MUSIC & PRACTICE

PEER-REVIEWED JOURNAL – PERFORMANCE AND PRACTICE STUDIES | ARTISTIC RESEARCH

ISSN: 1893-9562
DOI: 10.32063/1011

(Re)constructing Early Recordings: Reviving the Brave Belgians

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Abstract

In this article, we will observe at a micro level how specific values and value hierarchies influence performance practices and the social relationship between the conductor and musicians in new music ensembles. Our study is based on a context-based score analysis of *AMID* (2004) by Simon Steen-Andersen (1976–), an in-depth interview with the composer, and a performance practice pragmatically developed in rehearsal and performances of *AMID* with an advanced student ensemble of the Royal Conservatoire of Antwerp. We will contribute to this relatively new direction using experimental artistic and sociological research.

Introduction

This article presents one of the experimental case studies conducted during a four-year research project (Re)constructing Early Recordings: A Guide for Historically-Informed Performance, where various acoustic recordings were recreated in order to understand some of the musical, technical, and historical contexts associated with early sound recordings.[1] The use of early sound recordings[2] as historical documents in performance practice research is both established and diverse,[3] as they preserve historic attitudes to rhythm, melodic lines and harmonies that are in contrast with contemporary notions of musical texts and performances. Over the past few years, there have been a several projects investigating early recordings and historical playing practices, however, until (Re)constructing Early Recordings, none accurately aligned technical aspects of recording sessions with use of historical instruments and playing styles.[4]

In this article we depict the process of creating the acoustic ten-inch disc. Through our observations about mechanical recording process, we hope to offer insights into romantic playing practices and historical recording techniques. In order to give the reader the full picture

[1] (Re)constructing Early Recordings: A Guide for Historically-Informed Performance. Principal investigator: Dr Inja Stanović, supported by Leverhulme Trust Early Career Fellowship and the University of Huddersfield, 2017–2021.

[2] For the purpose of this article, the term *early sound recordings* refers to acoustic cylinders and discs made before 1925. Reproducing piano rolls are here omitted, as their recording process and reproduction are significantly different.

[3] Numerous authors have discussed the value and importance of early recordings, arguing that they preserve sonic evidence of playing styles from the end of the nineteenth and the beginning of the twentieth centuries; see Robert Philip, *Performing Music in the Age of Recording* (New Haven: Yale University Press, 2004); Robert Philip, *Early Recordings and Musical Style. Changing Tastes in Instrumental Performance, 1900–1950* (Cambridge: Cambridge University Press, 1992); Neal Peres Da Costa, *Off the Record: Performing Practices in Romantic Piano Playing* (Oxford: Oxford University Press, 2012); James Methuen-Campbell, *Chopin Playing From the Composer to the Present Day* (London: Victor Gollancz, 1981); Timothy Day, *A Century of Recorded Music: Listening to Musical History* (New Haven: Yale University Press, 2000); Clive Brown, *Classical and Romantic Performing Practice 1750–1900* (Oxford: Oxford University Press, 1999), just to name a few.

[4] Such as *Chasing Dr. Joachim* (June 2015) conducted at the University of Arts, Bern (with Johannes Gebauer, Sebastian Bausch and Kai Köpp), where acoustic discs were recreated, albeit using wax cylinders rather than discs. Even though acoustic discs and wax cylinders are both made in mechanical recording circumstances, they involve very different processes and comparisons are therefore rather limited. Another example is the re-enactment of Arthur Nikisch's recording of Beethoven's Fifth Symphony at Royal College of Music in 2015. Even though this re-enactment revealed a number of valuable points on mechanical recording technologies, however, it did not include historical instruments and playing styles and as such was therefore limited in its scope and findings. For more information, see Aleks Kolkowski, Duncan Miller and Amy Blier-Carruthers, 'The Art and Science of Acoustic Recording: Re-enacting Arthur Nikisch and the Berlin Philharmonic Orchestra's Landmark 1913 Recording of Beethoven's Fifth Symphony', *Science Museum Group Journal* 1/3 (2015), https://doi.org/10.15180/150302. Some researchers focused on producing recordings which *sound* like acoustic ones, but are actually achieved digitally; see www.chasingthebutterfly.no (accessed 15 October 2022).

of this process and its results, the article is accompanied with digital transfers of recordings we made.

The 'Heylbroeck' disc

At the beginning of the twentieth century, players from the famous Ghentian horn school[5] were nicknamed *brave Belges* (brave Belgians), due to their poetic style and technical accuracy.[6] The players used crooked piston horns and favoured the instruments made by Brussels manufacturer Van Cauwelaert.[7] They were mostly educated at the Ghent Royal Conservatory, an institution proud of its rigid educational system, which preferred non-virtuosic and highly expressive repertoire. Charles Heylbroeck (1872–1945) was a famous teacher at the Ghent Royal Conservatory and a prominent figure in Belgian *Belle Epoque*, closely connected to violinist Eugène Ysaÿe (1858–1931) and composer Robert Herberigs (1886–1974). Heylbroeck recorded at least two solo discs for a company called *Chantal*. This is not surprising, as the *Chantal* founder Léon Moeremans was not only Heylbroeck's colleague at the conservatory, but also his instrument supplier.[8]

The earliest horn recordings date from the late nineteenth century, and from 1905 horn players of the *Belle Epoque* era had begun recording on a regular basis.[9] Most early horn recordings present short excerpts of ensemble solos, or obligatos in operatic works. As a result, they do not necessarily capture the playing style used in the performance of solo repertoire.[10] One of

[5] Letter from W.H.C. Blandford to R. Morley Pegge of 29 November 1924 (courtesy of John Humphries). The subject of this quote was Raymond Meert (1880–1967), Ghent-trained principal horn of the Hallé Orchestra between 1917 and 1938.

[6] Famous horn players from Ghent include Louis-Victor Dufrasne (1878–1941), one of the most influential horn educators in the United States during the interwar period. Charles Heylbroeck (1872–1945) and Maurice Van Bocxstaele (1897–1974) were both teachers at the Ghent Royal Conservatory with impressive international orchestral and solo careers. Heylbroeck was a teacher at the Ghent Royal Conservatory from 1902 until 1938.

[7] The Van Cauwelaert piston horn was produced without any major changes in design from between 1850 until 1955, and was the most-used instrument by Ghentian players until the 1960s. For more information on this, please see Jeroen Billiet, 'The Horns of the Van Cauwelaert Brass Instrument Workshop in Brussels in the Ghent Royal Conservatory Historical Instrument Collection', *Larigot* 29 (2019), 58–67.

[8] According to Moeremans' shop catalogue (c1914), he supplied musical instruments to Heylbroeck, and the Ghent Royal Conservatory.

[9] Vincent Andrieux, 'The French Horn School during the Belle Epoque: Investigation into "Prehistoric" Recordings' (transl. by Chris Larkin and Kate Malahieude), *The Horn Call*, February 2020, 32–41.

[10] Even today, orchestral and solo horn playing styles are distinguishably distinct.

the most intriguing examples of a recorded solo horn is a 78RPM disc made by Heylbroeck,[11] issued by the Belgian *Disque Chantal* label under catalogue number 1632. It contains two lyrical pieces for horn and piano as a part of a large series made with Ghentian musicians;[12] one side is an arrangement of W. A. Mozart's *Wiegenlied* K350 (called *Berceuse de Mozart* on the disc's label), and the other side is a colourful performance of the descriptive *Le Passant, Sérénade Nocturne pour Cor* by the Ghentian composer Léo Van der Haegen (1870–1940).[13] The Heylbroeck disc features the instrument and repertoire choice common to the Ghentian horn school.

Heylbroeck's playing style matches other horn recordings from the *Belle Epoque* era; he uses rubato and rhythmical alterations, portamento-style legato and irregular articulation. In both pieces, Heylbroeck concludes the phrases with truncated endings, as if rushing to the following phrase. Even so, his interpretation remains highly musical; he uses expressive techniques such as tempo and intonation changes, in tandem with tonal colourings which he enhances with use of mutes and changing crooks. There are several intriguing musical points on both sides of the disc, such as a remarkable speed of the lip trill at the end of *Berceuse*, and the speed of the slurs in *Le Passant*. It is also important to note that the *Berceuse*, written for F horn, is played on E horn on the recording, with the pianist transposing to a semitone lower. In *Le Passant*, he uses an A crook (shorter and brighter sounding), in line with the nineteenth-century tradition of using the crook system to achieve different tonal colour.[14]

On disc 1632, Heylbroeck uses expressive methods in the lyrical pieces with a clear intention of narrative and artistic interpretation. By contrast, disc 1633, the following release by

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[11] Charles Heylbroeck, *Disque Chantal* 1632*: Le Passant-Serenade Nocturne pour le cor/Berceuse pour le Cor*. 78RPM Shellac Disc, ca.1914–1920.

[12] Ghentian *Compagnie Chantal* was officially founded in 1919 by Léon Moeremans (1861–1937). However, the financial archive of the Ghent Conservatory in 1913 mentions "procuration de disques chez mr. Moeremans' (archive of the Royal Ghent Conservatory, finances 1913, folder 4), which indicates that Moeremans was active on the market before the official founding of *Chantal* label. Further evidence from the archives suggests that the recording of Heylbroeck disc is likely to have taken place as early as 1914. *Chantal* produced over 4000 different titles during its operational years, a considerable number of them featuring Ghentian musicians.

[13] *Sérénade* is the second movement of Van der Haegen's *Petite Suite Flamande* (1914), a gathering of four descriptive pieces for movie orchestra. The press clipping found with the orchestral score illustrates this piece very vividly: "At midnight, the moon mysteriously lights a half-open window. A maiden is enchanted by the love song of her passing lover". (BGc II13874).

[14] John Humphries, *The Early Horn: A Practical Guide* (Cambridge: Cambridge University Press, 2000), 30–31.

the *Chantal* label,[15] presents Heylbroeck's military style; a highly technical performance with clean articulation, direct and stable sense of intonation and sound quality. Comparison of these two contrasting discs further confirms that certain expressional techniques were deliberately employed as tools in artistic expression in lyrical pieces, and were not a result of unaccomplished technical developments, or the product of artistic whim on the part of the recording artist.

Reconstruction of the 'Heylbroeck' disc conditions

The reconstruction of the disc 1632 took place in March 2020 in the Early Music Room of the University of Huddersfield. Historical research was mostly straightforward and started with locating the scores for W. A. Mozart's *Wiegenlied* K350 and Léo Van der Haegen's *Le Passant, Sérénade Nocturne pour Cor* at the Ghent Royal Conservatory library.[16] Both scores are handwritten, and Heylbroeck is noted as an arranger of Mozart's K350. Research into the original instruments was slightly more challenging: as with most Ghentian players, Heylbroeck used a Van Cauwelaert piston horn. There are six Van Cauwelaert horns in the historical collection of the Ghent Conservatory, including a 3-valve *Gantois* model, catalogue number CG6. This horn, purchased by the school in 1894, was in use by Heylbroeck around the time of the original recording, and may be played with both E and A crooks.[17] In our recording, the horn was played with a small-rim original Van Cauwelaert mouthpiece, allowing for the use of the characteristic in-lip embouchure position as shown on historical pictures of Ghentian players. We also used a wooden mute from the Conservatory collection for the echo passage heard in the Mozart recording.[18]

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[15] *Chantal* disc number 1633 is currently held in the Belgian national library (KBR, fund Becko V/12/16 Mus) and presents a series of hunting horn calls.

[16] Ghent Royal Conservatory Library, manuscripts II17586 (Van der Haegen) and II17587 (Mozart).

[17] Lending registers of the Ghent Conservatory, ca. 1910 ('*CG6: en usage par mr. le professeur Heylbroeck*'). The Gantois model uses a replaceable terminal crook system that is comparable to the one an orchestral French hand horn of the nineteenth century, with a set of Périnet valves fitted. The adjustable length of the valve tubings allow the use of terminal crooks ranging from E to A. The other 3-valve horn model produced by Van Cauwelaert has a *cor* solo-design with a fixed lead pipe and interchangeable tuning slides of different lengths and can be played in the keys of F up to B-flat alto. Original E and A-crooks from the same collection were selected for the recording experiment.

[18] A set of four straight mutes made by the Ghentian artisan Maurice Vlaeminck were purchased in 1922 by the Ghent Conservatory. They are made of turned acacia wood and have a soft but vibrant sound that is reminiscent of a trombone cup mute. This mute model was designed by horn player Jules Willems (ca. 1891–ca. 1950) and in general use with players of the Ghent tradition around World War I.

Moeremans, the *Chantal* founder, is known to have recorded the majority of *Chantal* discs in a contained backstage room of the Minard Theatre, around the corner from his workshop in Ghent. The piano at that location was most likely an upright French-style model which was almost impossible to locate in West Yorkshire at the time of recording. However, we were fortunate to have access to 1910 Broadwood upright in a very good condition.[19]

The date of publication of the original disc, along with its duration of approximately three minutes left no room for manoeuvre when deciding which mechanical technologies to use. The assembly of mechanical recording equipment was achieved with generous help from Duncan Miller (Vulcan Records), using a traversing turntable disc recorder which he built in 2013. This machine records 10-inch discs, which was fortunate, as the recorded pieces fit in the time scale of a 10-inch diameter (slightly more than 3 minutes in length). The session required two recording funnels: a steel one (660mm by 203mm) and large zinc one (280mm by 1100mm), together with a sliding trunnion recorder (50mm diameter glass diaphragm).

Digital recording equipment was used alongside mechanical technologies. This included a pair of AKG414 microphones, a pair of DPA microphones, a Steinberg UR22 sound card and a DAW (Cubase 10.5). The digital recordings and, later, transfers were made by Dr. Adam Stanović, London College of Communication. Some of the details of the recording session can be observed in Figures 1, 2 and 3 below.

Figures 1 and 2. Experiments with the positioning the horn bell towards the recording funnels.

[19] Owned by Dr. David Milsom who generously allowed us to use his instrument for this recording session.

Figure 3. Recording process. Two recording funnels, and the wax blank in green colour.

The recording session

Recording mechanically is much different to recording in a contemporary digital setting; even relatively easy pieces such as *Berceuse* and *Le Passant* seem challenging when there is only one take available to make a recording. The pressure of recording mechanically is very similar to the anxiety musicians often feel when performing in front of an audience. Indeed, this feeling is slightly augmented; there is not only one take, but mistakes are also preserved. Another difficulty arises in relation to the length of the pieces; both pieces on the original disc are just over 3 minutes long, Mozart 3′09″ and Van der Haegen 3′08″. The 10-inch discs could carry a maximum of 3′15″ per side, which suggests that these pieces may have been arranged specifically for this recording. Such a tight fit of piece length to disc space meant that every slowing down had to be carefully planned, and often compensated by speeding up elsewhere. If the tempo was too slow, the disc would run out and recording would have to be repeated.
We were very aware that there were not many blank discs available; as in the early twentieth century setting, wax blanks are expensive to make, limiting the number of discs a single recording session can afford to use. Studios of the time often used a shaving machine, which would remove the thin layer of the wax blank one did not want to use, and this process could be repeated several times. For the purposes of this case study, Duncan Miller produced ten blank discs, but unfortunately (due to the room layout) a shaving machine could not be used. Once a take was done, we were not able to listen to it; the wax blanks are used to make a mould which is, in turn, used to produce the final disc. The wax version *may* be played back, but this is not recommended, since the mould may be compromised by chipping or otherwise damaging the wax surface. This process of producing the finished record takes several days, during which one does not know whether the disc will be a success.

Owing to the above constraints, mechanical recording sessions often start with various tests, and this case study was no different. The horn projects its sound backwards, making it an

unusual instrument to record. Thus, we wanted to understand whether or not the horn player needs to face the recording funnel with the bell, in order to obtain a clear definition of sound, and what the optimal balance between horn and piano should be. The tests included playing at various distances from the recording funnel, and differing positions of horn in relation to the recording funnel. A short excerpt of the *Berceuse* was played six times: three with a bell position directly facing the funnel, followed by three takes with the bell in a 90° angle from the recording intake. Each set of three takes started with the horn at a 10cm distance from the recording funnel. The second was a further 25cm away from the funnel, and the third a further 25cm still. Following these tests, several trials were recorded in order to achieve a good balance between the horn and the piano. The tests included various positions of recording funnel towards both the piano and the horn; two recording funnels were used because differences in volume between two instruments would be too large with a single funnel shared by both. The distance and direction experiments showed that the angle between the horn bell and recording funnel affected the sound quality more than the distance itself, which created a notable effect on the horn player's articulation perception. Tonguing sounded much more pronounced and direct in the closer takes. On the original disc, the horn player seems to play a little more directly into the recording funnel, however articulation seems to be softer than on reproduced discs.

This case study showed that there are many technical parameters that need to be adjusted to record mechanically; the obvious instrumental differences between horn and piano made our observations fairly different. The horn player found that applying exaggerated phrasing and rubato, a centred and soft tonal quality, and deliberate changes in intonation – all stylistic idioms of Ghentian *Belle Epoque* playing – to a maximum felt surprisingly natural and truly allowed him to focus more on the melodic line. The proximity of the recording funnel was nevertheless intimidating. Additionally, even with 20 years of experience in historically informed horn performance, performing solo repertoire on a horn crooked in anything else than F and B-flat, proved demanding: horn players of today are mostly 'conditioned' by the education system to think their parts as transposed in F, using alternative fingerings for the B-flat or double horn. When playing a horn set to another key, the horn player's reflexes will not automatically adjust the fingerings. This would have been very different at the end of the nineteenth century, when horn players were still trained partly on the natural horn with its full range of changing crooks, therefore thinking their parts in the relative key of the piece.

From the pianist's point of view, playing the accompaniment at an extremely high volume felt unmusical and odd. Everything needed to be performed extremely loudly so that the performance could be registered in the wax. This is very tiring, and it produces a complex musical situation: what you play is not at all what you hear registered. Although one has to play very loudly in order to be registered on wax, the resulting recordings are always much less

loud, and there is necessarily a substantial amount of surface noise that makes the recorded performance more difficult to hear. More strikingly, dynamic contrasts (which may have been carefully controlled during the performance by the performing musicians) are substantially reduced and the recorded frequency balance will only partially reflect the range of frequencies that the recorded instruments are capable of producing; mechanical recording technologies are only capable of reproducing a limited dynamic range and mostly only manage to capture frequencies between 100 and 2000Hz.

The stylistic approaches were modified throughout the session itself, where it became obvious that recording in certain conditions will definitely influence our interpretational choice no matter how much we prepared for the session. The personal expressional explorations therefore became conditioned by the technicality of mechanical recording. The examples of this include 1) the horn player being influenced by the physicality of the horn resonating with the recording funnel, which in turn changed his technique and consequently his interpretational choices; 2) the pianist changing the posture of the hand and body, as a result of playing both pieces loudly from beginning to the end; 3) the ensemble communication in this context did not change significantly, as the two musicians could see each other; 4) the recording conditions seemed to enhance the effect of portamento slurs in the horn part and the asynchrony between the hands in the piano part; 5) both musicians applied what they thought was an exaggerated amount of rubato, which seemed not to register as much as they assumed it would.

Acoustic discs

The digital transfers of discs are extremely valuable sources of research evidence. Once in a digital format, possibilities for research activities are numerous and varied. For example, one may enjoy repeated playbacks in ways that would otherwise be impossible using the gramophone (records deteriorate with repeated playbacks), observe the transfers through various different sound analysis programs using computer technologies, and make clear comparisons between new and old transfers of discs. Accordingly, it was not simply the act of recording that was our interest: the recorded results were equally significant, producing numerous thought-provoking observations, as explained below.

All of the transfers for this study were made on the same day using the same equipment. This ensured a degree of environmental and technical consistency when comparing and studying the old and new records side-by-side. The embedded links below enable one to hear the transfers. Numbers 1 and 2 are transfers of the original disc made by Charles Heylbroeck in 1914, numbers 3 and 4 are transfers of discs we made in March 2020. The final transfer, number 5, presents a series of distance tests from the same recording session in 2020; these were made in order to establish where the horn player should stand and to investigate the sound quality influenced by the angle between the horn and recording funnel.

1. A. Mozart: *Berceuse*. Charles Heylbroeck, 1914.
2. Léo Van der Haegen: *Le Passant*. Charles Heylbroeck, 1914.
3. A. Mozart: *Berceuse*. Jeroen Billiet and Inja Stanović, 2020.
4. Léo Van der Haegen: *Le Passant*. Jeroen Billiet and Inja Stanović, 2020.
5. Jeroen Billiet and Inja Stanović. Distance tests, 2020.

[All the links may be accessed here: https://injastanovic.com/early-recordings/recording-session-6/]

A comparison between the 1914 and 2020 discs is revealing in a number of key aspects. Examining these transfers as waveforms using the program Audacity, the following was observed:

1) Durational differences between transfers. As is noticeable from Figure 4, Heylbroeck's interpretation of Mozart's *Berceuse* is 3 minutes and 9 seconds long, whereas the transfer of 2020 disc is just 2 minutes and 50 seconds. Clearly, therefore, the reproduced take on Mozart's piece is substantially faster: 19 seconds shorter than the original recording. This was not planned, taking into account the previous comments about the stress of performing for a mechanical recording, it is perhaps not surprising that performers used a slightly faster tempo. Looking at Figure 5, it is noticeable that Heylbroeck's interpretation of *Le Passant*, from the first to the last note, is 3 minutes and 8 seconds long, compared to 2020 disc transfer which is 6 seconds shorter at 3 minutes and 2 seconds. In this piece, the tempo dissimilarity is not particularly significant, and even from the first listening it is obvious that the durational difference comes not from the choice of tempo, but from time taken at the ends of phrases.

2) Differences in frequency range. The 1914 disc captured substantially more higher frequencies than the 2020 one, as seen in Figures 6 and 7. This is likely due to differences in the mechanical recording technologies used to capture the recordings and is thus not particularly surprising. In the case study, the traversing turntable disc recorder which Duncan Miller built in 2013 was used, and even though this machine was built to similar specifications to 1914 recording devices, mechanical recording technologies invariably differ and, consequently, so does their ability to capture a wider or narrower spread of frequencies. Besides possible dissimilarities between the machines, other factors causing these frequency differences could include the position and distance of instruments from the recording funnel, along with differences between the volumes that performers played during the recording sessions. Figure 7 presents a small number of peaks which are significantly louder (seen as vertical lines), occurring

on the same two notes, perhaps suggesting an internal resonance within the recording device.

3) Differences in the dynamic range between the recordings. These can be seen in Figures 4–7. In Figure 4, one can observe a curious event in the second part of the piece (at 1 minute 30 seconds); the dynamic range of the Heylbroeck recording suddenly collapses, while the reconstructed version continues to show a fairly substantial set of dynamic changes (from 1 minute 24 seconds). It is entirely possible that this is simply a matter of the performing musicians closely controlling the dynamic shadings of their instruments. However, it is also possible that the recording engineer placed something in front of the recording funnel (perhaps a sheet or cloth) in order to emphasize the change in dynamics and also colour; this was a recording practice around the time, and although there is no evidence that this happened in the original recording session, careful listening to the original certainly suggests that something changed in the overall capture of the recording device that transforms both the instruments and the overall acoustic, implying that this recording trick may have been employed.

4) Pitch differences. Comparisons between the original and new recordings show that the difference between the starting notes (in both pieces) of original and 2020 discs is only 4Hz. This is a fairly negligible difference between the two recordings and may well be put down to either the speed of the transfer playbacks, or very slight tuning differences for the instruments used. In any case, 4Hz is not sufficient a difference to suggest that the overall pitch has changed.

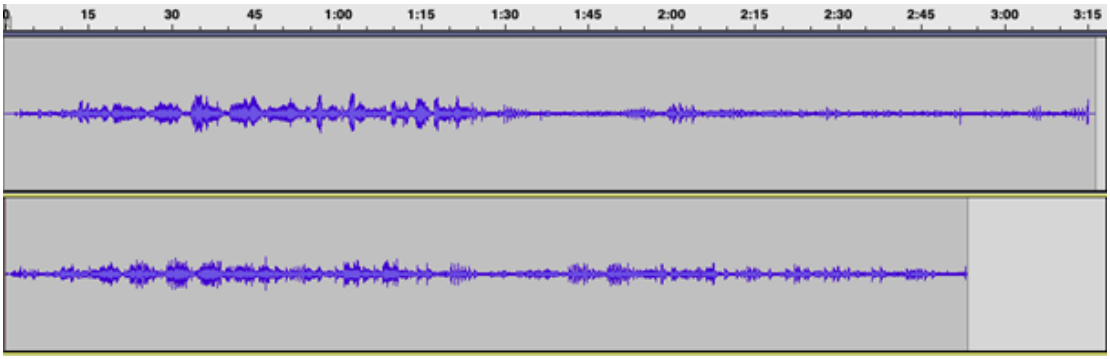

Figure 4. W. A. Mozart: *Berceuse*. Heylbroeck, 1914 (top) compared to Billiet and Stanović, 2020 (bottom). Waveform (shown in Audacity).

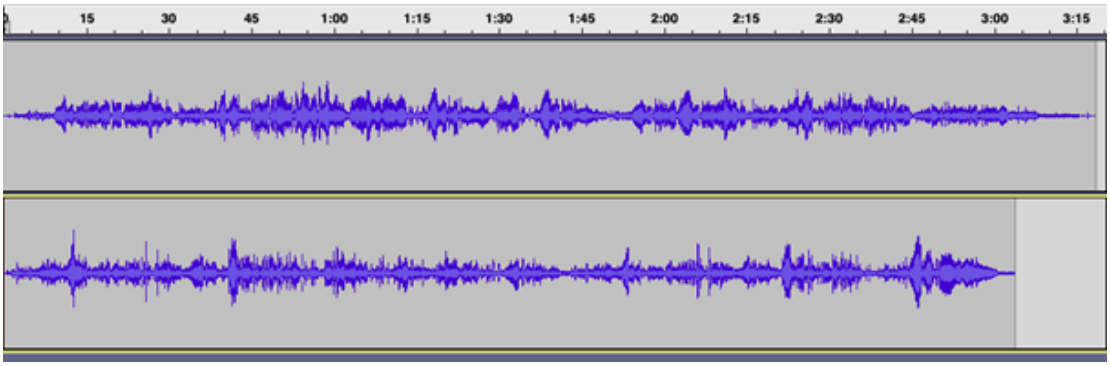

Figure 5. L. Van der Haegen: *Le Passant*. Heylbroeck, 1914 (top) compared to Billiet and Stanović, 2020 (bottom). Waveform (shown in Audacity).

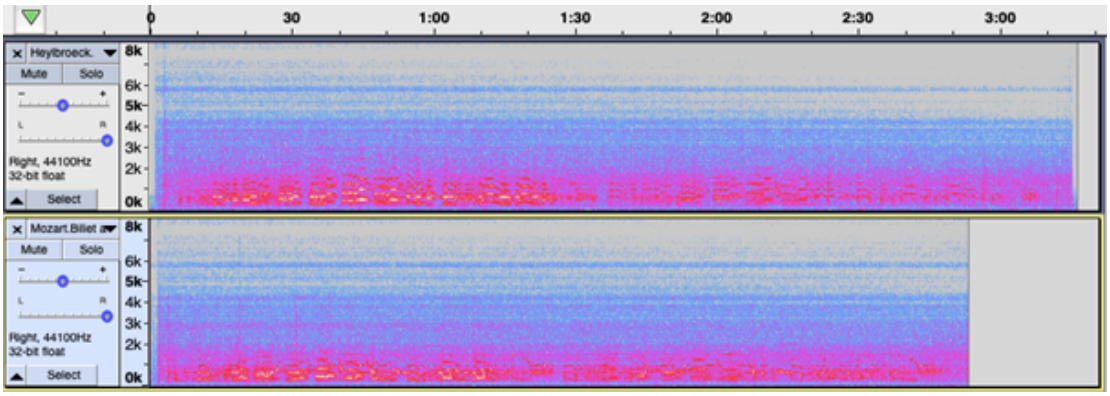

Figure 6. W. A. Mozart: *Berceuse*. Heylbroeck, 1914 (top) compared to Billiet and Stanović, 2020 (bottom). Spectrogram (shown in Audacity).

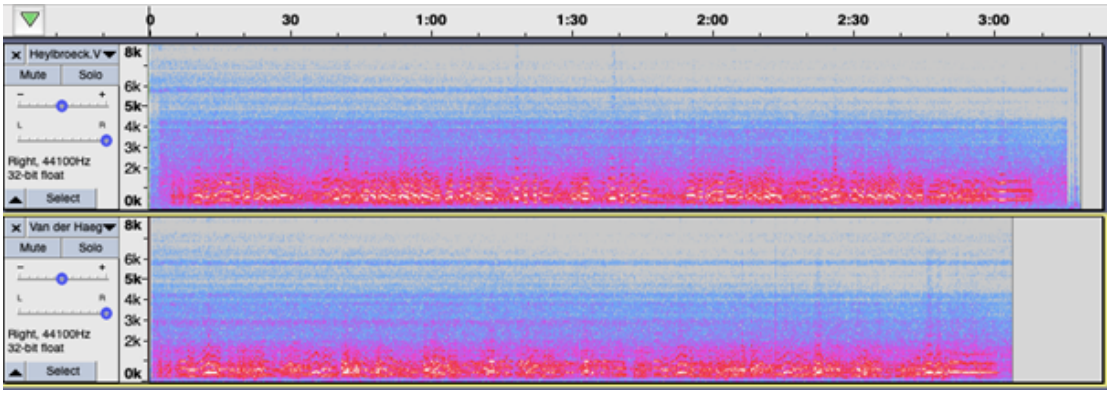

Figure 7. L. Van der Haegen: *Le Passant*. Heylbroeck, 1914 (top) compared to Billiet and Stanović, 2020 (bottom). Spectrogram (shown in Audacity).

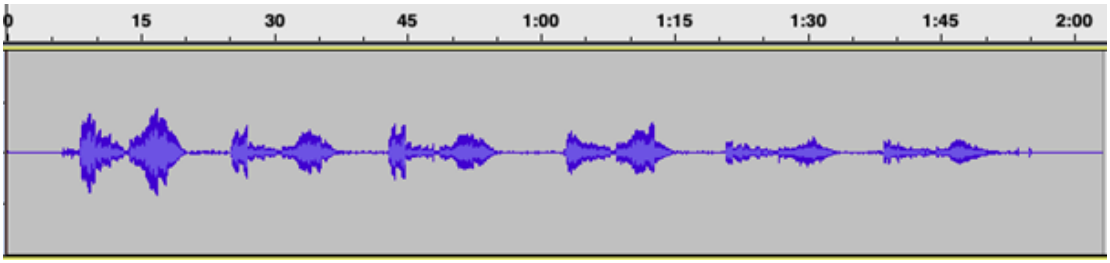

Figure 8. Distance study. Waveform (shown in Audacity).

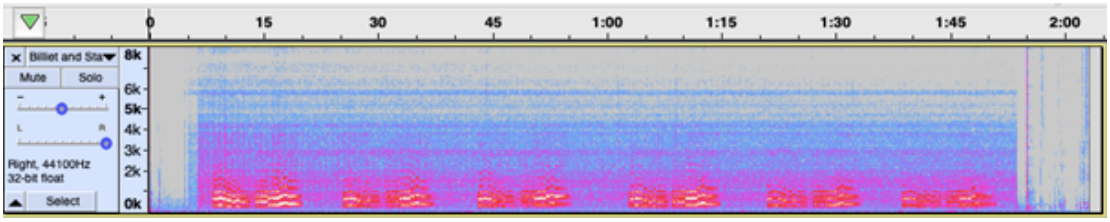

Figure 9. Distance study. Spectrogram (shown in Audacity).

Conclusion

This article has described the practical and technical parameters we needed to adjust in order to record mechanically, alongside the sonic results that we achieved. As sections 4 and 5 of this text make clear, many aspects of the performance were changed, some more surprising than others. For example, not being able to hear back what one has recorded, especially on a medium that sounds so dramatically different in the room than it does on the disc, made an significant difference to the process. We both wondered whether recording would feel equally uncomfortable if the opportunity to listen back (after it was recorded) had never become an option. In a sense, this was similar to the experiences of those born before the 1990s, who were required to wait for photographic films to be developed; even though many people may have felt impatient to see their photos once they were in the process of development, it was not something one would think of when taking the photo itself.

Even though this case study was prepared with numerous sources, mimicking the original recording in these circumstances was almost impossible: the differences between what was performed and what was recorded were significant, and one did not know how the discs would sound for several days after the event. We both agreed that the experience of a historical recording session influenced our performance, and changed our understanding of early recordings in general; the mechanical recording process makes musicians perform in a certain way, so that sound can be registered on the wax. After this experience, we both began to hear such recordings differently, actively imagining what was physically done to produce the results

that we now hear. Going through the process expanded our musical instincts and altered the perception of some of the musical parameters heard in historical recordings. Ultimately, the process of recording mechanically not only important helped us grasp how acoustic discs were made, but also changed how we listen to the whole group of recordings.

This study proved how important it is to try to grasp all the various contexts associated with historical recordings. Researchers and performers that are interested in historical performance practices will continue to conduct their research using historical written and audio sources, treatises and various other forms of written evidence. This study suggests that practical experiments, involving mechanical recording technologies, should join this group of resources, as we all have a lot to learn from the process of making them. We hope that this article, along with the recordings we made, will be a stepping-stone towards such an end.