'Unbelievably hard work': Marin Mersenne's *Harmonie universelle* at the printers

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The French scholar Marin Mersenne (1588–1648) described the process of getting his *Harmonie universelle* printed as 'unbelievably hard work'.¹ He finished the manuscript in 1634 after ten years' work, but could only send the complete printed work to his friend and patron Nicolas-Claude Fabri de Peiresc in 1637.² During the three years of printing, the voluminous book was produced piecemeal. According to Mersenne, the primary cause of the delay was the intervention of Pierre Ballard, the Music Printer to the King. Ballard famously held the privilege on music printing in France, and with this privilege, Ballard was the only one who could print musical notation or allow others to do so. Mersenne's dissatisfaction with Ballard has long been noted, and traces of the chaos attending the printing process can be found throughout the work. However, little attention has been given to the role of music printing in Mersenne's work. The technique of music printing, the presses of Pierre Ballard and the royal privilege are important elements in understanding how we encounter the *Harmonie universelle* today. Moreover, Mersenne's role as an author and intermediary in early modern print culture still demand closer investigation. This chapter attempts to locate Mersenne at the printing press, to see how he negotiated, brokered and handled the restrictions and possibilities of music printing in early seventeenth-century Paris.

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Readers of the *Harmonie universelle* have long commented upon its complex structure.³ The number of books is said to differ with each copy. This is complicated by the fact that there are three variants, each with a different printer on the title page. The majority of the surviving copies were published under the names of Sébastien Cramoisy and Pierre Ballard. The second variant features only Ballard's name on the title page (see Figure 10.1). The third variant is published under the name of Richard Charlemagne. Mersenne's own copy – the one by Cramoisy and Ballard – is full of improvements and alterations, indicating that the result continued to bother him.⁴ Simultaneously, Mersenne published the Latin counterpart of his book, the *Harmonicorum libri*, made for those who could not read French.⁵ It was printed by Guillaume Baudry with Ballard's musical characters in 1635 and re-issued the next year with a new preface of the printer. The *Harmonie* contains newer material that was only added after 1636. Nonetheless, the Latin version also contains material that cannot be found in the French book, thus confusing its history even more.

How can we approach the use of music printing in a theoretical work? In recent years, musicological studies have explored the variety of ways in which contemporary print culture

Figure 10.1 Marin Mersenne, *Harmonie universelle* (Paris: Ballard, 1636), title page.
Source: Hanover, Gottfried Wilhelm Leibniz Bibliothek, K-A 7050.

shaped books on music theory. By examining title page, size, shape of the book and marginal notes, several studies have explored how music printing influenced methods of music theoretical authorship and practices of reading and musical scholarship.⁶ Cristle Collins Judd's *Reading Renaissance Music Theory* explores the ways sixteenth-century music theorists utilised and depended on music printing for their musical examples.⁷ Kate van Orden has explored how musical authorship developed in the age of music printing and how 'composers' were increasingly turned into 'authors'.⁸ Simultaneously, scholars have argued for a more critical approach to specific authors and audiences. Early modern music theory encompassed a wide variety of practices and activities, and terms such as 'music theorist' or 'music theory' require critical examination. As Jessie Ann Owens writes, 'we need to find words that are specific to the particular activity and reflect the character of the audience and social function of the text(s) under consideration'.⁹ This also becomes clear in Mersenne's work. The subtitle

for the *Harmonie universelle* is 'the theory and practice of music'. Music here is understood in its broadest sense, which for Mersenne also included sound propagation, mechanics and instrument building, topics that today are typically omitted from the history of music theory. Moreover, for musical authors like Mersenne, as Penelope Gouk has argued, 'it was the possession of higher academic degrees in philosophy and theology' rather than any practical experience that qualified them to write about music.¹⁰ By focussing on how Mersenne approached music printing and the privilege of Ballard, we can understand the influences of print culture on the practice of publishing music books in seventeenth-century France. Print and printing privileges determine and delimit what musical theoretical knowledge is included and how it is transmitted. It is here that the printer Ballard and his privilege play a large role in understanding the *Harmonie*. Before we discuss Mersenne's role and the process of printing, we must therefore focus first on the printer, Ballard.

Ballard's privilege

After Adrien le Roy's death in 1599, Pierre Ballard took over the printing firm Le Roy & Ballard that from now on would bear only his name. His father had founded the firm with Le Roy in 1551 and was made 'royal printer of music' two years later.¹¹ During the second half of the sixteenth century, Ballard and Le Roy had few competitors and thus could establish a virtual monopoly.¹² The production of other printers in Paris, such as Nicolas du Chemin, diminished in the 1570s, and other important centres of printing such as Lyons were only secondary to Paris in music. Pierre Ballard was appointed Music Printer to the King on 25 March 1607, a privilege renewed in 1611 and 1633. Until his death in 1639, he would dominate French music printing. Because he possessed the sole privilege to print music within France, no one was allowed to print musical characters (vocal or instrumental of any kind) without Ballard's permission, otherwise they had to pay a fine and hand over the musical type.¹³

Ballard's position, however, was not undisputed. Several other printers wanted to break open the privilege and print music themselves.¹⁴ In 1633 Nicolas Métru, for example, received a privilege to have his music printed, sold and distributed by any printer or bookseller of his choice, a right that contradicted Ballard's privilege. Ballard went to court to defend his own privilege and Métru's letters were cancelled, under the condition that Ballard would print and distribute the composer's works. With some composers, Ballard would make specialised contracts for the printing and distribution of their works. In 1638, for example, he made an agreement with Nicolas Formé to publish three masses with the stipulation that he would refrain from publishing any similar works.¹⁵ Such contracts, however, seem to have been rare.

The printing privilege of Ballard was 'a restrictive, monopolistic measure' 'to support individual printers' as Richard Agee describes.¹⁶ In France especially, privileges and monopolies were given to the King's Printers from the sixteenth century onwards.¹⁷ A privilege could have wide ranging influences. As Daniel Heartz has shown, Pierre Attaignant primarily published the music of composers close to the court.¹⁸ Robert Ballard preferred to publish collections of music by various composers, rather than devoting books exclusively to a sole composer, arguing that sales would go down if he did so.¹⁹ During the first half of the seventeenth century, the taste and preferences of Pierre Ballard controlled the French music scene, favouring *airs de cour* and songs over ensemble music and keyboard repertoire. For composers outside Paris, it was especially difficult to get their work published. In 1633, the Rouen organist Jean Titelouze hoped some more works of his would see the light of day, 'if Ballard wants it'.²⁰

Not only composers relied on the willingness of the printing firm; music theorists like Mersenne were similarly dependent on Ballard. The printing of music treatises was not a priority for Le Roy and Ballard in the sixteenth century. The treatises that they did print, such as a text by Jean Yssandon (1582) and an anonymous work (1583), were uncomplicated and primarily used for elementary music education. In the early seventeenth century, Pierre Ballard printed several treatises, including instructions for instruments such as Luis de Briceño's *Metodo mui facilissimo* (1626), two anonymous music treatises (1602 and 1616) and Antoine Parran's *Traité de la musique* (1639; 1646) (see Table 10.1). As Laurent Guillo has shown, Pierre and Robert III Ballard were responsible for almost half of the treatises on music and music instruction in France and more than half of those printed in Paris.²¹ When we look at the list of treatises printed by Pierre Ballard, Mersenne's work figures in prominently. Not every music book, however, was deemed fit for print. Antoine de Cousu's *La Musique universelle* (1658), for example, was such a book. Although Titelouze announced in 1633 to Mersenne that Ballard would soon print de Cousu's book, it took eventually until 1658.²² According to Mersenne, the work in question was 'so long and useless' that it could not be printed in France.²³ He asked Giovanni Battista Doni if he could help with finding someone to publish the book in Rome. De Cousu's long discussion of metres and notational systems that were no longer in use seemed to disqualify it from printing. Money was most likely an issue. De Cousu eventually financed the printing himself but the process was interrupted by his death, leaving the publication unfinished.

Pierre Ballard did not only influence whether musical treatises were printed, but also – directly and indirectly – on what music was being discussed. It is clear that the influence of Ballard extended deep into Mersenne's *Harmonie*. It is also clear that Mersenne knew very well what was available in Ballard's shop, which was 'filled with all kinds of examples of the best masters who have ever existed'.²⁴ Throughout the book we find references to the stock of Ballard's bookshop. Mersenne refers to the lute pieces that Ballard 'prints every year' and the *airs* being printed every day.²⁵ As Laurent Guillo has made clear, the composers referred to by Mersenne reflected the interest of the printer.²⁶ Mersenne relied heavily on musical examples of Eustache du Caurroy, and on the *airs* of Antoine Boësset and Etienne Moulinié. As I will discuss later, he also acted as agent for composers who wanted to print or buy music.²⁷ To get his own book printed, however, proved more difficult.

Table 10.1 Music treatises 1599–1652

[anonymous]	<i>Traité de musique</i>	1602
[anonymous]	<i>Traité de musique</i>	1616–1617
Marin Mersenne	<i>Quaestiones</i>	1623
Louis de Briceño	<i>Metodo mui facilissimo</i>	1626
François Bourgoing	<i>Brevis psalmodiae ratio</i>	1635
Marin Mersenne	<i>Traite de l'Orgue</i>	1635
Marin Mersenne	<i>Harmonicorum libri</i>	1636
Marin Mersenne	<i>Harmonie universelle</i>	1636
Antoine Parran	<i>Traité</i>	1639
Marin Mersenne	<i>Cogitata physico-mathematica</i>	1644
Antoine Parran	<i>Traité</i> (2nd ed.)	1646
Marin Mersenne	<i>Harmonicorum libri</i>	1648
Jean Denis	<i>Traité de l'accord de l'épinette</i>	1650
Marin Mersenne	<i>Harmonicorum libri</i>	1652
Denis Macé	<i>Reigles très faciles</i>	1652

Data from: Guillo (2003).

Printing the *Harmonie universelle*

It is unclear whether Mersenne considered publishing his *Harmonie* outside of France. He had already relied on Ballard's music font in his *Celeberrimae Quaestiones in Genesim*, printed by Cramoisy.²⁸ For most of his other works on music printed before the *Harmonie*, Mersenne did not use a music font.²⁹ The compositional examples in the book draw heavily on the music published by Ballard, and would have been difficult to print elsewhere. Although Mersenne sought out other printers than Ballard to print the musical examples, Ballard did not let him. A letter from Mersenne to Peiresc in 1634 reveals the tension caused by Ballard's control. Mersenne identifies Ballard as the cause of delay, yet he was not allowed to print his work elsewhere:

[...] because I often have to wait for Mr Ballard, the music printer, the only person in France who possesses the type in France, and there is no way to have types made, because of his privilege. I would already have had some [type] founded by someone who had bought matrices by chance, but he [Ballard] put me in my place with his privileges and promised me to provide me with his own, which he does, but, because he does not want the other printers to know how to compose and arrange his characters, he handles and arranges them himself. This often holds me back a fortnight or even entire months waiting for his convenience. And because he did not want to undertake to work on my book, even though I offered him what you were kind enough to give me for this subject. [...] Your charity has given me the courage to undertake this endeavour myself, so that I do not depend on them [the booksellers], thank God, nor on their petty tyranny, which many honest folk are comfortable with.³⁰

The physical music type is at the centre of this problem. Mersenne was obviously annoyed by the costs, and Ballard's insistence on printing the book himself. He would have let someone who had purchased the necessary matrices by chance print the musical examples, but Ballard objected to this. We have little further information from Mersenne's letters on contacts with other printers, since such contact would have been conducted in person. It seems in any case that he wanted to get on with this project quickly. In Mersenne's letters from the previous years, we find lists of questions, depictions of instruments and musical experiments that he aimed to incorporate in his future work. He collected material on a wide variety of instruments and their construction; visited makers and musicians; performed acoustic experiments with strings, organ pipes and guns; and studied the remaining sources on ancient music. All of this was supposed to come together in his *Harmonie*, which, as Peiresc wrote, was 'put together under great pressure'.³¹ It remains unknown why Mersenne was in such a hurry, but it is clear that by this moment, it was time to bring his work to the printers.

Mersenne had already received the printing privilege for the *Harmonie* and the *Harmonicorum libri* in 1629.³² This privilege was given to Cramoisy seven years later, on 26 April 1636, when printing was already underway. In the intervening years, we find repeated references to the slow progress of the printing. Mersenne divided his work into smaller treatises, limiting the use of musical notation to those books where it was necessary, since he had to wait on Ballard's convenience.³³ During the process, Mersenne already issued separate parts, for example, the treatise on the organ, signed by Ballard in 1635, and the first book on sound.³⁴ His patron Peiresc tried to calm Mersenne, writing that he did not find it strange that the music printer was causing him pains, since printers were mostly 'folk without mercy'.³⁵ Mersenne was most likely eager to satisfy his patron and not run out of money during the process. He wrote that he if he were not bound by his oath of poverty, he would have printed it himself, 'so that only honest men will handle it'.³⁶ The total cost of printing was estimated to be 1,000 *écus*, of which the printer demanded a hundred in

advance. Peiresc happily provided Mersenne with his part.³⁷ In the end, the remaining expense of the investment was probably divided among the three different printers, who each made their own title page. The last two books of the *Harmonie* do not contain any musical examples and were added in 1637 or 1638. Mersenne also fashioned an index and a small summary ('Abrégé'), which his correspondents continued to request.³⁸ In the end, he even despaired of the use of printing entirely: 'If we stayed with the old method of writing by hand, we would often have a more satisfying and better account'.³⁹

Mersenne as middleman

Throughout his life, Mersenne acted on behalf of others to get books printed or obtain privileges. Although he was not always successful in the execution of such tasks, he offered many authors help in publishing or dissemination and saw himself as an *entremetteur* or middleman.⁴⁰ This was not always easy; the early seventeenth century saw an increasing role of censorship and control, especially with the rise of Cardinal Richelieu and his agent for books, Chancellor Séguier. As Mersenne wrote to René Descartes: 'Never has the censorship of books been more painstaking than at present'.⁴¹ Books on theology and politics – but also literature and mathematics – were diligently investigated. Still, Mersenne saw himself as someone who could navigate such waters. In his first surviving letter to Galileo Galilei, Mersenne proposed to assist in publishing his work in France: 'I can assure you that if you are willing to trust this treatise to me and to send me a copy by a reliable method, I will make so bold as to undertake to have it published'.⁴² When Descartes tried to get a privilege for his scientific essays and the *Discourse on Method*, he sought out Mersenne and the Dutch diplomat and poet Constantijn Huygens. Descartes handed Huygens the material that was already printed in the Low Countries, who forwarded it to Mersenne to arrange the formal request of the privilege in Paris.⁴³

In the field of music, Mersenne occupies a similar role of intermediary. When Constantijn Huygens wanted to have his song collection published by Robert Ballard in Paris, he turned to Mersenne for help. Huygens hoped that Mersenne could help him persuade the composer Jean Baptiste Boësset to supervise the printing process, but he declined. Eventually Thomas Gobert and Christophe-Nicolas Tassin would be in charge.⁴⁴ Mersenne played an important role in establishing the necessary contacts. According to a letter written 5 May 1646, Mersenne instructed Tassin to deliver the nine Latin songs to Ballard and let him arrange a meeting with Boësset.⁴⁵ In subsequent correspondence, they discussed technicalities such as layout, type and tablature, a realm in which Mersenne played a lesser role: such matters were handled between Huygens, Tassin, Gobert and Ballard himself. The cost of printing was a salient issue; Ballard wanted to know how much Huygens could contribute. Huygens was also asked to provide a basso continuo instead of lute tablature, since those sold better.⁴⁶ Mersenne wrote to Huygens at the end of September that he would ask Gobert to come over so that they could sing through Huygens' songs, and that they would then bring them to Ballard for printing.⁴⁷ In the next few months, Huygens wanted to see the proofs; he wrote to Mersenne again and complained about Ballard's tardiness in completing the publication.⁴⁸ Mersenne wrote back that he could do little about Ballard's working tempo and that Huygens should contact Gobert, since 'he can do more about the laziness of Ballard than me'.⁴⁹ In the following letter, Mersenne reflects upon the state of music printing, comparing it to that in Italy, the Low Countries, and even the Ottoman Empire:

Mr Gobert has promised me every kind of care and diligence in regard to Ballard. It is strange that in such a large kingdom, we have only this one printer of music, while in Italy there is

hardly a village without one. But you are in this one aspect even poorer than us: for all the villages that print good and bad books, you have none for poor old music. She will, as I see it, always be as miserable in this country of France as she is in Turkey.⁵⁰

Almost a decade after his experience of printing the *Harmonie*, it was still difficult for Mersenne to understand the lack of other printers of music. Huygens was annoyed with the delay but eventually declared proudly in his letters that his music was printed in the French capital, and not in the Low Countries.⁵¹ Paris and Ballard still stood for quality and prestige, even if these came at a price. Robert Ballard himself denied the accusation that he was not interested in printing Huygens's *Pathodia* and worked especially slowly, claiming that he was merely waiting for Huygens to decide on technical issues.⁵²

The limitations of music printing

In Mersenne's writing on music notation and embellishments, we see in detail the influence of printing technologies on the development of music theoretical ideas. Mersenne often expressed frustration with the limitations of musical typography, for example, when discussing newer genres such as the monody, or the special characters of organ tablature. Mersenne complained that the musical characters in use could not express the subtleties and exclamations of the human voice or indicate performance practices such as the 'martelemens', 'tremblemens' and 'battemens' which players used to adorn their playing.⁵³ But more fundamentally, Mersenne considered that the difficulty of music printing and Ballard's privilege both disrupted musical practice and the transfer for musical knowledge. One way to circumvent this was to create other forms of notation that did not rely on music type. Like many of his contemporaries, Mersenne devised several new music notational systems. He was especially interested in updating the solmisation system and translating notes into numbers. In book sixteen, 'On singing well' ('de l'art de bien chanter'), the second proposition deals with the notation of music using ordinary letters. As examples, he demonstrates several alternatives for compositions by Eustache du Caurroy, including a setting of the text *Misericordias Domini*. In the next proposition, he gives symbols to write and compose any kind of music easily, for voice or instrument, without relying on musical notation (see Figure 10.2). However, it was not possible to indicate rhythms with these methods. Although such practices clearly relate to the seventeenth-century interest in universal languages and cryptography, Mersenne also saw his efforts as serving the practical need to preserve musical compositions that would otherwise be lost because of the lack of a sufficiently flexible technique of music printing in France:

All this being said, one can easily write, read, and sing every kind of music with ordinary printing type, without any need for music type. So all those who compose *airs* and motets will communicate their thoughts and intentions to all kinds of people, and we will be able to have a number of good compositions which are being lost, and which we cannot enjoy for lack of music type, which is very rare in France.⁵⁴

In another instance, Mersenne envisioned the possibility for composers and theorists to share their compositions more easily, without having to print them with music type:

This manner of composing, which I explain here, can be used by learned theorists who wish to compare and send their compositions to each other, or who wish to have them printed without using the customary notes, which are not encountered at all amongst ordinary printers.⁵⁵

Figure 10.2 Marin Mersenne, *Harmonie universelle* (Paris: Ballard, 1636), p. 348 (*Livre sixiesme de l'art de bien chanter*).

Source: Hanover, Gottfried Wilhelm Leibniz Bibliothek, K-A 7050.

Through an alternative system of letters or numbers, other printers would be able to print musical compositions, facilitating the sharing of music. Such practices were not an innovation, though; solmisation methods are the most common example, and alternatives to musical notes were developed throughout early modern period.

The viability of such methods and their ability to compete with the presses of Ballard remain unknown. Mersenne himself composed a hymn with numbers and sent it to Jean Titelouze, who tried to decipher it.⁵⁶ This attempt was not particularly successful. However, it is certain that Mersenne's notational system served didactic, theoretical and demonstrative purposes. By assigning numbers to the position according to the bass or tonal system, readers could scan the harmonies and progressions quickly. Alternatively, Mersenne suggested using the number of air vibrations as a notational method. By extending a string and counting the number of vibrations, Mersenne was able to quantify the movement of air and the pitches produced. He devised several uses of this method, for example, to show how pieces of music might be sung at the same pitch all over the world.⁵⁷ It could also be used to write down music. As he writes: 'In fact, we cannot represent sound better than by the number of beatings ('battemens'), since they are in no way different from sound, which we call sonorous or sounding number'.⁵⁸ As an example, he gives an *air* by Boësset, represented with the number of air vibrations of the individual pitches (see Figure 10.3).

The extent to which such notational systems served practical purposes remains unclear. Although Mersenne's notation compresses musical notation, it removes almost all the musicality we associate with staff notation, and turns a musical composition into a mere series of numbers. Mersenne believed, however, that music could be more easily shared, learnt and, transmitted by this method. Moreover – not unimportantly – one would not have to wait on the dilatory Ballard. One of Mersenne's companions, Jean le Maire, also developed such a notational method. Mersenne commented on le Maire's system in his *Harmonie* and in his annotations.⁵⁹ He discussed le Maire's system only briefly, since its characters could not yet be printed. However, he did send examples to several correspondents. Constantijn Huygens, for example, discussed the characters with Joan Albert Ban. Although Huygens did not think much of Le Maire's characters, he believed that they could one day be made public through the printing press.⁶⁰ Ban saw no need for new characters and thought that ordinary music notes sufficed.⁶¹

*Tablature des retours ou mouuemens que font les chordes, ou les voix qui chantent l'air
d'Anthoine Boësset Intendant de la Musique de la cham-
bre du Roy, & de la Reyne.*

Basse.			Taille.			Haute-contre.			Dessus.		
lettres	mesures	retours	lettres	mesures	retours	lettres	mesures	retours	lettres	mesures	retours
G	$\frac{1}{3}$	32	F	$\frac{1}{3}$	64	A	$1\frac{1}{3}$	320	D	$\frac{1}{3}$	$106\frac{2}{3}$
F	$4\frac{1}{3}$	390	E	$\frac{1}{6}$	30	G	$\frac{1}{3}$	144	C	$3\frac{2}{3}$	940
E	1	90	D	2	320	F	7	1344	$\frac{1}{2}$	$\frac{1}{2}$	$133\frac{1}{6}$
$\times c$	$\frac{1}{3}$	$28\frac{4}{3}$	C	$5\frac{1}{6}$	764	E	$3\frac{1}{3}$	600	B	$4\frac{9}{12}$	$123\frac{2}{3}$
D	$3\frac{1}{2}$	280	B	$1\frac{2}{3}$	$165\frac{1}{3}$	$\times c$	$3\frac{1}{3}$	$67\frac{9}{12}$	A	$5\frac{5}{12}$	1280
C	$3\frac{1}{2}$	252	A	$4\frac{1}{6}$	500	D	$6\frac{5}{6}$	994	G	$3\frac{1}{2}$	108
B	3	192	G	$5\frac{1}{3}$	606	C	$2\frac{1}{6}$	312	$\times f$	$\frac{1}{6}$	$66\frac{2}{3}$
A	1	60	$\times f$	$\frac{1}{3}$	$33\frac{1}{3}$				F	$2\frac{1}{2}$	216
G	$2\frac{1}{3}$	136	F	$2\frac{1}{2}$	225				E	$\frac{2}{3}$	120
F	$2\frac{1}{2}$	120									
somme 1579.			somme 3007.			somme 3781.			somme 4202 $\frac{1}{2}$.		
N iiii											

Figure 10.3 Marin Mersenne, *Harmonie universelle* (Paris: Ballard, 1636), p. 143 (*Livre troisieme des Instrumens a chordes*).

Source: Hanover, Gottfried Wilhelm Leibniz Bibliothek, K-A 7050.

An investigation of printing cannot ignore the continuation of manuscript traditions and scribal cultures. As many studies have shown, a culture of scribal book production continued to flourish long after the introduction of printed books.⁶² This was no different in the field of music. Throughout Mersenne's letters, we find leaflets and references to musical notation by hand. In his personal annotations, he wrote down melodies and larger pieces, such as an organ composition by Charles Racquet, one of his friends.⁶³ Moreover, throughout the *Harmonie*, Mersenne refers to the impossibility of printing several characters. For example, several characters for the study of lute tablature devised by Parisian lutenist Jehan Basset could not be printed within the musical examples. Although they are mentioned in the text and illustrated in woodcuts, they are missing in the musical examples set by Ballard, which relied on moveable type. Those who wanted to learn the piece according to the method Mersenne described needed to visit the author himself or find his copy at the printer: 'But those who desire to mark them up will find them in my copy, where they are interpolated by hand because they had none of these characters at the print shop, and they will transcribe them rather easily'. He instructs the reader to wash the paper with a solution of alum to prevent the paper from absorbing excess ink.⁶⁴ In another instance, he writes: 'I shall lend my copy to accommodate the characters of this page, which could not be found in the printing houses of Paris'.⁶⁵ Such practices of lending and circulation of books can tell us much about the transfer of musical knowledge in Mersenne's circle. A closer investigation of the remaining copies of the *Harmonie* with annotations would be necessary to see if any annotations match those by Mersenne. Mersenne's insistence on

the necessity of writing by hand demonstrates that he considered music books as dynamic, unstable objects that were inscribed and altered by their users over time.

Conclusion

Within the *Harmonie universelle* we see two privileges at work. First was the privilege requested by Mersenne in 1629 to publish his two books. Authors who wanted to print their work needed at least the approbation of the doctors of the Sorbonne and could, at their discretion, request a privilege that would protect their work from reprints. A privilege could be requested first by the author and then handed to the printer, as Mersenne did, giving his privilege to Cramoisy in 1636. Secondly, this text illustrates the effects of Pierre Ballard's general privilege to print music type, which amounted to a monopoly on publishing music. As others have pointed out, Ballard exerted wide influence through this privilege, determining whether or not composers were published. As a businessman, Ballard always made decisions on collections or volumes, tablature or continuo, printing together with an eye to the potential market and sales. Mersenne had to rely on his patron Peiresc to print his work; this enabled him to be less dependent on printers, unlike other musical authors, as the example of Antoine de Cousu makes clear.

When we look at the *Harmonie* through the lens of music printing, our attention is drawn to the musical examples Mersenne discussed, the ways in which he organised his work into smaller treatises, and how his efforts to develop a new notational system gained extra urgency. The *Harmonie* is full of tables, text, notes and images, each of them to be 'read' in a specific way. A thorough study of the afterlives of the *Harmonie universelle* might uncover possible readings. Through his network of correspondents, Mersenne circulated and mediated the music printed by Ballard in Paris. Mersenne acted as an intermediary and provided his contacts outside Paris, such as Huygens and Peiresc, not only with information and news, but also with actual prints and books. In the fields of music and music printing, Mersenne acted on behalf of others to obtain privileges or transmit material to the printer. Scholarly books and music books moved within the same fields and across the same networks.

The complicated structure of the *Harmonie* and the discrepancies between the surviving copies testify to the chaotic printing process. With his need for extensive images, music examples and Greek and Hebrew letters, Mersenne demanded a lot from his printers, and such requests could not be fulfilled by a single printer in Paris at the time. Still, such discrepancies during the printing process were hardly exceptional in the world of early modern books. The printing history and Mersenne's continuous reworkings should remind us that the music book is not a singular, stable object, but rather an exceptionally fragile one. Tracing the challenges of a book's production illustrates the complexity of the printing process and the various economic, social and material influences that could affect the production of a work of music theory. Mersenne's approach to the printing press shows what unbelievably hard work stands between writing and final publication.

Notes

- 1 Mersenne to Nicolas-Claude Fabri de Peiresc, 15 March 1637. Mersenne, *Correspondance*, 6:216. This edition will be henceforth abbreviated as CM.
- 2 Mersenne to Peiresc, 20 March 1634, CM 4: 81–82. Mersenne had already announced a work on music in his *Observationes, et emendationes ad Francisci Georgii veneti problemata* (1623) and his *La Verité des Sciences* (1625). See Fabbri, 'Genesis', 292.

- 3 For example: Hawkins, *General History*, 106; Christensen, 'Fragile Texts', 199. The most extensive investigation has to my knowledge been conducted by Laurent Guillo; see Guillo, *Pierre I Ballard et Robert III Ballard*, 2: 300–301. See also: Eitner, 'Druckwerke'; Lenoble, *Mersenne*, xxii–xxv.
- 4 See the facsimile with an introduction by François Lesure, Mersenne, *Harmonie universelle*, v–viii.
- 5 Mersenne to Peiresc, 12 October 1635, CM 5: 423.
- 6 Owens, 'You Can Tell a Book by Its Cover', 348. See also: Christensen, 'Fragile Texts', 177–208; Brannon, 'Books about Music'.
- 7 Judd, *Reading Renaissance Music Theory*.
- 8 Van Orden, *Music, Authorship, and the Book*, 12.
- 9 Owens, 'You Can Tell a Book by Its Cover', 348.
- 10 Gouk, 'The Role of Harmonics', 228. On the social differentiation of musical authors in the seventeenth century, see Bianchi, 'The Musician as Author'.
- 11 Lesure and Thibault, *Bibliographie des éditions d'Adrian le Roy et Robert Ballard*.
- 12 For example: Brooks, 'France', 171.
- 13 Parran, *Traité de la Musique*, 1639, [144] ('Extrait du privilege'):

Faisant defenses à toutes autres personnes de quelque qualité & condition qu'ils soyent, d'entreprendre d'imprimer aucune sorte de Musique tant vocale qu'instrumentale de quelques Autheurs que ce soit, ny fondre aucuns Caracteres de Musique, sans le congé dudit Ballard, à peine de Six mille livres d'amande, & de confiscation tant de Caracteres que des exemplaires, ainsi qu'il est plus amplement déclaré esdites Lettres.

- 14 Guillo, *Pierre I Ballard et Robert Ballard III Ballard*, 1: 29–32 and 1: 49–53.
- 15 Lesure, 'Un contrat "d'exclusivité"', 229; Guillo, *Pierre I Ballard et Robert III Ballard*, 1: 20.
- 16 Agee, 'The Venetian Privilege', 25. See also: Bernstein, 'Financial Arrangements'.
- 17 Martin, *Print, Power, and People*, 36–37; Martin, *The French Book*; Mcleod, *Licensing Loyalty*, 10–36.
- 18 Heartz, *Pierre Attaignant*, xviii–xix.
- 19 Perelle, 'Bénigne de Bacilly', 251.
- 20 Titelouze to Mersenne, 7 February 1633, CM 3: 232.
- 21 Guillo, *Pierre I Ballard et Robert III Ballard*, 127–128.
- 22 Titelouze to Mersenne, 7 February 1633, CM 3: 232.
- 23 Mersenne to Giovanni Battista Doni, 2 February 1635, CM 5: 38–39: 'si long et si inutile qu'on ne veut pas l'imprimer'.
- 24 Mersenne, *Harmonie universelle*, 2:422: 'la boutique du sieur Ballard est si pleine et si bien fournie de toutes sortes d'exemples de meilleurs Maistres qui ayant jamais esté'.
- 25 Mersenne, *Harmonie universelle*, 3: 92, 2: 360 ('des chants').
- 26 Guillo, *Pierre I Ballard et Robert III Ballard*, 1: 84.
- 27 Guillo, 'Sous la main du Père Mersenne', 38.
- 28 Mersenne, *Celeberrimae Quaestiones*, 1623: 1633–1664.
- 29 An exception is the *Questions inouyes ou Recreation des scavans* (Paris, 1634), which features music type on p. 171.
- 30 Mersenne to Peiresc, 4 December 1634, CM 4: 404–405:

[...] parce qu'il me faut souvent attendre aprez le Sr Ballard, imprimeur de musique, qui seul a des caracteres en France, sans qu'il y ait moyen d'en faire faire, à cause de son privilege. J'en aurois desja fait fonder par quelqu'un qui de hazard avoit accepté des matrices, mais il me vint remonstrer cela avec ses privileges et me promit de m'en fournir des siens, ce qu'il fait, mais, parce qu'il ne veut pas que les autres imprimeurs sçachent composer et accommoder ses caracteres, il les manie et accommode luy mesme, ce qui me recule souvent de quinze jours, voire des mois entiers pour attendre sa commodité. Et parce qu'il n'a pas voulu entreprendre mon livre, quoyque je luy offrisse ce qu'il vous a pleu me donner pour ce sujet. [...] vostre charité m'a donné le courage d'entreprendre moy mesme, de sorte que je ne depends point d'eux par la grace de Dieu, ni de leur petite tyrannie, dont plusieurs honnestes gens sont fort aysés.

- 31 Peiresc to Thomas D'Arcos, January/February 1633, CM 3: 373: 'pour un ouvrage excellent de la musique qui sa ve mettre soubz presse'.
- 32 Mersenne, *Harmonie universelle*, no page ('extrait du privilege').
- 33 Mersenne to Giovanni Battista Doni, 2 February 1635, CM 5: 40.

- 34 Mersenne, *Traité de l'orgue*, 1979; See also the introduction of Lesure in Mersenne, *Harmonie universelle*, v–vii.
- 35 Peiresc to Mersenne, 23 April 1635, CM 5: 142: 'genz impitoyables pour la pluspart'.
- 36 Mersenne to Peiresc, 20 March 1634, CM IV: 81–82.
- 37 Peiresc to Mersenne, 8 July 1634, CM 4:236. (also 278)
- 38 Gaignières to Mersenne, 17 February 1637, CM 6: 195; Huygens to Descartes 24 February 1637, CM 6: 207.
- 39 Mersenne to Peiresc, 1 July 1635, CM 5: 268–269: 'Si l'on remettoit l'ancienne mode d'escrire à la main, nous en aurions souvent plus de contentement et meilleur compte'.
- 40 For this phrase, see Simon, 'Language as "Universal Truchman"', 322–323.
- 41 Mersenne to Descartes, 15 February 1637, 6: 188: 'Jamais on ne fut plus exact qu'à present pour l'examen des livres'. Translation in: Sawyer, *Printed Poison*, 142.
- 42 Mersenne to Galileo Galilei, 1 February 1629, CM 2: 175: 'quod certe, si nobis confidere velis, et tutâ viâ illius exemplar ad nos transmittere, illius editionem, prout praescripseris, audemus polliceri'. Translated in: Lewis, 'Mersenne as Translator', 760.
- 43 Clarke, *Descartes*, 139–141.
- 44 Guillo, *Pierre I Ballard et Robert III Ballard*, 1, 35–38; 2, 381–382.
- 45 Christophe-Nicolas Tassin to Huygens, 5 May 1646, CM 14: 265–266; Huygens, *Driehonderd brieven*, 749–751.
- 46 Robert Ballard to Huygens, 15 February 1647, Huygens, *Driehonderd brieven*, 804; Thomas Gobert to Huygens, 15 February 1747, Huygens, *Driehonderd brieven*, 806.
- 47 Mersenne to Huygens, end of September 1646, CM 14: 497:
- j'attends tousiours le retour de nostre cour pour voir le sr gobert. je le convieray de venir disner chez moy, si tost qu'il sera revenu, affin que toute l'apprezdisnée nous chantions vos airs et que nous les baillions à Mr Ballard pour imprimer.
- 48 Huygens to Mersenne, 26 November 1646, CM 14: 637; Huygens, *Driehonderd brieven*, 778; Huygens to Marin Mersenne, 23 December 1646, CM 14: 718; Huygens, *Driehonderd brieven*, 782.
- 49 Mersenne to Huygens, 3 January 1647, CM 15: 20; Huygens, *Driehonderd brieven*, 788: 'il a plus puissance sur la paresse de Sr. Ballard que moy'.
- 50 Mersenne to Huygens, 12 January 1647, CM 15: 43:
- Mr Gobert m'a promis toute sorte de sollicitation et de diligence enuers Ballard. C'est chose estrange qu'en un si grand Royaume, nous n'ayons que ce seul imprimeur de Musique et a peine y a il une ville en Italie où il n'y en ayt quelque'un. Vous este de ce costé-là encore plus pauvre que nous, car entre tant de ville qui impriment bons et mauvais livres, vous n'en avez point pour la pauvre Musique. Elle sera a ce que je voy tousiours miserable en cest pays françois aussibien qu'en la Turquie.
- 51 Huygens to Marie Louise Gonzaga, 6 January 1648, Huygens, *Driehonderd brieven*, 851. For example his critique: Huygens to Anna Maria van Schuurman, ca. 20–25 December 1647, Huygens, *Driehonderd brieven*, 845.
- 52 Robert Ballard to Huygens, 7 February 1647, Huygens, *Driehonderd brieven*, 811.
- 53 For example: Mersenne, *Harmonie universelle*, 3: 392.
- 54 Mersenne. *Harmonie universelle*, 2: 349:
- Tout cecy estant posé, l'on peut aisement escrire, lire et chanter toute sorte de Musique avec les caracteres ordinaires des impressions, sans qu'il soit besoin des notes, de sorte que tous ceux qui composent des Airs, et des Motets communiqueront leur pensée, et leur dessein à toutes sortes de personnes, et que nous pourrons avoir quantité de bonnes compositions qui se perdent, et dont on ne peut iouir manque des caracteres de Musique, qui sont fort rares en France. Je mets dont icy les deux compositions à 7 et 8 parties, afin de faire vn essay de cette methode.
- 55 Mersenne, *Harmonie universelle*, 2: 245:
- Cette maniere de Composer, que i'explique icy, peut servir aux sçavans Theoriciens, qui voudront conferer ensemble, et qui s'environneront mutuellement leurs Compositions, ou qui les voudront faire imprimer sans user des notes de la Pratique, qui ne se rencontrent point chez les Imprimeurs ordinaires.

- 56 Jean Titelouze to Mersenne, 26 March 1628, CM 2: 44–45. Mersenne did print the chant *Vexilla regis* in numbers in his *Harmonicorum libri*, 1636, 148–151.
- 57 Mersenne, *Harmonie universelle*, 3: 147.
- 58 Mersenne, *Harmonie universelle*, 3: 147: 'En effet l'on ne peut mieux représenter le son que par le nombre desdits battemens, puis qu'ils ne sont nullement differens du son, que l'on appelle nombre sonant ou sonore'.
- 59 Mersenne, *Harmonie universelle*, 2: 145 (*livres second des genres*) and 342.
- 60 Huygens to Joan Albert Ban, 11 August 1640, CM 9: 440. Huygens, *Driehonderd brieven*, 337–338.
- 61 Joan Albert Ban to Anna Maria Schuurman, 20 August 1640, CM 10: 43; Huygens, *Driehonderd brieven*, 371.
- 62 For a recent example, see Yale, 'Marginalia', 194–195.
- 63 Tessier, 'Une pièce d'orgue'.
- 64 Mersenne, *Harmonie universelle*, 3: 90:

Mais ceux qui desireront les marquer les trouueront dans mon exemplaire, où ils sont adioustez à la main, parce que l'on n'a point de ces caracteres dans les imprimeries, et les transcriront aussi aysément, comme ie le leur presteray librement, si ce n'est qu'ils ayment mieux consulter ledit Basset, qui les accommodera: mais il est necessaire de faire lauer leur papier dans l'eau d'alun, afin qu'il ne boie point, et qu'ils y puissent escrire tout ce qu'ils voudront.

For the method, see Mersenne, *Harmonie universelle*, 3: 76.

- 65 Mersenne, *Harmonie universelle*, 2: 441: 'Je presteray mon exemplaire pour accommoder les caracteres de cette page qui n'ont peu trouver dans les Imprimeries de Paris'. He refers here to the table on p. 421.

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