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Musical archaeology: learning to learn from early recordings, the pitfalls and the pleasures

The first half century of recording used an acoustic system. This system had severe sonic limitations and imposed restraints on the performers, which have frequently been cited as reasonable grounds for dismissing or marginalising records made before 1925; at the very least reception of these recordings is inclined to the view that they are an uncertain prequel to the real thing, which appeared in 1925 with the microphone. These concerns are most pointed in the field of Wagner performance, which benefited more than most from electrical recording. My research is focused on acoustic recordings of opera, especially Wagner's, and the information they impart about performance, interpretation, the performers, and the music itself. Understanding these recordings requires more mediation from both the imagination and the technology if we are to enter into their diverse and rich cultural legacy. They also demand a greater level of acquiescence on our part. This paper includes a series of questions directed to those involved with the technical aspects of restoring and transferring historical recordings.

Stephen King, in his short story of 1990 and TV mini series *The Langoliers*, depicts a terrifying alternative reality in which time literally devours the present. Giant creatures munch their way through the fabric of the now, destroying everything in their path and thereby making way for the future.

But one does not need monsters with well-endowed incisors to destroy the past, for the passing of time turns the world into myth, the past into imperfect memory, leaving countless clues in the process but no certainties. However vivid the picture of the past might be, it is only a cipher of it: no number of viewings of the BBC's impeccably researched *Pride and Prejudice* can recreate the late eighteenth- or early nineteenth-century country house in its entirety, for neither novel nor TV drama mention the fact that men were disposed to urinate on the hangings, a circumstance that would undoubtedly linger in *our* collective memory.

Long preoccupied with Dresden, I finally plucked up courage to visit the city last year and experience it for myself. Looking across the Elbe from the south bank, one initially sees a view that Wagner would have found more or less familiar, give or take the odd tower block in the distance.

View of Dresden from the south bank (photo © Simon Trezise 2004)

View of Frauenkirche (photo © Simon Trezise 2004)

Crossing to the gloriously reconstructed Frauenkirche but looking further north, you discover a grim East German city with grey concrete and wide roads.

View of Dresden (photo © Simon Trezise 2004)

Evidence of what used to be there is present all around you in black-and-white photographs.

Dresden poster (photo © Simon Trezise 2004)

Dig deeper, or take the frequently proffered cinematic tour of ‘Dresden as it used to be’, and you are given a primitive movie taken from a tram as it journeyed through the old city.

Still from film of old Dresden

Ghostly black-and-white images of streetscapes and streets that no longer exist roll past, but the camera never looks to the left or the right, only ahead. This is our visual record of Dresden before February 1945, which can be supplemented with photographs, pictures, and postcards. Return to the real tour in 2004 and backtrack to the Semperoper

Semperoper before 1945

a different version of the past presents itself: the building was reduced to a shell in 1945

Semperoper, 1946

but Strauss himself would be hard pressed to find fault with the view of it now from the Roman Catholic Cathedral.

Semperoper 2004 (photo © Simon Trezise 2004)

Inside and out, all the way across the vast square it so magnificently dominates, the opera house has been replicated with astonishing fidelity to the original nineteenth-century vision right down to the clock over the stage that keeps time in hours and five-minute increments. Here, and for a few buildings along the river, the imagination has little to contribute to our recreation of the past. The Langoliers have been cheated of a fragment of the old city.

Which bring me to the records. They are a souvenir of a lost time and place. Saying that the music recorded on them is often the same as that performed today and implying that that reduces our sense of remoteness is no more useful than pointing out that the Romans drank wine as we excavate a Roman villa. Performance practice, the thoughts, feelings, and experiences of the people who made them are so far removed from our own that we are truly in a strange and foreign land. This strangeness is amplified by the drastic changes in performance practice that seem to date from around the aftermath of the First World War – changes so drastic and far reaching that not even the authentic-performance movement of the post-war years can quite match the upheaval to which the recordings of the acoustic period bear witness and quite possibly contributed. An overriding concern in my current research is to develop a sensitivity to the nuances of acoustic recordings and what they tell us about performance, performers, the music, and the age in which they were made. To make the task doubly difficult I find myself strongly drawn to Wagner and the unsettling documents of Wagner performance in the period up to the introduction of the microphone. Wagner was, as we are so often told, the composer with whom the acoustic gramophone had the most trouble, but the acoustic gramophone had somehow to cater for a vast appetite for Wagner's music from the first generations after the composer's death. Although John Steane wrote these comments over three decades ago, the gist of them still distinguishes views of Wagner on record:

> to learn how Wagner could be sung, the record public in general had to wait for the advent of electrical recording … to hear Wagner truly *performed* they had to wait for the age of LP[1]

To begin I put before you a tantalising taste of the strangeness and other-worldliness of the early twentieth century in a ghostly monochrome sound. Here is a Brünnhilde sprinting towards death with the Valkyrie's laughter so vividly evoked by Carolyn Abbate; this is ecstasy as we no longer conceive it, for the second-subject-like material Wagner uses here, which in a recent performance at the Budapest Opera was performed *andante*, preceded by a *Luftpause*, all *molto legato* and quite loud – as it often is -- is played with Wagner's markings of *Lebhaft*, the strings staccato, and dynamics *piano* intact. You can clearly hear the string detail and an immensely expressive soprano with very little vibrato, Lillian Nordica:

[MUSIC 1 (details appear in Appendix)]

This was recorded on 28 February 1903 live at the Metropolitan Opera House in New York and in terms of what was caught it far exceeds anything that was published in that year or for many years afterwards.

It's hardly necessary to do more than briefly sketch the sonic limitations of acoustic or mechanical recordings, for they are well know. Timothy Day puts it succinctly:

> The acoustic process … limited what music could be attempted, it affected how the musicians performed in various ways, and it seriously distorted the sounds they actually made. Large numbers of performing musicians could not be recorded at all.[2]

Let me, however, introduce you to one of the last artists to make an acoustic recording, Birgit Nilsson. One of the great post-war Wagner singers, her experience of recording into the acoustic horn was an unhappy one.

[MUSIC 2]

Notice how the acoustic method seems to intensify weaknesses in the sustaining power of her voice, drawing attention to unevenness in her vocal production, including a sever tremor, that usually sounds to us a great deal more controlled than a host of later Wagner sopranos. Here then is the first problem: creating a sufficiently even pressure of sound to move the diaphragm without but moving it too far or too little. This required singers of real quality, especially in the ability to produce a constant volume of air, and it also meant that the singer was denying her usual expressive instincts for fear of under- or over-exciting the machinery. Then there is the simple issue of interaction with the conductor or pianist, for the need to face into a horn denies the usual human interaction, even if on occasions a mirror might have been furnished.

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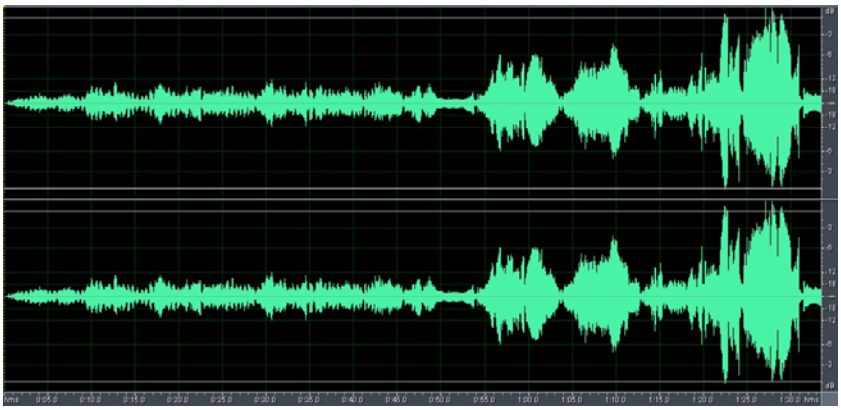
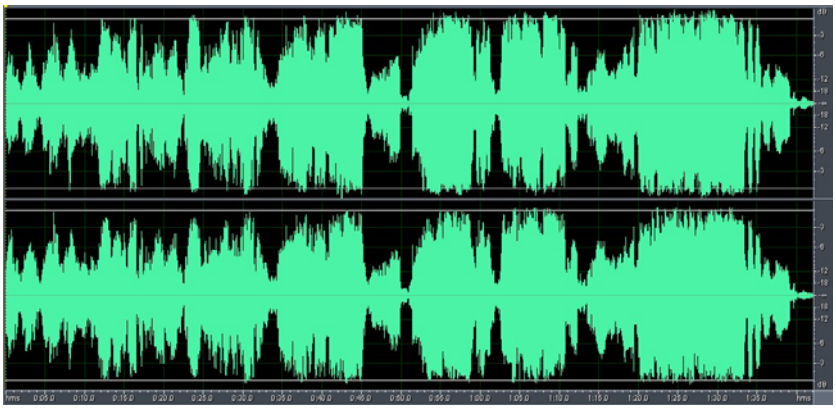
[1] *The Grand Tradition*, 101.
[2] *A century of recorded music*, 11.

Frequency ranges are highly restricted in both the bass and treble frequencies. Dynamic range, on the other hand, though nowhere near what later became available, can bear a greater resemblance to what pertained in the real world – we have seen dynamic ranges in the region of 40 decibels. My somewhat comical example visually contrasts an acoustic recording of a fragment of 'Tacea la notte' recorded in 1909 with the same passage as 'mangled' by Ireland's national broadcaster and disgraced RTE in 2004.



1909 recording of extract from 'Tacea la notte' by Ester Mazzoleni



2004 live broadcast of of extract from 'Tacea la notte' by RTE

We can see from these amplitude displays which has the greater dynamic range. Even more obvious in acoustic recordings is the need to reduce an orchestra to a small ensemble with some parts allocated to different instruments to those prescribed by the composer in order to enhance low and high string sonorities; these limitations frequently encouraged companies to invest apparently little time or money on the ensemble, just so long as it did something during the recording.

Finally, the relatively dim sonics of the acoustic disc make the level of surface noise an even more intrusive element in playback than it is with electrical 78s, though paradoxically in my experience acoustic 78s sometimes have less surface noise than their electrical counterparts.

This motley of circumstances goes some of the way towards accounting for the sonic strangeness of acoustic 78s. Whilst they allow us to eavesdrop on performances of the period 1890 to 1925, they undoubtedly withhold some essential information from us and cramped the performers'

style more severely than the electrical process. One might add the short playing time of the 78 as another constraint, but I think at this stage we should place the 4-minute rule into perspective: it endured right up until the late 1940s in many studios (but not all) and in the tape and digital eras it's common enough for performers to chop the music up into bite-size chunks for ease of recording. To be sure, it had an impact on the way music was recorded, and in the acoustic period there was less inclination to record long stretches of music – 17 of the 27 or so acoustic recordings of the *Tannhäuser* Overture are on just two sides, 5 are on three, and only 5 are on the four required for a complete performance (the Dresden version takes around 14 minutes to play complete).[3]

To evaluate these limitations and assist in our imaginative reconstruction of acoustic recordings we can deliberately vandalise a modern recording and, in theory at least, send it back in time. Here's a fragment of Haitink's 1988 recording of *Die Walküre* from the entry of Brünnhilde in Act II as it was recorded by EMI in Munich's Herkulesaal:

[MUSIC 3]

And here is a degraded version of the same passage:

[MUSIC 4]

It would take a high level of technical expertise to recreate the behaviour of a 1910 horn, diaphragm and cutting lathe. I have crudely curtailed the frequency range to that of an early acoustic recording, but we are still a long way from the sound of one. I could of course continue by adding noise and there may be some scope for reducing the dynamic range, though not as much as is commonly supposed. But even with all these changes the cleaned-up acoustic recording and the degraded modern recording sound unlike each other, and this has as much to do with studio practices as with the limitations of the technology. Acoustic recordings were made in small studios with little or no reverberation; the instruments and singer huddled around a horn, leaving little or no scope for natural reverberation even if the horn were sensitive enough to capture it. Careful treatment of an acoustic recording with artificial reverberation might help, but it cannot remove the sense of the small ensemble in its huddle around the horn.

As for cleaning up the sound of the acoustic recording, especially the Mapleson Cylinders, CEDAR and other digital methods have enabled us to remove a large part of the scratch, and transfer engineers such as Christian Zwarg make extensive use of various denoising procedures to remove the broadband noise that CEDAR declikers, decracklers, and declicklers do not touch.

The Mapleson cylinders do not tell us much about the orchestra, alas, for the strings were only occasionally picked up by the horn. As in choral recordings from this source and the few studio recordings of choruses, the strings seem to glide across groups of notes in a way that is inconceivable today. Whether there is a great deal of portamento is very hard to say, for

[3] *The orchestra on record*, 565–7.

the joins between notes are all but obliterated by surface noise or were never recorded in the first place. So how do we arrive at a determination of the sound of the Met orchestra in 1903 or indeed any orchestra of the pre-First World War period? We have a good few orchestral recordings but they tend to use far smaller groups of strings than the full orchestras of the time. Evidence, even that provided by small groups today, suggests that a smaller body of players will use more portamento than a large group, and the effect is quite different. As Robert Philip has shown, some electrical recordings do retain the portamento style, especially the Vienna Philharmonic, but not all aspects of the earlier playing style, such as the more informal approach to ensemble. Roger Norrington has played his own experiment in Stuttgart by teaching his orchestra to play with little vibrato, but his interest in historical performance styles is so limited that he does not take the next logical step of adding portamento, free bowing, and other attributes of early string playing to the mix.

Can technology assist us further then? Somewhere, there is surely a passage in the Maplesons that would guide us to a fuller picture of the sound of an early twentieth-century string section – it just needs to be unearthed. If the Maplesons cannot be made to reveal more of what's going on in the strings, can technology come up with a method of multiplying the sound of a small string group into a full section? We would have to trust that the players did not make a great distinction between their style of playing in a small group and a large one -- modern players often make a distinction -- but it might at least give us a sense of what a larger group of violins whose players use little vibrato and a great deal of portamento sounds like. To this we might ask the technicians what it would take to fabricate the high frequencies of an oboe, simulate a string bass, and so on.

These suggestions are not supposed to give us the Semperoper or the Frauenkirche. If we want the *verismo* of these architectural structures then there is nothing for it but to protest outside the offices of the Stuttgart Radio Symphony Orchestra and convince Sir Roger that there are more effective ways to engage in period-performance awareness than expunging vibrato from his modern-instrument band without adding the concomitant expressive nuances of portamento and so on. No, my desire is to add a supplementary varnish to the acoustic recordings to assist the imagination and add a little colour to the monochrome. At present nobody can do anything more than imagine what an early nineteenth-century orchestra's string section sounded like.

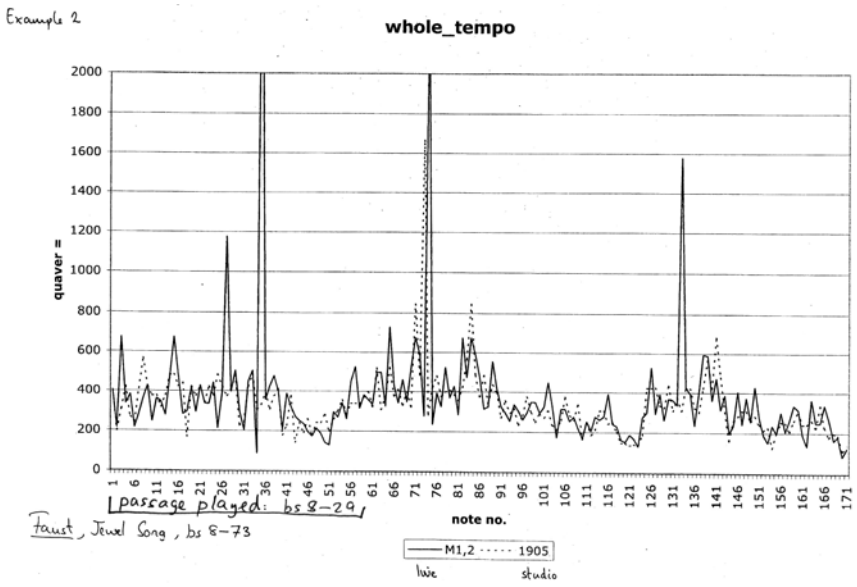
There is manifestly a great deal technology can do to increase the familiarity of acoustic recordings, for example by reducing noise, to de-familiarise modern recordings so that we hear them with some of the sonic limitations of the past, and by adding extra layers to an acoustic recording within the performance framework of the recordings (such as the addition of a real bass, as was done in the electrical period for some Caruso recordings), but there are others tests we can carry out in order to discover how performers were affected by their cramped recording environment.

We might try, for instance, to determine the extent to which singers were forced to modify their performances for the acoustic horn. Later in recording history we have an increasing number of live recordings to set beside the studio ones, but in the acoustic period live recording was very little used, though we know that Fred Gaisberg periodically toyed with the idea. All we have – and it's a substantial resource – are the Mapleson cylinders, which comprise around four hours of music taken live at the Met in the period 1901-3 by a brilliant recording amateur, Lionel Mapleson, the Met's librarian. They sound terrible to modern ears, and their issue on six LPs in 1985 left a great deal to be desired technically, but nevertheless in the years after the LP release the application of digital technology and a great deal of patient listening can be revealing. In three test cases with three sopranos I can establish some fundamental principles.

Many commentators rank Melba's 1905 recording of the Jewel Song from *Faust* as one of the most perfect examples of her art on record. Luckily, a significant part of the aria was also preserved by Mapleson in 1901. Here is the studio extract followed by the live recording:

[MUSIC 5]

Comparing the two recordings for their timing information I used exact plotting of musical events from a spectral view of the music rather than the more common but imprecise system of tapping the beat. The results are revealing indeed. With a few exceptions the 1901 and 1905 performances are identical. On the graph provided,



I have computed an average pulse for each note she sings in the aria from bar 8, when she enters early, to bar 73. So each note, regardless of duration, is given a pulse based on the average quaver value. As you see, her tempo is highly flexible, but in essentials the flexibility is the same live at the Met and studio-bound in London. Barely a second separates the two performances. In the smallest details, however, the live performance is more unpredictable. A general characteristic is that note durations in the

live performance are more variable, suggesting marginally more license on Melba's part.

As a second example – and all I can do here is summarise much-more-detailed findings, we encounter Emma Eames in *Tosca*. I'll play the studio version followed by the live one:

[MUSIC 6]
[MUSIC 7]

Again there is a great deal of similarity between stage and studio, the principal difference lying in her impassioned anticipation of climactic pitches at the Met, which is almost dutifully diluted in her studio recording, as if the passion is remembered in the studio but not enacted. She departs very little from the timing information of her Met performance in the studio, but there is generally more expressive freedom live and less respect for note values.

Our third example is Lillian Nordica, whose representation in studio recordings is sparse, poorly recorded, and often unsatisfactory. In spite of this, comparison of three versions of the Valkyrie's Battle cry confirms that the main elements of her performance are indeed present in the studio, but studio conditions caused her moments of uncertainty that upset her timing and natural intensity as a singer. Neither of the two studio recordings was published. The first places the voice a long way from the horn in what might be construed as an attempt to encompass what must have been a substantial voice without putting the singer through the ordeal of the full balletic dance to and from the horn in order to keep the air pressure regulated sufficiently. She sounds a little more at ease here.

[MUSIC 8]

In the second version she is closer to the horn and there is some awkwardness.

[MUSIC 9]

The Met recordings suggest a performer who drove excitedly to climactic points, accelerating as she went, which in the Battle cry are clearly articulated by high Bs.

[MUSIC 10]

They were evidently dangerous and presumably daunting for her in the studio. Nevertheless, the rich, vibrant, emotive character of her Brünnhilde is well documented in both the studio versions.

Conclusions from these three studies suggest different degrees of accommodation to the studio. So poor is the sound in the Met recordings one has to concentrate on selective aspects of the singing, and one often has to put up with an often inaudible orchestra, but they indicate that Melba was true to herself in the studio; Eames reduced her expressive range, hence the dubious argument that she was a 'cold' singer on record; Nordica was not at her best in the studio and may well have been

constrained by the requirement that she moderate her voice. At least the Met recordings take the singer out of the cramped, dead studio and into a reverberant theatre where we can hear the voice filling a large space and successfully moving the rigid, insensitive diaphragm of the Mapleson recorder.[4]

There is one final test. Taking a highly dramatic moment from near the end of Act I of *Die Walküre* mainly recorded in 1911, when one assumes the acoustic system had even less to offer Wagner than it had when Coates recorded long extracts from the *Ring* in the early 1920s, we will attempt to document the degree of the performers' dramatic involvement, their musical response to this overwhelming moment in the drama – the revelation of parentage and consequent 'christening' of Siegmund by Sieglinde. The orchestra is reduced to a chamber ensemble, though it is conducted responsively by Bruno Seidler-Winkler. The libretto is provided in Example 2. I will now play the passage:

[MUSIC 11]

SIEGLINDE

Doch nanntest du Wolfe den Vater?

SIEGMUND

Ein Wolf war er feigen Füchsen!
Doch dem so stolz strahlte das Auge,
wie, Herrliche, hehr dir es strahlt,
der war: Wälse genannt.

SIEGLINDE

War Wälse dein Vater, und bist du ein Wälsung,
stiess er für dich sein Schwert in den Stamm,
so lass mich dich heissen, wie ich dich liebe:
Siegmund; so nenn ich dich!

SIEGMUND

Siegmund heiss ich und Siegmund bin ich!
Bezeug es dies Schwert, das zaglos ich halte!
Wälse verhiess mir, in höchster Not
fänd' ich es einst: ich fass es nun!
Heiligster Minne höchste Not,
sehnender Liebe sehrende Not
brennt mir hell in der Brust.

SIEGLINDE

But did you name Wolf as your father?

SIEGMUND

A Wolf he was to craven foxes!
But he whose proud eyes shone
as grandly as yours, you marvel,
his name was "Volsa".

SIEGLINDE

If "Volsa" was your father and you are a "Volsung",
it was for you he thrust his sword in the tree—
so let me call you by the name I love:
Siegmund (Victor)—so I name you.

SIEGMUND

Siegmund I am called and Siegmund I am,
let this sword, which I fearlessly hold, bear witness.
Volsa promised me that in deepest distress
I should one day find it. Now I grasp it.
Holiest love's deepest distress,
yearning love's scorching desire,
burn bright in my breast,

Die Walküre, Act I, scene iii

When Siegmund enters with a description of Wotan, 'he whose proud eyes shone as grandly as [Sieglinde's]', he is soon engaging in a moderate *accelerando* as the Walhalla motive is developed in the 'orchestra': voice and ensemble collaborate in this intensification. Sieglinde's ecstatic response is preceded by a somewhat pallid string entry, which is made distant by the recording process rather than the players, who seem to be rehearsed and together. There is nothing restrained in Morena's singing as she reaches her high G slightly prematurely and interpolates a dramatic *Luftpause* before the cumulative moment of her naming of Siegmund. Then, on her last syllable the orchestra enters with a lively version of one of the Wälsung motives, which is strikingly articulated by the 'orchestra' even though the orchestration is not precisely Wagner's. Kraus rides the climax triumphantly with some dynamic variety and plentiful rubato.

[4] A question raised in the discussion of this paper was whether there was any need to compare studio and live performances, the presumption being that recordings should be taken on their merits. My design in making these comparisons was to evaluate the acoustic recordings as representations of the three sopranos chosen. One way to do this is to attempt to discover the extent to which they modified or distorted their performance style for the acoustic horn. The discovery that they were quite faithful to their live-performance styles enables the listener to trust the acoustic document more, I suggest.

We can continue to describe and mark out those elements in the music making that strike us a genuine dramatic recreation akin to later, more reliable sound documents. If we were to play it alongside a 1935 recording that is as highly regarded as any in the catalogue – Walter's Vienna set with Melchior and Lehmann – we would not find the 1911 recording seriously lacking in the sense of wonder and ecstasy this passage demands of the performers. To be sure, the later recording has the full forces of the Vienna Philharmonic Orchestra and more agreeable – to our ears at least – soloists, but as a performance 1911 stands up very well.

[MUSIC 12]

In doing this we are, I hope, passing a little beyond inadequate value judgements by seizing on musical characterisations that are, so far as we can tell, typical of what singers might do in a live performing situation, away from the constraints of the studio. After all, many of these singers became quite used to the acoustic process. They learnt to use it for their performances in an adaptation that is analogous to later singers' acclimatisation to the microphone. With the acoustic example you have just heard there is an amusing tailpiece, for the last segment, from 'Siegmund, heiss' ich' to the end was recorded in 1911 as a separate, solo record. Only the skill of the transfer engineer has created the impression of a unitary performance, but given the nature of the recording process in general, I'm not sure that we need to lose too much sleep over this. Christain Zwarg, who achieved this effortless continuity, becomes one of the performers – a brilliant illusionist who has helped breathe life and meaning into one of our many ghostly, monochrome images of a bygone age.

I hope we may reach a point when we can no longer tolerate Steane's view that we had, in 1906, yet to learn how Wagner might be sung on record, let alone performed. At least I hope some day we will stop apologising for acoustic recordings and start to enjoy them.

Audio examples

1. *Götterdämmerung*, Immolation, Lillian Nordica, Metropolitan Opera Orchestra conducted by Alfred Hertz, 28 February 1903, Symposium 1284
2. *Die Walküre*, Act I, Birgit Nilsson, cylinder recording (1895 machine, 1930s cylinder, recorded in the 1960s)
3. *Die Walküre,* Act II, Eva Marton, Bavarian Radio Symphony Orchestra conducted by Bernard Haitink, original, EMI 7 49534 2
4. *Die Walküre,* Act II, Eva Marton, Bavarian Radio Symphony Orchestra conducted by Bernard Haitink, filtered, EMI 7 49534 2
5. *Faust*, Jewel Song, Nellie Melba, 5 September 1905, EMI CDH 7 61070 2,
6. *Faust*, Jewel Song, Nellie Melba, Metropolitan Opera Orchestra conducted by Luigi Mancinelli, 28 March 1901 (from LP set)
7. *Tosca*, 'Vissi d'arte', Emma Eames, 16 March 1905
8. *Tosca*, 'Vissi d'arte', Emma Eames, Metropolitan Opera Orchestra conducted by Luigi Mancinelli, 3 January 1903 (from LP set)
9. *Die Walküre,* Act II, Lillian Nordica, 3 February 1911, Truesound Transfers TT-2001
10. *Die Walküre,* Act II, Lillian Nordica, 8 March 1911, Truesound Transfers TT-2001
11. *Die Walküre,* Act II, Lillian Nordica, Metropolitan Opera Orchestra conducted by Alfred Hertz, 16 January 1903, Truesound Transfers TT-2001
12. *Die Walküre,* Act I, Berta Morena, Ernst Kraus, orchestra conducted by Bruno Seidler-Winkler, 19 August 1911, Truesound Transfers TT-1802