir de suite à celle sur les travaux immenses de l'auteur & sur ses anecdotes*, Paris, Buc'hoz, s.d.; *Dissertation sur les travaux immenses de M. Buc'Hoz, Médecin, sur le peu de récompenses qu'il en a reçu. & sur les avantages qui en ont résulté à ses ennemis,* Paris, Buc'hoz, s.d*; Dissertation sur les différentes anecdotes de M. Buc'Hoz qui en ont fait un vrai homme de douleurs,* Paris, Buc'hoz, s.d.

[53] *L'Avantcoureur*, no 1, Paris, Panckoucke, 1765, Letter of La Chapelle, 15 December 1764, p. 9. The author made sure to rectify the faulty information in a subsequent issue (*L'Avantcoureur*, no. 4, 1965, p. 51-53). In fact, Buc'hoz was often ridiculed for his unbelievable productivity, having published more than 300 volumes in a couple of decades.

[54] Buc'hoz, *Dissertation sur l'aristocratie botanique*, *op. cit*., p. 8.

[55] Buc'hoz, *Dissertation… un vrai homme de douleurs*, *op. cit*., p. 11.

[56] Johann A. E. Goeze translated several of his works into German, for example: Buc'hoz, *Sammlung auserlesener Briefe zur Erhaltung der Gesundheit und durch den Bau und die Erziehung der Gewächse sich in kurzer Zeit zu bereichern*, Nürnberg, Schwarzkopf, 1773; Buc'hoz, *Geschichte einiger schädlichen Insekten, nebst den besten Mitteln gegen dieselben*, Leipzig, 1787; Buc'hoz, *Geschichte einiger, den Menschen, Thieren, Oekonomie und Gärtnerey schädlichen Insekten: nebst den besten Mitteln gegen dieselben*, Leipzig, Weidmanns Erbens & Reich, 1787. English translations include: Buc'hoz, *The Frugal House-Keeper*, London, 1778; *The Toilet of Flora*, London, Printed for W. Nicoll, 1772.

[57] About the rise of public opinion, see for example: Jürgen Habermas, *The Structural Transformation of the Public Sphere: An Inquiry Into a Category of Bourgeois Society*, trad. Thomas Burger, Cambridge (MA), MIT Press, [1962] 1991; Keith Michael Baker, "Ch. 8 Public Opinion as Political Invention," in *Inventing the French Revolution, Essays on French Political Culture in the Eighteenth Century*, Cambridge, Cambridge University Press, 1990, p. 167-199; Arlette Farge*, Dire et mal dire : l'opinion publique au XVIIIe siècle*, Paris, Seuil, 1992.

[58] Thomas S. Kuhn, *The Structure of Scientific Revolutions*, Chicago, University of Chicago Press, 1962.

[59] Lynn, *Popular science, op. cit.*

[60] Michael R. Lynn, "Divining the Enlightenment: Public Opinion and Popular Science in Old Regime France," *Isis*, vol. 92, No 1 (March 2001), p. 34-54; Jessica Riskin, "The Mesmerism Investigation and the Crisis of Sensibilist Science," in *Science in the Age of Sensibility: The Sentimental Empiricists of the French Enlightenment*, Chicago, Chicago University Press, 2002, p. 189-226; Robert Darnton, *Mesmerism and the End of the Enlightenment in France*, Cambridge, MA, Harvard University Press, 1968.

[61] He wrote: "Je prie les personnes de l'art qui emploieront ce remède suivant les règles que j'ai suives & dans les cas que j'ai désignés, d'avoir la bonté de me faire part de ce qu'ils en obtiendront. Un jour viendra que publiant un travail étendu sur ces maladies, je donnerai leurs observations en leur rendant toute la justice qui leur sera due, & le témoignage de ma reconnoissance." Le Rouge, *Avis très-important aux personnes attaquées de hernies ou descentes*, Paris, l'auteur, 1784, p. 7.

[62] Mentioned in: Robert de Vaugondy, *Uranographie ou description du ciel en deux hémisphères, calculés & construits pour l'année 1763*, Paris, l'auteur, 1764.

[63] Mallet, *Dissertation sur la manière de cultiver des plantes choisies dans les châssis physiques*, Paris, l'auteur, p. 39.

[64] Dorez, *Avis au sexe sur les cancers du sein, ou L'art de les guérir par un caustique nouveau, Adouci & inventé par M. Dorez,* Paris, l'auteur, 1790, p. 7.

[65] Gardanne Duport, *Méthode sure de guérir les malades vénériennes par le traitement mixte*, Paris, l'auteur, 1787, p. xii; also cited in: Felton, "When authors," *loc. cit.*, p. 247.

[66] D'Acher, *Essai sur l'influence de l'estomac sur toutes les opérations de l'économie animale; suivie d'une courte exposition des différentes maladies, qui dépendent du dérangement des fonctions de ce viscère, & d'un moyen certain pour les combattre,* Amsterdam et Paris, l'auteur, 1783, p. ii.

[67] On this topic, see for example: Londa Schiebinger, *Nature's Body: Gender in the Making of Modern Science*, Boston, Beacon Press, 1993.

[68] Carpentier, *Suite au nouveau plan d'éducation, pour former des hommes instruits et des citoyens utiles. Seconde dissertation, sur la nécessité que les mères nourrissent elles-mêmes leurs enfans,* Paris, l'auteur, 1775, p. 160.

[69] Rob Iliffe, "Butter for Parsnips. Authorship, Audience, and the Incomprehensibility of the *Principia,*" in *Scientific Authorship*, *op. cit.*, p. 33-65.

[70] William R. Newman*, Promethean Ambitions: Alchemy and the Quest to Perfect Nature*, Chicago, The University of Chicago Press, 2005, p. 114. I would like to thank Jean-François Gauvin for this reference.

[71] Newton's involvement in alchemy has been the object of several scholarly works. See for example: Michael White, *Isaac Newton: The Last Sorcerer*, London, Fourth Estate Limited, 2007; Karin Figala, "Newton's Alchemy," in *The Cambridge Companion to Newton*, ed. Bernard Cohen and George Edwin Smith, Cambridge, Cambridge University Press, 2004, p. 370-386; William R. Newman, "Newton's Theory of Metallic Generation in the Previously Neglected Text 'Humores minerales continuo decidunt'," in *Chymists and Chymistry: Studies in the History of Alchemy and Early Modern Chemistry*, ed. Lawrence M. Principe, Sagamore Beach, MA, Chemical Heritage Foundation and Science History Publications, 2007, p. 89-100.

[72] For example: Adeline Gargam, *Les Femmes savantes, lettrées et cultivées dans la littérature française des Lumières, ou la conquête d'une légitimité (1690-1804)*, 2 vol., Paris, Honoré Champion, 2013; Margaret C. Jacob and Dorothée Sturkenboom, "A women's scientific society in the west: the late eighteenth-century assimilation of science," *Isis* 94 (2003), p. 217-252.

[73] See for example Elisabeth Badinter and Danielle Muzerelle, eds. *Madame du Châtelet : la femme des Lumières*, Paris, Bibliothèque nationale de France, 2006; Mary Terrall, "Emilie du Chatelet and the gendering of science," *History of Science* 33 (1995), p. 283-310; Sarah Hutton, "Emilie Du Châtelet's *Institutions de physique* as a document in the history of French Newtonianism," *Studies in History and Philosophy of Science* 35, no 3 (2004), p. 515-531.

[74] Rebecca Messbarger and Paula Findlen, eds., *The Contest for Knowledge: Debates over Women's Learning in Eighteenth-Century Italy. Agnesi, Maria Gaetana, Diamante Medaglia Faini, Aretafila Savini de' Rossi, and Accademia de' Ricovrati*, Chicago, University of Chicago Press, 2005.

[75] Hahn, *The Anatomy*, *op. cit.*, p. 108.