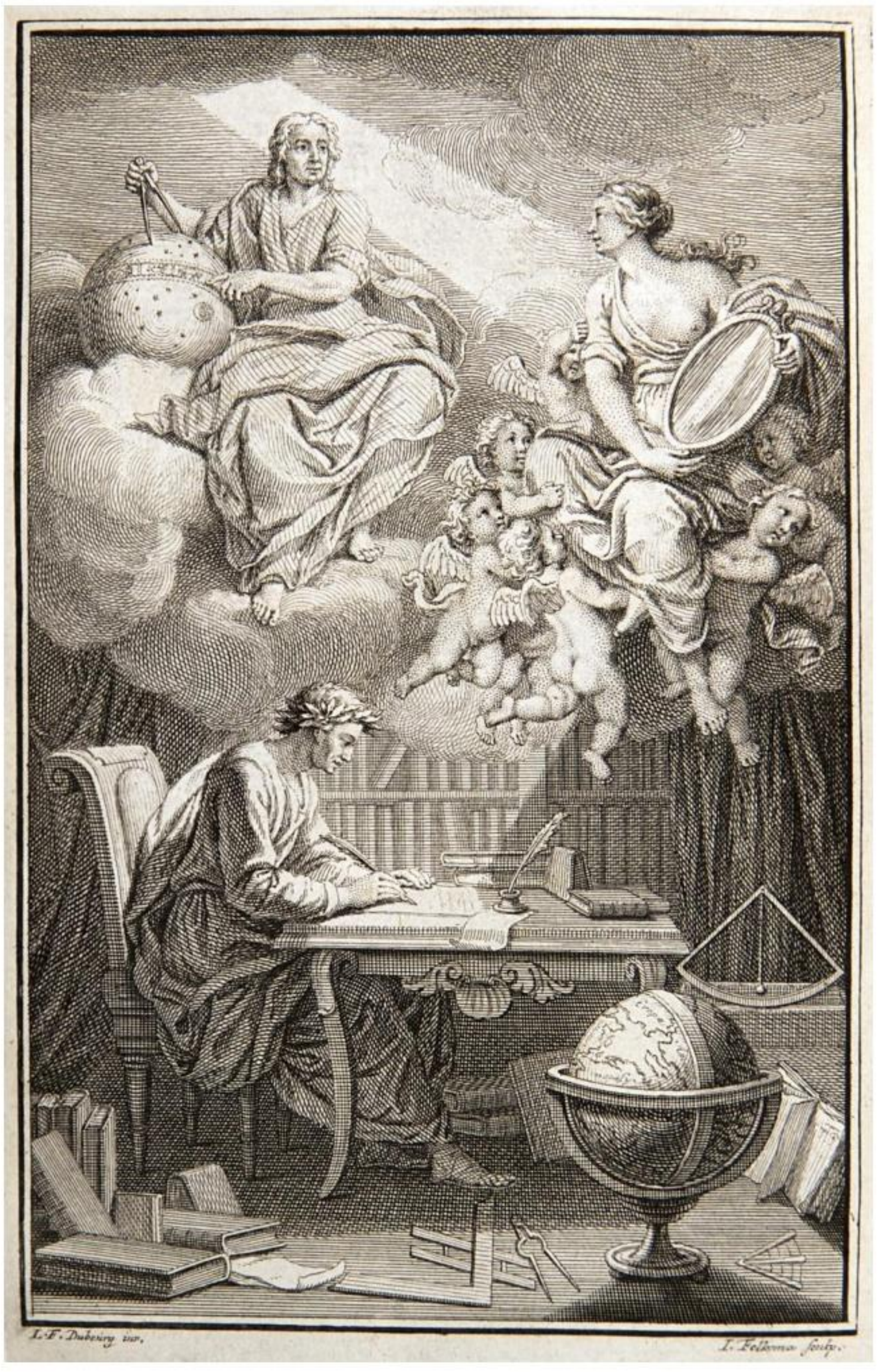
Chronotopos

A Journal of Translation History



Scientific Translation in the Early Modern Period

Guest edited by Garda Elsherif, Andreas Gipper, Caroline Mannweiler, Diego Stefanelli

Image: Frontispiece to Voltaire's interpretation of Isaac Newton's work, *Elémens de la philosophie de Newton* **(1738)**

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Introduction: Scientific Translation in the Early Modern Period

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Garda Elsherif, Andreas Gipper, Caroline Mannweiler, Diego Stefanelli

Introduction: Scientific Translation

This special issue is essentially the result of a research project on scholarly translation that was part of the German Research Foundation's Priority Programme "Translation Cultures of the Early Modern Period" (SPP 2130). The editors' contributions emerged directly from this project and are essentially based on the same corpus of texts. They were complemented by two external contributions (Fischer and Lukenda). The DFG project focused on scientific translations from English, German and Italian into French in the 17th and long 18th century. This period marks the birth of modern science, and French was something like the lingua franca of scientific communication. The project focused on translations in book form, which were systematically recorded for the period in question. Our corpus comprises a total of 633 texts from the years 1600 to 1815, including 356 translations from English, 158 from German and 119 from Italian. The corpus has undergone certain adaptations in the individual contributions in order to meet the requirements of the respective research interests. In terms of content, our corpus includes publications from the fields that essentially correspond to the later classes of the Académie des sciences: Sciences mathématiques: Mécanique, Astronomie, Géographie, Navigation, Physique générale, and Sciences physiques: Chimie, Minéralogie, Anatomie et zoologie, Art vétérinaire, Médecine, Botanique, Économie rurale. Of course, the boundaries between the various disciplines are not always clearly drawn in this period, and the categorisation of texts in the scientific field is sometimes problematic. This is typically the case in the field of scientific travel literature. Here, highly serious geological, zoological and botanical studies are often juxtaposed with observations of more 'touristic' or anecdotal interest. This observation also applies to the field of medicine, which makes up an important part of the corpus, but took longer than the other sub-disciplines to submit to the experimental-scientific paradigm and clung longer than others to a kind of pre-modern discourse and the authority of the classical *auctores*.

If our translation bibliography therefore only includes book translations, which in many respects confer special visibility and guarantee translators a special position within the scientific community in which they operate, it is also clear that the emergence of periodical scientific publications from the middle of the 17th century onwards had a massive impact on the production of translations. The early scientific journals emerged not least as translation platforms intended to ensure the rapid circulation of scientific knowledge. A quantitative survey of this translation production has not yet been attempted, and could only be carried out at great expense due to the large number of periodical publications in Europe. Nevertheless, with the contributions of Caroline Mannweiler and Robert Lukenda, journals have found their rightful place as translation agencies in this focus issue.

The academy system proved to be a second important translation agency in the early modern period. Academies such as the Académie des sciences required translations for their internal work and also promoted and evaluated translations, which were then published with their label as a seal of quality (cf. Elsherif). At the same time, the publications of scientific societies throughout Europe are the subject of several demanding translation projects. There are, for example, translations of the Philosophical Transactions into Latin and French, and a major project such as the Collection académique, which aims to make the entire production of the European scientific societies available in French. This is an example of the close connection between vernacularisation and the formation of national scholarly communities on the one hand, and a large-scale translation activity on the other, with the help of which the universal claims of the modern sciences and their character as a major transnational project were put into practice (cf. Gipper).

If the early modern period proves to be the cradle of modern scholarly translation, it is not least because of the emergence of a new type of translators who generally saw themselves as part of the scholarly community to which they were addressing themselves. Translation and the translator turn out to be part of an essentially synchronous scientific communication context. The dominant model of translation is that of horizontal translation, which takes place between languages that tend to have a similar cultural and linguistic prestige. This fundamentally distinguishes such translations from, for example, the numerous Plinius-Volgarizzamenti of the Renaissance. Translators no longer felt a primary obligation to an author, but to a scientific discourse to which they contributed by commenting on texts, checking experiments and results and correcting them where necessary. In this respect, translations at this time took on an important function of quality assurance. As Diego Stefanelli's prosopographical contribution shows, translators during this period therefore generally required specific knowledge of the discipline and in many cases used their translation work as a means of entering an academic career. As a rule, translators legitimise themselves through their specialist knowledge and their competence in the source language, but not through any kind of linguistic-translational qualification.

The complementary papers deal with two important aspects of the mediating role of French as a scientific lingua franca. On the one hand, how German-speaking research (especially in the fields of mineralogy and chemistry), which became increasingly important from the second half of the eighteenth century onwards, was transmitted to France through translation (cf. Fischer), and, on the other hand, how the position of French as the lingua franca of the sciences was articulated in a neighbouring country such as Italy, where the French influence was particularly strong in the eighteenth century (cf. Lukenda).

Fischer's contribution is an impressive and very detailed demonstration of how the French translation market, which was traditionally extremely Paris-centric, had a unique geographical relay with regard to German-language research in Alsace, with its natural centre Strasbourg. Lukenda's contribution, on the other hand, takes a sideways glance at the early 19th century and examines the role of academic journals in Italy as translation agencies in the conflicting fields of academic internationalisation and the emerging nation-state movement.

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Andreas Gipper

On the role of translation in the stabilization of national scientific cultures

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Abstract

Translation is usually understood primarily as a mediating movement between different cultural and linguistic spheres. Recent translation studies, on the other hand, have often emphasised that translations not only facilitate the crossing of national borders, but also contribute significantly to the establishment of the very borders they subsequently overcome. The same phenomenon can be observed in the emerging sciences. This seems all the more remarkable given that in view of the decidedly universalist self-conception of the sciences, one would hardly expect translations to have their role in the stabilisation of national scholarly spheres. The present article aims to show how translation in the seventeenth and eighteenth centuries was not only a precondition for the emergence of science as a transnational project, but also contributed significantly to the development of national scientific communities and cultures.

Keywords: Scientific communities, function of scientific translation, early modern period, universality claim, national hegemony

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Andreas Gipper

On the role of translation in the stabilization of national scientific cultures

Abstract:

Translation is usually understood primarily as a mediating movement between different cultural and linguistic spheres. Recent translation studies, on the other hand, have often emphasised that translations not only facilitate the crossing of national borders, but also contribute significantly to the establishment of the very borders they subsequently overcome. The same phenomenon can be observed in the emerging sciences. This seems all the more remarkable given that in view of the decidedly universalist self-conception of the sciences, one would hardly expect translations to have their role in the stabilisation of national scholarly spheres. The present article aims to show how translation in the seventeenth and eighteenth centuries was not only a precondition for the emergence of science as a transnational project, but also contributed significantly to the development of national scientific communities and cultures.

From the res publica litteraria to national scientific cultures

Since their beginnings, modern natural sciences have positioned themselves as inheritors of the old *res publica litteraria*, communicating in Latin. The foundational self-perception of the modern natural sciences encompasses a pronounced claim to universal validity and a strong commitment to the benefits of mankind.[1] This claim to universal validity and accessibility, however conflicts with the massive vernacularisation of scientific discourse, as it was promoted by the European academies of sciences in the 17th century. This shift is in part a consequence of the transformation of formerly private scholarly circles into state institutions under monarchical patronage. Notably, 'national' academies, especially the *Royal Society* in London and the *Académie des Sciences* in Paris (similar tendencies can also be observed in the Italian academy system), foster the formation of national scientific communities with their own corporate reflexes and career mechanisms.

Despite their professed universal claims and the current inclusion of foreign members, these academies have shown from their beginnings an often-underestimated tendency to consider themselves exponents of a national community of honour. In some respect vernacularisation and nationalization seem to go hand in hand. Although there is a broad consensus in the historical and political sciences that the emergence of nations, especially in the sense of nation states, is essentially a phenomenon of the 19th century,[2] recent research

[1] This aspect was specifically emphasized by one of the founders of modern sociology of science, Robert Merton, in his book *The Sociology of Science* (Chicago: UP 1973).

[2] Peter Burke, for example, assumes in his *Social History of Knowledge* that the nationalization of the sciences was a nineteenth-century phenomenon (BURKE 2012).

has clearly shown, that national attribution patterns and phenomena of national competition have been omnipresent in Europe at least since the time of humanism and that the idea of national communities of honour was already widespread in the 16th century, especially in humanist scholarly circles (HIRSCHI 2005). This raises the question of whether the emphasized universalism of modern sciences has obscured their de facto national constitution and the continuities linking them to the national reflexes of humanist scholarly circles. In fact, a closer look at the founding phase of modern scientific societies in the 17th century reveals a pronounced dimension of national competition that in some instances even displayed overtly nationalistic characteristics.[3]

If it seems clear that the founding of national scientific academies and the corresponding vernacularisation has massively fostered the formation of national scientific communities, the question arises of which role the new form of translational scientific communication has played in this process. And since the genre of scientific translation, especially in the mode of 'intranslation' (intraduction) in the sense of Ganne and Minon (1992),[4] represents a form of text production that, by definition, primarily addresses the scientific community of the target culture and aligns with its interests, this corpus of texts appears particularly suitable for examining this very process.[5]

In this sense, the following observations confirm what recent translation research has underscored: Translations not only facilitate the crossing of national borders, but also – as emphasized by Naoki Sakai – contribute significantly to the establishment of the very borders they subsequently overcome (SAKAI 1997, 2010; DIZDAR & GIPPER & SCHREIBER 2015).

Several aspects highlight the alignment of scientific translations with the interests of the target community:

1. Scientific translations can serve practical national economic interests. This is evidenced, for example, by various French translations from German in the field of mining.
2. Scientific translations focus on gaps in the research activities of their own community, signalling underdeveloped research areas and trends.
3. Science translations frequently serve young scientists in establishing themselves within their community (see the article by Diego Stefanelli in this issue). Their translational activity often functions as a means of testing and quality assurance. Translations often include a critical assessment of the translated text and a re-examination of its results via experimental replication (see the article by Garda Elsherif in this issue).

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[3] In fact, it seems important to distinguish between national competition and nationalism. But if nationalism is understood as the exaltation of one's own nation and the development of an exaggerated sense of national honour, including a sense of superiority associated with hegemonic tendencies, then many phenomena of national competition in the sciences of the early modern period can be regarded as forms of 'nationalism'. Caspar Hirschi uses the term 'overheating economy of honour' to describe the origins of nationalism (HIRSCHI 2012).

[4] The term has since been introduced to the English-speaking world by Antony Pym and others (PYM 2005).

[5] The following analyses demonstrate that this applies not only to 'intranslations' but also to 'extranslations' into Latin. These translations continue to hold significant importance in scientific communication during this period (GIPPER 2025a).

4. National academies explicitly commission scientific translations to promote their own research.
5. In specific cases, scientific translations serve to propagate the theoretical models of their own community or to refute competing models.
6. Scientific translations, in general, contribute to establish one's own community and one's own scientific language as the dominant one.

The subsequent exploration attempts to show that the scientific translation market, whose establishment from the 17th century onwards constitutes the necessary condition for the possibility of vernacularisation in the field of scientific literature, not only reflects and mirrors the formation of national scientific communities but often actively promotes it, serving as a tool for establishing their respective supremacy.

National competition between early modern European scientific societies

Our examination will begin by elucidating how national competition and the pursuit of national superiority manifested in early modern sciences and subsequently explore the role of translations within this context.

A look at the founding phase of the *Royal Society* and the *Académie des sciences* illustrates how strongly this dimension of national competition permeated the early communication between these two major European academies. Thus, from the outset there is a bitter debate on the question which academic tradition is older and which country plays the pioneering role. Although the *Royal Society* was founded six years before the *Académie des Sciences*, there has been an intense debate between English and French scholars about who influenced whom in its founding.[6] Numerous are the testimonies of French academicians from Chapelain, Cassini, Du Hamel, Thevenot, to Fontenelle, who point out that English researchers went in and out of the private French predecessor academies Monmort and Thévenot, and that in particular the first secretary of the Royal Society Henry Oldenburg was an avid visitor to both academies during his time in Paris. Cassini for instance states in his work *De l'origine et du progres de l'astronomie*:

Plusieurs années avant que cette Academie [Académie des sciences] fust etablie, on faisait à Paris diverses conférences de physique & de mathématique. Dés l'an 1638 le P. Mersenne commença à faire de ces sortes de conférences qui furent depuis continuées par M. de Montmor & par M. Thevenot. Quantité de sçavans hommes prenoient plaisir à venir s'y entretenir des observations astronomiques, des problemes d'analyse, des expériences de physique, & des nouvelles découvertes dans l'anatomie, dans la chimie & dans la botanique. […] Plusieurs étrangers s'y trouvoient aussi, & entr'autres Mr Oldembourg, qui ayant depuis passé en Angleterre et ayant inspiré aux Anglois le dessein de faire de semblables conférences, donna occasion à l'établissement de la societé royale d'Angleterre. (CASSINI 1693: 26.)

[Several years before this Academy [Académie des sciences] was established, various lectures on physics and mathematics were given in Paris. As early as

[6] This debate has been analysed by Syfret as early as 1948, but it has subsequently received little attention regarding its implications for the history of scientific communities (SYFRET 1948).

1638, Father Mersenne began to give these kinds of lectures, which have since been continued by M. de Montmor and M. Thevenot. Many learned men enjoyed coming to talk about astronomical observations, analytical problems, physical experiments and new discoveries in anatomy, chemistry and botany. [...] Several foreigners were also there, including Mr Oldembourg, who, having since passed to England and having inspired the English to hold similar conferences, gave rise to the establishment of the Royal Society of England.]

This view is echoed in Du Hamel's official history of the *Académie des sciences*, titled *Regiae scientiarum academiae historia* (DU HAMEL 1700). Du Hamel recounts the gathering of distinguished scholars in Oxford, underscoring their travels through France and Italy and their attendance at meetings of the academies of Montmort and Thevenot:

Sub finem dominationis Olivarii Cromvelii complures viri nobiles, quibus et hae diciplinae cordi erant, quique magna ex parte Galliam et Italiam peragrarunt, atque Eruditorum coetui apud D. D. Montmort et Thevenot interfuerant, Oxonii una convenerunt, […]. (DU HAMEL 1700: 8–9)

[At the end of Oliver Cromwell's reign, many distinguished men who were interested in these disciplines, and who had to a great extent travelled through France and Italy and had attended the meetings of scholars at the residence of Mr. Montmort and Thevenot, gathered together in Oxford.]

In this perspective, the Royal Society appears as an imitation of French models, a view vehemently rejected by figures like Robert Hooke:

The first [objection] is concerning the beginning, and original, of the Royal Society, concerning which he [i.e. Cassini] might have been much better informed, if he had taken notice of what has been said concerning it in Dr Sprat's History thereof; but that, it seems, did not so well suit his design of making the French to be the first. He makes, then, Mr Oldenburg to have been the instrument, who inspired the English with a desire to imitate the French, in having Philosophical Clubs, or Meetings; and that this was the occasion of founding the Royal Society, and making the French the first. I will not say, that Mr Oldenburg did rather inspire the French to follow the English, or, at least, did help them, and hinder us. But 'tis well known who were the principal men that began and promoted that design, both in this city and in Oxford; and that a long while before Mr Oldenburg came into England. (HOOKE 1726: 388)[7]

What we see is a competitive relationship with strong national undertones, which find significant confirmation in the cited *History of the Royal Society* by Thomas Sprat (cf. GIPPER 2025b).
It is worth noting that Italian researchers claimed early on the invention of the scientific academy system for Italy. Such a claim is not a coincidence and more

[7] Hooke's criticism of Cassini reflects his deep dislike of Oldenburg. Incidentally, Hooke also disputes a whole series of priority claims made by Cassini in the aforementioned article, especially with regard to the development of telescopes and the pendulum clock. The latter is particularly curious because its inventor Christiaan Huyghens was a member of both academies, and the invention was now claimed by each of them.

than an ironic side note. In 1667, the year in which the *Saggi* were published, Geminiano Montanari (MONTANARI 1667: 6) wrote that the northern nations had followed the Italians in establishing philosophical societies, resulting in the flourishing of experimental philosophy in countries such as France, England, and Holland ("ond' è, che in Francia, in Inghilterra, in Olanda , & in tant' altri luoghi fiorisce ad imitatione della Toscana Accademia la filosofia sperimentale." ["therefore in France, England, the Netherlands, & in so many other places experimental philosophy flourishes in imitation of the Tuscan Academy."])
Indeed, questions of priority represent a crucial field wherein competitive relationships are predominantly played out. The initial letter that Henry Oldenburg addressed to Newton in his function as secretary of the Royal Society (NEWTON 1955–77, vol. I: 73), in which he warned him of the need to protect his optical discoveries from being appropriated by foreigners, is symptomatic of this. Subsequently, another letter to Newton from the same year states:

[…] this discourse should without delay be printed, there being cause to apprehend that the ingenious and surprising notion therein contained may easily be snatched from you, and the Honor of it be assumed by forainers, some of them, as I formerly told you being apt enough to make shew of and to vend, what is not of the growth of their country. (NEWTON 1955–77, vol. I: 107–108)

Translation in the interest of particular scientific communities

The ideal instrument to prevent such unauthorized appropriations by 'foreigners' is, undoubtedly, translation in one of the dominant languages of scientific communication (that is in the 17th century Latin or French). Once a scientific discovery is recognised outside its own linguistic community, the risk of its authorship being disputed diminishes. The dispute between Newton and Leibniz over differential calculus illustrates this problem. The establishment of one's own vernacular scientific community necessitates not only a translational import, i.e. the publication of the most innovative research in one's own language, but also, as long as the own language is not established as a scientific standard, a significant translational export.
Oldenburg's correspondence testifies to both. It shows the extent to which the work of the *Royal Society*, and especially the publication of the *Philosophical Transactions*, is characterized by the daily struggle to provide suitable translations of the texts of foreign contributors, and to what extent Oldenburg's own work consisted in translating contributions from Latin, French, German, and Italian into English for the *Transactions*. In addition, however, members of the Royal Society have from the beginning endeavored to promote the dissemination of their work in other European languages. This included a large number of translations into Latin, which were undertaken to a considerable extent by Oldenburg himself. These translations had the same purpose as Oldenburg's exhortations in his letter to Newton. Their aim was to secure the first authorship of English researchers in specific discoveries against the usurpation by foreigners. This is illustrated by a whole series of Latin translations of Robert Boyle's works, which – just for the sake of curiosity – also seem to have contributed to Oldenburg's income. The correspondence between Oldenburg and Boyle reveals that Boyle paid him the noteworthy amount of 10 shillings per page for his translations (BOAS HALL 2002: 85). These translations thus served the

Royal Society's international prestige. Given this context, it is unsurprising that Oldenburg was highly interested in having the *Philosophical Transactions* translated into Latin to make them available to non-English-speaking audiences. Though Oldenburg initially planned to do this himself, first Sterpin and then Sands preceded him, even though Oldenburg was extremely dissatisfied with both translations (cf. GIPPER 2025a).

Actually, the translation activities of the early *Royal Society* are a particularly interesting topic. Single analyses featuring Robert Hooke or Theodore Haak only scratch the surface of a much larger subject area (HENDERSON 2017 and 2013; VAN DE KAMP 2017). Of particular interest in this context are prominent Fellows of the Royal Society such as Alexander Pitfield or Richard Waller, who not only contributed countless smaller translations to the *Philosophical Transactions*, but also produced extensive translations that are among the most important early publications of the *Royal Society*. Special mention should be made of the translation of the *Saggi di naturali esperienze* (1667) of the Accademia del Cimento. This was penned by Waller and published in 1684 under the title *Essays of Natural Experiments*. Another example is Alexander Pitfield's translation of Claude Perrault's *Memoir for a natural history of animals: containing the anatomical descriptions of several creatures dissected by the Royal Academy of Sciences at Paris* (1688).

Both translations have interesting implications. The publication of the *Saggi* raises the question of the *Royal Society*'s relationship with the *Academia del Cimento*. Quite interestingly, the Italians, through Finch and Southwell, had communicated their desire for close collaboration with the *Royal Society* as early as the 1660s. Boyle's mistrust seems to have been the reason why no collaborative efforts with the Italians took place. He feared that his experiments, particularly those regarding the vacuum, could be claimed by them. The rivalry between the two parties may also have contributed to the initial downplaying of the *Saggi*'s significance by Boyle and his colleagues. Considering this background, it is somewhat surprising that it was the *Royal Society* that commissioned a translation almost twenty years later. However, in an instructive article, Luciano Boschiero (2010: 79) has shown that the translation of the *Saggi* was apparently commissioned less for its novelty value than because the group around Hooke, Boyle and Papin in the 1680s was interested in presenting to the English public a confirmation and reaffirmation of their mechanistic approach to physics, particularly concerning the description of the properties of gases. It is interesting to note that Waller emphasises in his preface that many of the experiments described in the *Saggi* had already been carried out in London before their publication (WALLER 1684).

We are dealing here with a recurring pattern in scientific translation literature. Many examples exist in the 17th and 18th centuries of translations created not primarily for their substantial content, but instead as tools for gaining external confirmation in internal theoretical or methodological debates, and to strengthen certain theoretical positions.[8]

[8] Another example of this mechanism is the translation of Ludwig Friedrich Ehrmann's work, *Versuch einer Schmelzkunst mit Beyhülfe der Feuerluft*, commissioned by the Paris *Académie des sciences*. Elsherif's meticulous analysis shows that its primary purpose was to support Lavoisier's theoretical position in the context of the great debate about the phlogiston theory. Incidentally, the translation served also to transfer Lavoisier's

The translations mentioned also deserve special attention because they testify to the *Royal Society*'s early efforts to appropriate the results of foreign scientific academies through translation. Oldenburg justified this activity and the dense network of informants associated with it as early as 1673, stating that, "it adds not a little to the renown of England, now admired abroad for advancing Experimental Knowledge as well as Academical Learning" (OLDENBURG 1965–1986, vol. X: 175; GREENFIELD 1987: 119). The Parisian *Académie des Sciences* adopted a similar approach to make the results of the *Royal Society* accessible to French scientists by translating the *Philosophical Transactions* into French. The specifics of these significant undertakings will not be discussed in this text, as they are relatively well studied. (TURNER 2008; PEIFFER 2020). However, it should be observed in our context that François de Brémond's and Pierre Demours's translations are clearly embedded in a national framework. It is worth noting that state authorities, in particular Minister d'Aguesseau (himself a member of the *Académie des Sciences*), immediately took an interest in Brémond's initially private translation project and urged Brémond, who had previously only translated excerpts, to undertake a complete translation. Demours, who carried on with Brémond's work after his premature death, explains in his "Préface du traducteur" that the main reason for the project of a complete translation of the *Philosophical Transactions* was the rivalry between England and France, and that it was precisely for this reason that it was important not to fob off French scholars with extracts, but to give them a complete overview of the work of the *Royal Society*. If the translation was to be interpreted as "[to] the honour of the English nation", then France should be credited for spreading the work of the *Royal Society* globally within the science community (DEMOURS 1759: xxxii).[9]

While the translation activities of the academies seem to be driven by the goal of conceiving the space of scientific knowledge as a transnational space, they equally prove to be in the service of establishing the national space of knowledge as a universal space. Thomas Sprat's *History of the Royal Society* (1767) for instance shows clearly how much the project of the Improvement of Learning is linked from the beginning to the conviction, that the flourishing of the sciences and arts legitimates hegemonical claims. In other words, both intranslations and extranslations serve to a considerable extent to stabilise the prestige of the national scientific community.

The rivalry in particular between the French and English scientific communities runs through the whole of the seventeenth and eighteenth centuries and is epitomised not least in the struggle between Cartesians and Newtonians, to which Rupert Hall, already fifty years ago, attested a considerable dimension of national chauvinism (HALL 1975). Descartes and Newton quickly emerged as leading figures in their respective scientific communities. The debate between the Newtonian attraction theory and the Cartesian vortex theory was also a battle for scientific supremacy (SHANKS 2008). It is clear that this debate largely took place

terminology to the German research working with different concepts (ELSHERIF forthcoming).

[9] "L'émulation qui régne aujourd'hui entre toutes les Nations sçavantes de l'Europe, éxige une connoissance plus complette des travaux communs aux unes & aux autres, pour que le Lecteur impartial puisse juger sainement de leur mérite." ["The rivalry that reigns today between all the learned nations of Europe requires a more complete knowledge of the works common to all of them, so that the impartial reader can judge their merit."]

through translations and adaptations. The well known contributions of Voltaire in disseminating Newtonian physics through his *Éléments de la philosophie de Newton* and Mme du Chatelet's translation of the *Principia* will not be explored in detail here. Rather, as an example, I would like to highlight an intriguing case where national undertones are both apparent and unexpected. This text is a translation of one of the most successful Newton popularizations of the 18th century – *Dialogues on Light and Colours* – published by the Venetian Francesco Algarotti in 1737 under the title *Il newtonianismo per le dame*. This treatise is particularly interesting in our context as it represents a kind of remake of a famous popularization of Descartes' vortex-theory, Fontenelle's *Entretiens sur la pluralité des mondes*. Despite openly following Fontenelle's literary model and even dedicating his work to him, Algarotti's main objective is to promote Newtonian physics as the ultimate triumph over Descartes' 'scientific novels'. This very argument is what led the book translator, Duperron de Castera, to accuse Algarotti of exhibiting disrespect towards the French nation.

Cependant j'ai peur qu'on ne lui reproche d'avoir le ton un peu trop décisif. Zelé partisan des Savans d'Angleterre, il n'en parle qu'avec vénération, & sans doute il n'a pas tort. Prévenu contre Descartes & contre tous nos Philosophes François, il les traite de tems en tems avec un mépris souverain: ce sont, si l'on veut l'en croire, des esprits Romanesques, livrés à la témérité des Conjectures, entraînés par la fureur de fabriquer des Systêmes, toujours exposés aux insultes des Observations & de l'Experience. Notre Nation n'est guères plus respectée on nous donne de la gentillesse & du feu; mais dès qu'il s'agit du solide, c'est chez les Anglois qu'on va le chercher. (DUPERRON DE CASTERA 1738: xvii)

[However, I am afraid that he may be reproached for having a somewhat decisive tone. A zealous advocate of the English scholars, he speaks of them with nothing but veneration, and undoubtedly he is not wrong. Prejudiced against Descartes and against all our French philosophers, he occasionally treats them with supreme disdain: they are, if we were to believe him, romanesque minds, given to the temerity of conjectures, driven by the fervor of constructing systems, always exposed to the insults of observations and experiments. Our nation is hardly more respected; we are attributed with elegance and spirit; but as soon as it comes to the substantial, it is among the English that one looks for it.]

So, we are dealing with a typical illustration of how scientific issues are declared to be a matter of national honour, and it is precisely in the field of scientific translation, the contact zone par excellence between scientific communities, that this aspect seems to be particularly virulent.

Translation as a means of establishing a particular scientific culture as a universal one

I will conclude my paper by providing two further examples that illustrate the extent to which the translational appropriation of global scientific research must be understood not least as a means of strengthening one's own community. Initially, I will examine the *Collection académique*, the most considerable and audacious translation initiative of the 18th century. Jean Berryat initiated the project in the early 1750s, and nearly 33 volumes were published from 1755

onwards by Philippe Guéneau de Montbeillard.[10] Pierre Brunet has already highlighted the direct link between this project and the spirit of Diderot's *Encyclopédie*, to which Gueneau himself and a number of other translators of the *Collection* (Daubenton, Laviroux, Roux) contributed (BRUNET 1926 and 1929). The Collection undoubtedly endeavours to establish the French-speaking world as the central hub and place of communication for contemporary scientific discourse. Its objective is to consolidate the most significant publications of the foremost European scientific academies such as the *Academia del Cimento*, the *Royal Society*, and the *Leopoldina* into one collection and to offer them in French. If the *Discours préliminaire* of the Collection, written by Gueneau de Montbeillard, is examined, its spirit, clearly influenced by that of Diderot's and d'Alembert's *Encyclopédie*, reveals that alongside the omnipresent pathos of natural sciences as a transnational scientific endeavour, the *Collection Académique* also expresses the competition between national scientific communities, which the *Discours préliminaire* addresses as the central motor of progress in scientific communication:

Depuis qu'il est des Académies on sent la nécessité d'établir entr'elles une communication réciproque & d'appliquer au commerce littéraire le principe de la concurrence, qui est l'âme de toute sorte de commerce (GUENEAU DE MONTBEILLARD 1755: 46).

[Since there are Academies one feels the need to establish between them a reciprocal communication & to apply to the literary trade the principle of competition, which is the soul of any kind of trade.]

It is characteristic that Gueneau de Montbeillard's *Discours* does not fail to serve the narrative that the *Royal Society* was founded under the influence of the French academies of Monmor and Thévenot. Thus, the Collection académique symbolically reinforces this implicit preeminence of French science.

En un mot la Collection Académique réunira en moins de quarante volumes tous les faits relatifs à son objet, lesquels sont répandus dans plus de huit cens volumes originaux écrits en Latin, en Italien, en Espagnol, en Anglois, en Allemand, &c. & dont la suite complète ne se trouve peut-être dans aucune Bibliothèque de l'Europe. Cet ouvrage sera tout en François parce que la langue Françoise est devenue par une espèce de convention générale la langue courante de l'Europe, & que par la sagesse & la précision qui la caractérisent elle semble devoir être regardée comme la langue de la Philosophie. (GUENEAU DE MONTBEILLARD 1755: 37)

[In a word, the Academic Collection will gather in less than forty volumes all the facts relative to its object, which are spread out in more than eight hundred original volumes written in Latin, Italian, Spanish, English, German, &c. & the complete continuation of which is perhaps not found in any Library of Europe. This work will be all in French because the French language has become by a sort

[10] Unfortunately, the state of research on the origins and conception of the *Collection académique* is extremely unsatisfactory. With the exception of Brunet's essays, there appears to be no other research on this historical mega-project. Very little is known about its initiator, Pierre Berryat (1718–1754), except that he was a medical doctor and correspondent of the Académie des Sciences in Paris. What we do know is that the project was based mainly around the Académie des sciences, arts et belles lettres de Dijon.

of general convention the common language of Europe, & that by the wisdom & precision which characterize it, it may be regarded as the language of Philosophy.]

In this perspective, making the accumulated knowledge of the natural sciences available in one place and in one language for all interested parties not only promotes research in France, but it also simultaneously makes the French language the symbolic hub of transnational scientific communication.
It is this very perspective that the second document, which will be briefly mentioned, centres on. In fact, Louis Bernard Guyton de Morveau's "Mémoire contenant des vues pour conserver à la langue française la prérogative d'être la langue universelle" (1787) programmatically summarises the link between scientific translation policy and the desire for dominance by certain national scientific communities. Caroline Mannweiler has emphasised the significance of this text in two important essays (MANNWEILER 2021, 2024). Morveau was a part of the same circle at the *Académie des Sciences de Dijon* that had launched the *Collection académique* under the direction of Berryat and then Gueneau de Montbeillard. Morveau, an eminent chemist, is particularly renowned for his contribution to the creation of the first systematic chemical nomenclature. At the time of his essay, he had already been intensively involved for many years in making the most important chemical literature of his time available in French. In this sense, Bret speaks of a veritable circle of translators "pour naturaliser la chimie étrangère" (BRET 2008: 127; BRET 2010). It should also be mentioned in this context that this circle included several chemists de Dijon, like Jacques Champy, as well as Guyton's later wife Claudine Picardet, perhaps the most prolific translator of chemical literature in the entire 18th century.
Guyton de Morveau's essay begins with the same concern that the *Collection académique* aimed to address, namely, the recognition that the abundance of vernacular academies and their publications – particularly those in Northern Europe, given his background in chemistry – poses a significant impediment to scientific communication and progress. If France wishes to retain its status as a core hub of global research and avoid falling behind the northern European nations, most of which use German as a relay language, a major national effort must be made to train translators and to translate these strategic bodies of knowledge. It is evident that the essay largely aims to continue the approach of the *Collection académique*. A certain dominance of French science in the world can only be secured if France pursues an active translation policy. And in Guyton's perspective, this supremacy in the field of chemistry is challenged above all by the Germans.

Pendant que 1e Français néglige de convertir à son propre usage les écrits des Savans étrangers, l'Allemand semble aspirer à l'honneur de les fournir à tout l'univers. Tous les mémoires d'Académies, tous les grands ouvrages de science, de toute nation, sont traduits dans cette langue avec une incroyable rapidité, elle porte au nord ce qu'elle a recueilli au midi, & c'est par elle que nous avons reçu jusqu'ici le peu qui nous est venu en ce genre des pays du nord. (GUYTON 1787: 59)

[While the French neglects to convert the writings of foreign scholars to his own use, the German seems to aspire to the honour of supplying them to the whole

universe. All the memoirs of the Academies, all the great works of science, of every nation, are translated into this language with incredible rapidity; it carries to the north what it has gathered from the south, and it is through this language that we have so far received the little that has come to us of this kind from the countries of the north.]

As we can see, in Guyton de Morveau we find the same discourse of national honour that has pervaded European academia since its beginnings, and which seems to develop a particular virulence in the field of translation. If France fails to take adequate measures, German will replace French as the "language of the savants of all countries" ("la langue des savans de tous les pays"), and French scientists will have to learn German in order to remain scientifically up-to-date. By doing so, French would run the risk of facilitating the triumph of German through sheer negligence, "à porter à une autre nation un honneur qu'il pouvait conserver à sa patrie" (GUYTON 1787: 60). Guyton de Morveau argues that it is a task of national importance to prevent this from happening, and that this can only be organised under the auspices of the state as a scientific translation agency, which could end up giving France a kind of monopoly of distribution in the field of knowledge production.

[…] au lieu de nous rendre tributaires d'une nation pour cette correspondance, ce seront toutes les nations étrangères qui deviendront tributaires de la France ; qu'il n'y entrera désormais de tous les bons livres imprimés au dehors, que le seul exemplaire destiné à se multiplier sous nos presses, pour satisfaire la curiosité de l'Europe savante […]. (GUYTON 1787: 64)

[[...] instead of making us dependent on one nation for this correspondence, it will be all the foreign nations that will become dependent on France; it will enter henceforth of all the good books printed outside, only the one copy destined to multiply under our presses, to satisfy the curiosity of learned Europe [...].]

It can hardly be expressed more clearly than this: Scientific translation during the 18th century was not only a means of facilitating cross-border scientific communication, central to the transnational acquisition of knowledge, but also a way of reinforcing national cultures of knowledge in a world where science and technology increasingly determine not only the competition for symbolic goods but also national power interests.

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Garda Elsherif

From Authority to Autopsy
How Translations Reflect Changing Scientific Norms

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Abstract

This paper examines translations of books in the natural sciences into French from the sixteenth to the eighteenth centuries. Specifically, it examines the scientific reader's expectations of contemporary book translations. To that end, this study investigates review reports on manuscripts of translations submitted to the leading French institution of modern sciences—the Académie Royale des Sciences*. These are compared to review reports of manuscripts of translations submitted to the* Faculté de Médecine *of the Paris University, which remained longer in the pre-modern attempt to preserve classical 'auctores' in translation. The comparison of the review reports reveals interesting shifts in translation norms, highlighting the demand for critical scientific translations wherein the translator, as a member of the scientific community, critically investigates and comments on the translated text.*

Keywords: Translation in the scientific field, translation norms, translation and modern sciences, critical translation, translation and commentary, history of sciences

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From Authority to Autopsy

How Translations Reflect Changing Scientific Norms

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This paper examines translations of books in the natural sciences into French from the sixteenth to the eighteenth centuries. Specifically, it examines the scientific reader's expectations of contemporary book translations. To that end, this study investigates review reports on manuscripts of translations submitted to the leading French institution of modern sciences—the Académie Royale des Sciences*. These are compared to review reports of manuscripts of translations submitted to the* Faculté de Médecine *of the Paris University, which remained longer in the pre-modern attempt to preserve classical 'auctores' in translation. The comparison of the review reports reveals interesting shifts in translation norms, highlighting the demand for critical scientific translations wherein the translator, as a member of the scientific community, critically investigates and comments on the translated text.*

Introduction

The role of translation in the academic field has enjoyed growing interest in translation studies and in the history of sciences since the beginning of the 2000s with studies looking at the translation of academic texts at very different times and places, investigating the many ways in which translation is *involved* in the academic field (SARUKKAI 2001; MONTGOMERY 2002), such as in generating reputations for translated or translating academic authors (GIPPER & STEFANELLI 2021), canonizing academic knowledge (SCHÖGLER 2018), functioning as an argument in scientific controversies (ELSHERIF forthcoming), transforming scientific and philosophical concepts (HELLER 2019), establishing scientific and philosophical languages (ENDRESS 1989, SINGH 2022), enabling exiled scientists to connect to a foreign scientific tradition (ROZMYSŁOWICZ 2023; SCHIPPEL 2023), and educating and training early research scholars (AVKIRAN 2022: 270; ELSHERIF 2024: 241–278).

This paper aims to build on the prior research and asks for the *specificity* of translation in the "scientific system" (LUHMANN 1990) or the scientific "field" (BOURDIEU 1997, 1998) – in other words, the specificity of translation taking place in the *game* of sciences. This game possesses its own rules, logic, and mechanisms. The central question of this paper is how these rules and mechanisms of sciences affect the translation involved in it. This paper, thus, has a very similar concern to the recently published monograph by SCHÖGLER (2023), in which he looks at book translation in the humanities and social sciences from 1945 onwards, asking "how translation is controlled in this field [of the humanities and social sciences, G.E.] and how its control affects the social construction of translational practice" (ibid.: 15, tl. G.E.).

Unlike Schögler, however, this paper focuses on the emerging *natural* sciences[1] in France in the sixteenth, seventeenth, and eighteenth centuries. This period is noteworthy because it is in the seventeenth century that modern natural sciences slowly began to emerge and to develop own norms. This paper observes the development of these norms and asks how they influence the production of scientific book translations. In other words, this paper concerns the central question of what ideas of a 'good' and 'useful' translation existed in the (early) modern scientific system and how that idea changed from early modern to the modern scientific system. What *norms* had scientific book translations to fulfill? More precisely, what expectations were placed on scientific translations by scientific readers, and how are they related to the *logic* of the natural sciences?
Accordingly, this work has two further limitations that narrow its focus in addition to being confined to the *natural* sciences. Firstly, it focuses exclusively on *book* translations, as the production of translations in the (early) modern scientific system is far too complex to be satisfactorily depicted in one paper. Expectations of published *book* translations differed from expectations of translations published in *journals*. Due to their specific and limited context of use, unpublished translations produced for internal purposes were, in turn, subject to wholly different expectations than published translations (see ELSHERIF 2024).[2] A single paper cannot do justice to this breadth of scientific translation production. Secondly, the paper focuses exclusively on the expectations of the *scientific* readership. By 'scientific readership,' this paper refers to all readers who perceive themselves as part of the scientific community and are perceived as such by other community members. Among them are professors and members of scientific academies, as well as practical surgeons, pharmacists, mining experts, and experimenting amateurs. It is not the institutional position that determines membership in the scientific community – instead, it is whether one is published and cited. The present analysis is limited to this scientific readership.
This raises the methodological question of how to discern what is expected of scientific book translations. Roughly speaking, there are two ways to distinguish these expectations: One can analyze statements by scientific recipients who explain through translation criticism or reviews why they think a particular translation is useful or not. Alternatively, one can go down the route of looking for regularities in translation production aided by quantitative analyses.
This paper attempts to combine both above approaches, however, with a certain focus on the first way. Primarily, the article examines review reports written in the *Faculté de Médecine* of the University of Paris (~1200–1793) and the *Académie Royale des Sciences* (officially founded in 1699).[3] In both institutions,

[1] By 'natural sciences,' I refer to what was known among contemporaries as *sciences et arts*. These included the following technical and scientific fields of knowledge: Astronomy, mathematics, natural history (geology, biology), mineralogy, chemistry, pharmacy, physics, mining science, agriculture, forestry, medicine, surgery, architecture, and military science. For a more differentiated discussion of the concept of "sciences et arts," see BRET & MOERMAN (2014).

[2] The fact that the distinction between published and unpublished translations became a crucial one in the second half of the 18th century will become clear later on in this article.

[3] After the unofficial establishment of the Academy in 1666, it is not before 1699 that the Academy received their first Royal Statute. It is then that the Academy started to approbate manuscripts (including translations) prior to publication. The Academy was closed 1793 during the French Revolution and re-established in 1795 as the first of three classes of the

book translations (as well as original writings) in manuscript form could be submitted for examination to publish the translation with its approval and printing privilege. Comparing these review reports over time and considering the different social positions of both institutions in the field of sciences allows us to grasp how the emergence of the modern natural sciences came along with the emergence of specific translation norms (TOURY 2012).
Second, this analysis of the review reports will be flanked (in the second half of this paper) by quantitative data analysis of a corpus of book translations into French from English, German, and Italian.[4] These data will enable us to examine historical developments from 1600 to 1815 and consider the translation-related expectations of the mentioned institutions in a broader context.

From authority to autopsy: the epistemological ideal of modern sciences

The emergence of modern natural sciences in Europe can be traced back at least to the seventeenth century and was accompanied by a series of each interconnected linguistic, social and epistemic changes: The linguistic change is perhaps the most striking. While Latin was long regarded as the "langue naturelle" (ANONYM 1649: ij) of scholarly discourse and no other language was permissible for writing down scholarly knowledge, the vernacular languages began to come into view as languages of equal value around the 16th century. The long-held belief that there was a natural hierarchy between languages was increasingly called into question, perceiving language as a *cultural* asset that could be developed and expanded through the creative use of language (see SPERONI 1542; DU BELLAY 1549). This shift was accompanied by the conviction that everything can be expressed in any language. The decrease of Latin and the increase of the vernacular languages in the field of sciences and philosophy was, thus, accompanied by a certain pre-assumption in language theory, i.e., the separation of *res* and *verba* (BENNETT 2011, 2024): Scholastic and Renaissance humanist scholars acquired knowledge precisely by learning Greek and Latin. Knowledge, so the assumption goes, is contained in the ancient languages themselves. In contrast, the conviction that content and linguistic form can be separated from each other and that any content can be expressed in any language became stronger in the course of early modernity, an idea of language that is particularly well represented by the Grammar of Port Royal. On the basis of such an understanding of language, translation becomes unproblematic (in the field of scholarship and sciences) and a legitimate and desirable alternative to language learning, which 'costs many years of life' – a narrative that became increasingly strong from the 16th century onwards (see again SPERONI 1542, but also

Institut de France, being now a national rather than a royal institution, and re-established as independent institution in 1816. In this paper we focus on the review reports written by the Academy in the period of 1699–1815.

[4] The corpus of French book translations from English, German, and Italian from 1600 to 1815 was compiled jointly by the sub-project *Scientific Translation in France in the Classical Age (1600–1815)* of the priority program *Early Modern Translation Cultures (1450–1800)*, which the German Research Foundation funded (see introduction in this issue). The corpus comprises all scientific book translations known to date from the languages mentioned. It enables us to make representative statements about which characteristics are identifiable and in how many translations over the span of 215 years. In this paper, I strictly distinguish between scientific book translations and those published in periodicals.

D'ALEMBERT 1866 [1750]). Although this understanding of language is often dismissed as naïve in translation studies, it must be noted that this conviction in the separation of thought and form and the potential equality of all languages was nevertheless a basic prerequisite that made the shift in scientific communication from Latin to vernacular languages possible in the first place – a linguistic shift that was itself important for the greater social inclusion into the 'game' of sciences. This brings us to the second – namely social – change that was closely related to this language change and that Edgar ZILSEL (2003 [1976]) has analyzed particularly well. Whereas in the Middle Ages and the Renaissance, scholarship was restricted to a small social circle (i.e. clergymen), in the 16th century practitioners (i.e. surgeons, architects, painters) also began to write down their knowledge. These writings and authors (such as the surgeon Ambroise Paré) were not considered part of traditional scholarship at the time (the authors were not professors at universities) and they themselves aimed their writings not primarily at scholars but at other practitioners. As both the authors and the readers did not go to schools and universities and therefore had no knowledge of Latin, these writings were written and published in vernacular languages. The shift from Latin to vernacular languages in the writing and dissemination of knowledge was thus initiated in the 16th century largely by people who were not considered scholars, either in their own perception or in the perception of others. The fact that vernacular languages came to the center of scientific communication became apparent in the 17th century with the founding of new scientific institutions in Europe (Accademia dei Lincei, Académie des Sciences, Royal Society), which each chose a vernacular language to communicate knowledge. These new institutions were an expression of a 'new' understanding of science (what we today call 'natural sciences') and were partly in a (polemical) relationship of demarcation with institutions of the 'old' classical scholarship following the Aristotelian Organon (in France primarily the universities). The designation of 'modern' sciences is thus a self-designation, while that of 'old' science is an external designation of the 'moderns', who attempt to distinguish themselves from the 'old'. This demarcation finds its clearest expression in the *Querelle des Anciens et des Modernes* (GIPPER 2015). What distinguished the 'modernes' most from the '*scholastici'* (LUTZ-BACHMANN 2022) was their attitude towards classical antiquity. While *scholastici* (and also Renaissance humanists) regarded classical antiquity as an unsurpassable model that can and should be imitated but not surpassed, the 'moderns' argue that the ancients *can* and already *have* been surpassed. The ancients appear as important predecessors whose knowledge, however, one can build on and generate new knowledge. It is the idea of a forward-looking collectivity (i.e., subsequent scientists shall build on existing knowledge) and the idea of progress that was to become constitutive for the emerging natural sciences and which can – according to Zilsel – first be observed among the practical surgeons and architects of the 16th century. While medieval scholars aimed to *preserve* and *organize* externally generated (ancient) knowledge through the learning of ancient languages and encyclopedic-classificatory efforts (cf. STICHWEH 2013: 76–77), knowledge was now to be generated by experiments in the laboratory and by observing nature itself; subsequent generations should *build on* current knowledge and develop it further. However, the concept of *building upon knowledge* implies a reference back to existing knowledge: its inadequacies, imperfections, and falsehoods must first be *critically* discerned to enable the overhaul of existing knowledge (cf. NIEMANN

2019: 62). Existing knowledge is thus not (or no longer) accepted as true without pause but is regarded as potentially false and downgraded to an opinion requiring further scrutiny.

The increased significance of criticism in the sense described above goes hand in hand with a loss of significance of authorities (cf. LÖSCHNER 2016). As FOUCAULT (cf. 1998: 212–213) states in the essay, *What is an author?,* authorizations by reference to individual names have lost significance in the differentiation process of modern sciences from the seventeenth century onwards (unlike in literature, as one example). Whereas the authority of a person or an institution to which truth claims could be made was previously how truth claims were legitimized, it is now the approval of the scientific community that does so: experiments and theories must be presented publicly and subjected to critical scrutiny by the scientific community. With the decreased importance of authorities, the *autopsy* – seeing with one's own eyes – becomes the new ideal of knowledge. Truth claims are, thus, created through intersubjective experience: the repetition of experiments, the application of medical therapy proposals, and the repeated observation of geographical and biological occurrences – in other words, failed attempts at falsification (cf. POPPER 1963).[5]

To examine whether this loss of importance of *authority* and the simultaneous gain in the importance of *autopsy* as the dominant ideal of knowledge is reflected in the expectations of scientific book translations, we will now look at the available review reports on submitted manuscripts of translations of the *Faculté de Médecine* and compare them with the available review reports of the *Académie des Sciences*. The selection of these two institutions lends itself to this since in France it was particularly the universities – as representatives of classical scholarship – that were opposed to the new scientific developments (STAMBUL 2023), and that was criticized by the 'moderns' as unworldly and rigid (LUTZ-BACHMANN 2022). This was particularly true of the Faculty of Medicine of the University of Sorbonne, as it was precisely in the field of medicine that the education of 'modern' medicine was characterized by a particularly high level of controversy and debate. It is important to know that until the 18th century, 'medicine' was the theoretical study of medical authorities (especially Hippocrates and Galen) and was strictly separated from practical surgery. The fact that surgeons began to publish surgical knowledge in the vernacular languages in the 16th century was initially perceived as an affront by the Faculty of Medicine (CHATELAIN 2006: 200). The fact that the Faculty of Medicine remained critical of 'modern' medicine in the 18th century is evidenced by the founding of the *Académie royale de Chirurgie* (1731–1793) and the *Société royale*

[5] With this increase in the significance of *autopsy*, the author's name does not entirely lose its relevance in the scientific field, but its function shifts from a form of authorization to an 'index of "reality"' (FOUCAULT 1969: 20)—not for the truth or validity of what has been established but for the truthful description of circumstances that determine the research result. The author becomes the 'guarantor of the text' (GENETTE 2001 [1987]: 50), assuming responsibility for having observed the facts described or for having checked the trustworthiness of the sources consulted. The reference to the author's name thus remains relevant to the extent that the author vouches for having adhered to the methodological rules of scholarship (AZZOUNI 2015: 106).

de Médecine (1778–1793), last of which names this – and the intention to strengthen 'modern' medicine – as a founding motive in its founding statues.[6]

Expectations toward translations and the differentiation of modern sciences

Fifteen review reports from the Faculty of Medicine on submitted manuscripts of translations issued in the period 1528–1749 were found. These fifteen review reports can be compared with 42 the Academy issued from 1701–1814. The comparison between the review reports of the two institutions thus also contains a diachronic perspective, as the reports of the Faculty of Medicine begin as early as the 15th century, while the reports of the Academy of Sciences all date from the 18th century. In addition, seven of the fifteen translations examined by the Faculty of Medicine (and published between 1528 and 1678) are translations from Greek into Latin. The remaining eight translations (issued between 1675 and 1649) are translations into French (one from Greek, to which we will refer again later, the others from English, German and Italian). The 42 translations of the *Académie royale des sciences* are in 37 cases from other European vernacular languages (English, German, Spanish, Italian), in two cases from contemporary Latin texts, and in three cases from ancient Greek texts (the latter three translations all appeared at the beginning of the 19th century between 1806 and 1814).

The fact that only fifteen review reports from the Faculty of Medicine will be compared to 42 review reports from the Academy of Sciences must be methodologically problematized, as this small number of review reports allows only cautious statements about the translation norms to which the Faculty adheres. At the same time, this striking difference reflects the increasing multilingualism of the scientific field from the 17th century onward and the great increase in the production of translations that accompanied the development of the modern natural sciences. The high number of translations approved by the *Académie des Sciences* moreover emphasizes the role the Academy played, which acted as an important driving force behind scientific translation production in the 18th century (ELSHERIF 2024).

Before we begin to analyze the review reports, it is important to work out the different institutional contexts in which they were prepared: The issued review reports in the Faculty of Medicine are part of a larger context of *authentication* and *censorship.* The reports are part of the context of *authentication*, as the Faculty has also issued certificates that certify that a certain person has produced a specific drug formulation in a specific way before their eyes and, thus, before the public.[7] The context of *censorship* also pertains to these reports as, on March

[6] See the document "Observations sur l'Etablissement de la Société Royale de Médecine" folder *SRM 114 d 4* in the Archives of the Academy of Medicine in Paris, where the Societies aim to "favoriser le progress de la médecine" [=to support the progress of medicine] (ibid.:2) is formulated and where they state on page 10–11: "La faculté soutient qu'elle est le seul tribunal legal en Médecine […]. On lui repondra d'abord qu'il n'y en a point et net peut jamais y en avoir, parceque les causes des maladies étant souvent incertaines, la manière d'agir des Remèdes inconnues et les Maladies susceptibles des variations, la Médecine ne peut être soumise des jugemens déficiles." [= The faculty maintains that it is the only legal tribunal in Medicine… The first response is that there is none, and there never can be, because the causes of disease are often uncertain, the way in which remedies work is unknown, and diseases are subject to variations, so medicine cannot be subject to deficient judgments.]

[7] For example, on May 22nd, 1670, the Faculty of Medicine issued a certificate attesting "que M. Moyse Charas, apothicaire ordinaire de M. Frère unique du Roy, a dispensé et parachevé

2nd, 1535, the French parliament issued a regulation stipulating that no book on medicine or surgery could be printed or sold by booksellers in France unless it had been examined in advance by representatives of the Faculty and found to be unproblematic (cf. PUYLON 1672: 14). From 1535 onwards, the examination of manuscripts by the Faculty was obligatory—not optional. Then, the Faculty lost this authoritative status in 1701 with Jean-Paul Bignon's promulgation of a royal censorship authority, after which every new publication had to receive approval from the so-called *Censeur Royal*; the approval of the Faculty, now indicated the exceptional quality of only a few books. This return from an obligatory to an optional examination is reflected in the Faculty's review reports, which became again more detailed from 1701 onward. If not all books had to be approved by the Faculty before publication, then a more comprehensive explanation was needed to explain why one particular book deserved approval by the Faculty over others. Regarding publications approved by the *Académie des Sciences*, its approbation never fulfilled a function of censorship, so submitting one's writing to this institution was always optional. The review reports are part of a wider context of *testing* and *proving*, as review reports were drawn up for submitted original writings, translations, machine designs, or measuring instruments that could be submitted to the Academy for approval. However, in this paper, only the review reports of submitted manuscripts prior to publication are of interest. Article 30 of the Academy's Royal Statute of 1699 mentions:

L'Académie examinera les ouvrages que les académiciens se proposeront de faire imprimer; elle n'y donnera son approbation qu'après-une lecture entière faite dans les assemblées, ou du moins qu'après un examen et rapport fait par ceux que la Compagnie aura commis à cet examen.

[The academy will examine the works that the academicians propose to have printed; it will give its approval only after a complete reading in the assemblies, or at least after an examination and report made by those whom the Company will have assigned to this examination.]

Before approbating any of the submitted manuscripts, the Academy required that each manuscript be read and examined by at least two of its representatives, who then wrote a review report arguing for or against the manuscript's publication.

Criteria of approval by the Faculté de Médecine

If we first look at the fifteen examination reports of the Faculty of Medicine, it is worth distinguishing between the reception of Greek authorities (mainly Galen and Hippokrates but also Paul of Aegina) and the translation of contemporary authors. The former characterized the work of the Faculty in the 16th and 17th centuries, the latter does not appear before the end of the 17th century.[8] As far as

en notre présence publiquement la composition de trois cents livres de Thériaque, selon la description d'Andromacus, […]" [= M. Moyse Charas dispensed and completed in our presence the composition of three hundre pounds of Theriac, according to the description of Andromacus] (CHARAS 1668: 11). This practice of public demonstration and authentication can itself be regarded as characteristic for the sciences in the modern sense and highlights again that the Faculty cannot be described as strictly opposite to the modern sciences.

[8] The first translation into French approved by the Faculty of Medicine is a collection of translated writings of Nehemiah Grew, Robert Boyle and Antoni Van Leeuwenhoeck published in 1679. The review report by the Faculty of Medicine was written by Jean Garbe

the translations of ancient authorities are concerned, the review reports show clearly that the Faculty's interest in these translations was determined by the ancient authorities. In the review report on the Greek-Latin edition of all the writings of Galen and Hippocrates, translated into Latin by Claude Chartier, the Faculty members emphasized that the medical teachings of Galen and Hippocrates are the most outstanding in the history of medicine and that their doctrine had been confirmed time and again throughout history (FdM 1679: 6). What made the translation attractive for the Faculty was the fact that it presented a complete translation of the two "fathers of medicine" ("utriusque parentis Medicinae", ibid.). The decisive criterion for authorizing the publication was therefore the authority of the source text authors. A very similar picture emerges when looking at the review reports of the translations of Galen (1528, 1538) and Paul of Aegina, both translated into Latin by Johann Winter von Adernach (Jean Gonthier d'Adernach). The members of the Faculty praise the fact that Adernach only made changes to the text when they were absolutely necessary.[9] Otherwise, they emphasize the importance of the authors of the source text.[10] With regard to the translation of Paul of Aegina, they also praise Gonthier's efforts to correct the copyists' errors and emphasize that the commentaries Gonthier added were purely for the sake of better comprehensibility and the exegesis of the source text.[11] Once again, the impression is created that it is the authors of the original in particular who make their translation into Latin appear valuable.

In all these translations of ancient authorities, it was also crucial for the Faculty that the target language was Latin – and not French. This can be seen particularly well in the review report on the French translation of Galen by Claude Tardy in 1657, the publication of which was rejected by the Faculty on the grounds that "des Oeuvres des Princes de la Médecine" [= the works of the Princes of Medicine] shall not appear in a vulgar language (FDM in HAZON 1773: 48).

If the authors were not Greek authorities but contemporary authors, translations into French seem to have been acceptable to the Faculty. This is evidenced by the seven review reports on French translations from the end of the 17th century onward. However, although the remaining seven review reports were all

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and Louys Morin on March 4th, 1679 and is reprinted in GREW & BOYLE & VAN LEEUWENHOECK 1679. The translator(s) remain unknown.

[9] "Gonthier a suivi la loi prescrite aux Interprètes ; il s'est conformé au plan de ses Auteurs ; ou s'il s'est permis quelquefois des changemens, on s'appercevra aisément qu'ils ne sont pas considérables" [= Gonthier has followed the rules laid down for interpreters; he has conformed to the plan of the authors ; when he has sometimes allowed himself changes, it will easy be seen that they are not considerable.] (FDM in HERISSANT 1765: 73).

[10] Concerning the translations of Galen, they mention that with Galen, Gauthier has chosen an author that is "vraiment utile" [= truly useful] (FDM in HERISSANT 1765: 75) and concerning Gauthiers translation of Paul of Aegina they emphasize that Paul of Aegina was "celui de tous les Médecins qui, depuis Galien jusqu'à Gonthier, avoit écrit avec la plus de certitude sur son Art" [= of all the physicians, from Galen to Gonthier, he wrote with the greatest proficiency about his art] (FDM in HERISSANT 1765: 83)

[11] "Gonthier eut à vaincre dans cette traduction […] d'abord la négligence des Copistes […]. Il a joint […] quelques Commentaires qui expliquent la raison de ces changemens, & éclaircissent ce que l'Auteur n'avoit fait qu'indiquer obscurément" [= In this translation, Gonthier had to overcome…first of all, the negligence of the copyists. He had appended … a few commentaries, which explain the reason for these changes, and clarify what the Author had only obscurely indicated] (FDM in HERISSANT 1765: 84).

translations of contemporary authors of lesser authority, here too the author's reputation and the success of the source text appear to be the primary criteria for approval. This criterion is mentioned as an argument in all review reports without exception. For example, the French self-translation of Jean PALFIJN (1731) was worthy of approval, as the author's earlier books had already proved useful (FDM 1728: xv); likewise, the translation of George Cheyne by Jean-Baptiste de la Chapelle (1749) was "digne de la réputation, que son Auteur s'est faite par d'autres Ouvrages" [= worthy of the reputation that its author has earned for his other works] (FDM 1748: vij). In the review report on Gottfried Rothe's *Introduction à la Chymie* (1741) [*Gründliche Anleitung zur Cymie*], the numerous editions of the original in Germany appear as an additional argument alongside the author's reputation: "Nous [...] après une lecture attentive de cet Ouvrage, avons jugé qu'il étoit digne de la réputation qu'il a en Allemagne, ou servant, pour ainsi dire, de Manuel de Chymie, il a été imprimé plusieurs fois dans sa langue originale" =[After a careful reading, we judged this work worthy of the reputation it has in Germany, where it serves, so to speak, as a Manual of Chemistry. It has been printed several times in its original language.] (FDM 1741: 4).

Four of the seven French translations approved by the Faculty include the translator's commentary on the scientific content of the translated text, whether in footnotes (CORNARO / DE LA BONODIÈRE 1701; PALFIJN 1731; JAMES / DIDEROT et al. 1746) or in the case of de la Chapelle's translation of Cheyne (1749), as an unusually long (90 pages) *Avertissement du Traducteur*. Such efforts by the translators and editors to supplement and optimize the text are only mentioned in the review reports for two of the four translations, however. For example, de la Bonodière's annotations in his anonymously published translation of Cornaro – prominently announced on the title page – remain unmentioned in the review report. Thus, the representatives of the Faculty sought to emphasize the usefulness of the source script. In de la Chapelle's conspicuously long preface to his translation of Cheyne (1749), he meticulously attempts to reflect the current state of research, which goes completely unmentioned in the review report. Only for Jean Palfijn's self-translation (1731) does the review report mention that Palfijn added new *planches* to his French self-translation and supplemented the text with a few notes (cf. FDM 1728: xvj). However, this is a unique case: Palfijn, as a self-translator, also occupied the role of author. In addition to Palfijn's additions in his self-translation, Robert James's dictionary (1746), translated by Diderot, Eidous, and Toussaint and revised and expanded by Julien Bossun—himself a member of the Faculty—contains praise for the efforts of Bossun in completing the dictionary:

On ne peut que savoir gré à l'Éditeur du soin qu'il a pris de donner à l'Ouvrage plus d'universalité, par l'augmentation de plusieurs Articles, par l'addition de quelques-autres qui avoient été omis, & par des notes judicieuses qu'il a placées dans les endroits, qui paroissoient avoir besoin d'éclaircissement. (FDM 1745: n. p.)

[We can only be grateful to the Editor for the care he has taken to give the work greater universality, by increasing several Articles, by adding others which had been omitted, & by the judicious notes he has placed when clarification was needed.]

In sum, according to the analyzed review reports, the author's reputation or the source text's success appears to be the primary criteria for the Faculty's approval of a submitted translation. This applies to the Latin translations by Greek authorities in the 16th and 17th centuries and continued to a certain extent in the French translations of the 18th century. Any additions or annotations to the translation do not appear to be an obstacle; however, neither do they appear to be obligatory for approval. Efforts to supplement and annotate thus appear to be an asset that is at least worth mentioning occasionally.

Review Reports of the Académie des Sciences

As we have already mentioned, neither the approval procedures of the Faculty nor those of the Academy involved *specific* procedures for translations; both original writings and translations were submitted and examined before publication. The translational character of a manuscript – that is, whether a manuscript is 'original' or 'translated' – played no role in its admission for examination. What was relevant, however, was that the manuscript fell within the Academy's area of responsibility, prompting the exclusion of metaphysical, theological and literary works. Once a manuscript had been accepted for examination, it was crucial for a positive assessment that the work fulfilled the principles of *novelty* and *criticism* in accordance with the modern model of knowledge. Jacob Winslow, then *pensionnaire anatomiste* at the Academy, formulated these criteria in a letter to Jean-Paul Bignon dated December 2nd, 1724:

Elle [= L'Académie, G.E.] suit l'intention de son auguste Fondateur de glorieuse mémoire, en n'adoptant que des Observations de Mathmématique & de Physique, qui soient ou tout à fait nouvelles, ou propres à éclaircir, à vérifier, ou à réfuter celles dont on a déjà fait part au Public, soit dans les Mémoires de l'Académie, soit ailleurs. (WINSLOW 1725: 61)

[The academy follows the intention of its august founder of glorious memory, in adopting only observations of mathematics and physics, which are either entirely new, or suitable for clarifying, verifying or refuting those which have already been made known to the public.]

For a positive assessment, the scientific writing had to either shed light on a completely novel aspect or provide new findings (thus contributing novelty), build on previously published writings and clarify them, support them with additional experiments or observations, or refute them in a comprehensible manner (thus contributing criticism or falsification).

Meanwhile, the review reports of submitted manuscripts of translations are consistently divided into two parts: In the report's first part, the writer examines if it is worth publishing a translation of *this particular book* – in other words, the usefulness of the source script. The report's second part focuses on whether it is worth publishing *this particular translation* of a particular book, thus querying the usefulness of the translation. These two aspects are explicitly formulated in the report on the submitted translation of Brook Taylor's *Traité de perspective* [*New Principles of Linear Perspective*], in which the examiners provide the following introductory statement:

L'examen de la traduction d'un ouvrage étranger doit se faire sous deux point de vue bien distincts: il faut d'abord discuter l'utilité dans notre langue, et ensuite le mérite intrinsèque de la traduction. (AdS 1801: 360)

[The examination of a translation of a foreign work must be made from two quite distinct points of view: first, the usefulness in our language, and second, the intrinsic merit of the translation.]

Each submitted translation manuscript had to adequately demonstrate the value it added to the translated source text's existing merits. It was not the source text in French translation that was examined; instead, the examiners focused on the submitted (translation) manuscript alongside its translational and non-translational parts (i.e., including annotations, prefaces, added chapters, etc.).
A closer analysis of all available review reports shows that the two criteria mentioned were not weighted equally. In cases of doubt, the second aspect—the translation manuscript's added value—was given greater importance than the source script's relevance. The following two cases make this weighting apparent: The first concerns the French translation of Piattoli's *Essai sur les lieux et les dangers des sépultures* (1778) [*Saggio intorno al luogo del seppellire*], submitted to the Academy by the French physician and anatomist Félix Vicq d'Azyr. In the review report, the Academy's representatives first note that although Piattoli adhered to the basic scientific principles in his work—reasoned argumentation and the citation of sources—the work does not provide any new scientific knowledge: "Il n'y a rien de nouveau dans la partie scientifique de cet ouvrage" [= There is nothing new in the scientific part of the volume] (AdS 1777: 97). The first criterion, the source text's relevance to the French scientific discourse, was thus assessed negatively, yet the translated manuscript was still approved due to its added scientific value. This value originated in the work's detailed *Discours préliminaire*, where Vicq d'Azyr discusses Piattoli's writing relative to other works of natural history and gives medical advice on how people who are in danger of suffocating from foul-smelling exhalations could be saved:

M. de Vicq d'Azir a completté [sic!] l'ouvrage italien, dont il donne la traduction en françois par le discours préliminaire qu'il a mis à la tête. Ce discours renferme des extraits, des ouvrages et des règlements qui ont paru en France sur le danger des inhumations dans les Eglises et dans les villes. […] M. de Vicq donne aussi des conseils pour secourir les gens suffoqués par des vapeurs méphitiques et il rapporte les opinions et la pratique des meilleurs auteurs sur ce sujet. […] Nous pensons que l'Académie doit applaudir aux bonnes intentions et au zèle de M. de Vicq d'Azir et que son discours préliminaire est bien digne de l'impression pour tout ce qui a rapport à la médecine et à la physique. (ibid.: 97–98)

[M. de Vicq d'Azyr has completed the Italian work, which he translates into French, by means of the preliminary speech he has placed at the head. This speech contains extracts, works and regulations that have appeared in France on the danger of burials in churches and cities. M. de Vicq also gives advice on how to rescue people suffocated by mephitic vapors, and reports on the opinions and practice of the best authors on this subject. We think that the academy should applaud M. de Vicq d'Azyr's good intentions and zeal, and that his preliminary speech is well worthy of being printed in all matters relating to medicine and physics.]

In this case, the translator's *Discours préliminaire* (spanning an impressive 151 pages), with which he opens Piattoli's work and adds new insights into the treatment of asphyxiated persons, is the decisive aspect that makes the manuscript worthy of approval. This preliminary discourse thus compensated for the source text's lack of relevance and made the translation manuscript in its entirety worthy of publication. In this case, the added value of the translation manuscript was given greater importance than the relevance of the source material.

The second case is the French manuscript of Brook Taylor's *New Principles of Linear Perspective* (relevant to painters and architects), which was translated into French as *Traité de perspective* by 'M. Lavite.' In the review report on this manuscript dated June 15th, 1801, the Academy representatives begin by emphasizing the originality of Taylor's writing: "Le traité de Taylor doit être distingué de la foule des livres qu'on a écrits sur la perspective; il est digne de son auteur par l'originalité et la fécondité des principes sur lesquels il est fondé" [= Taylor's treatise stands out from the crowd of books that have been written on perspective; it is worthy of its author for the originality and fruitfulness of the principles on which it is based] (AdS 1801: 361). In the eyes of its examiners, the originality of Taylor's writing distinguished it from the numerous writings previously published on perspective. Accordingly, the first criterion for evaluation—the usefulness of a translation of *this* source writing—was assessed positively. Nevertheless, the translation manuscript was ultimately rejected (in fact, the translation was never printed). It was rejected not because of linguistic translation errors (an interlingual review of the translation never even occurred) but because Lavite did not contribute any additional value to the translated text—that is, he did not supplement it or comment on the scientific content of the text in annotations or other peritexts. This lack of meta-discussion of the manuscript and lack of supplementation by the translator led the examiners to conclude that the manuscript submitted by Lavite was a simple version that could be provided by basically anyone with competence in English and French and basic knowledge of geometry:

Quant au mérite de la traduction, qui pourroit être assez grand s'il s'agissoit d'un ouvrage de style, on conviendra qu'il est presque nul dans une simple version, que peut faire tout homme qui entend la langue anglaise et la géométrie. (ibid.)

[As for the merit of the translation, which could be quite great if it were a work of style, we agree that it is almost inexistent in a simple version, which can be done by any man who understands the English and geometry.]

This second case is of note for two reasons: Firstly, it evidences that the second criterion for assessing manuscripts of translations – the added value to the translated book – could both compensate for the translated writing's lack of relevance (as the first case, Vicq d'Azyr, showed) and that the translator's lack of meta-discussion or addition to the translated writing could lead to a manuscript of a translation being rejected. This rejection could occur even if the translated source writing seemed innovative and relevant to French-language scientific discourse. This case thus further supports that the second evaluation criterion for manuscripts of translations was accorded much greater significance.

However, a second aspect in this last example remains of interest here: the judgment of the committee that the submitted translation was merely a "simple version" (ibid.) of a translated work and not an "ouvrage de style" (ibid.) – that is, not a book of architecture. What we find explicitly expressed here is a differentiation between two types of scientific translation according to their function in the scientific system. Translations that primarily fulfill a subsidiary function ('version') are distinguished from those translations that claim to add something new to the scientific discourse and are thus regarded as distinctive scientific writings. This distinction closely resembles Gideon Toury's analytical distinction between the translation of a literary text and the literary translation of a text (c.f. TOURY 2012: 197). The translation of a literary text refers to *any translation* of "texts which are regarded as literary in the *source culture*" (ibid.; italics in orig.), while a literary translation is a translation of "*any* text, of any type whatsoever—in such a way that the product is acceptable as a literary text in the *recipient culture*" (ibid., italics in orig.). Similar to Toury's analytical distinction, the Academy's material shows us a distinction produced by the social actors themselves between *scientific translations*, which appear primarily as scientific publications and only secondarily as translations and the *translation of scientific texts* that primarily fulfill a subsidiary function, i.e., that are intended to help understand the scientific text of the other language, but which do not appear to be scientific texts in their own right and therefore not worthy of publication.

This distinction expressed very explicitly in the review report of 1801 we discussed here can already be perceived in vaguer formulations in the eighteenth century, for example, where attempts are made to distinguish annotated translations from a 'simple traduction.' The anonymous translator of Christian Wolff's *Cours de mathématique* (1747) [*Anfangsgründe aller Mathematischen Wissenschaften*], for example, claims in his translator's preface: "Je n'ai pas cru devoir me contenter d'en donner une simple traduction. Je suis entré dans un plus grand détail: […] j'ai souvent étendu le discours beaucoup plus qu'il ne l'étoit dans l'original." [= I thought it was not good enough to give a simple translation. I have gone into greater detail: … I have often extended the speech much more than it was in the original.] (ANONYMOUS 1747: iij).[12] And Nicolas Heurteloup states, "il faut encore mettre quelque différence entre la traduction pure et simple d'un ouvrage, et celle que l'on accompagne de notes, d'additions" [= There is a difference between a simple and straigtforward translation of a work, and one accompanied by notes and additions] (HEURTELOUP 1808: iv).

During the eighteenth century, France's (early) modern scientific system increasingly distinguished between a 'simple' linguistic transfer of scientific content for subsidiary purposes and between completed, annotated, critical (translation) publications, with the translators as commenting authors who enter a critical relationship with the translated text and attempt to assess and improve it.

This relationship between the translators and the texts they translate can be described as *critical* insofar as the translators attempt to, on the one hand, examine the scientific content they are translating before publishing it and, on the other, express their approval or disapproval of the translated content in detailed

[12] A very similar distinction is made by Le Cozic in the preface of his translation of MacLaurin (LE COZIC 1753: iij). The French translation of Christian Wolffs *Cours de mathématique* is discussed in length in a separate chapter in my dissertation (ELSHERIF 2024: 157–163).

annotations. The translators thus do not regard the authors of the works they translate as *authorities* of information but attempt to engage critically with them. This critical engagement is formulated in numerous translator's prefaces, of which one example shall suffice. Dumas, one of the two translators of a work by Thomas REID (1792), states in his preliminary discourse:

Je n'ai point placé mes notes pour accréditer cet ouvrage à force d'éloges, mais plutôt pour assurer la confiance du Lecteur sur ce qu'il y remarquera de bon, en lui faisant apercevoir ce qu'il renferme de défectueux. […] Enfin, le rôle de traducteur ne m'aveuglera point sur le mérite de son livre, et l'on ne m'accusera pas d'avoir épargné les endroits qui m'auront paru répréhensibles. (DUMAS 1792: 546)

[I have not placed my notes to accredit this work with praise, but rather to ensure the reader's confidence in what he will notice as good, by making him see what it contains as defective. […] Finally, my role as translator will not blind me to the merits of his book, and I will not be accused of having spared the places that I found objectionable.]

Of the 40 translations approved by the Academy,[13] 35 have extensive annotations in which a critical examination of the translated content occurs alongside additions regarding further literature or the translator's own research findings.[14] These numbers make it apparent that the Academy favored such critical translations. A rough comparison with review reports of other French institutions of modern sciences—the *Société d'Agriculture* (1761–1793) and the *Société de Médecine* (1778–1793) – further evidence this impression about the Academy of Sciences, as all review reports from each society have the same approval criteria. The modern academies and societies of science thus propagated a type of translation which – if one considers all scientific book translations from English, German, and Italian into French from 1600 to 1815 – became dominant from the second half of the eighteenth century onwards. While translations with critical annotations remained in the minority in the seventeenth and early eighteenth centuries, annotated translations already accounted for 72% of all French book translations in 1740–1815. However, these annotations are not primarily translation-related, in which the translator discusses translation problems or changes made to the text – translation problems discussed in footnotes are usually limited to terminological difficulties, i.e., when there are a number of competing terms for a phenomenon from which the translator has to choose or when there is no French term for a phenomenon and a new term is introduced. The vast majority of added annotations by the translators are, however, not translation-related, but notes in which the translators speak as scientists, contribute their own scientific arguments and observations, and take a critical stance (agreeing or disagreeing) with the translated text. In order to be able to provide such critical commentaries, which expand the scientific content of the text, the translator had to have an appropriate scientific background and, ideally, be an active member of the scientific community himself. The fact that this prior

[13] Two of the 42 submitted manuscripts of translations were rejected.

[14] Concerning the five remaining translations without added annotations, in two cases (CHAMPMAN / ANONYMOUS 1779 and EHRMANN / FONTALLARD 1787), the Academy had a particular scientific policy interesting in publishing the translation (cf. ELSHERIF 2024).

scientific knowledge of the translator and his position within the scientific community was of great importance to the Academy is shown by the numerous mentions of the translator's scientific expertise in the review reports, highlighting the "Notes *savants* que le Traducteur a ajoutées" (AdS 1776; italics G. E.) or the translator's proficiency in the 'language of natural history': "On doit sentir quel avantage avait M. Dietrich qui parle les deux langues, et qui connait bien une troisième bien essentielle à l'intelligence de cet ouvrage: la langue de l'histoire naturelle" [= You can see what an advantage Mr. Dietrich had, as he speaks both languages, and is familiar with a third that is essential to the understanding of this work: the language of natural history] (AdS 1776).
The Academy recognized such critical translations as an independent scientific achievement by the translator (or, more precisely, the 'author of the translation'). In a meeting on September 12th, 1799, the Academy explicitly decided:

Sur la proposition d'un Membre, la Classe, après avoir entendu le Rapport de ses Commissaires, décide que toute traduction qui aura exigé de la part de l'auteur de grandes recherches, un travail de longue haleine, et qui sera accompagnée de notes instructives, pourra être mise en concurrence avec les ouvrages qu'elle juge dignes d'êtres proclamés par [sic !] la reconnaissance publique. (AdS 1799: 622)

[On the proposition of a Member, the Class, after hearing the report of its commissioners, decides that any translation which has required extensive research and long-term work on the part of the author, and which is accompanied by instructive notes, may be placed in competition with works which it deems worthy of being proclaimed by public recognition.]

A translation that requires meticulous research by its author (n.b.: the author of the translation, i.e., the translator) and which is provided with instructive annotations should be credited to its author (i.e., translator) as being just as valuable a scientific achievement as non-translated scientific publications.

Concluding remarks

What conclusions can be drawn from the preceding observations? The review reports of the *Académie des Sciences* give a clear picture of which form of translation was regarded as valuable to the modern sciences and thus worthy of publication, i.e. those translations whose translators emerge as active scientists and comment on the translated text. Published book translations were primarily regarded as scientific *publications*, while their translation character remained of secondary relevance. As publications, book translations had to fulfill the same requirements as all other scientific publications: They had to add new information or a new perspective on existing information to the scientific discourse. The translators, who were expected to be visible as *scientific authors*, were considered members of the scientific community, and the publication of their critical and annotated translation was thus also seen as their scientific achievement. What becomes apparent in the transition from the *Faculté de Médecine* to the *Académie des Sciences*, and from the 16th to the 18th century, is a reorientation of the institutions' examiners from the source text author (whose prestige makes a translation valuable and thus worth publishing) to the question of whether the translation surpasses its source text in novelty and is thus itself worth publishing as scientific publication. This orientation towards the novelty of

the book translation is accompanied by an orientation towards the translator (and away from the author of the source text). The translation is only worth publishing as scientific writing if the translator also emerges as a scientific author and enters into a critical relationship with the source text. The norms of novelty and criticism established in the modern scientific system are thus also clearly manifested in the scientific translation practice.

Nevertheless, it would be too simplistic to say that the Faculty, as a representative of the old model of knowledge, regarded the authors of the source texts as authorities who shall be translated by 'neutral' translators—that is, translators who do not state their opinion on the translated content—while modern scientific institutions demanded a critical relationship between translator and text. Regarding translations approved by the Faculty, those in the seventeenth and eighteenth centuries already contained some critical comments by the translators but were only mentioned in two cases in the Faculty's review reports. Moreover, regarding those approved by the Academy, it would be equally simplistic to say that this institution paid no attention to the author's reputation or the source text's usefulness at all. For example, in the French translation of NEWTON (1740), it was undoubtedly Newton who ensured that the French translation would be an attractive text. In the review reports of the Faculty and those of the Academy, two criteria can be identified that were applied to manuscripts of translations: (1) the author's reputation or the source script's success and (2) the intrinsic added value of the translation itself. The weighting of these two criteria has changed from the Faculty to the Academy: in the former, the reputation of the author or the source text was the primary criterion for approval, and the added value of the translation a welcome asset; in the latter, by contrast, the intrinsic value of the translation becomes the primary criterion, with the benefit or success of the author and source text serving as a welcome asset.

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Translation and the early scientific press
Or: Why scientific papers should be regarded as translatorial activities

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Abstract

While the first discipline-specific scientific periodicals of the late 18th century are marked by the integration of full-text translations, these translations nearly disappeared from scientific periodicals towards the end of the 19th century. This development can be seen in the light of tensions already present in the early practice of full-text translations, such as the preference for 'original' material expressed by the readership of the journals, the time lag produced by translations, the changing role of national public spheres, as well as tensions related to the medium of the periodical press. However, the near disappearance of full-text translations could also be seen as a transformation of translatorial activity within the scientific community. With the evolution of the scientific paper as having to state the current state of research for a given topic on an ideally transnational level, the translatorial activity is transferred to every author of a scientific paper – an evolution that goes hand in hand with the idea of scientific papers as addressing a 'universal' audience, despite their being written in a particular natural language.

Keywords: scientific periodicals, national public sphere, Lorenz Crell, Annales de Chimie, Journal de Physique, Nicholson's journal

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Abstract:

While the first discipline-specific scientific periodicals of the late 18th century are marked by the integration of full-text translations, these translations nearly disappeared from scientific periodicals towards the end of the 19th century. This development can be seen in the light of tensions already present in the early practice of full-text translations, such as the preference for 'original' material expressed by the readership of the journals, the time lag produced by translations, the changing role of national public spheres, as well as tensions related to the medium of the periodical press. However, the near disappearance of full-text translations could also be seen as a transformation of translatorial activity within the scientific community. With the evolution of the scientific paper as having to state the current state of research for a given topic on an ideally transnational level, the translatorial activity is transferred to every author of a scientific paper – an evolution that goes hand in hand with the idea of scientific papers as addressing a 'universal' audience, despite their being written in a particular natural language.

Introduction

While GIPPER (2022) remains one of the rare studies on early scientific periodicals in Western Europe focussing exclusively on the issue of translation,[1] the presence of translation is mentioned in nearly all studies concerned with the beginnings of the scientific press. This applies to the studies concerned with individual periodicals (CROSLAND 1994; HUFBAUER 1982; LILLEY 1948; MCKIE 1957; MCCLELLAN 1979; WATTS 2014), but also to studies offering more general perspectives on the institution of the scientific press (KRONICK 1976; MEINEL 1994, 1997; STICHWEH 1984; PFEIFFER & VITTU 2008; CSIZAR 2018). Dominantly quantitative approaches such as MENZEL (2023) are still exceptional, but likely to become more frequent. At present, they seem to confirm observations and quantitative work made in earlier studies on the subject noticing increasing percentages of translations in journals in the 17th and particularly the second half of the 18th century and a decrease of translations within journals towards the very end of the 19th century (cf. MEINEL 1994, 1997; STICHWEH 1984; MENZEL 2023). Finally, there have been numerous studies situating the scientific press in

[1] Other exceptions are STEFANI-MEYER (2008) who focuses on translations in the *Journal des Savants* as well as PFEIFFER (2020) and TURNER (2008) who are concerned with translations from the *Philosophical transactions*. Generally, the *Journal des savants* and the *Philosophical transactions* have received large scholarly attention, yet these journals do not quite fit the profile of the scientific periodicals focussed on in the present study. This is due to their covering a much wider range of disciplines, but also, in case of the *Transactions*, of them becoming the medium of the *Royal Society* which modifies their position in the realm of scientific publications.

broader developments of book markets and international trade, especially in the 19th century British context (e.g. TOPHAM 2013). However, the focus on international aspects does not necessarily lead to a detailed analysis of translational activity, which remains difficult to trace, as translators often remain anonymous and journals rarely leave well-organised archives. Nevertheless, it is interesting to note the different framing of translational activity depending on the overall perspective adopted by the studies. While Watts, for example, situates the translations in Nicholson's Journal within a journalistic habit of reprinting material (cf. WATTS 2014: 393), Meinel sees in them signs of "awareness and reception [...] across language barriers" (MEINEL 1994: 54), while specifying that this is not only evident in translations, but also in the extraction of foreign material, etc., all of which leads to a practice of "multiple publication and multiple translation" (MEINEL 1994: 50) characteristic of the early scientific press. A slightly different focus characterises the studies written by historians of science. Crosland, for example, identifies translators within the 'editorial staff' of the Annales de Chimie, and is prompted by their lack of substantial scientific credentials (cf. CROSLAND 1994: 328). Lilley, on the other hand, identifies significant deficiencies in the translated material, for example on mathematical issues that had been discussed among French scientists but had not yet 'travelled' to Britain. He also cites the difficulty of access to foreign scientific journals for the British audience of Nicholson's journal, thus conceding that translations "were not the repetitive waste that they seem at first sight to be, but were in fact most important, at least to a large number of readers" (LILLEY 1948: 95).

These few remarks should suffice not only to testify to the interconnectedness of methodological choices, disciplinary perspectives and approaches to translation, but also to show that there is still ample room for an approach that takes the history of translation as its point of departure, especially since the data collected offer the prototype of a problem that requires a historical approach: that of observable change.[2] The evidence for a strong presence of translations in early scientific journals, followed by an almost complete disappearance at the end of the nineteenth century (cf. STICHWEH 1984; MEINEL 1994, 1997; MENZEL 2023), deserves further investigation. While the gradual disappearance of Latin as a lingua franca within the Republic of Letters in the 18th century and the rise of the nation-state in the 19th century certainly provide the context for this development, its precise dynamics remain to be analysed in more detail. This is obviously beyond the scope of a single article, but the following pages will attempt to offer at least some preliminary reflections and observations on the subject.

These reflections owe much to the works of two scholars who have contributed fundamental insights into the changing role of translation in the early scientific press, namely Meinel and Stichweh. Meinel focuses on quantitative developments, tracing the number of translations in French, German and British scientific periodicals (with an emphasis on chemistry) throughout the 19th century. He explains the decline in translations towards the very end of the 19th century by the emergence of discipline-specific national societies and abstract journals providing translational services for scientists. He also highlights specific developments within countries, such as the shift of translations to less prestigious

[2] Concerning the tendency of research in translation history to focus on stability, cf. PYM (1998: 115).

scientific journals in the case of France. Stichweh observes the same intriguing 'disappearance' of translations from scientific journals towards the end of the nineteenth century (cf. STICHWEH 1984: 441), but is less concerned with alternative sources of translations on which scholars could rely. Instead, he describes the reduction in translated articles as a symptom of a 'new' scientific public that conceives of itself as 'universal', even if linguistically restricted: Assuming this "interessante Vorstellung, daß Publikation in wissenschaftlichen Zeitschriften Kommunikation mit einem universellen Publikum ist, das keinerlei Einschränkungen hinsichtlich Nationalität und Sprache unterliegt" (STICHWEH 1984: 441), the absence of translations seems less surprising, or, one could argue, even necessary, insofar as translations suggest that the national public sphere in question is not 'universal', but surrounded by other public spheres that produce valuable articles. These intriguing questions are not addressed in detail in Stichweh's account. Rather, he adds a second argument to explain the progressive absence of translations in scientific journals, and this argument develops around a change in the overall function of scientific journals within disciplines: Whereas earlier journals could pretend to offer a complete overview of all new relevant findings in the discipline at an international level (through translations!), the general increase in scientific activity and publications over the course of the nineteenth century made this promise less and less realistic. Thus, as Stichweh argues, journals gradually abandoned translation.

The following study expands on the findings of both Stichweh and Meinel by presenting more detailed observations of concrete translation practices and discourses in scientific journals, focusing on the period between 1770 and the 1860s. Later developments, such as those mentioned by Meinel, are thus not part of the following investigations, although their relevance to the overall topic of translation in the scientific press is undeniable. A similar argument can be made with regard to comparative data on the role of translation in less specialized journals. It is evident that such a broader frame of reference would constitute a desirable object of study. However, it would require a longer investigation of a corpus of material that was not the focus of the DFG[3] project that funded this study. For this reason, the following analyses are limited to a small selection of scientific journals, in order to examine how the treatment of translations interacts with other developments within the specialized scientific press and, above all, with the development of the 'original' scientific paper.

It will be argued that the development of the scientific paper partially 'resolves' certain tensions that can be observed around the role of translation within scientific journals. However, in order to appreciate this 'solution', it is first necessary to trace the problems associated with full-text translation in scientific journals. To this end, the present study has collected observations on four early scientific journals, namely Crell's *Annalen der Chemie*[4] which is often termed the first (non-medical) discipline specific journal, the French *Annales de Chimie* (1789-1815), which began as a translation project of Crell's *Annalen*, Rozier's *Observations sur la physique, sur l'histoire naturelle et sur les arts et métiers* (also called *Journal de Physique*) (1771-1793) which pioneered scientific

[3] German Research Foundation.

[4] The title *Chemische Annalen* is used to refer collectively to the four distinct journal titles *Chemisches Journal* (1778–1781), N*eueste Entdeckungen in der Chemie* (1781–1784), C*hemisches Archiv* (1783–1798), *Chemische Annalen* (1784–1804).

journalism in France but lost credit when its late editor refused to accept the 'new chemistry' propagated by the *Annales de Chimie* and Lavoisier, and finally *Nicholson's Journal* which was commented on as being the first journal of its kind in England, modelled on the French *Journal de Physique* (cf. ANONYM 1799: 283). The choice of these journals is thus motivated by linked genealogies, roughly comparable periods of publication, and structural analogies (such as a relatively high degree of specialization and quality control[5]) that should facilitate a comparative approach. A comprehensive counting of the translations included in these respective journals could of course serve as an initial step in this comparison. However, since the question addressed in this article does not require the use of in-depth quantitative data, it seems acceptable to rely on information provided by the editors on control samples, as well as on previous studies that estimate the number of translations ranging from an average of 20 % for the *Annales de Chimie* (cf. MEINEL 1997: 141) to 30 % for *Nicholson's journal* (cf. TOPHAM 2013: 136). Such figures might easily be subject to Anthony Pym's 'descriptive trap': "Translation is important; let's look at translation; see, translation is important, isn't it?" (PYM 1998: 25). In the context of this paper, however, these percentages serve merely to attest to the fact that translations did indeed form a non-negligible part of early scientific journals. This fact in turn contrasts with later publishing practices, whereby translations were largely absent from scientific journals (cf. MEINEL 1994: 56), a practice that can again be observed today. Without presuming to provide an explanatory account of a development spanning nearly an entire century, the following pages aim to present observations that may be worthy of consideration when attempting to comprehend the fluctuating presence of translations within scientific journals. As a heuristic tool (without any deterministic claim), these observations will be organized around the tensions that emerge between the practice of publishing full-text translations and the challenges inherent to this practice.

Translations and/or Originals – challenges of a new audience

The first tension could be described as that between the presumed need for translations and the articulated desire for original work. This tension is clearly evident in the paratexts of the journals, be they editorial prefaces or reviews. These justify the presence of translations as a response, on the one hand, to the scientist's need to be aware of relevant findings from abroad and, on the other, to the needs of those scientists and amateurs who could not afford the publications of the academies, which were the authoritative institutions for the sciences in question. Thus, Crell clearly states that his translations of the publications of the *Académie des Sciences* and the *Royal Society* were intended for his readers who lacked these resources. He asserts, "[i]ch kann sicher annehmen, dass unter meinen Lesern nicht der zwanzigste Theil, die mehresten geschweige alle die

[5] The relatively high standards are clearly stated by Rozier: "Nous rejetterons en consequence ce qui ne seroit que compilation indigeste, & dénuée de vues neuves & utiles. L'importance des matières, la maniere dont elles feront prélentées, nous décideront sur le choix des morceaux qui doivent être insérés dans ce Recueil. Nous n'offrirons pas aux Amateurs oisifs, des Ouvrages purement agréables, ni la douce illusion de se croire initiés dans les Sciences qu'ils ignorent" (ROZIER 1773: v).

theuren Schriften der Akademien besitze" (CRELL 1781: s. p.), which is an argument found in almost identical form in Nicholson and his continental model Rozier:

And when we reflect on the very limited circulation of academical transactions, from their price, their number, their extent, distance of publication, difference of language, […] it is also certain that, from one or other of these causes, even the best memoirs they contain must continue unknown to a very large class of men of science (NICHOLSON 1797: iii–iv).

mais la plûpart des Collections académiques, sont écrites dans la Langue nationale, & imprimées plusieurs années après que la lecture des Mémoires a été faite. Pendant ce tems, on ignore des faits qui peuvent être de la plus grande utilité pour les Sciences. D'ailleurs, ces Collections devenues très-nombreuses, & par-là très dispendieuses, surpassent souvent les facultés de ceux qui seroient en état d'en profiter. (ROZIER 1773: iii–iv)

It is apparent that the supply of translations is aimed at a 'larger' audience, one that is unable to afford the publications and, naturally, is not affiliated with these institutions. However, it is noteworthy that while the journals provide translations for this audience, they also have to respond to the demand for more 'originals', as evidenced in Crell and Nicholson's prefaces:

It is certain that, if every article in a journal of science were to be professedly original, it would be a work of comparatively much less value to philosophers and the public (NICHOLSON 1797: iii).

Ich habe zwar den Wunsch gelesen, daß ich mehrere eigenthümliche Versuche, als bisher, in einem Band vereinigen mögte […] (CRELL 1781: s. p.).

The demand for original works is evidently at odds with the printing of translations, given that these constitute the 'non-original' material to which extracts from foreign works could be added. This demand is indeed intriguing insofar as it reflects an interrogation of the coexistence of translated and original works. However, it is even more intriguing in that it is driven by the same enlarged audience, presumably in need of translations of the unaffordable publications of the academies. It is precisely this audience that made the early scholarly journals successful, allowing a somewhat larger group of people to interact within the virtual realm of a journal. This interaction could take different forms, but in the case of the journals discussed, the exchange of experiences played an important role, as Crell's description of the function of his journal makes clear:

Um Erfindungen zu machen, sie zu erweisen, oder sie zu berichtigen, muß man die bereits gemachten kennen. Eine Entdeckung entwickelt eine Zweyte, so wie ein Funke den andern. Oft verwendet man vergeblich seine Zeit auf eine Untersuchung, weil man nicht wußte, daß sie schon gemacht war. (CRELL 1781: s. p.)

The fact that the journals allowed their readers to save time and effort on experience is also emphasised by Lilley (cf. LILLEY 1948: 97). But perhaps even more importantly, the journals offered the opportunity to contribute minor findings that gained importance by being integrated into a larger disciplinary whole formed by the readers of the newly created journals (cf. HUFBAUER 1982; PFEIFFER & VITTU 1980: 297). In a sense, this audience, which did not have access to the academies that provided a regular meeting place for their members, seems to have sought its own meeting place through the journals. And the ideal form of interaction in these was obviously the direct exchange of 'original' work provided by readers and contributors. How else could one explain that Volta, who had privileged access to European scientific institutions, wanted to found an academic journal on the peninsula (cf. PFEIFFER & VITTU 2008: 295)? The idea of creating a journal that would bring together the work of fellow Italian scientists seems to testify to this new dynamic of a sociological widening of the participants in scientific research. And it was precisely this expansion that undoubtedly increased the need for published translations (which Volta explicitly wanted to include in his journal project), since – unlike the elite scientists, whose intensive international correspondence (cf. BRET & GRISON & SADON-GOUPIL 1994; BERGMANN 1965; LAVOISIER 1955ff.; OLDENBURG 1966) proves that they had means of keeping up with international research besides published translations – this new public had to rely on journals that brought this research within their immediate reach. At the same time, however, this new audience wanted original content that demonstrated the presence of a scientific community beyond the more cosmopolitan scientific elites.

Interestingly, this tension seems to have been perceived by the contemporaries of these developments, though without being clearly formulated. Rozier, for example, in the preface to his journal, simply remarks: "II semble qu'à mesure que le nombre des Savans s'est accru, la Correspondance, entre ceux des Nations différentes, a été rallentie" (ROZIER 1773: iv). And Crell takes great pains to justify his desire to publish translations of the *Transactions* alongside the original work by stating that these translations were in fact serving his countrymen:

Meine vorzüglichste Absicht, der ich alle anderen nachsetze, und der größte Nutzen dieses periodischen Werks, ist die Erweiterung der chemischen Kenntnisse unter meinen Landsleuten. Nicht blos durch Mittheilung solcher Versuche, die hier zuerst bekannt werden, erhalte ich meinen Endzweck; sondern auch durch solche, die zwar von andern gemacht sind, aber nicht allgemein genug bekannt seyn können. Deshalb glaube ich diese Absicht besser zu erreichen, wenn ich jährlich 4 Bände liefere, welche viele Auszüge aus den Werken akademischer Gesellschaften erhalten, als wenn nur ein oder zwey Teile erfolgten, die blos mit originellen vaterländischen Arbeiten angefüllt wären. (CRELL 1781: s. p.)

Whatever one may think of Crell's efforts to persuade his readers, his discourse expresses the underlying tension in the readership of his journal. This readership had apparently conflated the concepts of 'being an original work' and 'being a domestic work', as Crell's phrase "originelle[n] vaterländische[n] Arbeiten" suggests – a conflation that puts translations in an unenviable position.

Translation and time – challenges of scientific progress

A second tension appearing in the journals concerning translations revolves around issues of 'time', or rather the inevitable time difference that is inherent to translation as being posterior to a source text. This tension could already be sensed in the preface to Nicholson's journal, expressing the pertinence of publishing non-original material, found for instance in the memoirs of Academies, even if these had been published a considerable time ago:

Whenever, in the progress of investigation, discoveries thus buried from the knowledge of the world, shall' present themselves, the rational plan of a public journal will require them to be brought forward, though years may have elapsed since their first publication (NICHOLSON 1797: iv).

Now, it may seem surprising to the modern reader to even consider the relevance of translating material published years ago, but in the case of the *Memoirs of the Academies*, this relevance must be seen in the light of the prestige of these institutions, which produced the authoritative knowledge of the time in their respective countries. For a finding to be regarded as a discovery, it had to be presented at meetings of the *Royal Society* or the *Académie des Sciences* and it was these institutions, with their technical facilities for replicating experiments and carrying out expensive research missions, that provided what might now be called qualified peer review. The importance of their publications can therefore hardly be overestimated, which explains why their translation seemed highly desirable. However, one of the major problems of the academies, and one of the main reasons for the success of scientific journals, was the relatively slow pace of their publication. The *Mémoires* of the *Académie des sciences* and the *Philosophical Transactions* which began as Henry Oldenburg's journal but became the official organ of the *Royal Society* in 1751 (cf. FYFE et al. 2015), were notoriously slow to appear, sometimes provoking year-long delays between the period of discovery, the reading in front of the Academy and the publication of the findings in the respective *Transactions*. If to this we add the time necessary to translate these *Transactions*, the risk of publishing outdated knowledge seems obvious – a risk confirmed by a review of Crell's *Annalen*: "Wozu endlich auch die so späten Auszüge aus den Denkschriften der Gesellsch. u. Akademien d. W.? Die mehresten besitzen wir schon in anderen frühern Uebersetzungen und mehrere sind entweder widerlegt oder verbessert, und also jetzt nicht mehr passend" (ANONYM 1788: 160). It is not surprising, therefore, that Crell and other journal editors wished to publish the findings presented at the *Academy* meetings before they even appeared in their *Transactions*, as evidenced by a request from Crell to the chemist Guyton de Morveau:

En general, je vous serais très obligé, si vous voudriez m'envoyer des copies, oú [sic] des extraits de mémoires chymiques, qu'on a lus à l'illustre Acad. R., pour pouvoir en faire usage dans les Annales ; car ces extraits n'empêcheroient pas du tout, qu'on pourrait après tout aussi bien les faire imprimer en francois, comme si je n'en avois pas fait usage (Correspondance Crell-Morveau, Archives Académie des Sciences).

However, the Academies were understandably reluctant to share the contents of their meetings (cf. MCCLELLAN 1979: 446), and Nicholson was severely sanctioned by the President of the *Royal Society*, Joseph Banks, for inadvertently publishing

results that had not yet appeared in the *Transactions* (cf. WATTS 2014). Interestingly, the *Royal Society* was less strict about translations of offprints given to members of the Society before publication in the *Transactions* (cf. WATTS 2014), but these offprints likely circulated among the well-connected elite (cf. LILLEY 1948: 91) and could not simply be translated and published by the journal editors. In this respect, Crell's request expresses above all a desire for attractive and current material, a desire that could hardly be satisfied with translated material alone, which was not always available within a reasonable time. Regarding the tension between timeliness and translation in scientific publishing, one could hardly imagine a more telling example than the project formed by Liebig at the beginning of the 19th century: As Meinel explains (cf. MEINEL 1997: 145), Liebig meant to have his *Annalen der Pharmazie* (later called *Annalen der Chemie und Pharmazie*) published simultaneously in German, French and English, a plan testifying to the peculiar exigencies of scientific publishing. These exigencies may prove impossible to ensure in many concrete instances, but are nevertheless intrinsically linked to the mechanisms of scientific research. Since in science, no results can claim to be definitive, any time difference between publications and their translations, might entail an invalidation of the translated finding.

In the context of book translations, this fact leads to all sorts of adjustments that translators make in order to 'update' the translated text, in particular by including contradictory evidence.[6] In the context of journal translations, however, these adjustments are less extensive and less frequent, and in any case they cannot resolve the fundamental temporal tension between any publication and its translation, when these texts do not appear simultaneously, as in Liebig's (unrealised) plan. Interestingly (yet not surprisingly, if we recall Derrida's *différance*), the very idea of publishing journals simultaneously modifies the question of original and translation to some extent, showing that questions of temporality touch on very essential aspects of the problematic status of translation in scientific contexts.

This is evident in concerns about the priority of findings, which is why readers of Rozier's journal asked him to give the exact publication date of source material in translations, something he had not done at the beginning (cf. BERGMAN 1965: 106-107). But it probably also explains why the *Annales de Chimie* gave translation and 'translation control' by the editorial board a firm place in its directives (cf. BRET 1997: 426): If journals wanted to include foreign material and beat the *Academy* in terms of publication speed, translation had to be ensured within short time frames and could not be left to chance or the goodwill of people willing

[6] Cf. Elsherif in the present volume; Seligardi's claim that "journals were better than translation of monographs", because "book reviews and articles allowed critiques and comments to be expressed in a more open way than a translator's preface to a book" (SELIGARDI 2013: 427) is instructive because it underlines the 'critical' aspect of translations. The evidence concerning French translations of scientific work in the 18th century though shows that translators of monographs did indeed comment the translated works rather openly, in footnotes, but also in prefaces. The practices of critical footnotes and the replication of experiments before publication that Meinel links to Liebig's term 'Experimentalkritik' can also be found in the translation practices of the 18th century, as Gipper has shown concerning translations in Rozier's journal (cf. GIPPER 2021). For a different use of the term 'critical translation' cf. SAß (2023), who derives this practice from the editorial work of 'critical editions' of literary authors.

to translate well and quickly. In fact, as Berthollet's correspondence with Morveau shows, the *Annales de Chimie* benefited from the translation skills of Claudine Picardet, who had no official role within the *Annales de Chimie* but was a skilled scientific translator (cf. BRET 2014).

Nous espérons du zèle de Madame Picardet. (31 mars 1789)
J'ai recu la traduction de Mad Picardet: la Société des Annales lui sera bien oblige: priez la de lui continuer ses bons offices. (6 juin 1789)
Venez donc à notre secours le plus promptement avec Madame Picardet. (août 1789) (Correspondance Berthollet-Guyton de Morveau, Archives AdS)

However, this does not contradict the fact that the explicit mention of translations, their control and payment in the directives of the *Annales de Chimie* shows a concern for timely translations. It is also worth mentioning that Lorenz Crell and William Nicholson were themselves scientific translators, a fact that is rarely emphasised in relation to their personalities, but which is by no means negligible: if timely and accurate translation is the bottleneck of translation in scientific journals, then it must be extremely helpful to have these skills as editors. In this respect, these editors follow the polyglot model of scholarly editing embodied by Henry Oldenburg, who combined translatorial and editorial work for "[his] transactions" (OLDENBURG 1966: 433).

Translation and space – challenges of the national sphere

Where time is concerned, questions of space usually cannot be ignored, and the question of translation is of course no exception to this rule. For in addressing problems of synchronicity or delay between the publication of source texts and translations, it has been tacitly assumed that the locations of these publications are somehow congruent with the modern conception of nation-states. The prototype of this idea is expressed in Liebig's project of a synchronous publication in German, French and English, which in a sense only seems 'complete' when these respective versions are published synchronously in Germany, France and England.
As examples from the 18th century show, this congruence between the language of a journal and the space of its production and publication is of course untenable, since French journals were published outside France and many German journals did not have a national impact, as Stichweh points out with regard to the many 'local' journals in the German-speaking countries (cf. STICHWEH 1984: 409). Crell's *Annalen*, on the other hand, were expected in various parts of Europe as an access to chemistry in Germany, but also in Sweden (cf. BRET et al. 1994: 129), while Rozier's journal was received by chemists in England, as can be seen from a letter in which Kirwan mildly criticises Morveau for publishing some experiments in the *Nouvelles de la République des lettres* instead of using the more accessible channel of Rozier's journal (cf. BRET et al. 1994: 57). From the example of Kirwan waiting in London for Crell's *Annalen* and Rozier's *Journal de Physique*, one could of course extrapolate the potential of journals to create virtual spaces for transnational scientific exchange, an idea that is alluded to in several of the prefaces to our journals, but one has to take these discourses with a pinch of salt. While Lilley and Watts rightly underline the *function* of *Nicholson's journal* as forming a space for transnational discussion on electro-chemistry during a period

at the start of the 19th century, the rhetoric of the journals tends to imply the collection of knowledge within the realm of the journal, giving them the character of 'centres'.

On ne sauroit trop inviter ceux qui veulent faire des progrès dans les Sciences, à rapprocher les connoissances transmises par les Savans de tous les siécles & de tous les pays. C'est un préalable nécessaire pour parvenir à de nouvelles découvertes. (ROZIER 1773: v–vj)

Le cas où s'est trouvé M. Braun, & tant d'autres, avant ou après lui, démontre jusqu'à l'évidence la nécessité d'un dépot général pour les découvertes. Nous l'offrons aux Savans. Cet Ouvrage déja répandu dans les plus grandes villes de l'Europe, constatera leurs travaux. Si par des raisons particulières, ils ne veulent pas nous communiquer leurs dissertations, nous leur demandons au moins le simple exposé du fait, le résultat clair & précis de leurs expériences. On leur répond de la fidélité de la traduction en quel que Langue qu'ils écrivent: cependant, on les prie, si, pour eux la chose est facile, d'écrire en Latin ou en François. (ROZIER 1773: 8)

In both cases, Rozier implies the centrality of his journal, which may of course be advantageous and even necessary for the progress of science, since it potentially creates a common ground of knowledge. However, this idea also implies a certain 'megalomania', since it would only be defensible if all scientists agreed to publish in Rozier – an expectation that must have seemed unreasonable even at the time, since the 'symbolic capital' was still awarded by the academies. A publication in Rozier could thus certainly be advantageous, but it could by no means replace the consecration given by the Academies, as Lavoisier's negotiations between the different spaces of publication illustrate, apart from his depositing of important discoveries in sealed envelopes at the *Académie des sciences* (cf. POIRIER / BALINSKI 1996). To put it another way: Rozier may have been able to offer a virtual space for transnational research, but the contributors were still dependent on their respective local support systems, which Rozier could not replace. In this respect, of course, it is a charming rhetorical strategy to claim that the contributors to the journal 'own' it: "Telles ont été les raisons qui nous ont engagés à entreprendre ce Recueil; & nous les présentons avec d'autant plus de confiance, aux savans Etrangers, que ce sera leur ouvrage" (ROZIER 1773: v). In fact, even if Crell, for example, paid contributors (though this was rather exceptional), the journals remained 'virtual' spaces, dependent on material conditions provided by other institutions – or individuals, as in the case of Lavoisier, whose laboratory was the centre of the *Annales de Chimie*. In this sense, the journals could hardly offer a truly autonomous space, and it is not surprising that they lived rather symbiotically with the institutions and 'spaces' of the time. Their collection of texts and their intensive translation work thus contributed to the centrality of the respective national spheres and their languages, rather than creating a fundamentally transnational sphere.
This 'nationalising' potential of translation has been commented on in the past (cf. DIZDAR et al. 2014; GIPPER in the present volume), a very striking historical example being Guyton de Morveau's "Mémoire contenant des vues pour conserver à la langue française la prérogative d'être la langue universelle", which explains the intimate link between translation and the concern for the centrality

of the target language and the scientific community (cf. BRET 2016; MANNWEILER 2021, 2024) – a concern that responded directly to the German translation furore and that was also perfectly compatible with patriotic claims, as seen in the person of Crell, who in his journal combines intense translation work with emphatic patriotism. Yet it seems that the potential of translation history to elucidate this desperately vague concept of 'nation' has not yet been fully explored (cf. SAKAI 1997; BERMANN & WOOD 2005 for existing work). And while it is true that observing translation activities in scientific journals cannot provide a definition of the nation, it may well help to problematise certain preconceptions about its supposed emergence in the nineteenth century. For what emerges from certain details of the above-mentioned translation activities is a peculiar role of the national public sphere, a role that could be described as a pseudo-epistemological function that this sphere assumes and that is paradoxically reinforced by translation.

To grasp this function, one might consider the complaints of some translators about the reluctance of their target audience to accept insights from abroad – especially if they contradict cherished healing methods such as bloodletting: "Je scai qu'il combat un préjugé trop enraciné en France & sur-tout à Paris, pour trouver une approbation générale. Les Partisans outrés de la saignée & les ennemis des narcotiques condamneront d'emblée le livre de M. Lobb" (BOYER DE LA PREBANDIER 1749: iij). But on an even more fundamental level, this pseudo-epistemological function must be grasped in the very opacity attributed to the national public sphere in the context of the journals discussed. When Lorenz Crell suggests that he could print translated information from the *Académie des Sciences* in his journal and that this information could then be printed in France "as if [he] had not made use of it", this implies precisely a bizarre opacity of the respective national spheres. An opacity that he himself is obviously able to transcend, since he negotiates between the two spaces but which he nevertheless assumes. And one gets a very similar impression with regard to Banks's reaction to Nicholson, when he states that translations of papers presented to the *Royal Society* and published outside England might be acceptable and even welcome, while premature publication within England could not be tolerated. Again, the respective 'national' spheres are imagined to be opaque to one another, meaning that it is possible to treat things that happen outside the respective spheres as simply 'not happening', which is more than a simple lack of information. This 'pseudo-epistemological function' of the national sphere is also perfectly expressed by Morveau when he mentions that for the readers of Rozier's *Journal de physique*, things are 'new' that have simply been published in another language:

j'imagine qu'il veut par la donner a ses mémoires un air de nouveauté pour se concilier l'attention de bien des lecteurs qui ne veulent que du neuf et qui ne savent pas se rendre compte que ce qu'ils ne connoissent pas encore, est tout neuf pour eux, a quelque date qu'on l'ait publié dans une langue qu'ils ne pouvoient entendre (BERGMAN 1965: 170).

However, one might ask whether, by providing full-text translations of these findings formulated in other languages, Morveau is not paradoxically reinforcing, or at least adhering to, this 'pseudo-epistemological' function of the national public sphere: if everything outside the national sphere can be ignored, then

everything that should not be ignored must be brought into it, and thus translated into it. Now, this seems to be a view of the national public sphere that could be perceived as somewhat patronising, since editors and translators get to decide what the public 'knows'. But it is also definitely a view that seems to have changed over the course of the nineteenth century – if we are to accept Stichweh's description of the move towards a 'non-translating' scientific press as addressing a 'universal' audience. Of course, one might ask how the word 'universal' could be used in the context of a monolingual address. Since it is obvious that this address and the audience addressed are not universal, at least not in a linguistic sense, but either germanophone (in the case of the audience Stichweh is referring to), or francophone, or anglophone, and so on. And of course one could simply assume that Stichweh uses 'universal' in the sense that has been delegitimised by the 'universal' claims of the respective imperial nations, this universality having been aptly described as the history of the refusal of universality (cf. MESSLING & SOLTE-GRESSER 2023: 36).

What Stichweh is referring to, however, is most likely a different kind of universality, which is the exact parallel to the universality of scientific facts, which are neither culturally dependent nor changing in their truth value according to the 'national' language in which they are expressed. This universality finds its correlate in the idea of an audience that allows facts to be refuted at any time and from any source, and that could not *admit* ignoring facts simply because they have been published elsewhere. This audience is thus 'universal' in the sense that it assumes national aspects to be epistemologically irrelevant,[7] and, as Stichweh argues, this audience is expected to be able to navigate the world of scientific journals and information sources (cf. STICHWEH 1984: 441). This audience is thus similar to the 'elite' scientists of the 18th century, who were able to keep abreast of relevant international developments through personal contacts (within and outside the academies), correspondence and the emerging scientific press. And for this elite – whose standard would seem to be applied to all participants in the scientific field –, it could be argued that full-text translations in journals were probably not essential. However, the fact that our journal editors went to the trouble of providing these translations in the journals could be seen as a transitional phase in which findings from abroad had to be presented to the 'national public' in order to 'matter'.

This, of course, echoes the logic of the academies, which, as 'nationally' representative bodies, determined what was relevant in the respective sciences, including findings from abroad by their foreign members or reports by their members via translation or extraction of foreign material. Now, one could very well compare the functioning of our early journals with that of the academies, as they also assumed the role of collecting all relevant findings in their fields, including those from abroad, via translations. However, as Stichweh rightly notes, the assumption that a single medium could adequately collect all the relevant information became increasingly untenable with the growth of scientific activity in the 18th and 19th centuries. Consequently, translations were progressively excluded from journals, which were no longer able to claim to encompass all the pertinent material for their respective disciplines.

[7] On the substantial practical relevance of the national and linguistic origin of scientific findings cf. GORDIN (2015).

Translation and periodicals – challenges of a medium

While the impossibility of presenting complete selections of disciplinary findings relevant at a 'national' level seems a very plausible argument for the disappearance of full-text translations in journals at a time of increasing international scientific publication, there may be a final 'tension' to consider when assessing the disappearance – or rather transformation – of translational activity in journals. This tension revolves around the medial properties of scholarly journals, which are, after all, a subform of periodicals. As such, they represent a form of collective authorship, as opposed to the idea of a single author in monographs, and a form of serial writing that creates a strong connection between the readers and the respective journals. This aspect is undoubtedly present in Benedict Anderson's account of newspapers in the development of nations as 'imagined communities' (ANDERSON 1983), but it is even more evident in the idea of scientific journals as catalysts for scientific communities, in which readers of journals are potential contributors and contributors are also readers (cf. STICHWEH 1984; HUFBAUER 1982). The journal thus appears to be particularly well-suited to the practice of scientific publication, thereby supporting the fundamentally collective and dynamic nature of scientific research. However, the inclusion of full-text translations in journals does not seem to be the ideal way of exploiting the potential of the journal medium: First, it separates the text from its original dynamic research community if the translation is from another journal. Secondly, it unintentionally gives the text the status of an 'authoritative' work by performatively underlining the integrity of the text as text. And third, it diminishes the role of the translator, who cannot add substantive footnotes or commentary to journal translations, since the purpose of journals is to present translations as quickly as possible and within the page limits set by the journals. In this respect, book translations, with their practice of extensive commentary and footnoting, paradoxically seem somewhat closer to the dialogical character of the sciences than do full-text translations in journals (which, of course, does not solve the problem of speed).

One might ask, however, whether full-text translation really covers the whole range of translatorial activity within journals. A first alternative that comes to mind is, of course, the practice of extraction and abstracting, which has grown in importance in response to the sheer volume of relevant material. But as Meinel observes, this practice of abstracting had its limits and was progressively outsourced into 'secondary' publications. Furthermore, it never replaced the reading of full-text articles, which scholars continued to value, surprising as it may seem (cf. MEINEL 1997: 146).[8] It may therefore be worthwhile to consider other forms of alternative translatorial activity that can be derived from the practice of full-text translation. Upon examination of these translations, it

[8] An interesting commentary on the practice of extracting can be found in Baudrillart's preface to his translation of Burgdorf's *Nouveau Manuel forestier*: "Plusieurs personnes m'avaient conseillé de ne présenter qu'un bref extrait de l'ouvrage; mais outre que ce n'eût pas été remplir les vues de l'administration, qui a désiré qu'on le fît connaître dans tout ce qu'il pourrait nous être utile, c'eût été en rompre le plan général, et n'offrir que des membres épars, sans liaison avec le corps de cet ouvrage, et par conséquent sans intérêt pour la science. On se méfie d'ailleurs beaucoup des extraits, et on a raison. Un traducteur profite de cette manière d'opérer, pour passer les endroits qu'il entend difficilement, et qui souvent sont les plus intéressans" (BAUDRILLART 1808: s. p.).

becomes evident that while the translations themselves were only sporadically footnoted by the translators and editors, the selection of source texts to be translated reflected the agendas of the editors/contributors and previous publications in the journals. In this way, the translations can be regarded as 'outsourced' or 'explained' footnotes to the original articles. A particularly striking example is the translation policy of the author-editors of the *Annales de Chimie*, who either chose to translate chemists such as Klaproth whose work supported the New Chemistry published in the original articles in the *Annales*, or employed translations to provide counter-evidence to chemists arguing against the New Chemistry, such as Kirwan. From this perspective, these translations point to another crucial correlate of Stichweh's 'universal' audience, and that is the 'Fachaufsatz' or 'scientific paper'. The scientific paper, it could be argued, should be seen as a translatorial activity in that, in its ideal form, it presents the relevant state of research on its subject, regardless of the language in which that research has been published.[9] In gathering all the relevant evidence for and against its own argument, the scientific paper translates and recodes text and, moreover, perfectly reflects the dialogical potential of the periodical medium. In this sense, it could be a no less suitable indicator of "awareness" (MEINEL 1954: 54) than full-text translations. The reduction of full-text translations in periodicals could thus also be seen as a transformation of the translatorial activity, shifting it from the editors and translators of the periodicals to every author of a scientific article.

Conclusion

In describing the production of the scientific paper as a translatorial activity, this paper has drawn upon the methodological resources of the history of translation. For an understanding of the practice of the scientific paper as translatorial would not have been possible without first studying the practices of scientific translation in the 18th century. This research provides a perspective on the scientific paper as an evolution of practices and a solution to many of the challenges facing scientific translation. The following quote from the prolific scientific translator Lefebvre de Villebrune provides a succinct illustration of these practices:

Je m'attendois à trouver des vues neuves de pratique dans la dernière édition allemande que M. Murray de Gottingue a donnée de la traduction de Roseen. Il n'y a rien que nous ne sachions bien, excepté quelques faits nouveaux sur les vers ; mais plus relatifs aux adultes, & à l'histoire naturelle, qu'aux maladies dont il s'agit dans cet Ouvrage. La version Hollandoise, & les notes de M. Sandifort de Leyde, ne m'ont non plus montré rien de neuf. Dès qu'un fait a été bien prouvé, cent autres faits semblables n'apprennent plus rien: ainsi, il est inutile de les citer. (LEFEBVRE DE VILLEBRUNE 1786: x)

[9] A very similar idea is expressed in ROZMYSLOWICZ (2022): "Die Erwartung, in wissenschaftlichen Texten den aktuellen Forschungsstand zu verwerten und deshalb auf die Arbeiten anderer explizit bezugzunehmen, um die Relevanz der eigenen Arbeit herauszustellen, macht das Übersetzen zu einem inhärenten Bestandteil internationaler und multilingualer Wissensproduktion" (128).

In order to find new information about a given scientific fact, Villebrune explicitly consults various translations of the same text. The practice of comparing different translations is of course common in literary translations, but the difference with Villebrune's motives of comparison could not be greater. For Villebrune is not concerned with how the source text was translated, but rather with any new information that the translators/editors may have added to their translations. This confirms the practice shown by Elsherif (this volume), as well as Stefanelli's observation (also this volume) that scientific translators are often scientists themselves. Above all, however, it suggests the proximity between scientific translation and the production of a scientific work. Rather than being primarily concerned with reproducing the integrity of a source text in another language, scientific translation also examines the validity of the source text and confronts it with the current state of research. It is only stating the obvious to say that these practices are exactly what is expected of authors of scientific papers.

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Diego Stefanelli

Towards a typology of French-speaking translators of scientific texts (1600–1815)

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Abstract

The purpose of this article is to outline a typology of French-speaking translators of scientific texts between 1600 and 1815 on the basis of a database of 267 translators. Who were these translators? Can we speak of a scientific specialization? Taking a quantitative approach, the aim is to merge a selection of the translators' prosopographical information (related mainly to their profession) with the characteristics of the translations they produce (in terms of both quantity and typology). Through this, a typology of scientific translators is proposed, by identifying certain groups of translators who share common features (military personnel, journalists and polygraphs, scientists). Particular attention is given to the group of translators that is quantitatively the largest, the translators coming from the medical world (physicians and surgeons): why did they translate and which role did translations play in their careers? The quantitative approach is combined with some individual cases to make the analysis more concrete, showing both regularities and exceptions.

Keywords: history of science, scientific translations, translators

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Diego Stefanelli

Towards a typology of French-speaking translators of scientific texts (1600–1815)

Abstract:

The purpose of this article is to outline a typology of French-speaking translators of scientific texts between 1600 and 1815 on the basis of a database of 267 translators. Who were these translators? Can we speak of a scientific specialization? Taking a quantitative approach, the aim is to merge a selection of the translators' prosopographical information (related mainly to their profession) with the characteristics of the translations they produce (in terms of both quantity and typology). Through this, a typology of scientific translators is proposed, by identifying certain groups of translators who share common features (military personnel, journalists and polygraphs, scientists). Particular attention is given to the group of translators that is quantitatively the largest, the translators coming from the medical world (physicians and surgeons): why did they translate and which role did translations play in their careers? The quantitative approach is combined with some individual cases to make the analysis more concrete, showing both regularities and exceptions.

Due to the significance of one of its translators (Denis Diderot), the French translation of the *Medical Dictionary* of Robert James is arguably one of the most renowned French scientific translations of the 18th century. The translators were Diderot, Marc-Antoine Eidous and François-Vincent Toussaint. None of them was, properly speaking, a scientist. The translation had to be revised by an expert of the field, the young physician Julien Busson, a *docteur-régent* of the Medical Faculty in Paris. In the *Avertissement de l'editeur* he explained that his advice was necessary because of the limited medical knowledge of the translators:

*Les Libraires qui le distribuent aujourd'hui ayant été informés du mérite de cet Ouvrage, crurent rendre un service au Public en lui en procurant une Traduction Françoise: ils chargerent de ce travail Messieurs Diderot, Eidous, & Toussaint, connus par la grande intelligence qu'ils ont de la Langue Angloise. Si cette connoissance, jointe à une littérature profonde & choisie, & à un jugement sûr, avoit suffi pour donner à cet Ouvrage le degré de perfection que l'on étoit en droit d'exiger; il est certain qu'il pouvoit passer d'entre leurs mains dans celles du Public; mais comme il étoit naturel qu'un Ouvrage de Medecine fût examiné par un Medecin, je fus chargé par les Libraires de la révision & de la correction de cette Traduction, ainsi que d'y faire les additions ou les retranchemens que je jugerois nécessaires (*JAMES / DIDEROT; EIDOUS; TOUSSAINT 1746*, Avertissement de l'Editeur* [not numbered])

[The booksellers who distribute it today, having been informed of the merit of this work, currently render a service to the public by providing a French translation: they commissioned Mr. Diderot, Eidous and Toussaint, known for

their great understanding of the English language, to undertake this work. If this knowledge, combined with a profound & selected erudition, & a sound judgment, had been sufficient to give this work the degree of perfection one was entitled to demand; it is certain that it could pass from their hands into those of the Public; but since it was natural that a work of Medicine should be examined by a Physician, I was entrusted by the Booksellers with the revision & correction of this Translation, as well as making the additions or retrenchments I deemed necessary]

This passage immediately prompts the essential question that I seek to answer in my paper: Who were the translators of scientific texts in the 17th and 18th centuries? For this period, can we adopt the category of *scientific translators* as a means of defining those translators whose *specialization* was the translation of scientific texts? Should the translation of James' medical dictionary, carried out by translators who were not experts in the field but then reviewed by a physician, be considered as an exemplary and representative case?
The objective of this study is to determine whether there was a specialization of French-speaking translators of scientific texts during the period of modern science's specialization. In fact, as we will see, the majority of them were more similar to Busson than to Eidous, Diderot and Toussaint. Not only because the majority of them had a scientific background, but also because (like Busson)[1] they did not occupy prominent positions within the scientific community.

Translators-focused approach and establishment of the translators' database

The history of scientific translations is a relatively overlooked aspect of translation history studies. Even less studied are the main actors in this field, namely the translators. This is true in both disciplines between which my contribution is intended to be placed, namely, the history of science and the history of translation.[2] On the one hand, scientific translators have been quite overlooked by translation history scholars (as, for example, in the forefather of such translator-oriented history of translation, DELISLE & WOODSWORTH 2012). On the other hand, historians of science have typically paid little attention to translators of scientific texts as a major group of actors in the scientific community. More generally, the role of translation in the history of science has still been little investigated by historians of science (with some significant exceptions such as, among others, PANTIN 2007, COOK & DUPRÉ 2012 and FRANSEN & HODSON & ENENKEL 2017).
Although some translators have been extensively studied, a comprehensive study of scientific translators remains lacking. With regard to French-speaking scientific translations in the 17th and 18th centuries, the only attempt to do so (to the best of my knowledge) can be found in the chapter on *Sciences et arts* written by Patrice Bret and Ellen Moerman in the *Histoire des traductions en langue française* (BRET & MOERMAN 2014). The authors dedicate a chapter to the scientific translators, with a particular focus on their professional status and their linguistic skills, with the goal of defining a typology of these translators. They caution, however, that we are still a considerable distance from being able to

[1] For some information about Busson see WILLIAMS 2003: 12 and SCHNEIDER 2012: 186.

[2] About the "commensurability" of the two disciplines see OLOHAN 2014.

conduct a comprehensive prosopographical study of the scientific translators for the entire period under consideration.[3]

The purpose of this study is to partially fill this research gap. Relying on the translators of the texts included in our common DFG-project, I have extrapolated a database of 267 French-speaking translators of English, German and Italian scientific texts (1600–1815).[4] Given our focus on solely book-based translations, I have excluded authors of translations that appear in the form of articles in scientific journals. This represents a significant exclusion. It is evident that numerous translators who are not included in my analysis, as they translated only for journals, deserve a significant role in the history of scientific translations.[5] In addition, there are other, more general limitations to be considered in relation to the quantitative-prosopographical approach itself. Since the 1970s,[6] historians of science have debated the usefulness and limitations of using prosopographical methods in their discipline (STURDY 1995: XII). I certainly do not intend to enter into such discussions here. One cannot but agree with what Maurice Crosland has written concerning the "dangers" of prosopography applied to the history of science (in this case, of the members of the Académie des Sciences): "There would be dangers in trying to construct a comprehensive but simplicist quantitative collective social biography or 'prosopography', which attempted to categorise members of the Academy exhaustively and mechanically" (CROSLAND 1992: 173–174).

As will be shown, one of the principal issues is the categorization (social and professional) that is employed. Such categorization frequently gives rise to generalizations, simplifications, or anachronisms. Another issue is the underrepresentation of specific groups of translators, such as female translators of scientific texts. The quantitative approach is inadequate for accounting for these translators. Not only are they a quantitatively small minority,[7] but it is often challenging to quantify their translations, as they were frequently either anonymous or appeared under their husband's name.[8] The quantitative approach inevitably leads to overlook these significant actors of the scientific community of the time, since they are not, in purely quantitative terms, a representative type of scientific translator. Despite its limitations, the quantitative approach is

[3] "Nous sommes loin encore d'être en état de faire une étude prosopographique complète du monde des traducteurs scientifiques pour l'ensemble de la période, mais il est possible d'en ébaucher quelques caractères au siècle des Lumières" (BRET & MOERMAN 2014: 655).

[4] The vast majority of translators (72%) were born in the 18th century. Consequently, my quantitative analysis will inevitably focus more on that century.

[5] See GIPPER 2022.

[6] See, among others, SHAPIN & THACKRAY (1974), PYENSON (1977).

[7] The corpus reveals a dearth of female translators: Gabrielle Brisson (wife of Biot), Marie-Anne Pierette Paulze Lavoisier, Claudine Picardet (Mme Morveau) and Marie-Geneviève-Charlotte Thiroux d'Arconville. One should also mention Gabrielle-Émilie Le Tonnelier de Breteuil (Mme Du Châtelet), who translated from Latin the *Principia* of Newton (1759).

[8] A particularly noteworthy example is Claudine Picardet, who not only translated books but also a considerable number of papers published in scientific journals. For an overview of female translators of scientific texts in this period see BRET & MOERMAN 2014: 660–665. About Thiroux d'Arconville and Claudine Picardet see, among others, BRET & VAN TIGGELEN 2011, BERNIER & GIROU-SWIDERSKI 2016 and BRET 2014, respectively. About Madame Lavoisier's translation of Richard Kirwan's Essays see BRET & KAWASHIMA 2019.

undoubtedly useful. In particular for the under-researched group of scientific text translators, a quantitative survey that is mindful of its limitations can yield interesting data. First and foremost, it can serve to make *visible* these overlooked actors of modern science.

In light of the aforementioned considerations, I have conducted a comprehensive examination of an extensive database of translators, addressing a number of research questions that I believe are of significant relevance to my subject. I have concentrated on the one hand on the professional field in which the translators were active (a criterion which, as we shall see, presents certain difficulties), and on the other hand on the characteristics of their production as translators, that is the typology of their translations (have they translated only scientific texts or also other texts?) as well as their quantitative aspects (how many scientific translations have they produced?). By integrating these two sets of data, I then endeavor to outline some typologies of these translators.

Professional domains of translators

As Fritz Nies and Yen-Maï Tran-Gervat have pointed out in the chapter dedicated to the *Traducteurs* in the already mentioned *Histoire des traductions en langue française*, "l'histoire sociale des traducteurs est un immense champ, encore peu exploré par les historiens" (NIES & TRAN-GERVAT 2014: 103). In addition, the authors demonstrate the intricacy of a similar task. Primarily, there is a practical challenge, as it is often challenging to ascertain the biographical details of many translators. Sometimes, despite extensive research, they either remain anonymous or are nothing more than a name on a title page or mentioned in a biographical dictionary (NIES & TRAN-GERVAT 2014: 103). There is then a difficulty related to the historical context, namely the fact that the professions of Ancien Régime were characterized by "fluctuations" (NIES & TRAN-GERVAT 2014: 113) that renders it particularly difficult to delineate professional categories with distinct boundaries.

Restricting the perspective to that of translators of scientific texts does not diminish the inherent complexity of the task. On the contrary, the fact that modern science was defined as a specialized (and institutionalized) field of human knowledge during the seventeenth and eighteenth centuries makes it particularly challenging to identify the characteristics of such a large number of scientific translators. This concerns not only the basic biographical data (date and place of birth/death, geographical area of activity), which for numerous translators would require a considerable amount of additional research, but above all the question that I find most intriguing (at least to my point of view), which is whether these translators possess any scientific backgrounds and their standing within the scientific community.

In fact, there are some preliminary issues to address. In what ways can the term *scientific background* be employed in this period? In comparison to the well-established didactic-academic tradition of medicine, which can be traced back centuries, the institutionalization of other scientific disciplines at the time was more complex. And more generally: what does it mean, from a professional standpoint, to be a *scientist* in this historical period? Alongside professional figures such as physicians, surgeons, university professors, and employees of scientific institutions (like the *Jardin des Plantes* in Paris), there were scientists who supported themselves in other ways. A typical example is Jean Senebier, who

was a Genevan Calvinist pastor as well as the librarian of the Genevan library. He translated numerous works of the Italian scientist Lazzaro Spallanzani and published a substantial body of botanical research, despite not being a professional scientist. Nevertheless, he enjoyed a certain prestige within the scientific community (not least because of his translations).[9]

Furthermore, there are opposite cases, namely translators who had received scientific training but subsequently pursued careers in fields that were distinct from the original field of specialization. For example, the case of Jean Baptiste Lefebvre de Villebrune can be cited. As noted in the *Nouvelle biographie générale* (HOEFER 1859: 314), he was a physician and had some knowledge of natural history, but he had ceased medical practice to pursue the study of languages, becoming a professor of Hebrew and Syrian at the Collège de France (1792). The same can be said for Augustin-François Jault, who translated among others Samuel Sharp's *Treatise on the operations of surgery* (SHARP / JAULT 1741). As we read in the *Dictionnaire des Sciences Medicales*, after 12 years among the Jesuits, he studied medicine and became a medical doctor at the Faculty of Besançon, but he never engaged in the practice of medicine. Instead, he became "interprète pour les langues orientales" of the duc d'Orléans and in 1746 he assumed the chair of Syrian at the Collège de France (JOURDAN 1832: 348). Should we include Lefebvre de Villebrune and Jault among the scientists? While it may be appropriate from a strictly biographical perspective, it would be less so when viewed from the broader perspective of professional spheres.

I have therefore identified a few broad areas, that, despite being probably too general, may offer some interesting trends. Consequently, I have prioritized the general area of activity over professions or backgrounds:

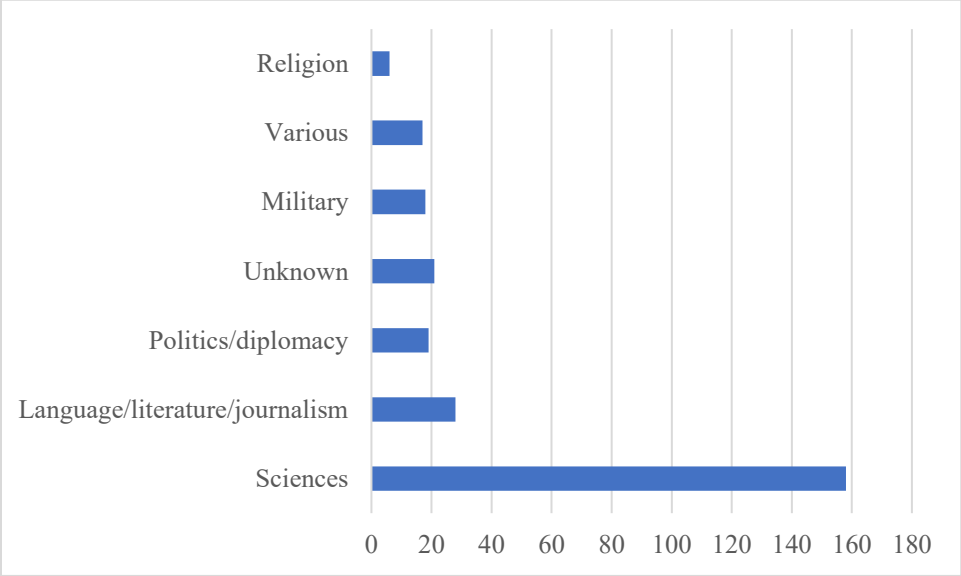

Figure 1: Number of translators and professional spheres

To return to the two examples above, I have included Senebier in the scientific sphere, excluding Lefebvre de Villebrune and Jault instead. Certainly, there are cases in which the delineation of the translators' principal field of activity can be particularly challenging. One can only confirm, once again, the difficulties highlighted by Crosland: "There are many cases where categorization would be

[9] On Senebier's translations see RATCLIFF 2010; GIPPER & STEFANELLI 2021.

arbitrary and quantification would be misleading" (CROSLAND 1992: 176). Consider for example Jean-Baptiste-Louis-Théodore de Tschoudi, a military with a strong interest in both the literary and botanic fields, as well as a cofounder of the Académie de Metz. He translated some parts of the *Gardeners Dictionary* by Philip Miller (MILLER / TSCHUDI 1768). In the frontispiece, the translator's name is mentioned in conjunction with a heterogeneous list of titles: "Citoyen de Glaris, Bailli de Metz, Capitaine au Régiment Suisse de Jenner, de l'Académie royale des Sciences & des Arts de Metz, de la Société de Physique de Zurich, & des Sociétés économiques de Berne & de Soleure". In what field should we situate such a personality: military, literary or scientific? Complex cases such as this one, along with quantitatively isolated cases, have been included in the category "various". It is also important to note that there are still translators whose professional (and often biographical) details remain "unknown".

Some translators come from non-scientific fields, such as "politics/diplomacy", "military world", "journalism/literature/language". Nevertheless, more than half of the translators (59%) were active in the scientific world and belonged in various ways to the scientific community. Indeed, the majority of translators who work primarily in the field of science, despite the limitations of this classification, appear to be clear. Interesting data emerge from a closer examination of the "Sciences" category. It should first be acknowledged that the disciplinary subdivisions utilized here may appear somewhat anachronistic when considered within the context of the period in question. It should be remembered that, at that time the main distinction was between the "sciences mathématiques" (in which mathematics, geometry, applied mechanics, astronomy, etc. should be included) and "sciences physiques" (to which belonged medicine, surgery, zoology, pharmacy, mineralogy) (BRET & MOERMANN 2014: 666):

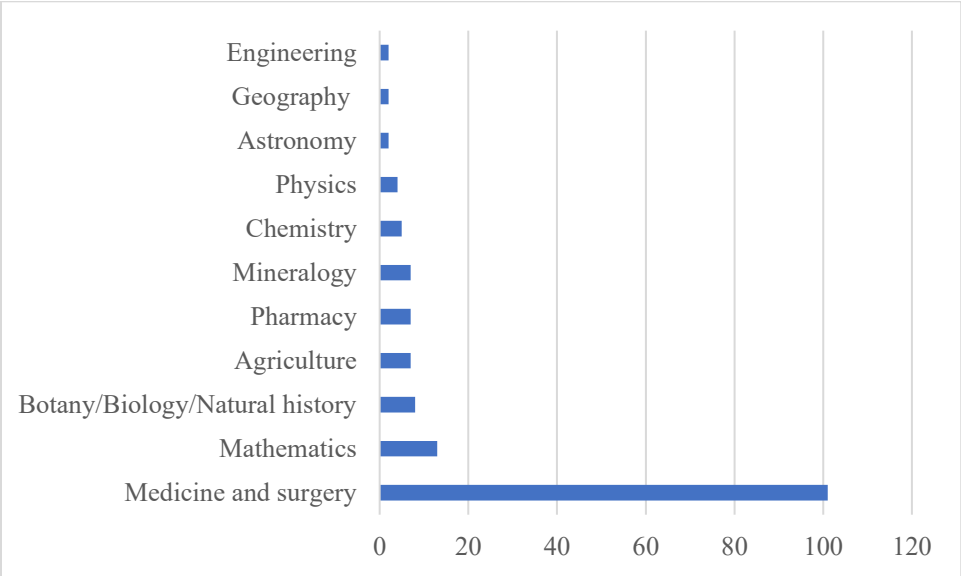

Figure 2: Number of translators and scientific disciplines

It should be noted that I have included both medicine and surgery in the same category. However, there had been considerable debate among medical professionals regarding the nature of the relationship between these two

disciplines.[10] Furthermore, I have considered pharmacy as a distinct category, although it should be remembered that the *apothiquaires* did, in fact, belong to the world of medicine. In general, it should be kept in mind that the medical field at the time was multifaceted and complex to define, encompassing a diverse array of professions and actors. Once more, the categories selected are bound to entail a certain degree of simplification. However, this is an acceptable consequence of the practical utility of such classifications. In any case, the prevailing pattern seems clear: the vast majority of translators came from the medical world.

Quantitative aspects of translators' production

Although it provides interesting data, the definition of spheres of activity remains very problematic. The fact that the scientific profession is evolving in complex ways over this period makes it difficult to draw up a general profile for all translators of scientific texts. Some apparently less refined criteria seem to be more fruitful. They concern the products of the translation activity of our translators. A preliminary distinction can be made between those who have translated only scientific texts and those who have translated scientific texts in addition to other kinds of texts (for example, literature or travel accounts). Thus far, 53 translators (20%) have been identified as having translated also other types of text. It is noteworthy that, despite this relatively small number, we find in this group some of the most prolific translators of the database, such as Lefebvre de Villebrune and Eidous.

Nevertheless, the majority of our translators translated only scientific texts. At least from a purely quantitative perspective, it is possible to hypothesize a kind of *specialization* of these translators. If we then look at another criterion, namely the number of scientific translations each translator has completed, we find some interesting trends. The vast majority of translators have only translated one or two texts:

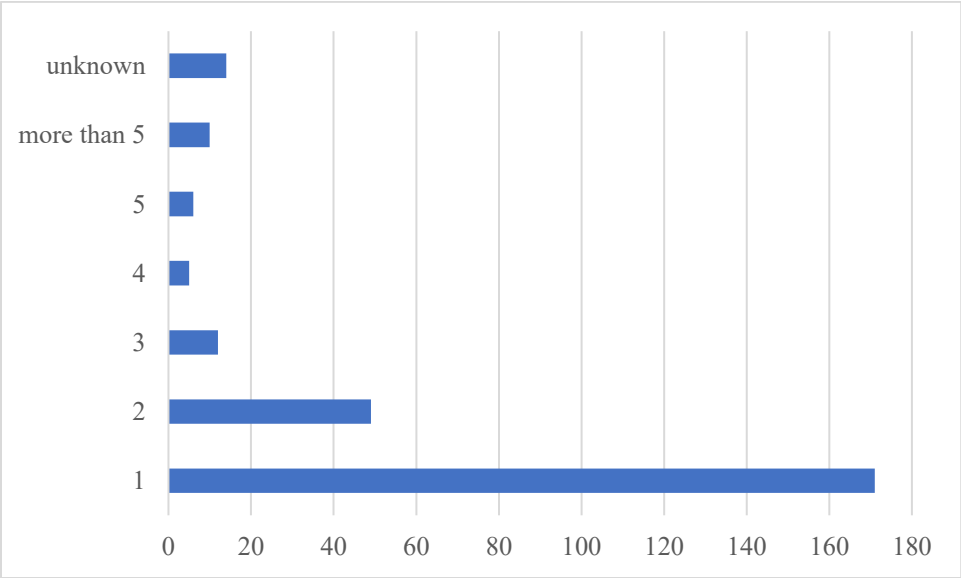

Figure 3: Number of translations per translator

[10] One of the most significant milestones in the recognition of surgery as a distinct scientific discipline was the establishment of Académie royale de chirurgie in 1731 by Georges Mareschal.

It must be admitted, however, that for some translators, some translations may have been overlooked (either because their authors remained anonymous or because it has been difficult to find additional information). Nevertheless, the overall trend remains clear. This seems to indicate that there is a lack of *professionalization* among translators who specialize in scientific translations. Those who produce a large amount of scientific translations seem to be an exception. The data appears to exhibit a quite clear pattern. The majority of translators specialise exclusively in scientific texts, yet they translate a relatively small number of texts. The tendency towards specialization among translators of scientific texts is accompanied by a parallel trend towards a limited number of translations per translator. Indeed, it is unlikely that the majority of these translators would have considered translating scientific texts as their primary occupation.

Towards a typology of scientific translators

The data collected thus far, despite the aforementioned limitations, provides an overall picture of all the translators considered. As shown by Nies and Tran-Gervat (2014), however, it is particularly fruitful to outline some *types* of translators. To do this, I will try to identify certain groups of translators who share common characteristics. In order to achieve this, it is useful to combine the two types of data that have been collected so far, the professional status of the translators and the characteristics of their translation activity. In order to provide a more concrete illustration, a few examples of translators will be provided for each category.

Military personnel

The presence of military personalities in our list is a noteworthy phenomenon. However, it reflects the general importance of military careers among the French translators in the 17th and 18th centuries as Nies (2017) has pointed out. First and foremost, they translated texts related to their discipline. In this period, technical texts about military science circulated in whole Europe through numerous translations (as shown by CUCCOLI 2018). A good example of this is the wide reception of the military writings of Alessandro Vittorio Papacino d'Antoni, director (from 1765) of the *Reali Scuole teoriche e pratiche d'artiglieria e fortificazioni*, instituted by Carlo Emanuele III in Turin (1739). His French translators were all military themselves: Gratien-Jean-Baptiste-Louis de Flavigny, who translated in 1773 his *Esame della polvere* (PAPACINO D'ANTONI / FLAVIGNY 1773a),[11] Antoine Baratier Saint-Auban, who translated his *Dell'uso delle armi da fuoco* (PAPACINO D'ANTONI / SAINT-AUBAN 1785) and Jean-Baptiste-Gaspard Cusset, seigneur de Montrozard, translator of his *Istituzioni fisico-meccaniche* as well as of the second volume of the treaty *Dell'artiglieria pratica* (PAPACINO D'ANTONI / MONTROZARD 1777 and 1780, respectively).

[11] He is also credited with the translation *Principes fondamentaux de la construction des places* (PAPACINO D'ANTONI / FLAVIGNY 1773b). As Prospero Balbo (BALBO 1805:75) noted with spite in his *Vita di Alessandro Vittorio Papacino d'Antoni*, the text was not presented as a translation, but was in fact derived from the third book of Papacino d'Antoni's *Dell'Architettura militare*.

Although one can speak of a tendency for these translators to specialize within their discipline, translators with military backgrounds who are also interested in other sciences should not be forgotten. An example is Théodose Le Barbier de Tinan, who was a military administrator (commissaire de guerre) in Strasbourg. He had many scientific interests and translated the Italian scientists Alessandro Volta and Giuseppe Toaldo.[12] Another interesting case is the baron Jacques-Joseph Roque. A member of the chevau-légers of the garde du roi (since 1773) he emigrated to England after the Revolution. There, he developed an interest in the pioneering works of the English physician Edward Jenner regarding vaccination, and became his French translator (Jenner / La Roque 1800).[13] François-René-Jean de Pommereuil, a *general de division* who made a successful career during the Napoleonic years, translated the writings of the Italian mineralogist Scipione Breislak from their Italian manuscripts, with the addition of some notes (BREISLAK / POMMEREUIL 1792 and 1801).

Then there are cases where the categories of military personnel and scientists overlap to the point of blurring, namely the cases of military physicians. This occurred especially during the Napoleonic wars. Some physicians who were employed in the Napoleonic army translated some scientific works during those very years. Just a few examples will suffice. Étienne-Benoit Révolat became physician in 1792 and served in the Napoleonic wars as *chirurgien-major* and *médecin principal* (DECHAMBRE 1876: 315). During these years he translated Thomas Denman's *Essay on the Puerperal Fever* and Gaetano Polloni's *Osservazioni mediche sulla malattia febrile dominante in Livorno* (DENMAN / Révolat 1797 and PALLONI / RÉVOLAT 1805). Another example (among many others) is Nicolas Heurteloup, first surgeon of the French army in 1800, who translated in these years Giuseppe Giannini's treaty *Della natura delle febbri* (GIANNINI / HEURTELOUP 1808).

Language, literature, journalism

A very heterogenous category is that of translators belonging to the domain "language/literature/journalism". They were journalists, lexicographers, literary critics, professors of literature, philosophers[14] who *occasionally* translated scientific texts. As to the number of scientific translations per translator, there is no significant divergence from the general trend, the majority of them (61%) having translated only one scientific work. However, two remarkable exceptions must be mentioned. In fact, two of the most prolific French translators of the 18th century, Jean Baptiste Lefebvre de Villebrune and the already mentioned Eidous translated also scientific texts. In this domain, too, they were particularly prolific, with each having translated more than six scientific texts. Both translators were in fact little esteemed by their contemporaries precisely because of this abundance of translations, which, according to many, implied little attention to the quality of their translations. The scientific translations of Eidous would deserve a separate

[12] VOLTA / LE BARBIER DE TINAN 1778 and TOALDO / LE BARBIER DE TINAN 1779.

[13] See MICHAUD 1846: 407.

[14] For example, one can cite the numerous mineralogical translations made by the *philosophe* Paul Heinrich Dieterich, baron d'Holbach (see BRET & MOERMAN 2014: 655–657).

study, which I do not intend to do here.[15] It should be mentioned, however, that he was the author of more than forty translations. At least 11 of them concerned scientific texts.[16] Such numbers were quite exceptional not only for the translators of scientific texts, but more generally.

For the majority of these translators, scientific translation was a sporadic activity. Among them we find, for example, Pierre-François Guyot Desfontaines, mostly known for his polemics against Voltaire and his French translation of *Gulliver's Travels*, but author also of an interesting translation of Francis Clifford's *State of Physick, Ancient and Modern* (CLIFFORD / DESFONTAINES 1742).[17] For the classical scholar Pierre Henri Larcher, mostly known for his translation of Herodotus, his only scientific translation, that of Pringle's *Observations on the Diseases of the Army* (PRINGLE / LARCHER 1771) was part of a series of translations of English literary and historical works, that he would later regret as a distraction from his studies in classical philology (as we read in DACIER 1821: 247). François Artaud-Soulange, who migrated to Göttingen after the French Revolution, became professor of French literature at the University of Göttingen, as well as correspondent of the local *Akademie der Wissenschaften* (from 1823). He was the author of only one scientific translation, which, however, was of considerable importance, that of Johann Friedrich Blumenbach's *Handbuch der Naturgeschichte* (BLUMENBACH / ARTAUD-SOULANGE 1803). Another interesting case is *baron* Pierre de La Montagne, a correspondent of the Museum of Bordeaux and, after the Revolution, a member of the local *Académie des sciences et belles-lettres* (QUÉRARD 1830: 503). He translated many literary works and travel accounts. His translations include also a scientific translation, that of William Falconer's *Dissertation on the Influence of the Passions upon Disorders of the Body* (FALCONER / DE LA MONTAGNE 1788). Interestingly, he added many notes to Falconer's text and he presented himself, in the frontispiece, as *docteur en médecine*. Indeed, he should be regarded as another case of a medical man who dedicated himself entirely to literature (and literary translations).

Bret & Moerman (2014: 655–657) have already drawn attention to this category of translators who belonged to the vast world of what is today referred to as the "humanities" and who also engaged in the translation of scientific texts. Their contribution to scientific translations was undoubtedly important. From a quantitative point of view, however, they were essentially a minority. More significant seems to be the other type of translators mentioned by Bret & Moerman 2014 (660), namely those who were members of the scientific community, though not necessarily occupying high-level positions within it.

Sciences: a focus on physicians and surgeons

Indeed, the analysis has revealed that the majority of translators were primarily engaged in the scientific domain. Rather than addressing each scientific discipline, I will focus on the most numerically significant group of translators, namely physicians and surgeons. In doing so, I exclude other translators coming

[15] Eidous' translations of travel literature have been already studied by DONATO 2012 and ECHE 2015.

[16] The number is based on the translations generally attributed to Eidous. Since some attributions should however be revised, the number must therefore be considered with some margin of uncertainty.

[17] About the translation see LÉGER 2004.

from other disciplines, who are likely deserving of more careful study (just think on mineralogy and the increasing number of French translations of German texts in the second part of the 18th century).[18] Nevertheless, focusing solely on this category of scientific translators allows for a more nuanced examination of a relatively smaller number of translators whose professional identity was, in the majority of cases, more clearly defined than for other scientific areas.
With regard to the number of translations per translator, the majority of translators tend to translate only one text:

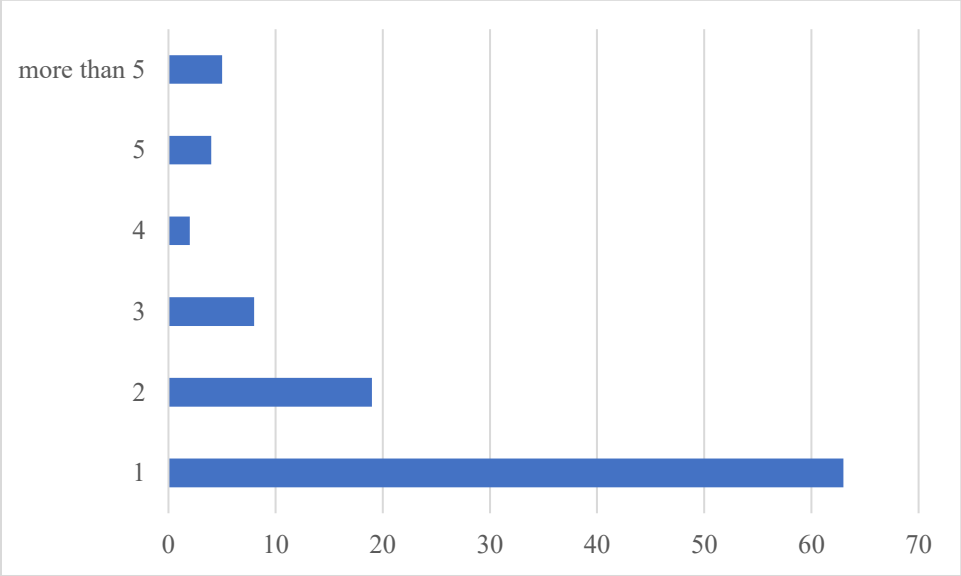

Figure 4: Number of translations per translator (physicians/surgeons)

Among the minority of translators who have produced numerous translations, there is one rather exceptional case, Antoine Jacques Louis Jourdan, the editor, among others, of the *Dictionnaire des sciences médicales* (1825). He translated at least 20 medical works, from many source languages (German, Italian, Latin, English), most of which, however, are not part of the corpus under consideration here (having appeared after 1815).
It is therefore of greater interest to consider not the quantity of translations, but rather the timing of these translations in the translators' scientific careers. It is not uncommon for many of them to make their scientific debut with translations, as Georges Cuvier observed in the case of Pierre Lassus.[19] In fact, Lassus (born 1741), whose successful career as surgeon started in the 1790s, translated Pott when he was at the beginning of his thirties (POTT / LASSUS 1771). A similar case was Jean-Bruno Cayol, who published, at the age of 25, his only translation, that of Antonio Scarpa's treatise on hernias (SCARPA / CAYOL 1812). Léopold-Joseph Renauldin, too, who in the 1830s was a well-known and respected physician, had begun his career translating (at the age of 29) the *Handbuch der medicinischen Diagnostik* of Wilhelm Friedrich Dreyssig (DREYSSIG / RENAULDIN 1804).[20] As we read in the *Biographie médicale*, Charles-Augustin Vandermonde began his

[18] See MANNWEILER 2024.

[19] "Il possédait […] plusieurs langues, et il avait débuté dans la carrière littéraire par des traductions d'ouvrages chirurgicaux anglais" (CUVIER 1819: 354).

[20] QUÉRARD 1859: 117.

career, once he had completed his medical studies, precisely with a translation, that of a dissertation of Carlo Curzio on a skin disease (CURZIO / VANDERMONDE 1755). He was 28 years old at the time and that was his first publication. One year later he released his first original work, his *Essai sur la manière de perfectionner l'espèce humaine* (1756). Interestingly, the *Biographie médicale* adds that young Vandermonde's annotations to his translation of Curzio had already demonstrated that he "était capable de donner quelque chose de mieux que ces traductions" (BAYLE 1841: 523).

Indeed, for many physicians, translating the works of prominent physicians represented a means of establishing their reputations and making a name for themselves. In this case, translation served as a significant stepping stone that could potentially enable a young scientist to attain some degree of prestige (or, at the very least, visibility) within the scientific community. This, in turn, could pave the way for them to gain employment within the scientific institutions of the time (BRET & MOERMAN 2014: 649). This trend is corroborated by an analysis of the age of translators at the time of their first translation. Over half of them (52%) first began translating when they were in their twenties and thirties.[21] This finding appears to corroborate the strategic role of translations in the career progression of the majority of these physicians. They were completed at the outset of their careers, and primarily served to establish reputations.[22] Nevertheless, for a significant number of these translators, the practice of translating was primarily a provisional undertaking that would ultimately be abandoned.

However, not all translators were able to make a career out of translation. In fact, there are translators who were only known for one or two translations, and who occupied secondary positions within the scientific community of their time. Further archival research could certainly provide more in-depth information for each of them. For the moment, it is sufficient to look in some nineteenth-century dictionaries. For many of these translators, the only works that were cited were their translations. See for example how the *Dictionnaire encyclopédique des sciences médicales* presented the physician Jean-Denis Duplanil:

Duplanil (Jean-Denis). Ce médecin, natif de Paris, appartenait à la Faculté de médecine de cette ville, où nous le voyons prendre la première inscription, le 26 octobre 1765. Il est mort à Argenteuil, près de Paris, le 7 août 1702 [sic], après avoir été médecin honoraire du comte d'Artois (Charles X). Fort laborieux, ami des sciences, possesseur d'une riche bibliothèque, Duplanil à laisse les ouvrages suivants:
1. Médecine du voyageur […], Paris, an IX (1801), 3 vol. in-8º – II. Médecine domestique de Buchan; trad. en franç. 1775, 5 vol. in-8º – *III. Méthode nouvelle et facile de guérir la malad. vénérienne, par Clarc.* Trad. en franç. Paris, 1785, in-8º (DECHAMBRE 1884: 668).

[Duplanil (Jean-Denis). This physician, born in Paris, belonged to the Faculty of Medicine of that city, where we see him taking his first registration on October

[21] Such data should be treated with some caution, as the age of a considerable number of translators (33%) could not (yet) be determined. Consequently, it is possible that the image may undergo some alterations, although it is unlikely that these will be significant.

[22] This is, it should be repeated, a general trend. Of course, there are individual cases where translations are placed at other points in the career.

26, 1765. He died in Argenteuil, near Paris, on August 7, 1702 [sic], after serving as honorary physician to the Count of Artois (Charles X). A hard worker, friend of the sciences and possessor of a rich library, Duplanil left the following works (…)]

The only works for which he was remembered were, next to his *Médecin du voyageur*, his two translations. For many translators the same applies. Even less had written the surgeon Vincent Abbadie. Born in Pujo (Bigorre) in 1737, he attended hospitals in Bayonne to become a surgeon and he then went to Paris to continue his studies. The *Biographie médicale* (Bayle 1841: 626) informs about his career: he worked at the Hôpital de Bicêtre and then he became surgeon of Louis-Jean-Marie de Bourbon, duc de Penthièvre. Thanks to this one, he received a "brevet de chirurgien-général de la marine". He authored only one work, a translation of some essays of David MacBride (that he dedicated to his protector) (MACBRIDE / ABBADIE 1766).
For other translators, the translations served their purpose better. A translation dedicated to an eminent scientist could be an effective means for a young physician to gain recognition and establish valuable connections within the scientific community. In the *Éloge de M. La Virotte* appeared in the *Journal des sçavans* (July 1759), one finds an interesting image of a young physician striving to establish a reputation among his colleagues in Paris. The dedication of La Virotte's translation to Jean-Jacques Dortous de Mairan, a well-established member of the Académie des Sciences, proved particularly helpful in this regard:

Il prit le Bonnet à Montpellier, & il vint ensuite à Paris; mais il ne pensa d'abord qu'à perfectionner ses connoissances dans la Capitale […]. M. la Virotte, jeune, jaloux de s'instruire, chercha alors, & a toujours cherché depuis les hommes célébres dans tous les genres […] Il publia quelques ouvrages, traduits de l'Anglois: Observations Nouvelles sur les crises. Dissertation sur la transpiration. Nouvelle Méthode pour pomper le mauvais air. Nouvelles Observations Microscopiques. Dissertation sur la chaleur. Exposition des découvertes de Newton, par Maclaurin.[23] *Il dédia ce dernier ouvrage à M. de Mairan, à ce Philosophe si célébre par ses découvertes […]. Il accueillit le jeune Traducteur, il le connut, il estima ses talens, il le présenta à M. le Chancelier Daguessau, qui, rassuré sur la jeunesse de M. la Virotte, par les suffrage de M. de Mairan, l'admit à nos Assemblées.* (ANONYMOUS 1759: 452)

[He took the *bonnet* in Montpellier, and then came to Paris; but at first he thought only of perfecting his knowledge in the capital [...]. M. la Virotte, a young man jealous of learning, then sought out, and has since sought out, famous men in all fields [...] He published several works, translated from English: *Observations Nouvelles sur les crises. Dissertation on perspiration. Nouvelle Méthode pour pomper le mauvais air. New Microscopic Observations. Dissertation on Heat. Exposition des découvertes de Newton, by Maclaurin*. He dedicated this last work to M. de Mairan, to this *philosophe* so famous for his discoveries [...]. He welcomed the young translator, got to know him, esteemed his talents, and introduced him

[23] See NIHELL / LAVIROTTE 1748, SUTTON / LAVIROTTE 1749, NEEDHAM / LAVIROTTE 1750, MACLAURIN / LAVIROTTE 1749. As to the *Dissertation sur la transpiration*, it is the translation of a writing of Bryan Robinson and it was included at the end of a collective volume containing Eidous' translation of the New Dispensatory by William Lewis (LEWIS / EIDOUS 1749–1750).

to Chancellor Daguessau, who, reassured of M. la Virotte's youth by M. de Mairan's approval, admitted him to our reunions].

Louis-Anne La Virotte is among the few translators who have authored more than 4 translations. What is important here, however, is the potential influence of translations on the trajectory of a young physician's career. It is not uncommon for scientific translations to confer a certain degree of prestige (or at least of "crédit symbolique", BRET & MOERMAN 2014: 649) upon a young physician. This phenomenon is not exclusive to the field of medicine, but is also observed in other scientific disciplines. Just think to the relatively well-known case of François de Brémond.[24] In 1736, when he was 25 years old, he began working on an ambitious translation project, concerning the *Philosophical Transactions* of the Royal Society, of which he translated the years between 1731 and 1736 (PHILOSOPHICAL TRANSACTIONS / BRÉMOND 1738–1741).[25] This translation, along with others,[26] was able to secure Brémond (who, it must be said, came from a well-connected family)[27] a place as *adjoint botaniste* in the prestigious academy.[28]
It is also worth noting another prolific translator from the medical field who gained considerable prestige through his translations, Édouard-François-Marie Bosquillon. He became docteur-régent when he was 26 years old. At the same time, his considerable knowledge of ancient Greek enabled him to become, when he was 30 years old, professor of ancient Greek at the Collège. He was able to combine the two fields, devoting himself to translations of both early and modern medical writings. Alongside Hippocrates, he translated many works of William Cullen and Benjamin Bell. These translations were highly appreciated, particularly because of the translator's notes, as we read in the *Magasin encyclopédique*:

Sa traduction des Elémens de Médecine de Cullen, avec les notes savantes dont il les a enrichis, est depuis plus de trente ans un livre classique, et un de ceux que les médecins consultent avec le plus de fruit, pour se diriger dans les cas difficiles. Nous lui devons encore une traduction française de la Chirurgie de Bell, auteur anglois. Les travaux que M. Bosquillon a faits sur le texte, et qu'il y a ajoutés, sont si étendus et d'un si grand intérêt, qu'il réunit dans cet ouvrage le titre d'auteur à celui de traducteur. (ANONYMOUS 1815: 182)

[His translation of Cullen's *Elémens de Médecine*, with the learned notes with which he enriched them, has been a classic book for over thirty years, and one of the most fruitfully consulted by doctors for guidance in difficult cases. We also owe him a French translation of Bell's Surgery. The work that Mr. Bosquillon has

[24] See BRET & MOERMAN 2014: 623–627.

[25] Brémond died in 1742. After his death, the physician Pierre Demours continued the translation project, publishing in 1759 the translation of the years 1737–1738 of the Philosophical Transactions (BRET & MOERMAN 2014: 625).

[26] He translated works of David Hartley, Stephen Hales, Patrick Murdoch and Francis Hauksbee (BRET & MOERMAN 2014: 624).

[27] See STURDY 1995: 400.

[28] Bycroft (2017) has studied another intriguing case concerning the role played by Charles Dufay's translation of Filippo Buonanni's *Traité des vernis* (1723) in the translator's access to the Académie des sciences.

done on the text, and which he has added to it, is so extensive and of such great interest, that in this work he combines the title of author with that of translator.]

Indeed, while a scientific translation could potentially launch a scientific career, not all translations (and translators) were the same. A translator also had to demonstrate scientific expertise. However, this is another issue (how was a *good* scientific translation expected to look at the time?), which will only be mentioned here in conclusion.

First conclusions

The quantitative-prosopographical perspective adopted here (whose limitations as much as its potential have been repeatedly emphasized) has made it possible to offer a multifaceted picture of the French-speaking translators of scientific texts between 1600 and 1815. On the one hand, the 267 translators here considered cannot be reduced to one single category. Among them one finds scientists, military personnel, journalists, language and literary professors, philosophers, polygraphs, diplomats, and others. At the same time, however, this study has shown that most of them were active members of the scientific community of their time and in various ways belonged to the world of science.
Moreover, an analysis of the products of their translation activity has demonstrated that the translation activity of the majority of them was not particularly prolific. Particularly the focus on the quantitatively most relevant group (the physicians and surgeons) has yielded interesting data. Translation was an important way for numerous physicians to establish (or at least to attempt to establish) their reputation within the scientific community. It was undoubtedly an important activity, but of limited duration. In fact, prolific translators of scientific works were the exception rather than the norm. This does not, however, imply a diminution in their historical relevance. Indeed, some translators become even more interesting precisely *because* they are exceptions.

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Robert Lukenda

The Translation of Science in the Era of Italian Nation-building
The Journal Antologia (1821–1833) between Fixation on France and Nationalisation Efforts

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Abstract

The early nineteenth century saw the beginning of intensive translation activity on the Italian peninsula in order to promote the cultural and scientific process of national unification (Risorgimento). Despite efforts to open up Italian culture to the English and German-speaking world, the French axis remained the central source of scientific and cultural import for Italy in the 19th century. This is evidenced not least by the appearance on the Italian peninsula in the 1820–1830s of scientific journals such as Antologia (1821–1833), conceived purely as translation organs and dedicated to the transfer of science and culture through translations from French journals. Taking Antologia as an emblematic example of this development, this article examines the early translation policy of this journal in its political and cultural context. Specific emphasis is placed on exploring the twists and turns of this translation policy, its influence on the scientific, cultural and political discourse in Italy, and the resulting implications for the process of Italy's internationalisation and nationalisation.

Keywords: translation history, translation of science, nation building, Risorgimento, periodical translation

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The early nineteenth century saw the beginning of intensive translation activity on the Italian peninsula in order to promote the cultural and scientific process of national unification (Risorgimento). Despite efforts to open up Italian culture to the English and German-speaking world, the French axis remained the central source of scientific and cultural import for Italy in the 19th century. This is evidenced not least by the appearance on the Italian peninsula in the 1820–1830s of scientific journals such as Antologia *(1821–1833), conceived purely as translation organs and dedicated to the transfer of science and culture through translations from French journals. Taking* Antologia *as an emblematic example of this development, this article examines the early translation policy of this journal in its political and cultural context. Specific emphasis is placed on examining the twists and turns of this translation policy, its influence on the scientific, cultural and political discourse in Italy, and the resulting implications for the process of Italy's internationalisation and nationalisation.*

Introduction

The emergence of Romanticism in Italy led to an increase in translation activities aimed at revitalising the divided country and promoting the process of national unification, known as Risorgimento or 'rebirth'. Although the role of scientific journals in this process has been extensively researched, there is a dearth of studies on the strategic significance of translation in these publications. It is surprising that this lack exists, given that Germaine de Staël's famous article *Sulla maniera e l'utilità delle traduzioni* (1816),[1] which appealed to Italian scholars to renew their language and culture through increased translation efforts, also found success in the field of science.[2]

This paper will address two questions. The first is how the model of the popular French scientific journal of the early nineteenth century shaped translation policies in the field of science in France. The second is how these policies affected the Italian scientific discourse at a time of rising national aspirations. In light of these questions, the aim of this article is to illustrate the complex relationship between periodical translation, Italian nation-building and the internationalisation of scientific and cultural discourses, drawing upon the case

[1] English: *The Spirit of Translation*.

[2] The role of translation in the process of Italian nation-building has hardly been valued in classical historiographical studies of the Risorgimento. Recent exceptions, based on a cultural and translation studies perspective, are (in addition to existing analyses such as SCHWARZE 2004) ENGELSKIRCHER (2020) and GIPPER et al. (2022a). The classic works on the Italian press in the Risorgimento (such as GALANTE GARRONE & DELLA PERUTA 1979; GERNERT 1990) also neglect the translation perspective. On the role of translation in early nineteenth-century Italian periodicals, see AGORNI (2021) and LUKENDA (2022b).

of *Antologia* (1821–1833). This Italian scientific journal, published during the 1820s, was originally conceived as a translation journal, dedicated to the dissemination of scientific and cultural knowledge, primarily from French journals. *Antologia* not only serves to illustrate the status of the French scientific journal as a model for Italy's nascent popular scientific press, but also exemplifies a translation policy that is both versatile and reflective of the complex and often conflicting dynamics between the processes of nationalisation and internationalisation that characterise the modern nation-building process. This article examines the ambivalence between cultural openness and national demarcation that shaped Italy's path towards political modernity and the establishment of a national scientific community and culture.[3]

Preliminary Remarks on Translation, Science and Nation-Building

Prior to an investigation into the context previously outlined, a number of preliminary remarks are necessary. Firstly, one should consider the concept of translation policy, which, according to the classic definition proposed by Toury,

[…] refers to those factors that govern the choice of text-types, or even of individual texts, to be imported through translation into a particular culture/language at a particular point in time. Such a policy will be said to exist inasmuch as the choice is found to be nonrandom. Different policies may of course apply to different subgroups, in terms of either text-types (e.g., literary vs. non-literary) or human agents and groups thereof (e.g., different publishing houses), and the interface between the two often offers very fertile grounds for policy hunting. (TOURY 1995: 58)[4]

Although, as Gipper, Heller and Lukenda argue, *Descriptive Translation Studies* focused on the connections between the act of translating and its socio-cultural and political contexts, the transitions and connections between the different levels of translating – the "interfaces" between agents, institutions and text types that Toury refers to – are rarely analysed in studies on translation history:

So konzentrieren sich die vielen Untersuchungen entweder auf die Ebene des Übersetzungsaktes […] ohne diese in einen Zusammenhang mit der Spezifik

[3] In this regard, Sakai has demonstrated that translation is characterised by a fundamentally ambivalent logic. This is due to the fact that translations serve as vectors for cross-border and border-forming dynamics of a cultural and political nature: "[…] translation is not only a border-crossing but also and preliminary an act of drawing a border, of bordering" (SAKAI 2010: 32). On the role of translation in processes of nation-building, which has become a major focus of research in the history of translation in recent years, cf. DIZDAR et al. (2015). For reasons of readability, in this article only longer quotations are given in their original language, while shorter quotations are usually provided directly in an English version.

[4] As will be demonstrated, journals in the early nineteenth century were frequently associated with prominent intellectual figures. Therefore, translation policy can be seen as a "strategic action taken by these individuals (cf. ENGELSKIRCHER 2020: 52) in the context of a socio-political agenda. Despite the ideological diversity of the national movement, its agenda can be described in terms of progress, industrialisation, intensified international exchange, and cultural and political nation-building. Translation policies in the present contextual framework, despite the presence of notable figures, were, as will be demonstrated, significantly influenced by the scientific communities on the Italian peninsula.

bestimmter Effekte auf der (inter)kulturellen oder politischen Ebene bringen zu können; oder sie konzentrieren sich auf die institutionelle Ebene, etwa auf die von Verlagen, Organisationen und anderen Institutionen betriebene Translationspolitik, jedoch häufig, ohne die konkreten Translationspraktiken zu beleuchten, auf die diese Politik abzielt; oder sie konzentrieren sich auf die (inter)kulturelle Ebene, d. h. auf die übersetzungsbedingten strukturellen Transformationsprozesse, und vernachlässigen dabei nicht selten die sprachliche und / oder die translationspolitische Dimension der Übersetzung. (GIPPER et al 2022b: 516; cf. also HELLER 2022).

[Thus, many studies either concentrate on the level of the act of translation, i.e. on concrete translation practices that are more or less regulated or conspicuous in terms of translation policy, [...] without being able to link them to the specificity of certain effects at the (inter)cultural or political level; or they concentrate on the institutional level, e.g. on the translation policies of publishers, organisations and other institutions, but often without shedding light on the concrete translation practices that these policies are aimed at; or they concentrate on the (inter)cultural level, i.e. on the structural transformation processes caused by translation, and often neglect the linguistic and/or translation policy dimension of translation. (RL)[5]].

From a methodological point of view, the present paper aims to make the dynamics visible in a holistic translation-historical perspective. It brings into perspective the different levels of translation, including the intercultural level, the level of actors and institutions, and the micro-level of concrete translation decisions. The objective of this approach is to draw precise conclusions about the role of periodical and scientific translation in the dynamics of Italy's internationalisation and nationalisation.[6]

[5] The initials of the author of this article are used below to indicate his own translations.

[6] However, the proposed methodology encounters certain challenges, including the relatively short lifespan of many journals, which is often a consequence of inadequate funding and the prevalence of political censorship. What is particularly striking, is the discrepancy between the high value and frequency of translation (which testifies to the fact that translation has been a common tool of scholarly communication since the eighteenth century) and the lack of methodological reflection on translation in the Italian journals of the early nineteenth century. As a result, conclusions about translation policy must usually be drawn both from a perspective that closely links the existing documents (prefaces, translated texts) to the political, scientific and cultural discourses in which the journal projects are embedded. A comprehensive analysis of *Antologia*'s translation policy would also need to address several other key questions, including the role of the collaborators in this editorial project, their attitudes towards translation, and their specific translation work. This is beyond the scope of the present discussion. Furthermore, the constraints of space preclude an exhaustive examination of a substantial corpus of translations within the present context. Consequently, the focus will be on a few pivotal and qualitative aspects of translation policy and practice. According to Corpet, analysing the translation policies of journals requires more than a quantitative approach. The history of a periodical cannot be fully understood by simply examining its table of contents. Periodicals require "une approche qualitative […] qui impose de considérer chaque revue particulière comme un *fait éditorial total* […] et permet de comprendre l'incroyable […] *performance* de la revue dans la création et la diffusion des formes, du savoir ou des opinions. […] tout positivisme statistique risque […] de fonctionner comme un leurre tant il est vrai que le monde des revues, qui flirte souvent avec le l'infiniment petit, le précaire et l'insaisissable, résiste à l'investigation quantitative par excès. L'économie

The second remark concerns the politicisation of translation in Italy, generally attributed to the publication in 1816 of Germaine de Staël's aforementioned essay *Sulla maniera e l'utilità delle traduzioni* in the Milanese journal *Biblioteca italiana*. Despite its focus on the field of literary translation, the article was of broader cultural relevance and interest for two principal reasons: On the one hand, it facilitated a period of extensive cultural exchange in the subsequent decade and encouraged the strengthening of already existing scientific and cultural relations with Northern Europe through translations. On the other hand, it was the source of inspiration for the development of a political understanding of translation in Italy. If translation, according to DE STAËL (1979[2]), was the key to cultural rebirth in Italy, in the eyes of her Italian Romantic followers, as we shall see, it became an important tool for linking the idea of cultural and scientific exchange with the project of political unity.[7]

The third point concerns the politicisation of science in Italy, in a national sense. If the genesis of a political concept of translation can be placed around 1816,[8] the emergence of a scientific discourse committed to the goal of national unification must be placed somewhat earlier, around the turn of the century.

It was during the *Triennio Repubblicano* (1796–1799) period in northern Italy under Napoleonic rule that intellectuals first formulated tangible political proposals for the establishment of a unified Italian nation-state.[9] The *Triennio* closely linked political and scientific debates in Italy as these plans were essentially based on efforts to create supra-regional structures in infrastructure and economy. The need to promote technical and industrial progress throughout the peninsula created an enormous demand for knowledge transfer and scientific translation. The initial consequence was an increase in exchange with France, which assumed a significant position in both political and cultural matters. France also served as a primary source for Italy to access the European knowledge

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des revues est par nature, contrairement à celle des livres ou des journaux, un monde souvent irrationnel, paradoxal […]" (CORPET 2002: 8, highlights of the original text).

[[…] a qualitative approach […] which demands to consider each journal as a *total editorial fact* [...] and which makes it possible to understand the incredible [...] *performance* of the journal in the creation and dissemination of forms, knowledge or opinions. [...] any statistical positivism runs the risk [...] of functioning as an illusion, since the world of magazines, which often flirts with the infinitely small, the precarious and the elusive, resists excessive quantitative study. The economics of magazines, unlike those of books or newspapers, is by its very nature a paradoxical world […]. (RL)] The domain under discussion is a complex system of dynamics and interactions. According to Bourdieu's field theory, this includes not only human and institutional actors, but also ideas, forms and traditions (such as journalistic concepts, editorial traditions, scientific and literary discourses, etc.). In this context, the question of the importance of translation in magazines always involves the acquisition of symbolic capital resources.

[7] Although translations were already a thriving field prior to the publication of *Sulla maniera*, the article in question initiated a modest yet perceptible discourse on the methodology of translation, which was hitherto absent on the peninsula.

[8] Cf. Giovanni Berchet's manifesto of Italian Romanticism (BERCHET 1992), which was published in the same year as de Staël's essay and is a direct response to her call for translation.

[9] The *Dissertazione sul problema dell'amministrazione generale della Lombardia: quale dei governi liberi meglio convenga alla felicità d'Itali*a (1796) by the philosopher and economist Melchiorre Gioia is a prototype of this approach.

market. The liberalisation of press legislation paved the way for the advent of newspapers and journals, which assumed a pivotal role in the discourse surrounding modernisation. As media outlets with an encyclopedic scope, they addressed a comprehensive range of subjects pertinent to social advancement, encompassing the natural sciences, agriculture, literature, and the arts. This approach resonates with the Enlightenment tradition of the late eighteen century, which regarded journals as "political instruments for disseminating knowledge and opinions in a broader sense" (GERNERT 1990: 25, RL).[10]

Although public discussions on political unification were largely suppressed in the post-Napoleonic era of Restoration, debates on industrialisation and scientific progress continued to develop. This was because the restored regimes on the Italian peninsula had clear economic interests. They promoted the establishment of economic societies, such as the Milanese *Società per l'incoraggiamento delle arti e dei mestieri* in 1838, and scientific journals.

While the impact of Italian journals in quantitative terms, in terms of distribution and circulation, was not considerable,[11] their qualitative impact on the national unification process was of paramount importance. The findings of Gernert's study indicate that the journal projects involved an intellectual elite,

[…] die […] über die partikularstaatlichen Grenzen hinaus miteinander in Kommunikation stand. Gemeinsam mit den ab 1839 jährlich stattfindenden Wissenschaftskongressen formierte sich so eine gesamtitalienische Führungsschicht bürgerlicher und adeliger Intellektueller, die zwar gesamtgesellschaftlich eine Minderheit darstellte, aber in ihrer Funktion für die italienische Nationalbewegung von primärer Bedeutung war, stellte sie doch die einzige Kompensation für das Manko eines profilierten und zielbewussten italienischen Bürgertums dar. (GERNERT 1990: 259, cf. also GALANTE GARRONE & DELLA PERUTA 1979: 5–6)

[[...] who [...] communicated with each other beyond the borders of individual states. Together with the scientific congresses held annually from 1839 onwards, a pan-Italian leadership class of bourgeois and aristocratic intellectuals was formed. Despite representing a minority in society, this class was of primary importance for the Italian national movement, as it was the only compensation for the lack of a distinctive and ambitious Italian bourgeoisie. (RL)]

In contrast to the Napoleonic era, which was marked by a prevailing republican spirit and a flourishing of liberal thought among Italian intellectuals, who frequently occupied prominent roles within the state administration, the

[10] The Milanese journal *Il Caffè* (1764–1766) represents a significant example of this tradition, which diverged from the prevailing style of 'erudite journalism' and expanded the scope of journalistic content to encompass a broader, educated readership.

[11] According to estimates published in the *Annali Universali di Statistica* (1824–1847), a highly influential journal of the period, the total number of copies sold across all Italian journals in 1833 was 18 000. This figure represents approximately ten readers per copy, with a total readership of at least 180 000 individuals across the Italian peninsula. Carlo Cattaneo's *Politecnico* (1839–1844), one of the most widely read scientific publications of its time, sold approximately 1 000 copies (Gernert 1990: 258-259). Gernert posits that these figures are modest in comparison to European standards of the period.

Restoration period saw a notable decline in the influence of these individuals. Subsequently, following the events of 1815, they were

[…] gezwungen, wieder zu ihren Kompensationsstrategien des 18. Jahrhunderts zurückzukehren und die politische Diskussion in privaten Zirkeln zu suchen. Es ist charakteristisch für die italienische Presse des frühen Risorgimento, daß sich Zeitschriftenprojekte aus diesen politischen Zirkeln, die meist um einzelne Führungspersönlichkeiten (Romagnosi, Vieusseux, Cattaneo u.a.) bildeten, hervorgingen (GERNERT 1990: 261; cf. also GALANTE GARRONE & DELLA PERUTA 1979: 11–12).

[[…] forced to return to their eighteenth-century strategies of compensation and to pursue political discourse in the confines of exclusive circles. It is characteristic of the Italian press of the early Risorgimento that journalistic initiatives emerged from these political circles, which were typically centred around individual leaders. (Romagnosi, Vieusseux, Cattaneo and others). (RL)]

Editorial engagement thus served as a "surrogate for political action" (GERNERT 1990: 261, RL).
Cultural and scientific journals are topical media and as such, they can be considered a barometer for monitoring the evolution of political, scientific, and cultural discourses. They respond to the necessity for rapid communication and immediate intervention in debates. As Carlo Cattaneo, one of the leading intellectuals, writers and publishers of the national movement in Italy, wrote in the foreword to the first issue of his *Politecnico*, founded in 1839, periodicals aimed to serve as intermediaries between the world of scholars and a broader mass audience.: "[...] it is our intention to act as interpreters and mediators between the reflections of a select few and the habits of the majority" (CATTANEO 1839a: 3, RL). In this mediating role of disseminating ideas of social and scientific progress, the linguistic aspect was of particular importance. While many representatives of Italian Romanticism ascribed a pioneering role to the *literati* and literature in the process of Italian linguistic regeneration and promoted the "nationalisation of the middle classes" (PORCIANI 1998: 201, RL) through the importation of foreign literatures through translation, Cattaneo saw science at the forefront.
In establishing the *Politecnico*, which concentrated on science and technology, Cattaneo sought to cultivate a popular scientific idiom in Italy, a goal that was unprecedented at the time. In contrast to the prevailing approach of focusing on the reception of foreign literature for the purpose of nation-building, Cattaneo placed his emphasis on the convergence forces of the international scientific language (GERNERT 1990: 112, RL; PÖCKL 1983: 14, RL). An investigation into the development of a popular scientific language in Italy and the role of journals in this process would require a separate research project. The following chapter will examine the important, yet ambivalent, role of translation and translation policy in the context of such modernisation efforts, using the example of the journal *Antologia* as a case study.[12]

[12] As will be demonstrated, Cattaneo expressed reservations about the heightened scientific translation activity of his era.

Between Nationalisation and Europeanisation: The Journal *Antologia* (1821–1833) and its winding Translation Policy

Antologia*'s early Focus on France*

The introduction of modern journalistic standards in Italy constituted a crucial prerequisite for these endeavours and for the role of social mediator that Italian scientific journals were striving for. Despite the growing appreciation for English and German-speaking cultures in terms of modern scientific and journalistic standards, many intellectuals of the time still considered France to be of paramount importance in this regard. Although political relations with France were largely severed in the post-Napoleonic era, strong intellectual and cultural ties remained. French was not only the language of choice for a significant proportion of the Italian elite, but France also represented a place of exile for numerous Italian patriots who had been persecuted on Italian soil. During the first decades of the nineteenth century, a notable Italian community gathered in Paris. In order to reinforce cultural ties with France, they established their own periodicals, such as the bilingual *L'Esule/L'Exilé* (1832–1834). Moreover, they fulfilled the role of correspondents for a number of scientific and cultural journals in various Italian regions. A significant number of Italian intellectuals had their biographical roots in the French-speaking area and maintained close relations with its academic circles. One such individual was Gian Pietro Vieusseux, a Florentine publisher of Swiss origin. He was a significant figure in the promotion of scientific discourse during the early Risorgimento period, establishing a new public institution dedicated to debates and lectures. This institution, the *Gabinetto scientifico-letterario* in Florence (1819), facilitated the transfer of scientific discourse from the academies and private salons of the eighteenth century to the public domain.

In the subsequent two-year period, Vieusseux proceeded to establish a new type of popular scientific journal for Italy, entitled *Antologia*.[13] As its subtitle *Scelta di opuscoli d'ogni letteratura tradotti in italiano* suggests, it was designed to publish only translations.

There were a number of compelling political and economic reasons for the establishment of translation journals. During the period between 1820 and 1821, which was characterised by revolutionary uprisings across various states on the Italian peninsula, translations, particularly those of a scientific nature, were less vulnerable to political censorship. Furthermore, translations were typically more cost-effective than the original texts from which they were derived.

In order to gain insight into *Antologia*'s translation policy, it is imperative to examine the programmatic preface to the inaugural issue.[14] Vieusseux's decision to devote himself to translating texts and to categorically exclude Italian originals

[13] A substantial corpus of research literature exists on *Antologia*, particularly in Italy. It would be beyond the remit of this article to provide an overview of this existing research. For an analysis of the *Antologia* and Vieusseux's pivotal role in shaping the Italian national scientific landscape, see Bossi (2013). While research such as the referenced study demonstrates the intimate connection between this process and Vieusseux's European experiences and aspirations, there is a notable absence of analysis that addresses the translation-political aspects of his editorial endeavors.

[14] The preface, bearing only the initials G. and P., can be attributed to Vieusseux, who was undoubtedly the driving force behind the journal's editorial policy. It is plausible that the letters represent his initials.

may, at first glance, appear to indicate a disregard for contemporary Italian scholarship. However, this decision appears, above all, to be a direct response to de Staël's call to transcend the linguistic boundaries of (national) literary and scientific cultures. The promotion of scientific communication also involves the improvement of translations, a goal which the journal strives to achieve. Vieusseux, therefore, extends an invitation to Italian writers to increase their translation activities and to submit translations.[15]

Nevertheless, if the stated objective of *Antologia* was to facilitate the dissemination of European scientific advancements in Italy through translation, Vieusseux concentrated these endeavours on a single journal: the French *Revue encyclopédique* (1819–1835), a prominent forum for liberal and progressive ideas in France during the Restoration period.[16]

What factors contribute to the *Revue encyclopédique*'s prominence in this context? First and foremost, Vieusseux's choice is evidently a reflection of the sociological and cultural milieu of his era. On the one hand, the high level of familiarity with French among the Italian elite meant that translations from this language required less effort in terms of cultural mediation than translations from English or German. Conversely, the objective was to attract a readership that extended beyond the proficient French-speaking elite. This audience was interested in engaging with scientific and cultural discourses but was reliant on translations. Furthermore, Paris' reputation as the capital of knowledge and the journalistic quality of its journals are also significant factors.[17] For Vieusseux, any publication in Paris, and particularly in the *Revue encyclopédique*, was regarded as a marker of quality and had been subjected to a process of rigorous peer review. It is noteworthy that translations from French and from well-known works written in French can be beneficial for French-speaking audiences in Italy, as they offer access to the highest standards of journalistic and scientific criticism (G./P. 1821: 8). In this context, the translated text is not merely a representation of its content, but also a reflection of the discourse surrounding it.[18] Vieusseux's

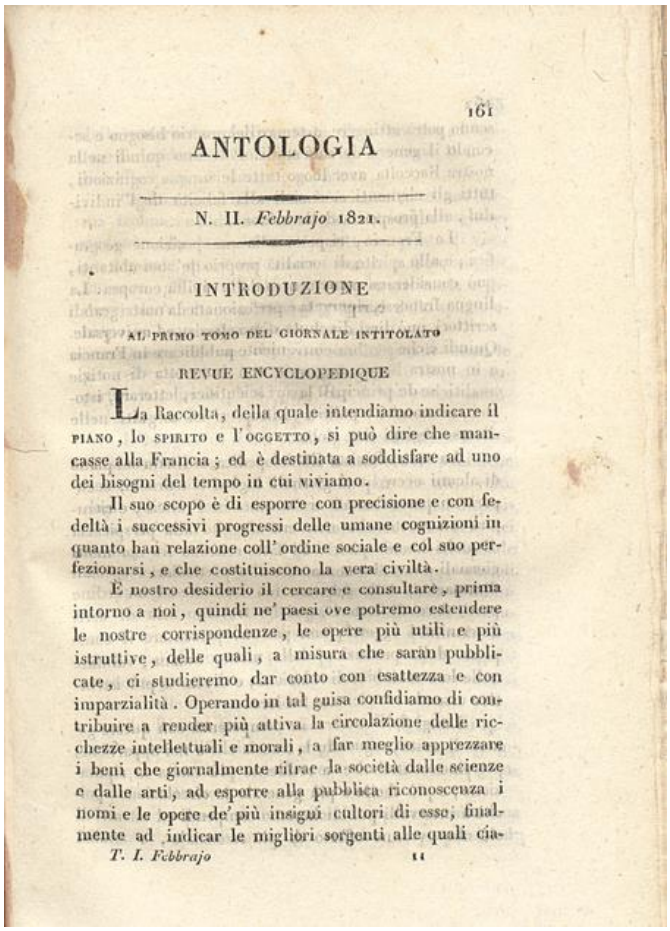
[15] It is possible that Vieusseux is alluding to the dearth of translators with expertise in specialized fields in Italy. Consequently, he requests leniency with respect to the quality of translations during the inaugural stages of the journal (G./P. 1821: 10). In *Antologia* (1822: 526–527), a reference is made to the establishment of a 'translation society' in Paris. The society was dedicated to the export of French literature and culture and the import of international knowledge through translation. These activities, according to the author, helped to consolidate Paris' position as a capital of knowledge. The note serves as a salient reminder for Italian authors lacking their own contacts to have their works translated. The primacy of France in the field of science is explicitly linked to increased translation efforts.

[16] The full title was *Revue encyclopédique ou analyse raisonnée des productions les plus remarquables dans la littérature, les sciences et les arts*. Cf. on the *Revue* Chappey (2019). For further insight into the editorial, political and cultural context surrounding the establishment of *Antologia* and its subsequent history cf. *Galante Garrone & Della Peruta* (1979: 113–147).

[17] As is well documented, it was with Rozier's *Observations sur la physique, sur l'histoire naturelle et sur les arts* that the model of the scientific journal was first established in France. From the outset, it was dedicated to "making pan-European scientific research accessible through translation" (GIPPER 2022: 71, RL).

[18] Vieusseux also cites England and Germany as exemplars of contemporary knowledge exchange and press, and underscores *Antologia*'s aspiration to address this deficit in Italy. However, he considered French periodicals, and in particular the *Revue encyclopédique*, to occupy a distinctive position due to the exceptional quality of their scholarly and journalistic

approach demonstrates that translation is not solely a matter of "linguistic recoding but is also a fundamental aspect of scientific communication" (GIPPER 2022: 86, RL). It thus offers a valuable contribution to this field of enquiry.
In light of the aforementioned evidence, it is evident that Vieusseux's objective in establishing a translation journal was not solely to gain access to a significant repository of knowledge. Rather, it was to introduce (or translate) a comprehensive and contemporary concept of scientific journalism in Italy. This is most evident in the second issue of *Antologia*, which opens with a distinctive and highly symbolic translation: the translation of the preface to the first volume of the *Revue encyclopédique* (fig. 1), which contains the journalistic and scientific programme of the French journal. This presents a classification of scientific disciplines and a structure of contents, which *Antologia* subsequently adopts through translation, along with a liberal political stance focused on industrial progress.[19]



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ANTOLOGIA

N. II. *Febbrajo* 1821.

INTRODUZIONE

AL PRIMO TOMO DEL GIORNALE INTITOLATO

REVUE ENCYCLOPEDIQUE

La Raccolta, della quale intendiamo indicare il PIANO, lo SPIRITO e l'OGGETTO, si può dire che mancasse alla Francia; ed è destinata a soddisfare ad uno dei bisogni del tempo in cui viviamo.

Il suo scopo è di esporre con precisione e con fedeltà i successivi progressi delle umane cognizioni in quanto han relazione coll'ordine sociale e col suo perfezionarsi, e che costituiscono la vera civiltà.

È nostro desiderio il cercare e consultare, prima intorno a noi, quindi ne' paesi ove potremo estendere le nostre corrispondenze, le opere più utili e più istruttive, delle quali, a misura che saran pubblicate, ci studieremo dar conto con esattezza e con imparzialità. Operando in tal guisa confidiamo di contribuire a render più attiva la circolazione delle ricchezze intellettuali e morali, a far meglio apprezzare i beni che giornalmente ritrae la società dalle scienze e dalle arti, ad esporre alla pubblica riconoscenza i nomi e le opere de' più insigni cultori di esse, finalmente ad indicar le migliori sorgenti alle quali cia-

T. I. Febbrajo 11

criticism (G./P. 1821: 6–8). To emphasise the intrinsic connection between translation and criticism: In the nineteenth century, it was customary to include entire translated passages in scholarly reviews. Consequently, translations are not standalone texts; rather, they are embedded within discursive contexts.

[19] *Antologia* not only adopts the thematic structure (1. natural sciences, 2. social sciences, 3. literature and the arts), but also reclaims the journalistic expertise associated with it. This is evident in the publication's commitment to providing a well-founded overview of the state of scientific research using careful selection, insightful commentary, and effective organisation. It is evident that Paris, the capital of knowledge and European civilisation, serves as the source for this (cf. JULLIEN 1821: 161–169, translator unknown).

Fig. 1

This approach gives rise to questions concerning the methodology of translation. However, the preface of the first edition of *Antologia* makes a relatively straightforward commitment to prioritising the quality of the translators themselves, to translate as faithfully as possible and only to provide "supplementary notes or transitions" (G./P. 1821: 8), along with a few introductory remarks on the author, if necessary, regarding his/her biography, scientific activities and publications. This approach involves a minimal level of visible intervention. In the majority of instances, only the source is referenced, typically without indicating the name of the translator.[20] In this way, the journal appears to simultaneously emphasise and conceal its status as a translation journal. This tendency towards the 'invisibility of the translator' is typical of the period (cf. VENUTI 1994) and has a number of causes. As the location and format of publication become a marker of quality, the role of the translator as a reviewer is less prominent, as was the case in the eighteenth century.[21] It is noteworthy that Vieusseux's emphasis on the added value of translation, and thus its independent ontological status, is at odds with a view that emphasises the transparency of the original in translation (through a methodology of minimal intervention). This appears to reflect a tension that Antoine BERMAN (1984) has described as characterising the translating culture of German Romanticism. On the one hand, there is the idea of a general translatability of arts and sciences (expressed in terms such as versability and convertibility). On the other hand, there is the belief in the influence of criticism on translation. Consequently, for the German Romantics, criticism is the highest form of translation.[22] However, the emphasis on commentary and mediation is dependent on the visibility of the interventions in question, namely those pertaining to translation activities. This apparent contradiction between an understanding of translation that eschews intervention and a journalistic approach that emphasises it is unlikely to be resolved without some degree of tension. As will be discussed further below, this discrepancy is likely to result in a lack of trust in the role of translation in the context of communicating scientific information.

These findings corroborate the assertion that the "modern scientific press, in its nascent stages preceding the advent of the contemporary monolingual English paradigm, was predominantly a translation-oriented enterprise" (GIPPER 2022: 71, RL). If *Antologia* is, in terms of content and journalistic conception, "born

[20] How has this approach affected the translation of the aforementioned preface to the *Revue encyclopédique*? The Italian version excludes a few passages from the French preface and occasionally condenses others. It is noteworthy that the omitted passages include references to figures of enlightened absolutism (JULLIEN 1819: 10), specifically the monarchs Frederick II and Catherine II (the latter in close contact with the prominent Italian Enlightenment philosopher Cesare Beccaria). Such references may have been deemed politically inappropriate in the context of the restorative political climate that prevailed in Italy after 1815, potentially leading to censorship.

[21] Cf. also the other articles in this dossier.

[22] As Berman demonstrates, this conceptualisation of translation aligns with a comprehensive Romantic educational program, encompassing both universal and national objectives at its core. It is important to note that the context outlined by Berman is primarily concerned with poetry and philological activities. Nevertheless, the overarching objective of *Antologia* is to cultivate interest in the sciences and the arts (G./P. 1821: 7).

translated", to use the formula proposed by Rebecca L. WALKOWITZ (2015), this is also true of other Italian journals of the period. These journals, like the Milanese *Rivista Europea* (1838–1842, 1843–1847), were conceived in their early stages as translation ventures. They borrowed complete editorial profiles from abroad, mainly from France, England, and Germany (cf. GALANTE GARRONE & DELLA PERUTA 1979: 9).[23]

Nevertheless, the purely translational journal is not a phenomenon exclusive to early political modernity. In fact, it was common practice in eighteenth-century Europe to reprint entire journals in other languages.[24] With the nationalisation and popularisation of science at the turn of the century, a notable shift occurred with regard to the linguistic character of the scientific journal. While late eighteenth-century journals such as Luigi Brugnatelli's *Giornale fisico-medico* (1792–1795) still published original articles in French and Latin, this was due to the fact that they were intended (apart from a circle of Italian scholars) for an international scientific community. Furthermore, only translated texts from languages that were less common in Italy were included, such as English or German. In contrast, journals such as *Antologia* abolished multilingualism in their quest for national scientific, linguistic and cultural cohesion.[25]

However, it would be erroneous to assume that this translation programme is devoid of ambivalences and discontinuities. These issues will be addressed in the subsequent section.

Antologia*'s turnaround in translation policy*

In light of the growing demand for scientific dissemination that *Antologia* aims to fulfil through its translation activities, it appears somewhat incongruous that, after a relatively brief period, it should reconsider its translation policy. In his foreword to the third issue, Vieusseux states his intention to reduce the number of translations, particularly from French, in favour of more original Italian articles, which were initially excluded. The rationale behind this shift is not entirely evident. It seems probable, however, that the debates that arose in Italy following de Staël's appeal for translation played a significant role. These debates

[23] On the *Rivista Europea*, cf. GERNERT (1990: 45–47). The main source for the *Rivista* was the French *Revue des Deux Mondes*, a journal conceived as a cultural, economic, and political 'bridge' between France and the Americas.

[24] In her overview of the development of Italian scientific journals in the late eighteenth century, Delpiano refers to the *Osservazioni spettanti alla fisica, alla storia naturale ed alle arti* (1776–1783) – a reprint of Rozier's *Observations* (DELPIANO 1989).

[25] On the *Giornale fisico-medico* cf. DELPIANO (1989: 472–474). This development was already evident in Italy at the end of the eighteenth century, as evidenced by translation journals such as the *Scelta di opuscoli interessanti tradotti da varie lingue* (1775–1778). These journals represented the medial prototype of "scientific dissemination" (DELPIANO 1989: 470, RL) in Italy. As an encyclopaedic journal, *Scelta di opuscoli* was designed for a broader readership and was committed to social utility. With its more concise texts reflecting the accelerated pace of scientific communication, it supplanted the more comprehensive publications of the academies (DELPIANO 1989: 467). A note on the method of translation: The figure of the translator is indeed present in the *Scelta* in the form of annotations. However, as the preface to the inaugural issue (SOAVE 1775: n. p.) indicates, the journal was intended to minimise the visibility of the editor for the sake of readability, as was the case with the *Antologia*. In 1778, the reference to translation was removed from the title, and the journal continued under the name *Opuscoli scelti sulle scienze e sulle arti*.

pitted proponents of classical and romantic culture against each other in a struggle for national renewal. While de Staël's call for translation was enthusiastically embraced by her Romantic Italian followers, who were often advocates of Italian political unity and who founded journals such as the Milanese *Conciliatore* (1816), dedicated to the importation of literature from northern Europe through translation, the adherents of classicism, who were often opponents of Italian unification, rejected such translation efforts, drawing attention to their own tradition in their quest for cultural regeneration. This debate became a journalistic issue, as it was largely fought out in the new cultural magazines of the Italian peninsula (cf. AGORNI 2021). Although proponents and opponents of extensive translation efforts could not be clearly delineated along ideological lines of romanticism and classicism, the question of the relationship between translations and original texts (and its implications for Italian nation-building) constituted an important subject of discussion, resulting in a series of shifts in the journalistic orientation of journals such as *Antologia*. Shortly after its launch, the journal's translatological orientation was already up for debate – largely, it seems, because of pressing national concerns. In the third issue, we find the following passage:

Il desiderio palesato da molti, e le gentili offerte d'alcune illuminate Persone zelanti della gloria patria, ci hanno persuasi a modificare la massima, adottata in sul nascere dell'ANTOLOGIA, di non comporla, cioè, se non colla versione di cose, tratte dalle migliori opere periodiche o da opuscoli d'Oltramonte; e a dar luogo anche a quelli articoli originali, che paressero meritevoli della curiosità de' Lettori. (ANTOLOGIA 1821c: 321)[26]

[The expressed desire of many and the kind offers from some enlightened individuals, zealous for the glory of their country, have prompted us to modify the initial maxim adopted at the beginning of ANTOLOGIA. This involved composing it not solely with the version of things taken from the best periodicals or pamphlets from beyond the Alps, but also with original articles deemed worthy of the readers' curiosity. (RL)]

If *Antologia* intends to publish more "original articles", as stated in this communication, due to public demand and the kindness of some patriotic luminaries who have donated manuscripts, it is with the declared aim of intervening in debates and national issues:

Incominciamo pertanto colla seguente scrittura anonima, pervenutaci da una città di questo Granducato. La quale pubblichiam […] così per la natura del subietto, che, relativamente ai Tosciani, ha l'aria di essere affatto nazionale, come per la suppellettile de' fatti irrefragabili, messi in campo dall'Autore, nel prendere parte ad una controversia, tanto a di' nostri agitata in Italia. (ANTOLOGIA 1821c: 321)[27]

[26] In the case of articles without an identifiable or signed author, the name of the journal is given as the author.

[27] The concept of nation can, of course, be interpreted here in a regional sense. Nevertheless, the supra-regional dimension of the "controversy" is emphasised in the last part of the quotation. The fourth issue further justifies the programmatic reorientation in favour of more original Italian texts and translations from German and English: Original French texts are

[We therefore begin with the following anonymous letter, which we received from a town in this Grand Duchy [Tuscany, RL]. We publish it [...] because of the nature of the subject, which seems to be entirely national as far as the Tuscans are concerned, as well as because of the irrefutable facts presented by the author, taking part in a controversy that is so much agitated in Italy today. (RL)]

As can be read in the following pages, this controversy concerns issues that fall within the context of the (re)emerging *Questione della lingua* – the language question, one of the central and historical issues in the creation of trans-regional standards in the fields of culture and communication on the peninsula.[28]
This coexistence of a dense and rapidly changing dynamic of translation and non-translation is by no means a singular phenomenon, as it can also be observed in other journals, such as the aforementioned *Rivista Europea*. The tendency to cut back on translations can also be seen in one of the most important applied science journals of the time: In the *Politecnico*, Cattaneo speaks of keeping the proportion of translations as low as possible for reasons of quality. At the same time, however, he wants to promote the international networking of his journal and of Italian science by recruiting correspondents and collaborating scientists (CATTANEO 1839b: 6).[29]

Dynamics of Translation and Non-Translation: *Antologia*'s Contribution to the Nationalisation of Science in Italy (Conclusion)

The twists and turns observed in *Antologia*'s translation policy (which can also be seen in other contemporary journals) call for further research. They call for a closer look at the relationship between translation and non-translation (in the narrower sense) and its effects in studies of translation history, nation-building and also in the emerging field of Periodical Studies – dynamics that, as shown, often coexisted in Italian journalistic enterprises in the nineteenth century.

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better known to an educated Italian public and are easily available in Italy. Translations from northern European languages therefore have a greater public utility and are more readily accepted by the Italian readership (ANTOLOGIA 1821a: 1–3). Issue 13 states that the aim is to nationalise *Antologia*: In Vieusseux's words, the journal was meant above all to serve the exchange of an Italian scientific community – "I shall bear in mind in particular that we write for Italians" (VIEUSSEUX 1822: 7, RL) – and the creation of supra-regional standards in the fields of science, language and culture on the peninsula, without dispensing entirely with translations. According to the editor, the original focus was not least due to the limited resources and the adventurous nature of this editorial venture (VIEUSSEUX 1822: 3–15). In *Antologia*, translations are not always recognisable as such. In the third issue there is only one text that can be clearly identified as a translation, and it comes from an English journal.

[28] "Da poco in qua si è rinnovata in Italia la questione, se *toscano* debba dirsi il nostro volgare illustre, anzichè *italiano*, e se quindi ebbe ragione o torto chi lo chiamò finora toscano" (ANTOLOGIA 1821b: 323). ["Recently in Italy the question has been raised again as to whether Tuscan should be called our illustrious vernacular instead of Italian, and whether those who have been calling it Tuscan are right or wrong" (RL).]

[29] Despite the flourishing of translation throughout the nineteenth century, a certain degree of translation fatigue can also be observed in other fields. In literature, for example, towards the middle of the century, the Italian Romantics, especially some prominent leaders of the national movement such as Berchet, began to turn their attention away from translation towards the establishment of their own national linguistic and cultural standards. (cf. LUKENDA 2022a).

There are undoubtedly also sociological reasons for the change in translation policy outlined above. When a journal, whether 'born translated' or not, is successful, it receives many 'suggestions' for publication which may lead it to correct its original program. Vieusseux's own words ("kind offers from some enlightened people") point to this.[30]

However, the presence of two strong dynamics – the increasing demand for translation on the one hand, and the growing discomfort with translation in literary and scientific circles after a Romantic period characterised by enthusiasm for translation on the other – seems to confirm what Peter BURKE (2000) has identified as an essential component of the social history of knowledge: the coexistence and interaction of opposing, ambivalent and sometimes even conflicting trends: internationalisation and nationalisation. It seems reasonable to suggest that Vieusseux and his fellow activists were well aware of the scientific and cultural significance of these dynamics, but initially miscalculated the potential for conflict they might generate.

If we follow the history of *Antologia*, we can see that this combination of opposing tendencies – the need to establish international links and to create national scientific and cultural standards – will guarantee the journal a prominent position in the emerging Italian scientific landscape. *Antologia* and Vieusseux were the first to pay attention to emerging scientific institutions at an international level. With the detailed and continuous reports that appeared in *Antologia* on the national scientific congresses held in Switzerland and Germany in the early 1820s (cf. ANTOLOGIA 1821d), Vieusseux and his journal were undoubtedly among the most important initiators of the *Riunione degli scienziati italiani* (1839–1847) – the leading pre-national scientific institution that played an important role in the constitution of national scientific branches (such as geography) during the Risorgimento period. The dynamics of non-translation and nationalisation thus follow the path traced by translation.

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[30] It is a bold hypothesis to suggest that these reflections on the relationship between translations and originals manifest something like an early, proto-national idea of cultural balance, which became a cultural doctrine in Italy in the early 20th century, albeit under very different political and ideological auspices – a parameter measuring the relationship between the export and import of cultural productions. However, further, extensive research would be required to shed light on this intriguing hypothesis.

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Daniel Fischer

A favourable ecosystem for scientific translation projects: Strasbourg's role in the production and transnational circulation of knowledge in the 1780s.

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Abstract

Strasbourg's geographical and political position during the eighteenth century led to the longstanding assumption that the capital of Alsace naturally fostered the circulation of German and French ideas and knowledge. Throughout the century, many travellers flowed through this city on the Rhine, which was viewed as the Eastern gateway to France even though its population remained primarily German-speaking. This study reconstitutes Strasbourg's total catalogue of 189 publications during the 1780s, enabling us to assess the provincial city's role in producing and circulating knowledge on both sides of the Rhine and more widely in Europe leading up to the French Revolution. We examine evidence of the reasons for the large volume of scientific publications, including a surprising level of investment into German translations. Finally, we present the specific case of the translated works of Lavoisier and Ehrmann published in Strasbourg in 1787, revealing new details that indicate that the local publishing sector's rationale went beyond geographical and linguistic opportunities.

Keywords: social history of science and knowledge; translation; mineralogy; chemistry; Alsace

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Keywords: *history of science and knowledge; translation; mineralogy; chemistry; Alsace*

Introduction

Strasbourg's unique geographical position along the Rhine, as a key stop on the route linking Paris, Vienna and Berlin, and its political situation as a French city since 1681 whose population remained largely German-speaking throughout the 18th century, meant that it was always a nodal point for the movement of travellers, goods and ideas between the German-speaking world and France. Printed matter was also an important part of this exchange. As the city's censors noted:

[Strasbourg's] booksellers supply part of Germany with French books and reciprocally supply the French with books printed in Germany and in the North. This is what gives this kind of trade a considerable scope that would be hard to find elsewhere.[1]

Similarly, the director of the Library in Paris, writing to the Strasbourg magistrate in 1786, said: "Your city is all the more interesting in my eyes, as it is better placed

[1] Letter from censor ZOEPFFEL (1785). Quoted by ELLOY (1973-1974: 11-12). These translations from the French are provided by the author of the article.

than many others to serve as a meeting point or communication point between the two languages in everything to do with literature."[2]

It is well established that Strasbourg booksellers and printers catalogued numerous titles in German and French during the eighteenth century (cf. CLAUS 1977; CASTELLI 2017). Moreover, in the decade preceding the French Revolution, the *Bibliographie französischer Übersetzungen aus dem Deutschen* lists four Strasbourg translations from German into French, compared to nine among Parisian booksellers and printers (cf. BIHL et al. 1987). But the data from this inventory, covering only translations from German to French, is considered incomplete. Jérôme Schweitzer offers a broader view, identifying 579 titles published in Strasbourg between 1785 and 1794, including 74 in Latin, 136 in French and 369 in German. He further observed that "many of these works are translations or adaptations of scientific, technical or pedagogical treatises" (SCHWEITZER 2017: 1119). However, an in-depth analysis of Strasbourg's publications has not been conducted to date.

The aim of this article is to verify Schweitzer's observation by studying the scale, content and translations of Strasbourg's publications during the decade leading up to the French Revolution. Translation in the sciences is a field of historiography that has been revitalised thanks to the work of Patrice Bret (cf. BRET & MOERMAN 2014), which highlighted the growing linguistic compartmentalisation of scholarly publication in the 17th and 18th centuries. Bret examines the increasing necessity of translations during that era, as well as the market demand, logistics and skills involved in scientific translation at a time when the use of Latin as a *lingua franca* for scholars was disappearing (cf. GORDIN 2015). Furthermore, the work of Hans-Jürgen Lüsebrink on the role of translations in Franco-German cultural transfers (cf. LÜSEBRINK et al. 2017), provides another lens through which to examine Strasbourg's production of scientific translations in the 1780s.

The role of scientific publications in 1780s Strasbourg

There are several reasons for focusing on the 1780s to examine the role of science in the publishing strategy of Strasbourg publishers and printers. First, the difficult economic situation of the 1780s forced booksellers and printers, just like other businesses, to adapt their strategies to survive in the context of a stagnant market. Competition between booksellers, publishers and printers in Strasbourg was fierce, even though access to and oversight of the bookselling and publishing industry was regulated by the corporate authorities of the tribe of the Stilt.

Secondly, the 1780s in France saw important developments in the scientific community. Working with the group at the Arsenal, the chemist Lavoisier made discoveries that gave rise to modern chemistry. In late 1779, Lavoisier presented to the *Académie des Sciences* a report (which he had produced two years earlier), in which he identified and named the "acidifying principle" or "oxygine" to designate the part of breathable air that causes certain substances to oxidise.[3] Oxygen and its

[2] Letter from the Director of the Librairie to the Strasbourg Magistrate, January 1786, quoted by CLAUS (1977: 62).

[3] LAVOISIER, Antoine Laurent de (1781): "Considérations générales sur la nature des acides et sur les principes dont ils sont composes". In: *Histoire de l'Académie royale des Sciences, année 1778, avec les Mémoires de Mathématiques & de Physique pour la même année*. Paris: Imprimerie royale, 536.

role in combustion and chemical reactions was thus identified, sweeping away old paradigms and paving the way to new scientific advances in fields beyond chemistry, such as mineralogy and metallurgy. But the advent of modern chemistry took time to develop (as we will see in part through our case study on Ehrmann and Lavoisier publications in Strasbourg at the end of this article) – finally crystallising in 1789, with the publication of Lavoisier's *Eléments de chimie* and the creation of the journal *Annales de chimie*. Meanwhile, France was also the site of high-profile aerostatic experiments. Hence the 1780s were marked by publications and heated debate of various scientific theories across Europe.
This golden age of scientific inquiry and publication came to an end at the end of the 1780s, though, with the arrival of French Revolution. We see evidence of this shift, for example, in the entreaty made to a German publisher by Philippe Frédéric de Dietrich (1748–1793), who was a Strasbourg patrician and member of both the Royal Academy of Sciences in Paris and the *Societät der Bergbaukunde*. In a letter to Friedrich Wilhelm Heinrich von Trebra, Director General of Mines in Hanover, Dietrich requested that a translation of the *Bergbaukunde*, the society's yearbook, be published in Germany, explaining that:

It is more impossible than ever to have the Society's volumes translated and printed in France. In these troubled times, all our printing presses are busy printing political brochures and pamphlets, and the best scientific books, even the national ones, do not sell.[4]

The Strasbourg publishing industry 1750–1789

The world of books in Strasbourg is well known thanks to the description offered by the Strasbourgeois Theophil Friedrich Ehrmann in 1789.[5] Ehrmann's data, combined with additional information from Gournay's 1789 business almanac,[6] and notes on each publisher from the Bibliothèque Nationale de France (BNF) and the *Nouveau dictionnaire de biographie alsacienne* (cf. BARBIER 1994; KELLER 1998; MARIOTTE 1985; ZELLER 1990) provide the following overview of the local industry (Figure 1).

Name of the publisher	Type of business			Start of activity	Special features
	Publisher	Printer	Bookseller		
Bauer & Treuttel	x		x	Founded by Bauer in 1748, partnership with	The name "Bauer et Treuttel" was displayed from 1777 to 1783. The death of Bauer in 1781 led Treuttel, his brother-

[4] Dietrich Archives (later ADD) 64/3, 590-591. Copy of a letter from Dietrich to Trebra, 11 November 1789.

[5] EHRMANN, Theophil Friedrich (1789): *Briefe eines reisenden Deutschen an seinen Bruder in H*** über verschiedene Länder und Gegenden von Europa*. Frankfurt/Leipzig: without any mentioned editor.

[6] GOURNAY, B.-C. (1789): *Tableau général du commerce, des marchands, négocians, armateurs, & c. de la France, de l'Europe, & des autres Parties du Monde, connu ci-devant sous le nom d'Almanach général du Commerce, &c*. Paris: without editor, 776.

				Treuttel in 1772	in-law, to keep only his name from 1783.
Dannbach	x	x		1784	Dannbach took over the Kürsner printing works in 1784.
Häussler	x			Since 1773	
Heitz	x	x		1717	Printer for the university and the town, the Protestant seminary and gymnasium, the Directory of the Augsburg Confession, the Prince of Hesse-Darmstadt, Count of Hanau-Lichtenberg. In 1789, the printing works was run by the fourth son and successor of Jean Henri I Heitz, Jean Henri Heitz II.
König	x		x	1748	In 1789, it was run by his widow and her two sons.
Kürsner	x			1724	Kürsner was not a bookseller, but his books were deposited with Seyfrid at the Marché aux Cerises. After being run by Jean Steinmann, who followed in Kürsner's footsteps, the printing business was taken over in 1784 by Dannbach, one of Kürsner's sons-in-law.
Le Roux (circa 1701–1790)	x	x	x	1729 or 1730	Printer to the king, the bishopric, the chancellery and the cardinal. Jean-François Le Roux (1701–1790) devoted himself to printing, while his son took charge of the bookshop.
Levrault	x	x		1767	Originally from Lorraine, Levrault initially worked with Christmann. Printer for the intendance and the episcopal university
Academic bookshop	x		x	1783	Founded by Salzmann and entrusted to Bartholomaï. The Librairie académique was taken over directly by Salzmann in 1785. Despite its name, it had no official link with the university.
Lorenz and Schuler	x	x		1777	Printer to the "immediate" nobility. Jonas Lorenz was apprenticed to König before 1762. Johann Friedrich Schüler, with whom he went into partnership in 1777, was his son-in-law.
Rolland and Jacob	x	x		1786	Employed in Kehl in 1783, they opened a type foundry in Strasbourg in 1784. At the end of 1786, they were authorised to open a printing

					works, but were not allowed to print in German. The company was also known as the "Société Typographique", and in 1789 became the King's ordinary printing house, before going bankrupt in December 1789.
Stein	x		x	Founded by his father around 1727	Bankruptcy in 1785, on Stein's death.

Figure 1: Strasbourg publishers and printers in the 1780s

After a period of relative stagnation beginning in 1750 and 1783, the output of the city's booksellers underwent a boom in which, according to the case of the Bauer and Treuttel bookshop studied by Annika Haß, the number of published titles increased and the presence of Strasbourg publishers was more pronounced at the Leipzig (Germany) book fairs (HAß 2023: 72). A new publishing house and bookshop, *La Librairie académique*, were also established in 1783 (cf. CLAUS 1977).

By the early 1780s, there were five publishers in Strasbourg, with a combined total of 16 presses. In 1786, Henri Rolland and Claude Jacob applied for the right to open a sixth publishing company in Strasbourg. Despite strong arguments – Jacob had been trained with the famous typographer and printer John Baskerville in Birmingham – the Strasbourg authorities, who supported the printers' guild, only agreed to their request on the condition that Rolland and Jacob not be permitted to print any posters or periodicals, nor any material in the German language (cf. ELLOY 1974).

At this time, the city's six printers served the needs of their own publishing houses, but their presses could also print publications upon the request of other publishing houses, including German publishers. Local publishers could also have their works printed in Strasbourg or abroad (CLAUS 1977: 36). In one case for example, two different publishers, Dannbach and Heitz, joined forces in 1778 to co-publish in Strasbourg the complete works of Alexander Pope,[7] translated from English into German.

From 1780 through 1789, a total of 189 titles were published in Strasbourg, excluding almanacs and calendars, academic works by university students, special event announcements, funeral orations, offprints of extracts from larger publications, newspapers, musical scores and political pamphlets under 20 pages (a genre that flourished as the Revolution approached). This figure combines 135 titles listed at the Bibliothèque Nationale de France (BNF) and 54 titles identified by cross-referencing French data with digitised German collections, publication announcements in periodicals[8] and library catalogues from the end of the 18th

[7] POPE, Alexander (1778): *Sämmtliche Werke*, *mit Wilh. Warburtons Commentar und Anmerkungen*. Strasbourg: Heitz and Dannbach.

[8] The bookseller Treuttel, for example, advertises the books published and available in the *Intelligenzblatt der Allgemeine Literatur-Zeitung vom Jahre 1788*, 36, 313-314.

and the 19th centuries.[9] The holdings and investory of the municipal library would have been a valuable resource for such information, had it not burned down during the siege of 1870.

These 189 titles fall into five main categories: theology, law, science and the arts, literature and languages, and history (categories as defined by Jean-Charles Brunet, author of "Art de classer les livres d'une bibliothèque" (1790)).[10] Of these titles, 37% (70 publications) can be classified as "sciences and arts". However, the volume of works in this category varies by publishing house. Four publishers did not publish any books in sciences and the arts; and three published around one-third of their books in this category (Dannbach, Heitz and Levrault); while such publications accounted for more than 50% of new publications by three publishing houses: *La Librairie académique*, *König* and *Treuttel* (Figure 2).

	Number of Publications					
Publisher	**Total**	**Theology**	**Law**	**Science and the arts**	**Literature and languages**	**History**
Bauer & Treuttel	34	1	0	19	4	10
Dannbach	10	1	3	3	1	2
Häussler	3	0	0	0	0	3
Heitz	17	2	2	4	7	2
König	19	0	1	11	6	1
Kürsner	5	1	0	0	2	2
Le Roux	7	4	1	0	1	1
Levrault	30	6	4	10	5	5
Academic bookshop	36	4	0	20	5	7
Lorenz & Schuler	7	1	0	0	4	2
Rolland & Jacob	8	0	3	0	2	3
Stein	4	0	0	0	1	3
Self-publishing	2	0	0	1	0	1
Unknown	7	3	0	2	0	2
Total (% of total)	**189 (100%)**	**23 (12%)**	**14 (7%)**	**70 (37%)**	**38 (20%)**	**44 (23%)**

Figure 2: Number of works published in Strasbourg between 1780 and 1789, according to Brunet's categorisation

Since Brunet's "sciences and the arts" category includes liberal and mechanical arts, we further classified the titles by discipline in order to focus on titles considered "scientific" in contemporary terms. Of the 70 books, 66 can be linked to one of the major classes of the *Académie Royale des Sciences*, according to the reform of 1785 (cf. BRIAN & DEMEULENAERE-DOUYÈRE 2002). Anatomy, which we

[9] (1799): *Catalogue des livres composant la bibliothèque de feu le C[itoy]en Dietrich, ancien Maire de Strasbourg, et membre de la ci-devant académie des Sciences de Paris*. Strasbourg: Levrault.

[10] BRUNET, Jean-Charles (1790): "L'art de classer les livres d'une bibliothèque". In *Dictionnaire bibliographique, historique et critique, des livres rares, précieux, singuliers, curieux, estimés et recherchés*, T.3. Paris: Cailleau et Fils, 511. Quoted by Haß 2023: 455.

have chosen to combine with medicine, surgery and pharmacy, accounts for nearly 55% of the publications that we would describe today as "scientific". Natural history and mineralogy, followed by mathematics and physics, account for 18% and 12% respectively of the scientific titles published in Strasbourg in the 1780s (Figure 3).

Name of publisher	Mathematics and physics	Anatomy, medicine, surgery, pharmacy	Natural history and mineralogy	Other academic disciplines[11]	Other	Total
Bauer & Treuttel	1	11	1	6		19
Dannbach	1	1	1			3
Heitz			1	2	1	4
König		8		1	2	11
Levrault	1	5	3		1	10
Librairie académique	5	8	6	1		20
Self-publishing		1				1
Unknown		2				2
Total	**8**	**36**	**12**	**10**	**4**	**70**

Figure 3: Breakdown of scientific fields covered by Strasbourg publications in the 1780s

It remains to be seen what place Strasbourg publishers reserved for translations. Of the 189 titles published in the 1780s, 35 were translations. Of these translations, 65% (23 titles) were in the "sciences and arts" field (Figure 4).

	Number of Translated Publications and Total Number of Publications					
Publisher's name	Translations / Total	Theology	Law	Science and the arts	Literature and languages	History
Bauer & Treuttel	11/34	0/1		6/19	0/4	5/10
Dannbach	1/10	0/1	0/3	1/3	0/1	0/2
Häussler	0/3					0/3
Heitz	0/17	0/2	0/2	0/4	0/7	0/2
König	5/19		0/1	3/11	2/6	0/1
Kürsner	0/5	0/1			0/2	0/2
Le Roux	0/7	0/4	0/1		0/1	0/1
Levrault	2/30	0/6	0/4	1/10	1/5	0/5
Librairie académique	14/36	0/4		11/20	1/5	2/7
Lorenz & Schuler	0/7	0/1			0/4	0/2
Rolland & Jacob	0/8		0/3		0/2	0/3
Stein	0/4				0/1	0/3
Self-publishing	1/2			0/1		1/1

[11] The other publications directly linked to an academic discipline are detailed as follows: four in chemistry and metallurgy (three books by Bauer & Treuttel and one by König), three in botany and agriculture (by Bauer & Treuttel and by Heitz), two in mechanical engineering (by Bauer & Treuttel and by Dannbach) and one in astronomy (by *La Librairie académique*).

Unknown	1/7	0/3		1/2		0/2
Totals	**35/189**	**0/23**	**0/14**	**23/70**	**4/38**	**8/44**

Figure 4: The number of translations published in Strasbourg in the 1780s

Of these 35 translations, ten were translated from French to German, while five were translated from German to French. (Figure 5 provides a summary of all 35 translations across six languages). Of the 23 translations in "science and the arts",[12] four disciplines are represented: 11 in anatomy, medicine, surgery or pharmacy; seven in natural history and mineralogy; three in chemistry and metallurgy; and two in mathematics and physics.

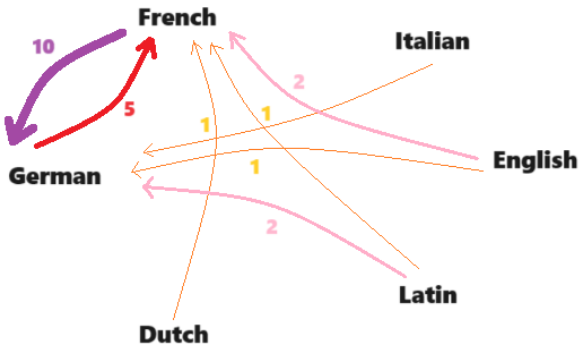

Figure 5: Source and target languages of scientific translations published in Strasbourg in the 1780s

As a point of comparison, in Frankfurt am Main was a similar sized economic and cultural crossroads city in 1789 with a population of 36,000, compared to Strasbourg's 45,000. Frankfurt was also home to one of the most important book fairs in the Holy Roman Empire (cf. ROTH 2013). During that period, however, Frankfurt only published 49 scientific works, including seven translations,[13] whereas Strasbourg published 70 scientific titles, including 23 translations. Thus, Strasbourg appears to have been a particularly active provincial city when it comes to 1780s scientific translations and publications.

In search of reasons for Strasbourg's strong scientific translation business

Several factors seem to have contributed to Strasbourg's active production of translated scientific publications. The city's renowned Faculty of Medicine, highly educated publishers and interpersonal, transnational relationships facilitated by Strasbourg's geographic position, in addition to the city's predominant French-German bilinguallism and longstanding history in the publishing industry, created a highly conducive environment for such publications.

Although Strasbourg lacked an academy of fine arts, sciences and literature like those in other French provincial towns like Dijon, Metz and Nancy, the presence of a major university with an international reputation and links to Protestant Germany gave Strasbourg unrivalled prestige, enabling the city to claim exclusive control over local scholarly production. The role of the University of Strasbourg in the publishing industry was substantially enhanced by Strasbourg's special

[12] See appendix 1.

[13] See appendix 2.

status, negotiated as part of the 1681 French annexation, under which the Strasbourg Magistrate retained the oversight of its own scientific publications – rather than being subject to the regulation and censorship of the Royal Academy of Sciences like the rest of France. The Magistrate regularly solicited input from eminent professors at the University of Strasbourg to guide local publishing decisions (cf. ELLOY 1974; CLAUS 1977: 13).

However, interest in scientific progress at Strasbourg's university remained limited to the Faculty of Medicine. Since medicine was considered the least noble of the four faculties (comprised of theology, philosophy, law and medicine), the Faculty's lighter weight of tradition meant that it had more latitude to keep abreast of emerging scientific developments. In addition to three academic chairs in (1) pathology and clinic, (2) botany, medical subjects and chemistry, and (3) theoretical and practical anatomy, the school also had an obstetrics department, founded in 1738 (MARGRAFF 1969: 21). The Faculty of Medicine attracted the largest number of students at the universiy. Some of its professors had a European reputation: Lobstein for anatomy and surgery, and Spielmann for chemistry. The presence of the university – thanks to its programmes, the academic work of its students and the need for textbooks – provided a base of activity for the city's booksellers, but the Faculty of Medicine was the largest driver of the city's academic publishing, accounting for more than half of the 70 scientific titles published in the 1780s.

The last third of the eighteenth century also saw the emergence of a generation of publishers who had themselves been educated before embarking on their careers in printing or bookselling. Salzmann, Heitz and Treuttel all had secondary education, as did König and Levrault. Their secondary studies were followed by travel, apprenticeships with Parisian booksellers, or university studies in Strasbourg or elsewhere in the Holy Roman Empire. Jean-Henri Heitz II, for example, attended the Protestant Gymnasium and also took private lessons in Hebrew and French (ELLOY 1974: 18). When he took over his family's bookshop-printing business in 1769, the operation was enriched by his language studies, travels and contacts in Paris as well as with Strasbourg's academic and pastoral elite. This new generation of well educated, well-travelled publishers was attuned to intellectual and scientific questions of the age, which impacted the selection of scientific works and translations.

Furthermore, the importance of interpersonal contacts in the publication of translations seems to have begun growing in the 1770s. Publishers sought to maintain personal relationships with intellectuals and writers, particularly those who stopped off in the city while travelling. When Alessandro Volta was welcomed to Strasbourg in 1777 as a member of the learned society gathered around the royal praetor, he established contacts in particular with Dietrich and Spielmann, whose scholarly merits he recognised.[14] The following year, his *Lettres sur l'air inflammable des marais* was translated not only into French by Jean-Jacques Barbier de Tinan and published by Heitz,[15] but also into German by

[14] VOLTA, Alessandro (1834): *Lettere inedite*. Pesaro: Tipografia nobili, 159.

[15] VOLTA, Alessandro / BARBIER DE TINAN, Jean-Jacques (transl.) (1778): *Lettres sur l'air inflammable des marais to which three letters by the same author from the Milan journal have been added, translated from the Italian*. Strasbourg: Heitz [Sull'Aria Infiammabile Nativa Delle Paludi (1777), Milan: Marelli].

Carl Heinrich Köstlin and published by Stein.[16] The following year, the printer Heitz once again entrusted Barbier de Tinan with the publication of a new translation from Italian into French, the *Mémoire sur les conducteurs électriques pour préserver les édifices de la éclair* by Abbé Giuseppe Toaldo.[17] This trend continued into the 1780s; Jean-Georges Treuttel, for example, invited Sophie von La Roche to his table in 1786 and cultivated a personal relationship with her (Haß 2023: 57). Strasbourg's position as an important stop along the travel route of European scholars therefore triggered the publication of a series of translations from Italian into French and German, making up-to-date scientific knowledge available to French and German speakers.

It would be tempting to attribute this greater number of translations from French into German to the dominance of French as the language of choice for scholars after the decline of Latin, and before the early 19th century rise of a triumvirate of vernacular languages for scientific publications: English, German and French (cf. Gordin 2015). It is true, after all, that the city's elites were often bilingual. For example, Goethe (who was in Strasbourg in 1770–1771) lauded Frédéric Rodolphe Salzmann for his elegant French even though Salzmann considered himself to be a "perfect German".[18] As a bilingual city, Strasbourg was well-placed to respond to increasing demand for translations. In a context where the scientific community was eager to stay abreast of recent scientific discoveries that were increasingly compartmentalized by country and language, translations became essential. The accelerating pace of discoveries meant that translators had to work in a hurry. Scholars were no longer content with translating extracts or summaries from periodicals; they wanted complete and thorough translations by translators with the threefold skill of perfect command of the source language, the target language, and the specific, scientific lexicon (Bret & Moerman 2014: 631). Such rapid but high-quality translations were crucial for fuelling scientific progress across linguistic and national boundaries, and Strasbourg was ideal to respond for this demand.

It appears, however, that claims of a so-called French Europe in the 18th century and of French as a universal language have been exaggerated and insufficiently contextualised (cf. Beaurepaire 2007; Siouffi 2010). In reality, the 18th century saw the emergence of a multicultural dynamic, in which French "played its part … This multiculturality was built on the basis of a stratification of linguistic uses according to fields and contexts, as well as on the interweaving of transfers" (cf. Siouffi 2010). In chemistry, for example, the importance of Lavoisier's work – which was itself more widely diffused thanks to French-English translation, notably thanks to Madame de Lavoisier – paved the way for scientific translations from French into other target languages. But in other fields, such as mineralogy or the art of mining, advancements of German scientists led to increasing interest

[16] Volta, Alessandro / Köstlin, Carl Heinrich (transl.) (1778): *Briefe über die entzündbare Luft der Sümpfe: nebst drey andern Briefen von dem nämlichen Verfasser, die aus dem Mayländischen Journal genommen sind*. Strasbourg: Stein [Sull'Aria Infiammabile Nativa Delle Paludi (1777), Milan: Marelli].

[17] Toaldo, Giuseppe / Barbier de Tinan, Jean-Jacques (transl.) (1779): *Mémoire sur les conducteurs électriques pour préserver les édifices de la foudre*. Strasbourg: Heitz [Dei conduttori per preservare gli edifizj da'fulmini memorie (1778), Venice: Storti].

[18] Goethe, Johann Wilhelm von (1986): *Aus meinem Leben. Dichtung und Wahrheit*. Frankfurt a. M.: Deutscher Klassiker Verlag, 525. Quoted by Haß (2023: 39).

in translations from German into English or French in the 1780s. So the local prowess in French and German language is only a small part of the story.
A final, critical reason for Strasbourg's high level of scientific translations and publications is in fact market demand, but paradoxically not in Strasbourg itself. Given the bilingualism of educated classes in Strasbourg, local interest in translations from German to French or French to German was quite limited, and those involved in the book trade were aware that their work would find few buyers locally. The censor Zoeppfel stated in 1786:

Booksellers do not print to sell in the city. They print 1,000, 1,500 or 2,000 copies of their works, and pay little attention to the 10 or 20 copies that are sold in the city. The entire edition is destined to leave the country and is transported at great expense to Frankfurt or Leipzig, where it is exchanged for other books or paid for in silver.[19]

Before the 1770s, Strasbourg booksellers found themselves at a disadvantage at the major book fairs in the Holy Roman Empire. Since few titles were published in German in Strasbourg, they had little to trade and instead had to pay German booksellers for the titles they wished to offer their customers back in Strasbourg (CHÂTELLIER 1976). By increasing publication of German materials starting in the 1770s, Strasbourg booksellers became less indebted to German publishers, could sell in-demand, German language publications in Frankfurt and elsewhere, and could purchase and return with new German publications that were popular at home (CLAUS 1977: 99). It was in the light of the reality of this market that Strasbourg publishers looked for new titles to publish, and that the value of German translations grew, which explains the choice of German as the target language for translation in 14 cases out of 23.
Observing the specialisation within the scientific community, some booksellers specialised their catalogues. Dietrich, for instance, received from Treuttel all publiccations relating to natural history, chemistry, mineralogy and metallurgy, but once angrily returned to him three books on alchemy that had slipped into a book delivery, saying they were unworthy of his library.[20] These specialisations accompanied the growth of natural history and physics in publications between 1750 and 1790, while the already well represented areas of mathematics and medicine publications saw little change.
Publishing a work, especially if translation costs were involved, represented a major investment that did not always pay off. For example, Dietrich told Trebra that his French translation of *Erfahrungen vom Innern der Gebirge*, published in Paris in 1787, had found few buyers in France, and that he regretted his investment.[21] But if the market for scientific translations remained small in France, making Parisian publishers wary, the situation was different in Strasbourg. Local booksellers' need for books to sell at the Frankfurt and Leipzig fairs encouraged them to finance translations from French into German.
In summary, Strasbourg's particularly dynamic publishing of scientific translations in the 1780s depended on the confluence of several factors present

[19] Report by the censor Zoeppfel on the state of bookshops in Strasbourg, 1786. Quoted by ELLOY (1974: 34–35).

[20] ADD 64/I/1, 57–58. Copy of a letter from Dietrich to Treuttel, 27 September 1787.

[21] ADD 64/I/1, 215–217. Copy of a letter from Dietrich to Trebra, 8 December 1788.

in Strasbourg at the time, including educational, cultural, geographic, linguistic and interpersonal components that presented opportunities for synergy and individual initiatives. These factors are well illustrated by the case of Ehrmann and Lavoisier publications in the 1780s.

An example of cross-translation, revealing the conditions fuelling the publication of scientific translations in Strasbourg on the eve of the French Revolution: the works of Ehrmann and Lavoisier

During the 1780s, Strasbourg publishers, translators and scholars continually sought ways to overcome material and financial obstacles to the translation of scientific works. An example of cross-publication in Strasbourg illustrates this perfectly.

In 1786, Friedrich Ludwig Ehrmann, an experimental physics demonstrator in Strasbourg, who had already published a description of electric lamps in French and German in 1780[22] and a description of the Montgolfier brothers' aerostatic machines in German in 1784,[23] worked with Treuttel to publish a treatise entitled *Versuch einer Schmelzkunst mit Beyhülfe der Feuerluft*.[24] This treatise corroborated a series of observations also made by Lavoisier in a memoir read at the Académie des Sciences in 1783 but not published until 1785. According to Ehrmann, neither scientist was aware of the other's work at the time.[25]

In reality, Ehrmann followed Lavoisier's work with more interest than he was willing to admit to his readers. He obtained all the books published on the subject of combustion and air, and he took advantage of his connection with Dietrich, who lived in Paris in the 1780s and was close to Lavoisier, to obtain information about the instruments used by the Arsenal chemist.[26]

Recognizing the growing importance of and cross-border demand for such scientific publications, Treuttel saw a market opportunity. His "publishing strategy" (JURATIC 2014: 215) would be to use plates and engravings in multiple publications to maximize the returns on his investment. Having published Ehrmann's treatise in German, and seeing the crossover with Lavoisier's work, Treuttel devised a cross-translation project. He gained the support of Dietrich in Paris, which would enable him to reach Lavoisier.

At the Académie des Sciences on 29 April 1786, a committee composed of Lavoisier, Berthollet and Fourcroy examined an early manuscript of the translation of Ehrmann's *Essai d'un art de fusion à l'aide de l'air du feu ou l'air vital*. The translation had been produced by Fontallard, a maths and languages teacher working in Dietrich's office who had applied to be the German interpreter

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[22] EHRMANN, Friedrich Ludwig (1780): *Beschreibung und Gebrauch einiger elektrischer Lampen*. Strasbourg: Bauer & Treuttel; EHRMANN, Friedrich Ludwig (1780): *Description et usage de quelques lampes à air inflammable*. Strasbourg: Heitz.

[23] EHRMANN, Friedrich Ludwig (1784): *Montgolfier'sche Luftkörper oder aerostatische Maschinen*. Strasbourg: Treuttel.

[24] EHRMANN, Friedrich Ludwig (1786): *Versuch einer Schmelzkunst mit Beyhülfe der Feuerluft*. Strasbourg: Treuttel.

[25] EHRMANN, Friedrich Ludwig / FONTALLARD, J.-F. de (transl.) (1787). *Essai d'un art de fusion à l'aide de l'air du feu ou air vital. Followed by the memoirs of Mr. Lavoisier de l'Académie Royale des Sciences, sur le même sujet*. Strasbourg: Treuttel; Paris: Cuchet [Versuch einer Schmelzkunst mit Beyhülfe der Feuerluft, 1786, Strasbourg: Treuttel].

[26] ADD 59a/135. Letter from Ehrmann to Dietrich, 30 April 1786.

for the Academy of Sciences ; the document received the Académie's approval for publication on 23 June 1786.[27] Dietrich had already informed Ehrmann in April that his work was to be translated.[28] Ehrmann seems to acknowledge that he owes Dietrich and his allies at the Académie the honour of being published in French with the approval of the Académie des Sciences.[29]
In December 1786, the printing of the French translation was already well advanced in Strasbourg. Ehrmann and Fontallard had taken the trouble to:

[…] revise the French translation 3 or 4 times to prevent any misunderstanding, which the German technology, of which M. de Fontallard absolutely could not have had an exact knowledge everywhere, may have given rise to in several places, & he removed a good number of them.[30]

Fontallard thus appeared to oversee the literary translation from German into French, and Ehrmann, the author, of the revision of Fontallard's translation. Fontallard received 150 Livres for his work, advanced by Dietrich, who was repaid by Treuttel via a reduction of Dietrich's debt on his book supply account with Treuttel by the same amount.
In December 1786, the idea was born to enrich the volume to be published and to suggest that Ehrmann's work be supplemented by the memoirs that Lavoisier had written on the same subject. Treuttel asked Lavoisier directly for permission to reproduce them.[31] The editor from Strasbourg came up with the idea for another initiative: that of combining the translation from German into French with another from French into German. He suggested translating Lavoisier's memoirs into German, to be added to Ehrmann's German edition. The bookseller recommended to Lavoisier that Ehrmann himself do the translation:

He has kindly taken charge of the German translation of your above-mentioned memoirs, which I propose to give to the German Republic of Letters in the same alliance, because, knowing the difficulty, he feared that many other scholars, less versed in this special part, would have crippled the meaning.[32]

Lavoisier responded favourably to this project on 25 December 1786, and gave Fontallard the authorisation requested and the list of other memoirs that deserved to appear in the French and German volumes in preparation.[33] The famous chemist, not wishing to make any changes to his texts published in 1782 and 1783, asked Moutard, the printer of the *Académie Royale des Sciences*, if it would be possible to print 1,500 copies from the old plates or send the plates to Strasbourg, to avoid the cost of making new ones – something that from a

[27] Archives de l'Académie des sciences (AAdS) de Paris, minutes of the meeting held on 23 June 1786, f°231r-236r.

[28] ADD 59a/135. Letter from Ehrmann to Dietrich, 30 April 1786.

[29] ADD 59a/136. Letter from Ehrmann to Dietrich, 3rd January 1787.

[30] Letter from Treuttel to Lavoisier, 18 December 1786. Quoted by GOUPIL (1986: 274).

[31] *Ibid.*

[32] *Ibid.*

[33] Letter from Lavoisier to Treuttel, 25 December 1786. Quoted by Goupil 1986: 276.

profitability point of view would suit both the old and new printers.[34] Unfortunately, since the two Strasbourg editions in French and German were in a smaller 8° format, Treuttel was obliged to completely redraw the plates originally produced for the in-4° Moutard edition published in 1782 and 1783 (GOUPIL 1993: 9). The cost savings hoped for by Treuttel were therefore not as advantageous as expected.

In February 1787, the translation of the work was nearing completion.[35] Treuttel sent Dietrich the sheets proofread by Ehrmann, the author, who checked the work of Fontallard, his French translator. The revised version was sent to Fontallard, who centralised the dispatches.[36] Ehrmann sent back all his proofreading on 15 April 1787 via the bookseller Treuttel.[37] But the question of two large copper engravings continued to stall: Treuttel feared that the costs of the enterprise would increase if Lavoisier did not provide him with copies taken from the Paris engraving.[38]

Lavoisier's three memoirs and Meusnier's paper on high-temperature fusion were published in German in 1787 under the title *Abhandlungen über die Wirkung des durch die Lebensluft verstärkten Feuers*. Ehrmann wrote a foreword and notes. He states on the front cover that this volume of translations of Lavoisier's works serves "als ein Anhang zu seinem *Versuche einer Schmelzkunst mit Beyhülfe der Feuerluft*", i.e., as a counterpart to his own work,[39] thereby using Lavoisier's translation to promote his work. However, such cross-referencing also served to reinforce modern chemistry in Europe – by promoting a new author outside the Arsenal group (Ehrmann) among francophone audiences, while disseminating Lavoisier's work more widely to germanephone readers.

Indeed, before 1789–1790, according to Andreas Kleinert, Lavoisier's theory "was not yet considered a real alternative to Stahl's" (KLEINERT 1995: 192). Although his ideas were already known in the German-speaking world thanks to Christian Ehrenfried Weigel's 1783 German translation of *Opuscules physiques et chymiques* and Crell's *Chemische Annalen,* which had been regularly reporting on Lavoisier's experiments since January 1784. But it was only thanks to the *Traité élémentaire de chimie* and the endorsement of its contents by the *Hofapotheker* Sigismund Friedrich Hermbstaedt, renowned for the quality of his publications, reviews and translations of works by Lavoisier, Scheele and Chaptal, that Lavoisier's theories began to be accepted in the German-speaking world by 1789 (KLEINERT 1995: 192). The double translation of Ehrmann's and Lavoisier's work, in 1786–1787, also attempted to contribute to the transfer of the ideas of modern chemistry across the Rhine. Treuttel, who no doubt hoped to have German versions of Lavoisier's texts to exchange with his German colleagues at the annual fairs, also offered to translate the *Traité élémentaire de chimie* in January 1789.

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[34] Letter from Lavoisier to Moutard, late 1786. Quoted by Goupil 1986: 277.

[35] ADD 62/358. Letter from Treuttel to Dietrich, 22 February 1787.

[36] ADD 59a/143. Letter from Fontallard to Dietrich, October 1786.

[37] ADD 62/154. Letter from Ehrmann to Dietrich, 20 April 1787.

[38] *Ibid.*

[39] LAVOISIER, Antoine Laurent de / EHRMANN, Friedrich Ludwig (transl.) (1787): *Abhandlungen über die Wirkung des durch die Lebensluft verstärkten Feuers*. Strasbourg: Treuttel.

Lavoisier accepted the Strasbourg bookseller's proposal and sent Treuttel, via Dietrich, a copy from which to begin the translation work.[40]

The exchanges between Treuttel, Lavoisier, Dietrich, Ehrmann and Fontallard reveal some of the conditions for the realisation of a translation publication project benefiting from Strasbourg's publishing ecosystem. One of the first conditions seems to be the importance of pre-existing interpersonal relationships: Treuttel published a translation of *Ferber's Lettres sur la minéralogie de l'Italie* initially published by Dietrich in Strasbourg in 1776,[41] and he served as Dietrich's Strasbourg-based connection to the German books he needed; Dietrich had the confidence of Lavoisier, who had supported his candidacy for the *Académie des Sciences* in 1786; Fontallard was part of Dietrich's secretariat in Paris and had already worked for him on several translations from German into French; Ehrmann was one of Dietrich's correspondents and had the same publisher in Strasbourg as Dietrich. The second condition seems to be the ability to assemble a team of authors, translators, and expert proofreaders capable of ensuring the quality of the translated work. But the ultimate condition is undoubtedly the alignment of a project with the realities of market demand, whether institutional or commercial. Without the prospect of being able to present himself in Leipzig or Frankfurt with the German version of Lavoisier's works, to be exchanged for numerous German titles that he would then sell to his clients in Strasbourg, Treuttel would not have risked such a costly venture.

In fact, this strong hub of activity and relationships around modern chemistry led the *Annales* team to seriously consider moving the printing of the journal to Strasbourg, which would have allowed them to avoid the overburdened printing sector in Paris.[42] While this plan was never realized, this vision is testament to Strasbourg's strong reputation for producing high-quality scientific publications and translations in the late 1780s.

Conclusion

As a provincial city with 23 translations of scientific publications in the 1780s alone, Strasbourg's role in publishing deserves to be reassessed and contextualised.

The links between publishing and the city's Protestant University, thanks in particular to the dynamism of the Faculty of Medicine, provided fertile ground for publishers seeking to develop their scientific catalogues. Medical publications continued to dominate, but by the 1780s, natural history, mineralogy and chemistry were increasingly prominent. In the 18th century, the role of the university as the driving force in scientific publications was still felt but was no longer exclusive.

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[40] ADD 64/I/1, 260. Copy of a letter from Dietrich to Treuttel, 27 January 1789.

[41] FERBER, Johann Jakob / DIETRICH, Philippe Frédéric (de) (transl.) (1776): *Lettres sur la minéralogie de l'Italie*. Strasbourg: Bauer & Treuttel [*Briefe aus Wälschland über natürliche Merkwürdigkeiten dieses Landes an den Herausgeber derselben Ignatz Edler von Born*, 1773. Prague: Gerle].

[42] ADD 64/I/1, 349. Copy of a letter from Dietrich to Berthollet, Strasbourg, 26 December 1789: "I had spoken to several of our booksellers to find out how much it would cost per volume to have the *Annales* printed here. They estimated the cost at 40 Livres per sheet, which comes to 800 Livres per volume, printed in twelve hundred copies. I had also secured a good proof-reader."

Three Strasbourg publishers in particular – König, La Librairie Académique and Treuttel – were proactive in the publishing of scientific works and translations, thanks to emerging cross-border market opportunities. Publishers favored translations into German because this enabled them to break out of the chronic narrowness of Strasbourg's editorial output, and supplied them with works to exchange with their German colleagues at fairs. By investing in translations, publishers found they could earn profits in Germanophone markets and procure other German-language books to sell in Strasbourg.

It is therefore a set of material and cultural parameters that determined the logics of the protagonists in the publishing world, far from the sole explanation of Strasbourg's geographical and linguistic location, whose literate, bilingual inhabitants would be natural go-betweens between German-speaking and French-speaking populations. On the other hand, it is true that the bilingualism of the scholarly elite did help produce competent translators, capable of mastering the "third language" of translation, as well as the scientific lexicon. Moreover, Strasbourg's geographic position at both the North-South and East-West crossroads of Europe helped to facilitate encounters and foster relationships between travelling authors, local scholars, and publishers. These interpersonal relationships played a critical role in the decisions, logistics and financing related to translating and publishing scientific works.

French aerostatic experiments and the development of modern chemistry in France, among other subjects, provided Strasbourg booksellers with a particularly large number of titles to translate into German in the 1780s. But personal initiative, networks activated and enriched by translation series, and opportunities to make cross-translations profitable also accounted for translations from other source languages into other target languages. In this respect, Strasbourg publishing also adapted to the new multicultural logic of a transnational scientific community that needed fast, high-quality translations. In contact with experts who mastered two of the three languages of the triumvirate of vernacular languages that dominated scientific production in Europe after the decline of Latin, Strasbourg played an important role in decompartmentalising and diffusing French and German scientific research.

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AA 2350 to 2361 and AA 2658. Police regulations for bookshops in Strasbourg.

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Appendix 1: The twenty-three translations published in Strasbourg in the 1780s

Authors	Source langage	Target Langage	Title	Publisher and year of publication	Translator, if known
?	French	German	*Die vollkommene Krankenwärterinn oder Unterricht wie kranke Personen gut zu pflegen und abzuwarten sind*	König, 1787	Johann Gottfried Pfähler
Balfour Francis	English	German	*Über den Einfluß des Mondes auf die Fieber*	Librairie académique, 1786	G. T. Wenzel
Bloch Marcus Elieser	German	French	*Traité de la génération des vers des intestins et des vermifuges*	Treuttel, 1788	Lassonne ?
Bond Thomas	English	French	*Défense de l'inoculation, et relation des progrès qu'elle a faits à Philadelphie en 1758*	Librairie académique, 1784	?
Bonn Andreas	Dutch	German	*Über eine seltene und widernatürliche Beschaffenheit der Harnblase und Geburtstheile eines zwölfjährigen Knabens*	?, 1782	Heinrich Joseph Arntz
Brunner Emanuel Alexander Ludovicus	Latin	German	*Vom Staar und dessen Heilverfahren, der Niederdruckung sowohl als Ausziehung*	Librairie académique, 1788	D. G. Ziegenhagen, a sworn doctor, who said he had "freely adapted"
Carrère Joseph-Barthélemy-François	French	German	*Handbuch zur Krankenpflege*	Treuttel, 1787	?
Ehrmann Friedrich Ludwig	German	French	*Essai d'un art de fusion à l'aide de l'air du feu ou air vital*	Treuttel, 1787	Friedrich Ludwig Ehrmann
Howard	English	French	*Lettres d'un voyageur sur les causes de la structure actuelle de la terre*	Levrault, 1786	Father Collot de Ramberville
Lavoisier Antoine Laurent (de)	French	German	*Abhandlungen Ueber die Wirkung des durch die Lebensluft verstärkten Feuers*	Treuttel, 1787	Friedrich Ludwig Ehrmann
Euler Leonhard	Latin	French	*Introduction à l'analyse des infiniment petits*	Librairie académique, 1786	Pezzi
Faujas de Saint-Fond Barthélemy	French	German	*Physikalische Abhandlung über den Trapp*	Librairie académique, 1789	?
Hamilton William	French	German	*Schreiben des Ritters von Hamilton an die königliche Societät der Wissenschaften in London*	Librairie académique, 1784	Indirect transl., from the French version

Martinet Jean Florent	French	German	*Neue Erfahrungen über die Eigenschaften des flüchtig-flüßigen Alkali*	König, 1789	"DELG", resident of Karlsruhe
Percy Pierre François	French	German	*Vom Ausziehen fremder Körper aus Schußwunden*	Librairie académique, 1789	Thomas Lauth
Poupart Pierre	French	German	*Abhandlung von den Flechten*	König, 1784	Johannes Conrad
Raff Georg Christian	German	French	*Abrégé D'Histoire Naturelle Pour L'Instruction De La Jeunesse*	Dannbach, 1786	Claude Perraut, having "Imitated German."
Ramond de Carbonnières Louis-François	French	German	*Reise nach den höchsten französischen und spanischen Pyrenäen, oder physikalische, geologische und moralische Beschreibung der Pyrenäen*	Librairie académique, 1789	Translated from the French "under the supervision of the author."
Schurer Jakob Ludwig	German	French	*Élémens De Physique*	Librairie académique, 1786	
Spallanzani Lazzaro	Italian	German	*Physikalische Beobachtungen auf der Insel Cythera, heutzutage Cerigo genannt*	Librairie académique, 1789	?
Spielmann Jacob Reinbold	Latin	German	*Anleitung zur Kenntniß der Arzneymittel*	Treuttel, 1785	Johann Jacob Spielmann, the author's son
Thomassin Michel	French	German	*Abhandlung über das Herausziehen fremder Körper aus Wunden*	Treuttel, 1788	?
Voigt Johann Carl Wilhelm	German	French	*Nouvelles lettres sur les montagnes*	Librairie académique, 1787	Jean-François de Fontallard

Appendix 2: Scientific publications and translations published in Frankfurt and Mainz in the 1780s

City: Frankfurt amMain	Scientific publications	Including translations
49 science books, 10 of which were co-published in Frankfurt and Leipzig (although these are sometimes indicated to conceal other places of publication, such as Nüremberg or Gießen) and 5 co-published in Frankfurt and Mainz.	Mathematics and physics: 6	Boerhaave, H. (1781). *Briefe an Johann Baptist Bassand*. Bauer. Breislak, S. & Barral, P. & Dolomieu, D. (de) (1789). *Beiträge zur Mineralogie von Italien*. Varrentrapp und Wenner. Carrère, J. B. F. (1789). *Untersuchungen über die verlarvten, ausgearteten oder verwickelten venerisch-chronischen Krankheiten*. Fleischer. Monro, A. (1789). *Abhandlungen von anatomischen Einspritzungen und Aufbewahrung anatomischer Präparate*. Jäger. Rollo, J. & Hendy, J. (1788). *Über die Drüsenkrankheit in Barbados oder über Willhelm Hillary's Elephantiasis*. Andreae. Sonnerat, P. (1784). *Reise nach Ostindien und Ssina*. Schneider. Tissot, S. (1782–1784). *Abhandlung über die Nerven und deren Krankheiten*.
	Medicine: 14	
	Botany and agriculture: 7	
	Natural history and mineralogy: 17	
	Chemistry and metallurgy: 5	

City: Mainz	Scientific publications	Including translations
17 science books, including 5 co-published in Mainz and Frankfurt.	Mathematics and physics: 3	Breislak, S. & Barral, P. & Dolomieu, D. (de) (1789). *Beiträge zur Mineralogie von Italien*. Varrentrapp und Wenner.
	Medicine: 5	
	Botany and agriculture: 1	
	Natural history and mineralogy: 8	
	Chemistry and metallurgy: 0	