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The aims of the Institute

A small number of pianola owners and musicians have been concerned for some time at the unnatural break between the world of music rolls and the world of music. Few members of the musical public know much about player pianos, and the Institute aims to bring about a better understanding and appreciation of the instrument in a number of ways.

The Institute publishes a regular journal, puts on public concerts, and has plans for a lending library of rolls, a travelling exhibition, and in addition a roll and information archive, with a small collection of player pianos for listening and study purposes.

The Pianola Institute will endeavour to preserve, research and document the pianola's history, to improve the instrument's present standing, and by the commissioning of new compositions, to ensure that it remains an important musical force for the future.

The directors of the Institute are:

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Editorial

2012 marks anniversaries for two major composers - the 150th anniversary of the birth of Debussy, and the centenary of the birth of Conlon Nancarrow. Debussy's music forms an important part of the standard concert repertoire, with several pianists undertaking recordings of his complete output. What is less well known is that during the first decade of the twentieth century, quite a number of pianists made recordings of his music, mostly on reproducing piano roll. In this issue of the Journal, we investigate what was published.

Conlon Nancarrow's 100th birthday was celebrated in grand style with a weekend festival of his music at London's South Bank Centre in April. The prime mover was Dr Dominic Murcott, one of the leading authorities on Nancarrow's music, and we are delighted to welcome him as a new contributor to the Journal.

Rex Lawson continues his series of investigations into the recording methods of the reproducing piano, this time delving into the mysteries of the Ampico. We are very pleased to welcome another new contributor to the Journal, Dr Chiara Bertoglio, who reviews Neal Peres Da Costa's new book on the subject of piano performance practice.

Player and reproducing pianos are starting to appear a little more regularly on the concert platform, and new recordings of roll performances in pretty decent versions are being issued. One can only be pleased at this development, even if some of the repertoire played is hardly mainstream! This is not really surprising in that the majority of music available on roll duplicates the standard piano music which can be heard during the regular concert season in our major recital halls and rooms. Player pianos were originally developed to enable music lovers to interpret that same music in their own homes, even if they did not have the talent or time to acquire the technique to play in the traditional way. Any enthusiast of the instrument will happily tell of the hours of pleasure roll playing can give.

In the light of the above, is it not strange that today, the value of player pianos has reached an all-time low? Fine, serviceable instruments are being offered free to anyone who will give them a home, and, even worse, some end up being scrapped. This dichotomy between the increased appearance on the concert platform and declining interest domestically is all the more difficult to understand in that, even in the highly developed age of technology in which we live, no other musical instrument gives the degree of control over the personal interpretation of piano music which is offered by the player piano. All the main features are there - tempo, dynamics, phrasing, in fact just about everything the music lover needs is at the tips of his fingers and toes!

So why are there not young folk coming along wanting to own a player piano and master the skill of playing it? It is at least in part because today's

generation has been brought up to listen passively to music, rather than actually participate in its performance even for its own pleasure, and it would probably not even occur to it to *want* to. Hence, a foot-operated player piano would not come within many people's sphere of reckoning. A further contributing factor to this situation is the lack of teaching in schools of any sort of manual dexterity. What has happened to the wood-working and metal-working shops of just a couple of generations ago? We are told that they became too expensive to maintain, and too dangerous(!) to use. But without a degree of practical bent, a device, part musical instrument and part machine will not hold the fascination which one might expect. A person to whom using a computer is second nature may well find difficulty in even putting a roll on a player piano, never mind feeling able to tackle very minor servicing or repairs! But such basic abilities are easily acquired, given the will, and ought not to be beyond the capabilities of most young people.

Player pianos are unlikely ever to be manufactured again, or at least, not in their traditional format. That being the case, the next generation of lovers of piano music must be enthused to get to know them, and appreciate what pleasure they can give. A player piano in reasonable working condition is a most attractive proposition, and ought to be self-recommending to musical people who have limited time in their busy lives for practising scales and arpeggios just to enable them to play through very simple pieces.

Denis Hall

Mechanical Troubles : Performing Nancarrow's Player Piano Studies Today

Dominic Murcott

Introduction

The US born and Mexican naturalised composer Conlon Nancarrow (1912-1997) was preoccupied with exploring complex temporal relationships in his music. In 1947, following a number of disappointing attempts at getting accurate performances, he turned to the player piano and took complete control of the composition, performance and production of his own work. Over the next forty or more years he produced a unique collection of pieces that have become part of the musical canon despite, or perhaps because of, their frequent mathematical density.

While solving one problem, however, he created another: there have been remarkably few opportunities to hear the works 'performed' on the instruments they were written for, and these have diminished in reverse proportion to the rise in the composer's popularity. In April 2012, to mark the centenary of Nancarrow's birth, London's Southbank Centre, in collaboration with the London Sinfonietta and Trinity Laban Conservatoire of Music and Dance, hosted a weekend festival of his work, featuring the complete studies for player piano on an instrument identical to the composer's own. This report highlights some of the problems that needed to be overcome in order to present these pieces, as well as considering the future of the music in performance.

A Site-Specific Composer

Born in Texarkana, Arkansas, Nancarrow's early and somewhat tentative career as a composer was interrupted in 1937, when he enlisted in the Lincoln Brigade to fight against Franco's fascists in Spain. Wounded and severely malnourished, he returned to the US to encounter a government that viewed his left wing idealism with intense suspicion, and after being denied a passport he moved to Mexico City in 1940 and lived there for the rest of his life.



Nancarrow in his Mexico City Garden

Nancarrow built a large sound-proofed studio within which to house his player pianos, plus an adjoining library of impressive dimensions. It was here that all of the 50-plus Studies For Player Piano were composed, the rolls punched by hand, the pieces previewed, and the best of the recordings made. Set in what was then a quiet suburb of the city, the studio was part of a delightful garden, and over the years it was expanded with a small flat and later a family house, designed by Nancarrow's close friend, the celebrated Mexican architect, Juan O'Gorman, and adorned with his trademark mosaics. It could be said that this modest paradise was the natural and truly authentic habitat of Nancarrow's work: those lucky enough to visit have often reported that the experience of hearing the studies in the studio had an unrivalled visceral excitement.

This excitement is obviously generated largely by the music itself. The earlier works married the influence of pre-bebop jazz (Fatha Hines, Bessie Smith and Louis Armstrong in particular) with architectural modernity at superhuman speeds; the later works developed an exquisite use of tempo canons (similar material at different speeds) and discovered a language that was truly idiomatic to the player piano. Study no. 25 uses lightning fast chromatic glissandi in contrary motion and concludes with over a thousand notes in 12 seconds. Study no. 33 has lines moving against each other with a ratio of 2 against $\sqrt{2}$, and Study no. 40 is based on the ratio of e (the natural logarithmic base) against π . Despite some of the results producing a seldom matched complexity, Nancarrow always discussed his aims as being to excite the listener, though this necessitates an ability to engage with the precise structural detail of the material underneath the surface textures. Freed from the limitations of human performers the music is often closer to computer music than it is to piano music, though interestingly computer composers have still not explored the same mathematical ideas with anything like the depth Nancarrow did.

Nancarrow owned a number of player pianos, but the two that he focused on were Marshall and Wendell uprights with an Ampico reproducing system, their serial numbers indicating that they were built in Albany, New York, in 1925 and 1926. These are powered by an integral electric motor which provides the necessary suction for the mechanism. Necessitating absolute rhythmic clarity as his work does, he customised the pianos in a number of ways, two of which are key: the first was to 'tack' the hammers, a practice that had been used in US bar music to help the sound cut through loud speech, and also by Glenn Gould to approximate the timbre of the harpsichord while maintaining the dynamic control of the piano. This was achieved on one piano by metal tacks, similar to drawing pins, supported by leather strips, and on the other by covering the whole hammer with a metal strip. The second customisation was the addition of dampers to the full range of notes

(the top 22 on these pianos usually being undamped). The result of these customisations was to produce a thin, sharp note with a crystal clear attack and an absolute minimum amount of sympathetic resonance from unstruck strings.

The traditional sound of a concert pianist comes not just from the piano but also from the reverberation of the performance space. Nancarrow's studio, despite a tiled floor and blocked walls, was acoustically designed to have a very modest amount of reverb, most of which was negated by furniture, bookshelves and general clutter. The sound of the instruments was therefore almost completely uncoloured by their surroundings, and this is what we hear on the classic recordings made in the studio under the composer's supervision (see 'recommended listening' at the end of this document). But perhaps more importantly this was the sound that Nancarrow developed, and for which he began to compose specifically.

As Nancarrow's music began to become widely known, initially thanks to the Merce Cunningham Dance Company's use of a number of the early studies in 1960, and later thanks to the championship of Ligeti and others, he began to be invited to present his work internationally. Unwilling to move his player pianos, he was very content, either to invite people to visit him at his studio, or, more practically, to play recordings from the studio to a theatre audience.



Nancarrow at his composing table in his studio

The Studies For Player Piano 'in concert'

While Nancarrow appeared to accept the playing of a recording as a concert experience, fans of his music were more ambitious. Jürgen Hocker, a German player piano enthusiast, became fascinated with Nancarrow's work, and through communication with the composer reconditioned a Bösendorfer grand with an Ampico mechanism, using this for many European concert performances of the studies from 1987 until shortly before his death in 2012.

Also around 1987 Nancarrow visited Pianolist Rex Lawson in London and was delighted to discover that the Pianola allowed human control of timing and dynamics, while retaining the integrity of the punched information. He was also delighted to discover a player who was a genuinely sophisticated musician and began planning a concerto for Pianola and orchestra for Lawson to play. As a result of this meeting Lawson began performing Nancarrow's Studies with his pedalled push-up Pianola attached to a grand piano. Wolfgang Heisig in Germany also took a similar approach with his pedalled Phonola.

The approach of these three practitioners represents a symbolic journey from the composer's studio and his innovative practices, to the more traditional practices of the concert hall. A further issue becomes apparent in the case of pedalled pianos: when experiencing the studies on the completely automatic player piano there is no human intervention, and a sense of convening directly with the composer prevails. The inclusion of a performer is a very powerful factor in the musical equation and this alters the experience. This alternation cannot be described as being clearly 'better' or 'worse', but simply different to the one that Nancarrow knew in his studio.

It should be mentioned that the German sound sculptor, composer and inventor known simply as Trimpin worked closely with Nancarrow to digitise the rolls as MIDI files. He has since created a number of MIDI controlled instruments and used them to perform Nancarrow's studies in a variety of situations. The instruments themselves become as intriguing as the music and often function at their best in a gallery setting where they can be approached and experienced as a piece of kinetic art.

The Complete Studies, London 2012

Given the fascination that Nancarrow fans have for his studio and the perceived isolation that he worked in, a conscious decision was taken to metaphorically bring the audience to the studio, rather than the studies to the concert hall. After the initial idea of a life-size model of the studio in the foyer of the Queen Elizabeth Hall was ruled out, the Purcell Room was fixed as the venue. Budgets and set-up time would allow for a minimum of stage design: projections of images from the studio, some comfortable furniture and player piano rolls hung in strips around the stage. The primary ways to engage the audience with the concept were going to be the approach taken by

the ‘performers’ and the player piano itself.

Nancarrow’s own instruments are stored with the composer’s archive in the Paul Sacher Foundation in Basel, Switzerland, and are not available for public events. After almost a year and a half of searching, a 1924 Marshall and Wendell Ampico, identical to Nancarrow’s, was discovered for sale in the UK. Astonishingly it required an attainable amount of refurbishing, and after having the hammers tacked was impressively close in tone to Nancarrow’s. There was some concern that the 88 year old motor would not survive a complete weekend of performance, so a customisation was fitted to allow a vacuum cleaner hidden in the dressing room to become the power source at the flick of a switch should it be needed (it was not!).

The volume of the player piano in Nancarrow’s studio was significantly louder, and perceptually ‘closer’, than that of a standard piano recital (and Nancarrow was known to have requested that the recordings be played surprisingly loud at concerts). The instrument was accordingly amplified with microphones placed behind the instrument to minimise sound from the machinery, and both volume level and presence were set to bring the audience of the Purcell Room as ‘close’ to the instrument as could be achieved comfortably.

Four of the later Studies (nos. 40, 41, 44 and 48) use two player pianos simultaneously. Lawson and Heisig had previously performed some of these works together using click tracks to maintain the mathematical synchronisation required, and luckily both agreed to not only perform these at the event but to change the rolls on the player piano and act as ‘guides’ for the audience.

A gentle theatre developed at the performances: the player piano was lit centre stage with covers removed to expose the mechanism, with Lawson and Heisig taking turns to change rolls and provide a running commentary during the re-roll periods. While each study played they sat on the on-stage sofa and, along with the audience, watched the rolls move and the keys play automatically. Despite the potential pitfalls from the lack of human performers, feedback from both audience and the many reviews suggested that the experience was indeed positive. The two-piano studies were performed on the pedalled push-ups and a pair of grand pianos, which provided a different perspective for four out of the ten concerts. A short video can currently be seen at http://www.youtube.com/watch?v=3nquG_CwGXo

A pleasantly unfamiliar issue was that of whom the applause was directed at: the onstage ‘guides’, the composer, or the piano itself? In all likelihood it was a combination of the three, but it is interesting to note that on one of the very few occasions when Nancarrow did allow a piano to be moved for a concert, there was a similar ambiguity, with the instrument itself being gestured to for applause by the composer .

Even after the considerable problems in sourcing the right instruments,

the rolls themselves posed a further problem. It seems that Nancarrow, conceiving the studies as complete when they were recorded in the studio, did not have any particularly strong ambition for the rolls being commercially available, and probably realised that there was a highly limited market for them anyway. The original rolls now reside at the Sacher Foundation but Wolfgang Heisig does however have permission (and importantly the enthusiasm!) to produce approximately half of the studies for sale, and these were duly purchased for the Festival. The Sacher Foundation was incredibly supportive and generous in loaning its own duplicate copies of the remaining ones so the concerts could go ahead, but this was a one-off agreement and not a sustainable method for other performances.

Looking to the Future

The recordings of the studies remain popular, and chamber arrangements continue to be performed globally. The fact however that this work was not created for performers, but simply transcribed for the rolls makes it unlike almost all other modern music, and the question about its longevity in this format remains. There is no reason why a number of player pianos cannot be maintained for decades, if not centuries, provided the interest in doing so is strong. Having access to rolls of all the studies would be of absolute necessity in that case, but once again this is a small niche market and hardly a viable commercial interest.

A more future-proof idea is that of making MIDI files of the studies commercially available, which could be used for Disklavier performance or unlimited electronic options. But there is little precedent for such a venture and the absolute certainty of digital piracy may make it financially unappealing to the main publishing companies. This of course excludes the considerable fascination and charm of the mechanical device. Nancarrow's music is not overtly emotive, but surprisingly the whirring and shuddering of this antiquated instrument provides an animated focus, and the composer's quiet belligerence and gentle humour manage to be ever present.

Nancarrow's position as a vital part of the American 20th Century *avant garde* is unlikely to diminish in the foreseeable future: perhaps the reverse will happen as more information about him becomes available.

At the time of writing the player piano used for the London 2012 performances resides at Trinity Laban Conservatoire of Music and Dance in Greenwich, with initial discussions underway about creating a permanent Nancarrow 'room' which can act as a small (studio-like) performance space. Nancarrow's studio in Mexico City is little changed since his death 15 years ago. The pianos and rolls are in Basel and much of the clutter is gone, but the place is still resonant with the echoes of the solitary work that took place in it, and O'Gorman's mythical animal mosaics keep guard. The house may soon

be sold, and who knows if the studio will survive? Perhaps words, pictures and recordings will have to suffice.



The Author in Nancarrow's Studio as it is today

Further reading

Gann, Kyle, *The Music of Conlon Nancarrow*. New York: Cambridge University Press, 1995.

Hocker, J. *Encounters With Conlon Nancarrow*. Plymouth, UK, Lexington Books, 2012

Useful Websites

Kyle Gann's Nancarrow pages: www.kylegann.com/index2.html

Jürgen Hocker's Nancarrow pages: www.nancarrow.de/

Robert Willey's Online Nancarrow Symposium:

www.conlonnancarrow.org/symposium/Program.html

The extensive programme for Impossible Brilliance: The Music of Conlon Nancarrow, London 2012:

[www.conlonnancarrow.org/symposium/papers/murcott/](http://www.conlonnancarrow.org/symposium/papers/murcott/ImpossibleBrillianceProgramme.pdf)

[ImpossibleBrillianceProgramme.pdf](http://www.conlonnancarrow.org/symposium/papers/murcott/ImpossibleBrillianceProgramme.pdf)

The Pianola Institute: www.pianola.org/history/history_nancarrow.cfm

Recommended Listening

Possibly the best recordings are the collection produced by Charles Amirkhanian in 1977 at Nancarrow's studio and originally released on the Arch 1750 label. These are now available on the Other Minds label here:

<http://webstore.otherminds.org/collections/other-minds-records/products/om1012-15>

Early jazz-influenced studies:

Study no. 2a

Study no. 3a, b, c, d, e

Other early melodic works:

Study no. 6

Study no. 12

Two transparent tempo canons

Study no. 14

Study no. 19

Some mid-period structural experiments:

Study no. 20

Study no. 21

Study no. 26

Some impressive complex and sophisticated works from throughout the catalogue

Study no. 7

Study no. 25

Study no. 37

Study no. 41a, b, c

On the Right Track

The Recording of Dynamics for the Reproducing Piano (Part Four)

Rex Lawson

DYNAMIC RECORDING SYSTEMS

4 The Ampico

Historical and Technical Background

The Ampico was the earliest of the American reproducing pianos, launched by the American Piano Company of New York in the autumn of 1911. It seems to have been designed to be roughly compatible with the Hupfeld Dea, since its initial repertoire was taken almost entirely from the existing catalogue issued by Ludwig Hupfeld, with whom the Company had an exclusive agreement for the publication of hand-played rolls in North America. Its first roll bulletin was published on 1 October 1911, and out of 51 pianists listed in its pages and quoted in *Music Trade Review*, only one, Hans Hanke, was not a Hupfeld artist.

Although it came to be known simply as the Ampico, taking its name from the initial letters of the American Piano Company, the instrument's first title was the Artigraphic player, available in the Knabe piano, with a Chickering model following by the December of 1911. It is clear that very few instruments were produced at this early stage, and it was not until mid-1912 that any substantial number were being sold. Rolls were also not very plentiful, and a San Francisco correspondent of *Music Trade Review* noted in June 1912 that the supply of Artigraphic music had been rather short, perhaps implying problems of production as the roll editing got under way.

In August 1912 an announcement was made that the instrument was to be re-named the Stoddard-Ampico, including in its title the name of Charles Fuller Stoddard, its main inventor, and this joint name lasted for roughly four years, although Ampico players continued to be marketed by Chickering under the name of Artigraphic. From 1916 onwards the Ampico effectively came of age, dropping its alternative titles and featuring in a campaign of demonstration concerts and extensive advertising. Leopold Godowsky set the scene with a recital at the Biltmore Hotel in New York, on 8 October 1916, during which he played a selection of pieces by hand, all of which were then repeated by the Ampico.

The artists' roster for this new player system was perhaps a little slow in getting going. To its initial base of Hupfeld rolls from Leipzig, the Company added a number of pianists whom it recorded in New York, who by 1916 included Hans Hanke, Howard Brockway, Clarence Adler, Marguerite Volavy and Leo Ornstein. In that year Godowsky was enlisted, and in 1919 the future success of the Ampico was assured by the exclusive signing of Sergei



KNABE

The Affair at the Biltmore

ON Sunday Afternoon, October 8th, the Music Room of the Biltmore held a distinguished audience of musicians, critics, and musical connoisseurs, who had assembled to hear Leopold Godowsky play—and to marvel at the perfect reproduction of his playing on the Knabe-Ampico.

Immediately after the conclusion of four of the selections played by Mr. Godowsky, the Knabe-Ampico reproduced the same numbers from records he had made for it. So perfect was the reproduction—so marvellous the fidelity of the replica to the performance of Mr. Godowsky, that the audience was first amazed—then moved to the most enthusiastic applause.

The introduction by Mr. Victor Wittgenstein, one of the brilliant younger pianists, had prepared the audience for a result that had hardly been dreamed possible by any piano of the player type, as well as the willingness of Mr. Godowsky to lend his art to the proving of the Ampico. Yet the perfection of the performance astounded every hearer. Here, indeed, was musical perfection—perfection that stood the acid test as no other instrument had ever dared apply it.

In operating the Knabe-Ampico no pumping or personal effort is required, and, in addition to reproducing the playing of the world's greatest pianists, it may be played by hand as the ordinary piano, or with any standard 88-note roll, as the player. The Ampico ranges in prices from the Stoddard-Ampico at \$750 to the Knabe-Ampico Grand at \$1,950.

You are cordially invited to attend a demonstration of the Knabe-Ampico in the Ampico Studio.

KNABE WAREROOMS
Fifth Avenue at Thirty-ninth Street

From The New York Globe, Oct. 11, 1915.

GODOWSKY VERSUS GODOWSKY'S RECORD

Once upon a time the great musician held that music could not exist where the artist himself did not actually produce the notes, and the player piano and photograph rolled forth the first world. No, sir, not so long before that, the painter raised the photograph himself and the work of the devil set.

The affair at the Biltmore held last Sunday would have been a scandal five years ago. For there that great pianist Leopold Godowsky actually permitted a music roll record of his rendition to be heard on the Ampico immediately after he personally had performed them. And the audience compared notes!

Indeed, as remarkable as the experiment itself is the extraordinary success achieved by the simple human mechanism.

*The Affair at the Biltmore,
New York Times, 26 November 1916*

Rachmaninoff, who had recently settled in the United States as a result of the Russian Revolution, and who perhaps thought it better to be the doyen of Ampico, rather than languish in the shadow of Paderewski on the Duo-Art.

A number of other well-known classical musicians joined the fold, including Moriz Rosenthal, Mischa Levitzki, Benno Moiseiwitsch, Artur Schnabel and, interestingly, Rachmaninoff's friend, the violinist Fritz Kreisler, a first-rate pianist in his own right. However, Aeolian had very quickly moved to secure many of the most famous pianists on exclusive contract, so that on the whole Ampico's recording artists tended to be younger and less well-known. But the Company's popular music rolls were far and away the most imaginative and lively of all

the reproducing piano catalogues, and the technical wizardry of the Ampico editing department allowed for a very snappy style of playing.

Like all pneumatic reproducing pianos, the Ampico controlled the dynamics of the pianist's performance by means of coded perforations at each edge of the music roll, for treble and bass respectively, in this case split between E and F above middle C, in line with the normal 88-note standard. However, unlike the Aeolian Company's Duo-Art, which remained more or less the same in construction from its launch in 1914 until its virtual demise in the early 1930s, the Ampico changed a great deal during its relatively brief life. The very earliest Artigraphic players had eight degrees of touch ('intensities' in Ampico terminology) on each side of the mechanism, and nothing to smoothe the gaps in between, but these were not long in production. Very soon the successive models of Ampico included both fast and slow crescendos and decrescendos, with the intensities superimposed above. A nod towards the Hupfeld origins of the Ampico repertoire can perhaps be seen in the naming

of the intensities as 2, 4 and 6 (with 2 + 4 equalling 6, rather than adding together like three binary digits), not only in line with the tracker bar holes that operated them, but also nearer to the six dynamic levels of the Dea.

Lacking the real stars of the American classical piano world, with the exception of Rachmaninoff, the American Piano Company made much of its technical achievements in its extensive advertising. Charles Stoddard, its inveterate inventor, was frequently featured in articles, and seems to have enjoyed giving speeches and posing for photographs. This was in considerable contrast to the research department of the Aeolian Company, which remained much more in the background, at least as far as the general public was concerned. The successive improvements in the Ampico's design were advertised, as were some of the methods used for capturing the dynamic elements of a pianist's performance. Charles Stoddard, a keen golfer, was photographed practising his strokes in the Ampico research laboratory, as a means of experimenting with the measurement of physical movements of high velocity and minimal duration. As a result, the exactness of Ampico's measurement systems were not in doubt, but their main importance to the Company was surely as an element of advertising, since no matter how accurately they could measure the speed of a piano hammer, Ampico had no means of reproducing the information without the aid of a skilled editing department and a lot of painstaking work.



Charles Stoddard experimenting with his golf club at the Ampico Laboratory

In the late 1920s the Ampico system was re-designed one final time, the result being a reproducing piano known commonly as the Ampico "B". The dynamic coding on the rolls was altered, with some attempt to keep the earlier rolls compatible with the new, and vice versa. On the whole, though, this new system arrived on the scene so late in the brief life of the reproducing piano that it made little difference to the Ampico's repertoire, and certainly no difference to its methods of recording. There were at least three styles of dynamic recording used between 1911 and 1930, however, and we shall examine these in turn.

Early Ampico Dynamic Recording – the Charles Stoddard Patents

Our knowledge of the very earliest forms of the Ampico comes mainly from patents, since the instruments themselves were not very numerous. In 1922 the US Patent Office issued a remarkable series of twenty consecutive patents to both Charles Fuller Stoddard and his colleague, Guy Manly Russell, for a number of versions of the Ampico, with application dates going back as far as July 1908. Why the patents were delayed for so long is not immediately clear, and the applications for several of them were renewed as part of the long drawn out process, but taken as a whole, the documents provide a useful record of the development of the Ampico over a period of nearly ten years.

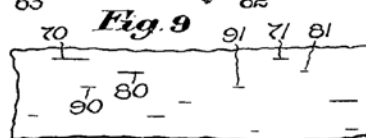
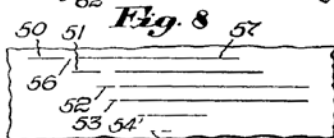
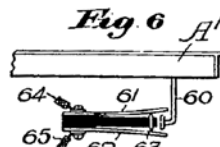
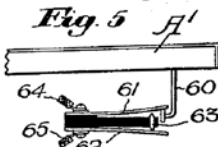
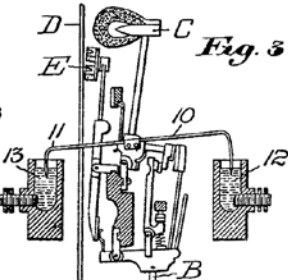
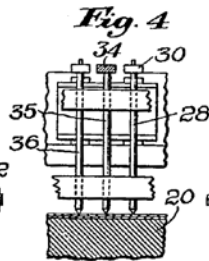
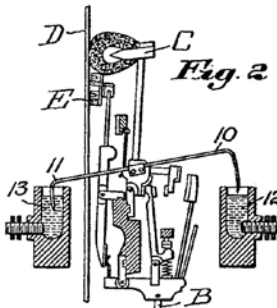
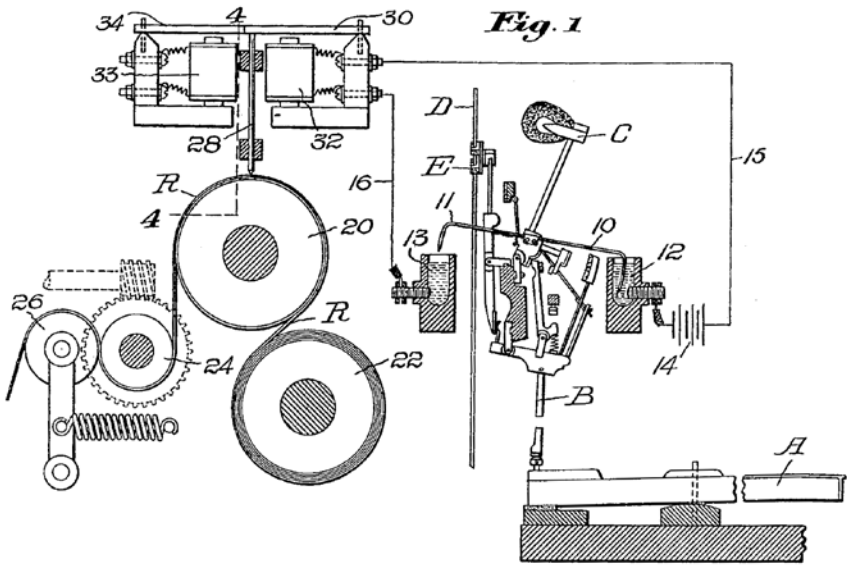
At roughly the same time as Charles Stoddard applied for the first of these reproducing piano patents, he also sought to patent a method of recording both the notes and dynamics of a pianist's performance. The drawing from his first patent of this sort, US 1,095,128, applied for in late April 1908, appears opposite. At the top of the page it can be seen from Fig. 1 that an upright piano has been used, and indeed that an upright action is necessary for the simplicity of the recording mechanism, if mercury rather than spring contacts are to be used. To describe the mechanism in the simplest terms, a piano hammer C has two thick contact wires 10 and 11 attached at the base of its shank, and these are able to make electrical connections with mercury baths 12 and 13. In Fig. 1 the hammer is at rest, and so only wire 10 and bath 12 make contact. Similarly in Fig. 2 the hammer is striking a string, thus causing a note to sound, and only wire 11 and bath 13 are making contact. However, in Fig 3, during the brief forward movement of the hammer as the key is depressed, and also after the hammer has rebounded and is in its check position, both wires and both mercury baths are in contact, thus allowing an electrical circuit to be completed.

The effect on the recording roll R is that the stylus 28 is pressed down during the travel of the hammer to the string, and also after the note has been sounded, as long as the key is held down. The roll in Fig. 8 thus has a series of short lines, their length in inverse proportion to the dynamic of the notes in question, followed by a series of longer lines, roughly equivalent to the

C. F. STODDARD.
 METHOD OF RECORDING MUSICAL TONES.
 APPLICATION FILED APR. 30, 1908. RENEWED AUG. 28, 1913.

1,095,128.

Patented Apr. 28, 1914.



Witnesses: 55
 Edwin J. Lusk
 Horace H. Crossman

Inventor:
 Charles F. Stoddard.
 by Emory & Booth, Attys

duration of the notes. In fact it can be seen in Fig. 8 that the gaps following the dynamic lines 50 and 51 are rather longer than those following 52 to 55. It would no doubt be the case that with quieter notes it would take longer for the hammer to rebound sufficiently from the string to make the electrical contact, so the start of the notes would presumably occur about halfway through the gap, rather than at the beginning of the secondary lines. The fact that this small detail was included in the drawings is a good indication that Stoddard had made practical experiments with such a device, though perhaps at roll speeds rather higher than normal.

To put the marks into context, Ampico's later spark chronograph detected timings over the last one-eighth of an inch of hammer travel, from about five-thousandths of an inch for pianissimo, to one-half of a thousandth for fortissimo. Allowing for a total hammer travel of just under two inches, and for the fact that considerable acceleration would have been needed for the higher dynamic levels, this gives an approximate time of overall hammer travel of about eight-hundredths of a second for *pp*, to around three for *ff*. A roll travelling at speed 100 (120 inches per minute) would translate these timings into distances of about .16" for *pp*, or .06" for *ff*. Someone with a good eye and a marked rule could make enough sense of these markings to read off a simple dynamic value.

The dual spring contacts in Figs. 5 to 7 work in a similar, but not identical way, completing a circuit only as the key is depressed or let off, so that a dynamic line occurs at the start of a note, and another line as the note ends, with the duration of the note left blank. Fig. 4 is simply a detail of one of the recording styli, which marked a roll by pressing it against a roller covered in carbon paper. This had the advantage of needing very little movement, and so would record with great accuracy.

At the left-hand end of Fig. 1 it can be clearly seen that the recording roll is being pulled through by two pinch rollers, one driven by a worm gear, so there can be no doubt that any roll produced on such a mechanism would not have included any built-in take-up spool acceleration.

There is a matching patent, split between nos. 1,409,478 and 1,557,732, which despite their relatively late issue dates of 1922 and 1925, were both applied for in July 1908, and these cover the earliest of Charles Stoddard's conceptions for a reproducing piano system. Six marginal perforations control three additive intensity steps and three cancel valves, providing eight intensities of touch, very clearly itemised as such in the description, and not seven, as in the later Ampico. There is no crescendo facility on this earliest of designs, nor on a modification of January 1910, in which the three individual cancel valves are replaced by only one, so a simple dynamic recording system would have been just about sufficient to cope with the relatively small number of steps available.

C. F. STODDARD.
METHOD OF RECORDING MUSIC.

APPLICATION FILED NOV. 12, 1910. RENEWED JULY 14, 1920.

1,367,634.

Patented Feb. 8, 1921.

2 SHEETS—SHEET 1.

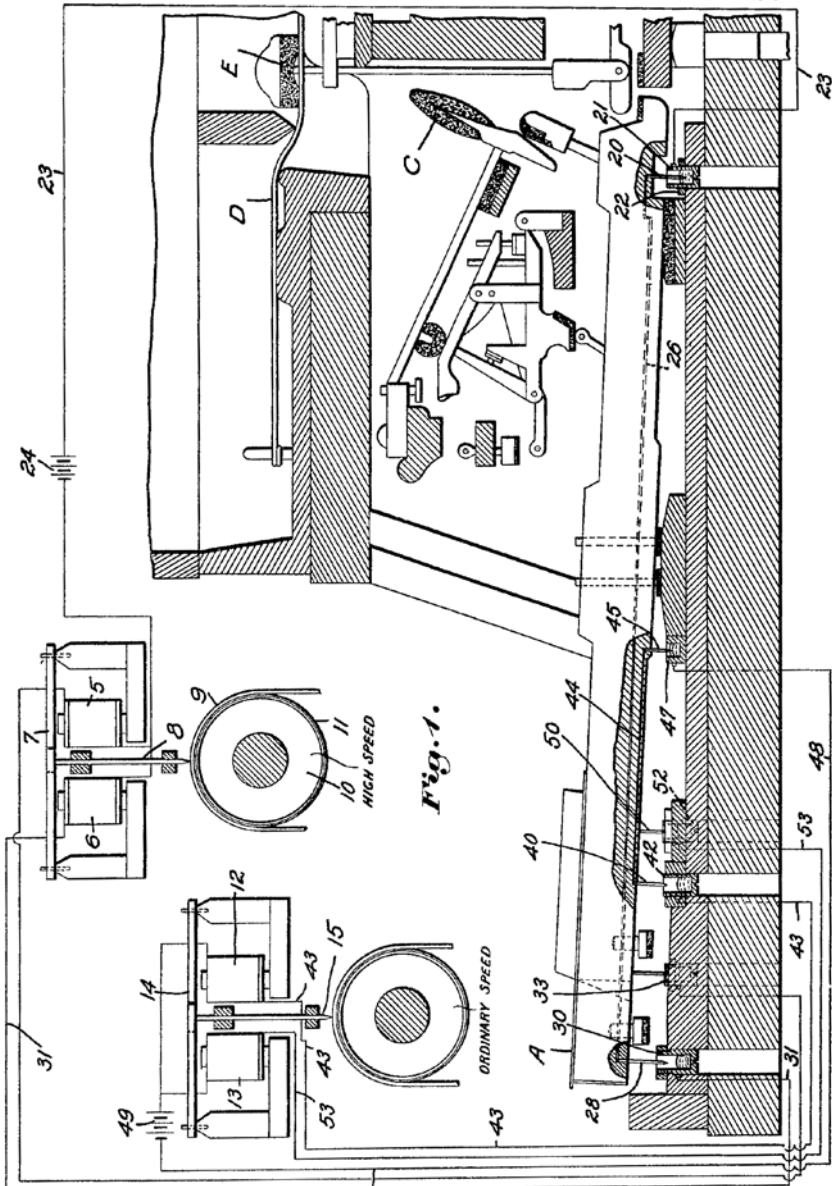


Fig. 1.

Witnesses:
Horace H. Crossman
Carl L. Choate

Inventor:
Charles F. Stoddard
Wm. B. Smith, James W. Wemy
Attys.

Patent 1,367,634, applied for in November 1910, is an adaptation of the first recording system, this time for a grand piano, while still allowing mercury baths to be used, in view of their negligible effect on the touch of the piano. At the same time, Stoddard has modified the system to record note durations and dynamics on two separate rolls, the dynamic roll running at a higher speed, thus allowing greater accuracy to be obtained. This would also obviate any confusion that might have arisen between note and dynamic lines in fast, repetitive passages. In this case the white note dynamics are obtained through a circuit connected through wires 28 and 20, at each end of the keys, which make contact with mercury baths 30 and 21. The blacks have a similar arrangement, though their front contacts dip into baths 33. Note durations are obtained by wires 40 and 50, for white and black respectively, connecting via wires 45, which remain constantly in baths 41.

The two rolls, one for dynamics, and one for pitch and duration, have identical marking mechanisms, which in turn are identical to that used in the previous patents, so it is not unreasonable to assume that the driving means for both are the same as before, namely by means of a worm gear and pinch rollers, thus causing no paper acceleration.

Overall, the conceptions show both an appreciation of pianistic demands, that the touch of the action should be relatively unaffected, which would be the case with mercury contacts, and also some evidence of the inventions being put into practice. The realisation that one roll was not enough for both notes and dynamics implies practical experimentation between 1908 and 1910. As it happens, it also puts one misconception about Welte's recording system into its proper perspective; namely that no marking system, soft rubber wheels or no, could hope to achieve any subtlety of individual dynamic measurement on a roll running anywhere near final playing speed, and especially on one being drawn in an accelerating manner on to a take-up spool.

In a lecture given at the Convention of the National Association of Piano Tuners, held at the Hotel Commodore in New York in August 1927, Charles Stoddard described some of the detail of the early dynamic recording system he had devised. It is a rarity in the world of the reproducing piano to have the inventor himself describing his own method of dynamic recording, so it is worth quoting here in full:

“The method used in the early days of the Ampico was covered by a patent granted about 1912. This consisted of placing electric contacts on the piano key which would indicate on a moving sheet the length of time it took the key to be depressed. We can readily see that it requires a much longer time to depress the key when playing a soft note than it does when playing a loud note. So a long mark denotes a soft note and a short mark denotes a loud note, with various gradations between.”

Despite the ingenuity of its inventor, this automatic recording system was only a partial solution to the problem of recording a pianist's dynamics. Even if the system had been exactly accurate, which it clearly wasn't, there remained the prodigious problem of converting individual note values into the two coding streams that were all the Ampico could respond to. To a musician contemplating these unwritten processes, it is clear that the judgment and experience of the roll editors was considerably more important than any individual dynamic readings.

Roll Editors as Portrait Painters – Practical Dynamic Editing for the Ampico A

Thanks to the efforts of resourceful enthusiasts, such as the Americans, Larry Givens and Nelson Barden, a number of interviews with former Ampico staff were undertaken and published during the 1960s. Larry Given's excellent monograph, *Re-Enacting the Artist*, published by the Vestal Press in 1970, pays particular attention to the work of the Ampico's two best-known engineers, Charles Stoddard and Clarence Hickman, the latter the inventor of the later style of recording and playback that included the spark chronograph. Nelson Barden on the other hand, in his interviews with former Ampico employees, balances his questioning of Clarence Hickman by three talks with former Ampico musical staff. Barden's investigations were subsequently included as part of a volume on *The Ampico Reproducing Piano*, edited by Richard Howe and published by the Music Box Society International in 1987.

Through the decade of the First World War, the design of the Ampico was modified in many ways, not least by the early addition of slow and fast crescendo and decrescendo mechanisms, which were used initially, no doubt, as a means of smoothing the transitions from one dynamic level to another, but in the end as a more subtle and direct representation of an overall performance. While the first dynamic recorder documented in Charles Stoddard's early patents might have been sufficient for a simple expression system with eight degrees of touch, it seems not to have been so successful in practice, because no-one apart from Stoddard himself seems to have remembered it.

Angelico Valerio, an Ampico roll-editor who began working for the Company in 1923, is reported verbatim in confirmation of this point of view:

VALERIO: 'Now if they were in a hurry for a roll, we'd know generally what dynamics to put in, because any piece they played we would have the music for it. We would read it over ourselves if we didn't know it, and we'd get a general idea of what they wanted. But we usually used to wait until we got the first record back with all the perforations, and then we'd put in the pedal and dynamics. This was before you had the dynamic machine.'

BARDEN: 'Now, when you were working in the pencil roll, which was just the hand punchings, could you do anything else except take out wrong notes? That is, would you get to dynamic markings at that point?'

VALERIO: 'No, because there were no dynamic markings. You're talking now about what happened with the dynamic [*spark chronograph*] machine?'

BARDEN: 'No, this is before.'

VALERIO: 'Before. Well, there were no dynamics.'

Similarly, Edgar Fairchild (the assumed and Anglicised name of Milton Suskind), Ampico's Editor-in-Chief from 1917 until 1925, as reported and paraphrased by Jim Elfers in the *Amica Bulletin* for September 1969, states that 'the recording mechanism, invented by Charles Stoddard, recorded the notes, the sustaining and una corda pedalling, and nothing else.'

Two styles of Ampico dynamic editing have been recorded in print, covering the periods from roughly 1918 to 1925, and from 1926 onwards. What is missing is any record of practices prior to 1918, when Theodore Henrion was Editor-in-Chief. Henrion died as a result of the New York flu epidemic, as did one of his counterparts at Aeolian, Felix Arndt, and the testimony of both men is sorely missed.

But we know from Charles Stoddard's patents that a system of dynamic recording had been designed way back in 1908, that it had been tried out in practice, and that it had been refined by late 1910. We know that its capacity for detail, albeit limited, was enough for the eight-step expression system that pre-dated the earliest Stoddard-Ampico. We know that Edgar Fairchild in 1918 drew pencil lines along the scores of pieces being recorded, to represent the general crescendos and diminuendos of an artist's playing, and that he then pencilled in accents as accurately as was possible in real time.

With all this in mind, the most likely scenario prior to 1918 is that the very earliest of Charles Stoddard's recordings did indeed measure dynamics automatically, though in a rudimentary way that divided the entire range into eight steps. With the introduction of the Stoddard-Ampico in 1912, with both fast and slow crescendos, it may well be that dynamic recording continued, but that the editing staff (Henrion, perhaps) devised a system of drawing a continuous line on the score in order to cope with the ebb and flow of crescendos, using the limited automatic dynamic information only as a guide to accents.

Whatever the case, it is clear that by 1918 the use of the early dynamic recorder had ceased, no doubt because Henrion, and thereafter Fairchild, were able to create rather more convincing musical portraits than the rough and ready musical photographs provided by Stoddard's early dynamic marking machine.



Two renowned Ampico editors - Edgar Fairchild and Marguerite Volavy

From 1918 until 1925 we have Fairchild's direct testimony, as passed on to us by Jim Elfers:

'The recording piano was a Chickering 6-foot grand with no name on the fallboard. The recording mechanism, invented by Charles Stoddard, recorded the notes, the sustaining and una corda pedalling, and nothing else. Wires led from the piano to the recording room. Cookie sat in an upholstered chair about eight feet behind and to the left of the pianist. On some such pretext as "timing the performance", or "killing time while they get the equipment ready", he would call for a complete run-through. During this performance the 'Cookie Chronograph' (Suskind himself) would 'record' the crescendo pattern by drawing a continuous line on the composition's music sheet - the bottom of the bass staff representing pianissimo; the top of the treble staff representing fortissimo. If the dynamics stayed at the same level for a while, Cookie would break the line to write notes describing the *effect* of the artist's playing - "crisp", "delicate", "legato", etc.

'During the actual recorded performance, Cookie would again follow on the music sheet, this time marking the accents above the treble staff. A short line directly above the note indicated a soft accent only slightly above the basic volume; a long line denoted a heavy accent. That was the 'Cookie Chronograph'.

'When Cookie began an editing job, he would try the roll on an upright

piano which had four buttons on a box in front of the keys, to operate the bass and treble crescendos. This was used only for experimentation, and did not add any dynamic coding to the roll. So important was the crescendo to Cookie's coding philosophy, he says he could achieve satisfactory effects on some compositions with the crescendos alone. In fact, the upright was used in some public performances, and the audience was unaware they weren't listening to a fully-coded roll.

'Cookie's editing philosophy was to recreate the general dynamics with what he called "crescendo" and "speed" (described in the manuals as "slow crescendo" and "fast crescendo"), and he used the "steps" ("intensities") *only* for accent. Usually his intensity perforations were accompanied by a cancel - the cancel to discontinue the previously-set intensity as the new one replaced it. Since he supervised his editors closely, one assumes the same philosophy was imposed on them. However, Angelico Valerio, who worked with Suskind and took over responsibility for the classical recordings after he left, has described to Associate Peter Brown a totally different philosophy: he started with the intensities and used the crescendos only for final modification. Presumably this was in conjunction with the spark chronograph, which was put into use after Suskind left Ampico.'

The Spark Chronograph – Advanced Dynamic Measurement

In early 1926, the absence through dismissal of Edgar Fairchild coincided more or less with the introduction of the new note dynamic recorder developed by Clarence Hickman. Inevitably a change in editing styles took place, mainly on account of the new technology, but also because new talents took their place in the driving seat.

The new recorder was known as the spark chronograph, a term that has passed down into player piano history. Larry Givens, who knew and interviewed Clarence Hickman personally, derived a description of the mechanism that cannot be bettered:

'In the Ampico dynamic recording system, each hammer's shank was fitted with a very light electric contactor in the form of an upright silver bar. This was connected to a bus bar and thus to electrical ground, through a small and very flexible copper wire. The contactor and the wire were both of sufficient lightness that the touch of the piano was not changed. An attachment was made for the action frame of the piano in such a manner that the silver contactor on each shank would successively touch two small silver wires as the hammer passed through its final travel toward the strings. The distance between the two wires was precisely adjusted with a micrometer. By measuring the time interval between the silver bar's contact with the first wire and its succeeding contact with the second wire,



The Ampico spark chronograph and note marking machines

the speed of the hammer could be precisely determined.

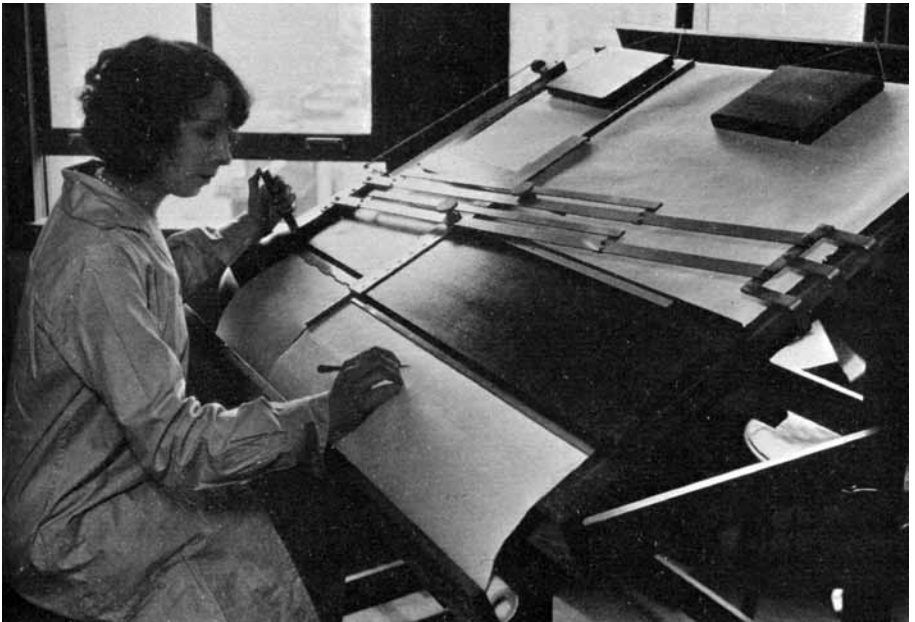
‘The chronograph contained a rotating drum, about three feet in length and six inches in diameter, which was driven by the shaft of an accurately-governed electric motor. Spiral knife edges were placed around the surface of this drum, at an angle of forty-five degrees from its axis of rotation. Directly beneath the drum and parallel with its axis, a number of segments were provided for distributing the time interval spark at right angles to the motion of the paper, which passed between the row of segments and the drum. These spark segments were of a length which was exactly equal to the *axial* distance between two successive knife edges on the rotating drum. By making the drum sufficiently wide and placing additional segments beneath it, any reasonable number of records could be obtained simultaneously.

‘For each measurement of a hammer’s velocity, a pair of segments were used. When a key was pressed and the silver contactor on the hammer shank touched the first of the two silver wires on the action frame, a spark jumped through the paper, between the first of the two segments and the knife edge which was above it. Then, as the hammer traveled onward and the contactor touched the second silver wire, a spark jumped between the second segment and the knife edge above it. However, during the short interval of time which had elapsed between the two sparks, the rotation of

the drum had caused the knife to move over the segments. The two spark holes would be at a distance on the paper which was *greater than the axial distance* between the knife edges on the drum. The closer this distance came to the actual distance between two knife edges, the shorter the time interval between the two sparks.

‘The dynamic recording paper was coated on one side with a waterproof glaze. When the sparks punctured the paper, tiny holes were made in the waterproof coating. Then the record was “developed” by applying a blue aniline dye to the coated side of the paper. The result was a large number of small coloured spots on the porous side of the paper. Each spot marked the beginning or end of a time measurement.’

The spark distances from the dynamic recorder were measured and transcribed as numerical values on to the original marked roll, up to a maximum of 120 dynamic levels, which Ampico coyly suggested was ten times the maximum number of differences in loudness discernible to the human ear. The musical editor then faced the enormous task of converting these levels to a constantly varying dynamic coding for each side of the piano’s pneumatic mechanism, which was apparently carried out with the aid of a chart or graph. It is noticeable that Ampico, although it spelled out the mechanical aspects of its techniques very carefully, tended to gloss over the musical work that was then carried out, perhaps conscious of the impression of automation and high fidelity that it was trying to create.



A member of the Ampico editing staff at work

In carrying out this work, Angelico Valerio is quoted above as having used the intensities first, and he confirms it to Nelson Barden in his own, rather confused, words:

BARDEN: 'With the old rolls, it looks as though the editors thought in terms of the crescendo mechanism first, and then the intensity steps second.'

VALERIO: 'No, it's the other way around.'

BARDEN: 'Did you always think first in terms of intensities, and then the crescendo to kind off polish it off?'

VALERIO: 'Yes, that's right. To smooth it up.'

BARDEN: 'Weren't most of the rolls before 1926 very crescendo oriented?'

VALERIO: 'Yes, they were. And some of them sounded atrocious too.'

It should be noted that the 1926 recording piano and spark chronograph predated the public launch of the Ampico "B" by three years. The more instantaneous response of the "B" to dynamic coding, coupled with the automatic recording of dynamics, may have helped later editors to achieve a more lifelike portrayal of the Ampico recording artists of the time, but at least for a while it was exclusively the owners of "A" pianos who benefitted from the new recording system.

In the early 1930s, the market for reproducing pianos and new rolls disappeared, and the radio and electrically amplified gramophone took over. Ampico merged, as the minority partner, with its long-term rival, the Aeolian Company, and the recording of rolls was essentially unified between the Ampico and Duo-Art. In the final stages of the Ampico, popular rolls were created by a former Duo-Art editor, Frank Milne, who was reputedly able to arrange both the notes and the dynamics by drawing them on to master rolls by hand. Since Milne's skill was originally with the Duo-Art, perhaps he had an assistant to cope with the very different Ampico coding, but such matters are now irretrievably lost in the mists of time.

Conclusion

Ampico dynamics can be very lifelike, and the pianos are certainly stunning to watch, because Charles Stoddard's various patents for note extensions mean that half the keys often seem to be going down simultaneously. The feeling of this writer is that Ampico rolls have the greatest effect on the human eyes – one can read in the faces of those listening the excitement generated not only by the original pianists, but also by the skilful roll editors. The Duo-Art appeals more to the intellect, and the Welte-Mignon, with its earlier generation of

pianists, to the heart. Ampico's advertising staff probably wrote much of their prose about dynamic recording mechanisms as an aid to effective advertising, but we certainly owe them a debt for being so thorough in their descriptions, which have ensured that the legacy of Charles Stoddard and Clarence Hickman will be remembered throughout the player piano world.

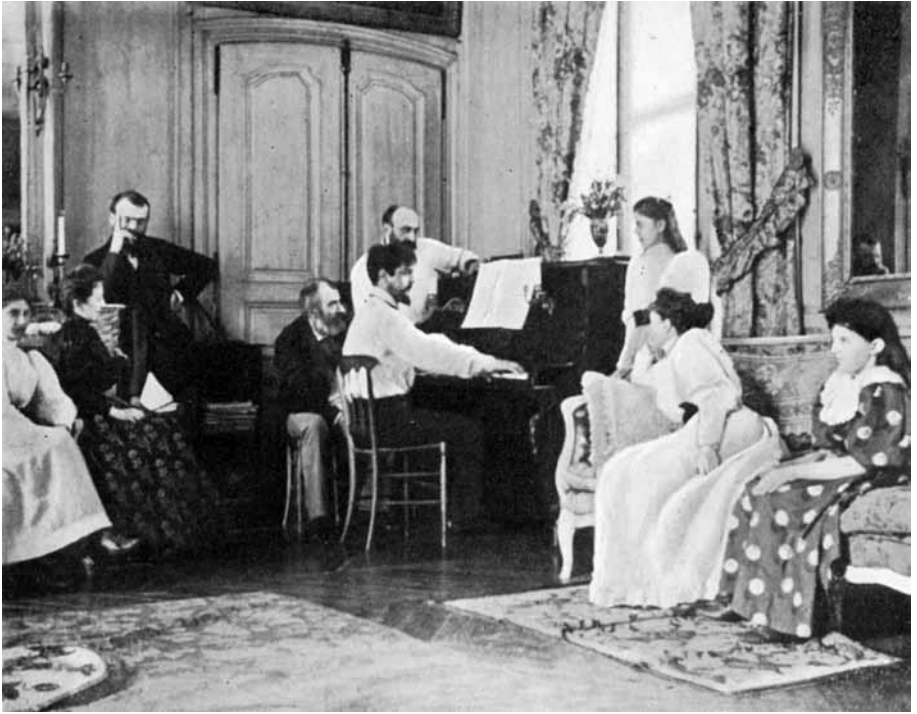
How Do You Like Your Debussy?*

Denis Hall

In the 150th anniversary year (2012) of the birth of Debussy, it is hardly surprising that there is considerable interest in the way the composer interpreted his own music. There are written descriptions, from quite precise comments on how he approached the piano keys and the sort of tone he could produce, to less helpful, general, admiring vague reports as to just how wonderful he was! More objectively, we can actually hear him playing, firstly accompanying Mary Garden in his *Ariettes* and an excerpt from *Pelléas et Mélisande* on G & T disc recordings made in 1904, and now available in the best ever transfers by Marston (Legendary Piano Recordings - 52054-2) in which the pitch unsteadiness which bedevilled these discs has been corrected. Then there are the somewhat problematic Welte-Mignon piano rolls which Debussy recorded in 1912, but which ought to give us a greater opportunity to assess his playing. I will return to these later.

Academic studies, analysing Debussy's playing have been undertaken including, for example, those by Roy Howat (*The Pianola Journal* no. 7 - 1994) and Cecilia Dunover ('Early Debussystes at the Piano', *Debussy in Performance*, 1999). One of Jan Holcman's essays ('Pianists: on and off the record', *Debussy on Disc*, 1912-1962) lists and comments on many recordings, but the only version of the Welte rolls available at that time for him to comment on was the one put out by Columbia (ML4291) in 1950. An aspect of Debussy interpretations which has not, as far as I am aware, been considered is how those pianists active at the turn of the twentieth century approached his music, which was new, and must have appeared very strange compared to anything which they had encountered up till then. For the purposes of this article, I am only considering recordings made before 1914, the year of the outbreak of the Great War, after which so much changed in the world. There are very few disc recordings up till then, but there does exist quite a collection of recordings on reproducing piano roll, most of which are unknown, largely due to the lack of awareness of the resource available in this format. It would be marvellous if some of the pianists who were close to Debussy, and to whom he dedicated his music, had left recordings, but for whatever reason, many did not, and there is no point in regretting this. There were, however, pianists around at that time who did not know the composer, but had a go at playing his music before a tradition of interpreting it had been established, and these are the ones who fascinate me, and who make up the core of this article. They had nothing to go on except the published scores, which they approached with the background of the nineteenth century romantic tradition, and there are more than a few surprises for the listener in 2012 to come to terms with!

* *With apologies to Clive Brown!*



Debussy at the Piano

The earliest source of reproducing piano rolls is the Welte-Mignon, introduced in 1904/5. The first pianist to essay a recording of a work by Debussy was Otto Neitzel (1852-1920), who played *Pagodes* (Welte 695) on his visit to the Welte studio in Leipzig on 24 October 1905. Neitzel composed (mostly operatic works), conducted, taught and toured as a concert pianist. His rolls suggest that his main repertoire consisted of the German/Austrian school - Bach, Beethoven and Schumann - and those rolls which I have heard indicate a pianist typical of many of his generation, to present-day ears rather weak in rhythm, and not averse to taking liberties with the score when it suited him.

Ernest Schelling (1876-1939), an American pianist, pupil and friend of Paderewski, also composed, conducted and had a considerable career as a concert pianist, but mainly in America. One of his compositions, which survives in magical recordings both on Victor disc (Victor 6700) and Duo-Art roll (Duo-Art 7215) by Paderewski, is his *Nocturne a Ragusa*. This wonderfully atmospheric piece describes the moonlight over Dubrovnik, the present-day name of Ragusa. Schelling's Welte session took place at Freiburg on 23 October 1907, when, on that day he played twelve works, including *La soirée dans Grenade* (Welte 1450) and the 'Toccata' from *Pour le piano* (Welte 1451).

On the strength of both his Welte and Duo-Art rolls, Schelling could be quite eccentric, even by the standards of those days. His playing does not come within miles of the subtlety which he displays in his writing of the *Nocturne*.

On 15 February 1906, the Countess Helena Morsztyn (1889-1954), a Leschetizky pupil, recorded a work described in the Welte catalogue as 'Prelude - A minor'; a good guess would be that it is the 'Prelude' from *Pour le piano* (Welte 1160). Her roll of Mendelssohn's *Variations Sérieuses* (Welte 1158) displays a fine technique coupled with an exciting temperament, and I could imagine this seventeen year old giving a highly virtuosic performance, but until a copy of the roll turns up, we shall just have to speculate.

Welte brought its recording piano to England in 1909, and during what must have been a frantic couple of weeks, recorded a remarkable 318 known titles. While a good number of these were of popular music, Welte still found time to capture some important artists who were in town. During that visit, five pianists made rolls of Debussy compositions.

The first was the English pianist, Herbert Fryer (1877-1957). He was born in London, and studied at the Royal Academy of Music, and also with Busoni in Weimar. He combined a successful career as a soloist with a professorship at the Royal Academy from around the end of the Great War until 1947. Fryer recorded extensively on roll for Welte, Hupfeld and Duo-Art, although only three pieces by Debussy - *The Little Shepherd* and *Serenade for the Doll* from 'Children's Corner' (Welte 1587) on 19 March, and, later, *Clair de lune* (Duo-Art 5611). His style of playing is typical of the best of the English School - elegant, unflamboyant, thoroughly musical, and with a freedom sadly lacking in most present-day players.

Then came Colin Taylor (born 1881), a name forgotten by even the most obsessive of historic piano enthusiasts. Taylor was born in Oxford, studied at the Royal College of Music, and was assistant music master at Eton College. After the Great War, he joined the staff of the South African College of Music, Cape Town. His only recorded legacy seems to be four rolls for Welte, recorded in London on 24 March, one of which is the second *Arabesque* (Welte 1705).

Of much greater importance are the five Debussy rolls of Richard Buhlig (1880-1952), an American born in Chicago, and a major pupil of Leschetizky. According to Harry Anderson (1910-1990), probably the most knowledgeable collector of piano recordings, no-one played such a wide repertoire as Buhlig in his time, encompassing all schools and periods, from the English virginalists to Bartok, Copland and Hindemith. Buhlig's recording session took place on 27 March, and on that day he included five of the six 'Images' (Welte 1765-1769). These rolls are very fine, even if not stylistically in tune with present day practice. I consider these rolls the best of these early performances which I have been able to hear.

Yolanda Mero (1887-1963), the Hungarian pianist of *Staccato Caprice* fame, recorded a single piece of Debussy - *Jardins sous la pluie* (Welte 1827) on 20 July. She recorded extensively on roll (Ampico, Angelus Artrio, Duo-Art and Welte), but made only one disc, Victor 1155, one side being the *Staccato Caprice* - obviously, and with justification, her party piece! Early on, she seems to have had a successful solo career, but probably semi-retired after marrying into the Steinway family.

The Italian pianist, Federico Bufaletti (1862-1936), was one of the older generation to tackle Debussy's music. Once again, as with many of those older artists who made piano rolls before the Great War, he has been completely forgotten, owing, I suspect, to the fact that he has left very little in the way of accessible recordings of his playing. For Welte, he recorded *Reverie* (Welte 1908) and *Reflets dans l'eau* (Welte 1909). He also recorded a handful of discs for Italian HMV during the early 1930s, including *Voiles* (S10455) and *Ondine* (S10465) from the two books of 'Preludes'. He had something of a solo career, touring in Europe before finally settling in Turin, where he was a professor at the Conservatoire from 1906 until 1932. Bufaletti's two Welte rolls are about the most extreme Debussy performances I have come across. In *Reverie*, he is wilful, but in *Reflets dans l'eau*, he takes the *Tempo Rubato* marking at the beginning as licence to ignore completely the note values, to the extent that, without a score to follow, one would have little grasp of what Debussy intended! This is the end of those recordings made in London in 1909.

In 1910, Welte took its recording piano to Russia, making rolls in Moscow and St Petersburg. During the two months' visit in January and February, they recorded about 165 known titles, and possibly a number more which have been lost. This bout of recording produced only two Debussy titles - the two *Arabesques* (Welte 1960 and 2007) played by Leff Pouishnoff (1891-1958). Pouishnoff settled in England after the Great War, and was greatly loved here. I have fond memories of seeing him play on television during the 1950s, and even at an early age, I appreciated the beauty of his playing.

Apart from Debussy's own rolls, the last of the Welte/Debussy recordings, made around 1911, is an accompaniment for the song *Les Cloches* (Welte 2488). The pianist is shown as Eugenie Adam. The first Welte-Mignon rolls, starting in 1904, are by a certain Eugenie Adam-Benard, who may have been the same artist as the one who recorded *Les Cloches*, although the fact that Welte kept the two names separate puts a question mark against this. Adam-Benard's maiden name was Rosenfeldt, and her husband, Alexander Adam, who died in 1917 in Freiburg, was shown as a 'Musical Director' in a Freiburg street directory. Eugenie Adam's recordings included some twenty accompaniment titles, all of substantial music, comprising some German Lieder and, very surprisingly, songs by the English composers, Stanford, Harty, Henschel, Quilter and Cowen.

The second piano roll company to consider is Hupfeld. It is not easy to determine the different types of rolls which Hupfeld issued in the early years of the twentieth century. The Dea, its first reproducing piano, was launched in 1907, but prior to that, it had been making 'hand-played' rolls for its 72-note foot-operated piano. Larry Sitsky's *The Classical Reproducing Piano Roll*, Greenwood Press, 1990, the most complete listing so far of classical reproducing piano rolls, falls down in its treatment of Hupfeld, listing *all* its rolls as 'Triphonola', which was Hupfeld's final reproducing piano, but which did not appear until the 1920s. Sitsky does note some rolls as having been issued for the Dea, and this seems to square with a 1913/14 Dea catalogue which I have seen. However, by that date, many Dea titles had already been deleted, and I am not aware of an earlier catalogue, or of a more complete numerical listing. Hupfeld divided this Dea catalogue into several sections, the main classical one starting with the number 25000. The highest number shown is 25478. The earlier part of this section (up to roll number 25313) has many missing numbers, and there is no way of knowing if there were any Debussy titles there. The other section which would include Debussy rolls is called 'Moderne und Salon-Musik', and lists only three titles.

Jardins sous la pluie (Dea 28414) is played by Theodor Szanto (1877-1934). Szanto studied at the Vienna Conservatory, the Budapest Academy of Music, and with Busoni in Berlin. Next comes Oswin Keller, who must hold something of a record for having made almost 350 rolls for Hupfeld, although many of these may be only hand-played, and not full reproducing ones. He also made many Empeco rolls, which, again, may not be for a reproducing piano. I regret I have no information about this system. Keller played the *Ballade* (Dea 28470), and, incidentally, *Golliwog's Cakewalk* and *La cathédrale engloutie* for Empeco. The third pianist is Walter Giesecking, who needs no introduction; his contribution is the second *Arabesque* (Dea 28484).

There is also the possibility that there may be Debussy rolls issued in Hupfeld's Animatic 'hand-played' 88-note series, and some early examples for the 73-note Phonoliszt expression piano. Without more definite information about Hupfeld recordings, I do not propose to delve too deeply into that topic. As noted before, Sitsky calls all Hupfeld rolls Triphonola, which is incorrect, but in his listing he includes some early names, and if these rolls really are for the Dea, it would be most interesting to hear them. For example, Bernhard Stavenhagen, the Liszt pupil, recorded *D'un cahier d'esquisses*, the Prelude from the *Suite Bergamasque* and *Poissons d'or*. Francis Planté, the veteran French pianist, played *Mouvement* and the 'Toccatà' from *Pour le piano*, and Nora Drewett, who appears later in the Duca section, *Danseuses de Delphes* and *La fille aux cheveux de lin*. And there is a curiosity - Gabriel Fauré playing his transcription of an excerpt from *Pelléas et Mélisande*.

The third early reproducing piano, the Philipps Duca, boasted quite a number of rolls of Debussy compositions in its catalogue. Commencing its activities in 1908, within two or three years it had recorded eleven Debussy titles. What is surprising is that all these, with one notable exception, were played by lesser known pianists, even though the Philipps catalogue included many of the most famous pianists of the day. 100 years on, there is no way of knowing whether it was the company which dictated what was recorded, or whether the choice was left to the artists.

The one great Duca artist who recorded a Debussy work is Edouard Risler (1873-1929). His only discs are a very poorly recorded series for Pathé, made in 1917, and as a result, his piano rolls are of particular value. Risler was born in Baden-Baden, and studied with Emile Descombes, a disciple of Chopin, and Louis Diémer, a noted exponent of the old French style of playing. He also worked with the Liszt pupils, Bernhard Stavenhagen and Eugen D'Albert. Risler's sole Debussy recording is *La soirée dans Grenade* (Duca 1053), although his most important roll must be that of the Sonata by Paul Dukas (Duca 1057), which was dedicated to him.

Nora Drewett (1882-1960) was born in England. She studied at the Paris Conservatoire, and with Bernhard Stavenhagen in Berlin, making her orchestral debut in Monte Carlo on 31 January 1904. In 1918 she married the violinist, Geza de Kresz, and gave duo and chamber music recitals with him throughout her career. In addition to this, she devoted time to teaching, and held posts at the Toronto Conservatory of Music, the Hamburg Conservatoire and the National Conservatoire in Budapest. Her sole Duca roll is of the first *Arabesque* (Duca 401).

Then comes the American pianist, Augusta Cottlow. She was something of a child prodigy, but survived the transition to adulthood, having a successful career both in America and Europe. Her early studies were in Chicago, but she later spent a year in Berlin with Busoni. Her roll recording activities comprise a large group for Duca and a few Duo-Arts dating from the mid-1920s. She was a particular advocate of the music of MacDowell, and there are ten Duca rolls of his music. The two Debussy pieces she recorded are the 'Prelude' from *Pour le piano* (Duca 559) and *Clair de lune* (Duca 560).

Another forgotten pianist who comes within this survey is August Schmid-Lindner (1870-1959), who recorded three of the Book One 'Preludes' - *Ce qu'a vu le vent d'ouest* (Duca 890), *La fille aux cheveux de lin* (Duca 888) and *La danse de Puck* (Duca 889). As a child, Schmid-Lindner played the organ and took lessons from Josef Rheinberger, who passed him on to the piano teacher, Hans Bussmayer. He completed his piano studies with the Liszt pupil, Sophie Menter, and was known as a concert pianist, chamber musician and conductor, as well as an outstanding music teacher. He made his career in Germany, remaining there throughout the period of the German Reich.

Bruno Hinze Reinhold was born in 1877 in Danzig, Germany. His career combined a number of teaching posts with that of a concert pianist, and he was particularly noted for his interpretations of Liszt. His piano rolls for Duca include eight of the *Années de Pèlerinage*. His contribution to the Debussy collection is *Jardins sous la pluie*, (Duca 865).

The French pianist, Germaine Schnitzer (1889-1982), while still in her teens, made a considerable number of rolls for Welte, Duca and Hupfeld. She studied with Raoul Pugno, and later with Emil Sauer. After 1915 she made her home in New York. Of particular interest here is her Duca roll of the 'Sarabande' from *Pour le piano* (Duca 986). Her Welte roll of Chopin's Impromptu op. 51 (Welte 902) suggests that she absorbed much of Pugno's style of playing - rushed phrasing, with her fingers almost running away with themselves from time to time, but most attractive playing nevertheless. Pugno's playing of the French repertoire is of great beauty, and one could imagine that Germaine Schnitzer's playing of the 'Sarabande' would be something special.

Miss Lonny Epstein (1885-1965) studied with Busoni and Max Reger, and was a pioneer in playing the fortepiano. Her career was centred on the Juilliard School in New York, where she was an assistant to Carl Friedberg. She recorded the second *Arabesque* (Duca 672).

Fritz Malata (1882-1949) was born in Vienna and, unusually, studied first as an engineer, only changing to music at the age of thirty. He won a double prize after his studies at the Academy in Cologne, and then rose to succeed Alfred Hoehn at Dr Hoch's Conservatoire in Frankfurt. His Debussy roll is of *Hommage à Rameau* (Duca 1724).

Finally, Germaine Arnaud (1892-1958), who played *Clair de lune* (Duca 736), turns out to be the much-loved actress, Yvonne Arnaud! She was educated in Paris and studied music at the Paris Conservatoire. Fêted as a child prodigy, she spent several years touring in Europe and America, during which time she performed with many of the leading orchestras under such conductors as Gustav Mahler, Willem Mengelberg and Edouard Colonne. In 1911, she decided to try acting in musical comedy, with remarkable success, and from then on, she abandoned playing the piano professionally, and pursued her acting career for the rest of her life. Some of you with (fairly) long memories will remember her as the soloist in the *Piano Concerto To End All Piano Concertos* in the Hoffnung Music Festival concert in 1956!

This brings us to Debussy's own piano rolls for Welte, which he made in 1912, when Welte took its recording piano to Paris. These rolls have been the subject of considerable interest in recent years, mainly from the aspect of textual differences from the usual editions of the published scores. While these annotations are important, there is much, in addition, in the rolls which can (and in some cases cannot) be discovered about Debussy's style of playing.

Before discussing Debussy's playing, it will be useful to consider briefly what Welte claimed in relation to recording its rolls. It had been possible since the 1880s to measure the pitches and note lengths and placings of a keyboard player, and to record them on a paper roll, and Welte almost certainly used this method in the manufacture of its orchestrion rolls. In addition, Welte also claimed for its Welte-Mignon piano to be able to record the pianist's touch, or dynamics, and as far as we know, this was done at the piano keys, using a pneumatic and electrical mechanism.

Measuring key strokes has subsequently been demonstrated as not being a very accurate or consistent method of recording dynamics, the first person to have been aware of this being Clarence Hickman, working for Ampico in the late 1920s, and more recently the likes of Wayne Stahnke and Richard Shepherd, who have all preferred to measure the speed of the piano hammers just before they hit the strings. Of course, Stahnke and Shepherd require a much greater degree of accuracy than was necessary in the days of the Welte-Mignon.

Welte always kept its method of recording secret, and very little in the way of precise evidence has come down to us. It is therefore hardly surprising that the subject has intrigued more than a few people over the years who have not been slow in putting forward their theories. However, without much more solid, first-hand evidence, the best anyone today can lay claim to is a means by which Welte could have obtained the necessary data. But given only the technology available in the early years of the twentieth century, it is remarkable how well the personalities of many of the greatest artists of that time have been captured by Welte.

An important feature of piano playing is the physical way in which a pianist actually plays the notes. Many of the professional pianists who made rolls would have employed a very positive approach, giving a clean down and up movement to the keys, which would mirror the speed with which the hammer hit the string, and thereby the loudness, and also the exact commencement and end of the notes. Debussy, on the other hand, eye witnesses tell us, tended to play 'into the keys', by which I deduce they mean he held his fingers close to the keys, or even rested them there, and pressed rather than struck them. Playing in this way, he would have been able to control the key speed and timing very accurately, and, if he wanted to, alter them during the stroke to achieve exactly the effect he desired. Playing in this way would not necessarily give Welte an accurate reading from which to prepare the rolls. While it would not seriously affect the overall result, it could produce an untidiness to the playing which would not have been a true representation of Debussy's playing.

The pianist's use of the sustaining and soft (key shift) pedals were recorded by Welte by means of electrical contacts in the recording piano's

trapwork, and it is the combination of the use of the pedals with the pianist's touch which is responsible for the individuality of an artist. It seems to me that the soft pedal as reproduced by Welte rolls is convincing, and very likely accurate, but not infrequently I have doubts about the sustaining pedal. Time and again, it is held down through changes in harmony in a way which no even half-decent amateur player would countenance. There is a reason for this which can be quite easily explained. In order to record pedal movements, electrical contacts would have been fixed in the trapwork, and so as not to miss fast, short pedalling effects, the contacts would have had to be near the beginning of the travel. The weakness in this arrangement seems to be that if the pianist made very quick pedal changes, and barely allowed the pedal to come back to its rest position, Welte's mechanism sometimes failed to capture the change, and the dampers would not be allowed to return to the strings and damp them. What is remarkable is that these apparent errors during the recording were not noticed and corrected during the preparation of the rolls. Welte, as we know, always claimed that once a pianist had played, there was no further input required of him, and the technicians, who may not have been skilled musicians, must have assumed that the sustaining pedal as recorded was correct. This problem mars the rolls of a number of Welte artists, including Debussy. According to his contemporaries, Debussy must have been a master of the subtle use of the pedal, and his pedalling on his disc recordings is faultless. Sadly, this is not borne out by his Welte rolls.

Finally, there is the inaccuracy of Welte's roll copying process. The production of commercial copies of their rolls was achieved by their machine somehow 'reading' a very accurate 'second master' roll, and from that reading, punching multiple copies. During the first few years of Welte's operations, the copies could be quite inaccurate, and while things did improve over the years, one could never be sure that a production roll would be as good as the second master. So, I think it is fair to say that what one hears of, say, *Minstrels* (Welte 2739) or *Golliwog's Cake Walk* (Welte 2733) are not rhythmically true representations of Debussy's playing. Since the advent of computer technology, copies of rolls every bit as good as the rolls from which they are made are regularly achieved, but one still needs good original copies.

I have taken the trouble to discuss the processes involved in the making of Welte rolls in order to explain why I think that Debussy's rolls do not really do him justice. These rolls are very important, but they are a mixed bunch. Nevertheless, apart from the faint discs of 1904, they are all the direct evidence of the playing of one of the most important composer/pianists that we have. Some rolls are obviously failures, but others, such as *La soirée dans Grenade* (Welte 2735) and *La plus que lente*, (Welte 2736), and maybe even *Danseuses de Delphes* and *La cathédrale engloutie* (Welte 2738) allow us to peer into Debussy's magical world of half-tones, and subtle colourings of his unique playing.

Although this article concentrates on piano roll recordings, it may not be out of place to mention the few disc recordings by the same generation of pianists as those who made rolls. Compared to the rolls, the discs are a pretty disappointing bunch, and were all recorded later than the rolls I have included. By far the most important, of course, are the four (possibly six) sides by Debussy himself, accompanying the soprano, Mary Garden. Next in order of seniority comes the Viennese, Alfred Grünfeld, (1852-1924), playing a very stylish *Golliwog's Cake Walk*. Paderewski (1860-1941) recorded *Reflets dans l'eau* three times, twice for the gramophone, and once for Duo-Art. It has been reported that Debussy heard him play this and said that, although Paderewski's interpretation was not what he had in mind, he, Paderewski, should not change anything. Paderewski also recorded four of the Book One 'Preludes' for Victor in 1930. Moritz Rosenthal's (1862-1946) sole Debussy performance is *Reflets dans l'eau*, Eugen d'Albert (1864-1932) played one piece, *Jardins sous la pluie*, and finally Ricardo Viñes (1874-1943), a long standing friend of the composer, made two sides among his small recorded legacy - *La soirée dans Grenade* and *Poissons d'or*.

This survey only scratches the surface of what could be an illuminating study of performances which might, with some justification, be described as being from another world. As one might have expected, there are Liszt pupils, Leschetizky pupils, and several who spent time with Busoni. French pianists do not feature as extensively as one might have thought, but maybe not too surprisingly as the roll companies were all German. Regrettably, only a few of the rolls described in this article can be heard, which would prevent such a project being undertaken at present. Many of the Welte-Mignon rolls are once again obtainable, thanks largely to the efforts of Thomas Jansen (Musikwerkstatt Monschau), but there are still important gaps. The situation is much more critical with the other two early reproducing pianos, the Hupfeld Dea and the Philipps Duca, where not only are the rolls extremely rare, but the instruments on which to play them have only survived in working order in one or two cases. But hopefully, one day the situation will improve, and another interesting collection of historic performances will be listened to, studied, and enjoyed again.

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Introduction

J.H. Morrison's article on the manufacture of one's own music rolls appeared over three issues of the Piano-Player Review, from Vol. 1, no. 1, to Vol. 1, no. 3, published between September and December 1912, and so roughly one hundred years ago, as this issue of the Pianola Journal was being constructed.

While the PPR built up a loyal readership around the United Kingdom as a whole, it was organised and edited by a group of musical writers and pianola enthusiasts based in Birmingham, notably Harry Ellingham, but also Sydney Grew and Ernest Newman. Few copies have survived, though the Birmingham Central Library has a complete bound set, housed with its local history department, and therefore apparently immune from any imminent budget cuts. The British Library also has an incomplete set, as does the Pianola Institute, which owns the copies that once belonged to Compton Mackenzie, founder and editor of Gramophone.

Little is known of J.H. Morrison, unless someone would care to enlighten us, but he was clearly very experienced in the transcribing and cutting of music rolls, and his evident thoroughness reminds us all of the deep enthusiasm that the player piano was able to inspire when it was new.

On Making One's Own Music Rolls

J.H. Morrison

I.

Writers are innumerable, but it is still possible for men to meet and discuss books without suspecting one another of authorship. A man may even be able to talk about pictures, with knowledge and wit; it will surprise no one to find that he is not a painter. But it almost inevitably makes matter for remark when an intelligent interest in music is met with in somebody who cannot play an instrument of any sort, nor even sing.

No doubt this is to be accounted for in part by the nature of music itself. A non-performing amateur of music is like a blind man with his books - you would scarcely expect to find him well and widely read. Perhaps, too, the prevalence of cant and affectation, which are the chief factors in most talk about music, may have led the plain-going person to a dim judgment that it is not safe to take anyone seriously on this subject, unless he can "show value", by a palpable display of practical skill. But really there is no more connection in the one case than in the others between knowledge and appreciation of the art and practical production or reproduction in it; and the piano-player will go far to drive this home. For with that there is no limit to a man's power of knowing and understanding music, except the limits of his own nature and of his interest in the subject. Where there is no will there is no way; but even as to that, and in spite of the element of nonsense in the commercial

advertisements, there is, no doubt, a special attraction and stimulus in managing a performance for oneself, which helps to keep alive and develop an interest in music for its own sake.

But here again there is a canting opinion in store for the unwary. To say that "the song is to the singer, and comes back most to him," is about as true as to say that the table is for the carpenter. Music is made to be heard, as certainly as pictures are painted to be seen, not copied; and though it is the peculiarity of a work of music that it must be reproduced every time it is to be heard, there is not the smallest reason to believe that the performer finds in it any unique appeal, which is denied to mere auditors of spirit and intelligence. And whether the song, or the table, "comes back most" to the singer, or the carpenter, will depend upon the singer's good memory, or the carpenter's bad workmanship. There is no evidence of any mystical relation between the player and the music he plays.

With a piano-player there is no limit to a man's opportunities of playing music but obviously they are limited, after all, by the variety of music-rolls extant. At present the full-scale instruments, in particular, are restricted on this account, and for some time to come this handicap must tell very considerably against their value to their users. For 65-note instruments the makers have done very well by comparison; probably they can afford to be liberal. But it is not to be expected that the manufacturer of rolls will ever equal or keep pace with the publication of printed scores; and where a selection has to be made the commercial tendency is to impose too many catchpenny songs and dances of the moment, to be imposed upon too often by pretentious dulness, like Macdowell's sonatas, and to neglect too long the more distinguished, but less aggressive work, such as Moussorgski's songs (of which only one, I think, has been "cut" as a music roll). The good music of the past is fairly well represented. But most people with tastes of their own will search the catalogues in vain for many things that they know, and more, that they would like to hear. As far as I know, one movement only of all Mozart's string quartets has been transcribed and published for the piano-player - the andante of the C major. I have transcribed for my own use about a dozen other movements from the ten great quartets. Again, all Beethoven's pianoforte sonatas are available; but the delightful Bagatelles (op. 119 and 126) were not added until the spring of this year, and many of Mozart's and Haydn's best works for piano are still wanting. For some time, as far as I know, I possessed the only music-roll versions of Byrde, the composer for harpsichord; and though his "Pavana, the Earle of Salisbury," has now been translated by the Orchestrelle Co., there is much more of him and of his contemporary, Purcell, that I have found well worth the labour of transcribing for myself. One more instance. It is not well enough known that Mozart wrote these fantasies for the mechanism of a musical clock - some eighteenth-

century ancestor of the piano-player. What could be more appropriate for translation to a music-roll? - especially as they are fine things in themselves, all three. Yet only one, which is fairly well known in the form of a transcription for organ, can be bought as a music-roll. I have made rolls of the two others, and play them often; one a most engaging andante "for a cylinder in a small barrel-organ;" the other three movements, first a splendid fugue, full of tune, then a slow movement of the best, and a most exciting finish.

It is true that the makers are willing to consider suggestions; and at a price they will make a roll to order from any printed score. But the suggestions are not always taken, and the price they charge for a roll ordered specially is high, about fifteen times the price of an ordinary copy of the same size. (The ordinary prices, it may be noted, are not low, and must involve a proportion of profit.) I have transcribed and cut for myself between fifty and sixty separate pieces or movements, none of them to be had as yet from the music-roll manufacturing companies. If they had been made to my order, I should have had to pay, as far as I can estimate on their published terms, more than £200 for them. As I have made them, they have cost rather less than 50s., including the price of the few simple tools required. Certainly the expenditure of time and attention has been considerable - more length than many games of patience; but the process is not less absorbing, and the finished rolls remain, and in the playing they are not at all inferior to the machine-made sort.

In a subsequent paper I will describe the methods which I have worked out for making music-rolls by hand, and also for "Themodising" the ordinary purchaseable sort, as well as those of one's own making.

II.

"Thou hast most traitorously corrupted the youth of the Realm... and whereas, before, our fore-fathers had no other books but the score and the tally, thou hast caused printing to be used; and, contrary to the King, his Crown and Dignity, thou hast built a paper-mill."

The musical use of perforated rolls in place of printed scores has been denounced, in words as solemn as Jack Cade's, from several quarters, interested and disinterested, but not by paper manufacturers. Paper-mills have not suffered by the innovation. The printed score of Beethoven's pianoforte sonatas can be had in three volumes - even in one volume - of a few hundred pages demy quarto. As perforated for the machine-piano, they occupy 79 rolls, with something like a mile of paper 11¹/₂ in. wide. But luckily paper is cheap.

On the whole I have found it better to arrange with one of the music-roll selling firms to supply the blank paper, of a suitable sort, cut to the proper width. They will do this at a small charge - a hundred yards for a few shillings,

and, if desired, they will also supply the core and mountings of the roll, which are, however, quite easy to make for oneself.

The length of a roll will depend (1) on the number of bars in the score of the piece you wish to transcribe, and (2) on the number of inches you decide to assign to a bar; The ordinary piano-player will not take a roll much longer than 80 feet.*

In transcribing from a score to a roll you are translating the arithmetical or time value of the printed notes into perforations of various lengths, and the first charge must be to keep the proportion strictly. If you give an inch to a quaver, you must give half-an-inch to a semi-quaver, and two inches to a crotchet; and in that case the total length of the bar will be six inches in $\frac{6}{8}$ or $\frac{3}{4}$ time, eight inches in $\frac{4}{4}$ or $\frac{8}{8}$ time, and so on.

That is simple arithmetic. The difficulty is, in the first place, to decide the length of the quaver, or whatever note you take as the unit - the standard of the proportion. The length will vary in different movements, according to the speed of the music, and according to the way it is scored (the metronome value of the notes). As to the speed, it is worth noting that the mechanism answers to the tempo lever most smoothly when this motor is working at half-speed, i.e., at about "60" on the tempo scale. For that reason it is a good general rule in cutting the roll to arrange that "60" shall be the normal pace of the motor, whatever the speed of the music. This can be secured by giving more inches to the bar in slow movements, and fewer in quick movements. With a metronome (which costs about 8/-) this principle can be applied very easily and accurately (the formula is: 100 beats to an inch). But some scores are silent about their metronome index.

Another plan, rougher, but still fairly serviceable, for deciding the length of the bar, is to look through the score of the piece to be transcribed, and see what is the shortest note in it - it may be the eighth or even the tenth part of a quaver. The length of the bar must be such as to allow not less than a quarter-of-an-inch to the shortest note whatever it may be. If it is intended to accent the roll automatically, the shortest note had better not be less than half-an-inch long.

Once the bar-length is fixed, the length of the whole roll is simply the bar-length multiplied by the number of bars in the piece (including rests, if any) plus an extra twelve inches or so at beginning and end. Of course it is

*This is not enough. The size of the roll is limited by the space available for it on each side of the tracker-bar, and this space is so narrow that in some cases the music-roll makers have divided a long movement between two rolls (e.g., the first movement of Beethoven's 'cello sonata in F, the piano part; and the first movement of his fifth concerto), and have separated movements that should be continual, like the scherzos and finale of Beethoven's fifth and seventh symphonies. There seems no mechanical reason why, in the construction of the instrument, this space might not be made an inch or so larger, and then it could take as a whole any composition this side of a tone-poem.'

possible to arrange two or more shorter pieces on the same roll; but this is not so good, because at times you will want to play the second piece alone, and it is tedious to yourself, and disrespectful to the first piece, to pedal your way through it perfunctorily.*

I have given much space to describing the methods of fixing the bar, because that is the only point in the process which calls for any skill of judgment.# The rest of the undertaking is almost entirely mechanical, and one can only see to it that one's work is not inferior to the machine's.

Cut a slip of paper a little longer than the bar-length which you have decided upon, and mark it in pencil along one edge with the main divisions of the bar, to scale. Insert the blank roll in the instrument and pedal it on for about a foot's length from the beginning. Now look closely at the roll where it covers the brass tracker-bar. The paper used by different firms varies in thickness, but it always is more or less transparent. You will be able to make out the line of slots in the tracker-bar, under the paper. The thirty-third slot from the treble end in 65-note machines (not counting the accent slots, if any) is F, the lowest space in the treble clef. Other notes above and below can be reckoned by counting to right and left (not forgetting the semi-tones). A pencil-mark over each of the slots corresponding to the notes of the opening chord in your piece will fix their position on the roll relative to one another, and the line of the tracker-bar serves to keep them straight.##

When you have transcribed the opening note, or chord, lay the paper scale along the roll, and mark out on the roll itself the main divisions of the first bar. Suppose your piece is in $\frac{2}{4}$ time, and that you have decided on a ratio of an inch to a crotchet: two inches to a bar: and have marked your paper scale with four half-inch divisions for the four quavers. Now, having indicated the places where the notes begin, you will pedal as far as the next note in the bar, a quaver-length (let us suppose), that is half-an-inch, further on. Transcribe any notes that occur at this interval in the score and so repeat the process through the bar, and from bar to bar, until the close of the piece; taking care, as you go, to mark where every note ends as well as where it begins.

It is better, except in legato passages, to make the notes rather short of their full length - e.g., three-quarters-of-an-inch is enough for an inch note and so on. Obviously this abbreviation is necessary where a note occurs twice in succession.

*Some instruments now have a device for passing silently over any part of a roll at will.

Many machine-cut rolls have very ill-chosen bar-lengths.

If the chord is an arpeggio the line should not be straight, but each note should begin a little further back than the next from bass to treble.

Some firms make a practice of treating every chord in this fashion, deliberately copying the worst vice of the worst pianists. They even advertise it, as "softly breaking the chords to the ear."

The legato “slur” in the score is translated by prolonging every “slurred” note about an eighth-of-an-inch beyond its full length, so that it just overlaps the note that follows next. Staccato notes should be marked short by half their length, and pizzicato (e.g., in transcription of a string quartet) by two-thirds or more.

This marking out, from note to note, and bar to bar, is the bulk of the business, and takes much time; but with practice one may come to transcribe at the rate of a bar every two or three minutes.

The work of “cutting” - perforating - is even simpler, quicker, and duller. Two or three tools are necessary. These are, first, a couple of small steel punches; one circular, $\frac{1}{16}$ th-of-an-inch in diameter; the other (to save time in cutting the longer notes) oblong, $\frac{1}{16}$ th x $\frac{1}{2}$ inch.* A toolmaker will make these to order for about 1/- a piece. The only other necessary apparatus is a block of lead, about a foot square and half-an-inch thick, which can be bought by weight from a plumber’s for two or three shillings.

In cutting, you lay the roll across the lead and punch out your pencilled notes into perforations by light strokes of a hammer (the lighter the hammer the less tiring for your hand). After being cut, the perforations should be smoothed down with a cloth, in case the edges may have been turned up by the punch. Mistakes can be corrected by sticking-plaster over the holes, but within limits, as the gum tends to warp the paper of the roll. After much punching, the surface of the lead block will become rough, but it can be flattened by laying it on stone or concrete and beating it with a heavy hammer. So your tools will never wear out.

All this is primitive and slow, no doubt; but you are sustained by the prospect of playing the roll the first of its kind immediately after the cutting is done. It may be remarked that mistakes and omissions are not unknown in machine-cut rolls from the best companies. They can, of course, be set right by hand, in the manner now fully described.

Accenting individual notes by side-perforations is a process of musical interest in itself, and far quicker and less laborious than making a roll from the beginning. In my next paper I will give an account of the way to accent a roll by hand. I think this may be of some special interest to owners of instruments containing the accent device (under whatever name), not only because machine-made accented rolls are comparatively few in number and expensive to buy, but because it is possible to accent a roll by hand more thoroughly and effectively than by machinery - at any rate, as accented rolls are made at present.

* $\frac{1}{18}$ th inch is the width of a slot in 65-note instruments. The gauge of full-scale instruments is narrower.

III.

Before trying one's hand on the practical work of accenting by means of side perforations, it is worth while to understand the principle of the accent device, which is quite a simple addition to the levers controlling the force of the hitting - the quantity of the tone - in bass or treble.

The levers* control valves which divert the suction of the main bellows from larger to smaller air passages; and the accenting device merely secures a momentary reversion - in the treble division or the bass - to the full draught#. This reversion occurs almost simultaneously with the transit of a perforation across one of the accenting slots at the end of the tracker bar, because the air admitted from the tracker bar through a tube opens the sliding-valve which the action of the bass or treble lever has closed, and the increased striking force takes effect upon any notes which are struck at that moment, i.e., whose perforations commence to pass over their slots within $\frac{1}{32}$ of an inch on either side of the accenting a perforation.

For this reason, where two or more notes in the same division, treble or bass, occur together, and would be played simultaneously by a pianist, it is necessary, if you wish to accent one of these above the rest, to separate it from them by making it commence not less than $\frac{1}{32}$ of an inch behind the line of the others, in order that the themodist may take effect upon it, without affecting them. This result may be secured either by holding back the note to be accented by means of a slip of gummed paper across the beginning of the perforation, or by cutting the other notes forward. The latter method is, I think, the better, because it is quicker and involves no gumming of the roll, while as to the effect upon the time of the music, it is, after all, the accented note rather than the others to which attention is called, and which, therefore, should be in strict time if a choice has to be made.

In the case of chords the use of the accenting device is a *pis aller*. Where the important note stands alone in its register and can be accented by means of the bass or treble lever only, this is much to be preferred. The two great virtues of the piano-player are that it does not drop notes, and does play its chords crisply, with no unnecessary arpeggios; and it cannot be denied that the accenting device derogates from this latter quality in a manner that is nearly always audible, and where audible, always offensive to a good ear. For this reason it is better to abstain from accenting in cases where the failure to accent is not very noticeable, e.g., in octave passages it is usually best to leave the lower note level with the upper, even where they both fall within the same

*In some of the cheaper players, the levers simply lower a couple of pieces of felt between the hammers and the strings of the piano. This is, of course, quite a different principle; and not so good.

Mr. Morrison's technical explanation of the working of the accenting device is not fully accurate. The side perforations do not actually open the sliding valves operated by the levers, but the effect, however, is the same - ED.

register and will be accented equally, and there are other passages to which it is better to discard accent and trust to skilful pedalling to bring out the contrast. But this is a matter which a player will be able to decide for himself in particular cases after a little experience. In this connexion, it is worth noting that the working of the accenting device is most satisfactory, and the arpeggio effect least perceptible when the player is working at high pressure; no doubt because the difference between the full and reduced draughts is greatest under that condition. It is almost impossible to get a good result from an accented chord played pianissimo.*

It should be noted also that a roll, or part of a roll in which a number of short perforations occur cannot be accented as satisfactorily, as where the intervals between the accented notes are longer. In a series of short perforations there is a tendency for the effect of the accent to be carried on to the unaccented notes that follow next. I do not know what causes this. It may be that the sliding-valve which has been opened by the air from the accenting slot is prevented from closing by the draught upon the suction-bellows from the perforations which come closely after. Or perhaps the air that enters through the accenting slot has not had time to exhaust itself and so continues to keep the valve more or less open[#]. Whatever the cause may be, I have observed the effect only too often, and in making rolls for oneself it is worth while, as I mentioned in previous papers, to avoid this difficulty altogether by arranging that the shortest note shall have a perforation not less than half-an-inch long.

Machine-made accented rolls are open to criticism on more than one account. Perhaps the most conspicuous point about them is the absence of accenting. Not only are long sections marked "Normal," and left altogether untouched, but even in the remaining sections there is, as a rule, no attempt to accent the leading note of a chord; and mistakes and omissions in the accenting are not at all uncommon. It is not fair to attribute these deficiencies to the piano-player, which no doubt faithfully reproduces the handiwork of the accenters. But another fault is probably due, at least indirectly, to the machinery. The divergence between accented notes and others in the same line is made a trifle longer than is necessary, no doubt in order to be on the safe side. In accenting by hand the margin can be cut fine, because a mistake can always be corrected. These are the points - more general use of the accenting devices, especially in chords and closer cutting to minimise the arpeggio effect - in which the player who accents his rolls for himself will score over the mere purchaser, and there is beside the very considerable

*With the latest instruments this is now possible. See next months "Evolution of the Piano-Player."
- ED.

[#] If the latter explanation is correct, the indication might be to use a still smaller punch for accented holes, to reduce the intake of air.

advantage of being able to adapt any ordinary rolls to the use of the device. How considerable, may be judged from a single instance, of Beethoven's thirty-two pianoforte sonatas, only six have been mechanically accented, and the manufacturers seem to be in no hurry to increase the proportion. In accenting by hand there is the same division of marking and cutting which I described in my last paper. The marking consists in putting a pencil dot on the roll over the accenting slot in bass or treble, exactly in a line with the commencement of the perforated note which you wish to accent; and in making some sign against any other notes in the same line - and the same register - which must be cut forward to take them out of range of the side perforation. In 65-note instruments, thirty-two notes are controlled by the bass lever and thirty-three by the treble, and so are within the scope of the accent slots to left and right respectively. In the work of cutting, an extra punch of $\frac{1}{32}$ inch diameter will be required for the accent perforations, and in certain cases, mentioned above, a punch with an aperture of $\frac{1}{64}$ inch may be useful. There are many manufactured rolls described as "accompaniments only" - rather an unfair description in the case of the piano part of a violin sonata, for instance. It is quite easy, if you think it worth while, to insert in these rolls, and accent, the part of the other instrument; and the result is not bad fun in the absence of a violin.

Review:

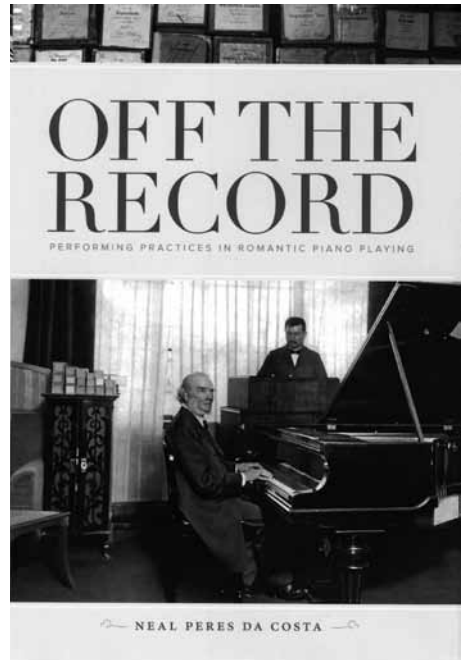
Off the Record: Performing Practices in Romantic Piano Playing
Chiara Bertoglio

Neal Peres Da Costa's new book, *Off the Record: Performing Practices in Romantic Piano Playing* (New York, Oxford University Press, 2012) is an extremely welcome addition to the bookshelves of every performing musician, teacher, musicologist and music professional. It is a thorough investigation of how the careful study and analysis of early audio documents (both recordings and piano rolls) can contribute to the knowledge and appreciation of performance practices dating back to the nineteenth century – and sometimes even earlier.

With painstaking accuracy, Da Costa analyses an impressive number of audio documents – without limiting himself to the field

of piano performance, although the conspicuous quantity of piano rolls somehow conditions his field of study. In my opinion, however, the most interesting aspect of his work is represented by the author's continuous effort to compare the aural evidence of early recordings with the written statements of performance treatises, methods and pedagogical witnesses covering a very long time-span.

Indeed, many of the most valuable and influential studies on performance practice published during the twentieth century focus almost exclusively on the pre-1800 era: a rather natural tendency, since it was precisely in those years that music notation gradually shifted from the so-called 'work-notation' to the later effort to notate the work's performance (Harnoncourt). Although the investigation of 'how' the pre-1800 works could have been performed at the time of their composition was – and obviously still is – a most laudable effort, its side effect has been to neglect the study of the following century's performance practices. And this is all the more surprising since the proportional abundance of documents would have made such a study an extremely promising one. Moreover, and rather paradoxically, the very same authenticist approach which promoted a historically informed



performance of pre-1800 works, and which was in some ways linked with the modernist trend, was partially responsible for a very common delusion, i.e. that ‘sentimental’ performances such as those of many major figures of the late nineteenth and early twentieth-century were inaccurate, exaggeratedly Romantic, and substantially inauthentic.

Indeed, the very ‘performance-notation’ of many works written during the nineteenth century seems to suggest that the effort to ‘read between the lines’ (which the pre-1800 works evidently ask for) is here superfluous: apparently, a score by Brahms, Liszt or Schumann offers so many indications to the performer that one has simply to execute them faithfully. Fortunately, in the recent years the deceptively calm water of Romantic performance practice has been questioned by the works of Clive Brown, Kenneth Hamilton, Maurice Hinson and David Milsom, to name but a few.

Da Costa’s book will therefore mercilessly shake many dogmas of music teaching – and therefore many cherished beliefs of most performers, especially as concerns the treatment of tempo and rhythmic issues, such as metrical rubato, hand dislocation and the practice of arpeggiated chords. His comparisons between written and aural sources demonstrate beyond all doubts that Boorman’s scepticism was well founded, when he stated that ‘the written or printed musical text is an object to be mistrusted at every turn. It elicits blind trust exactly when belief should be suspended, and is subjected to questioning at many points where investigation is needless, even valueless’¹. Even those performing musicians who cared to establish their performance on supposedly ‘authentic’ grounds, such as the statements of celebrated composers, teachers or performers of the nineteenth century, will have to revise many of their convictions: Da Costa’s book lists a wealth of cases in which to read a performer’s statement (or even to study the instructive edition he prepared) will be extremely misleading and will give a completely wrong impression about his own actual performance style or that of his musical context.

Off the Record brings its readers to reconsider the meaning of a plethora of musical indications which have never been considered as problematic by most of us, including the apparently vague *espressivo*, *cantando* or *con emozione* (to say nothing of *senza espressione*, whose more mysterious implications have brought many performers’ shoulders to shrug in puzzlement).

The practical effects of Da Costa’s work cannot be overestimated, if it will meet with the success it deserves: and this is a direct consequence of the manifold knowledge he employs throughout his book, where he displays an impressive musicological erudition, a thorough expertise as concerns the

¹ Stanley Boorman, ‘The Musical Text’ in Nicholas Cook and Mark Everist, eds., *Rethinking Music*, Oxford, Oxford University Press, 1999, pp. 403-42, here pp. 403-404.

mechanical and technological issues involved, as well as an approach which is unceasingly marked by the performing musician's mentality.

A further, important merit of his book is that it is not 'just' a book. It includes a number of musical examples within its main text, which makes it perfectly understandable - and sometimes even very enjoyable - in itself; however, its significance will increase dramatically if readers will take advantage of the companion website, where they will find many other written excerpts, but - above all - more than two hundred audio excerpts which will prove themselves agreeable, thought-provoking and revealing.

It is therefore a must-read book for all performers involved with Romantic music, but also a book to be 'listened to', to be placed on the music stand and to be practically experienced, as it will bring fresh inspiration and a whole new expressive palette to the interpreters of nineteenth-century works.

Contributors

Chiara Bertoglio PhD is a young Italian concert pianist, musicologist, writer and teacher. Her teachers include Paul Badura Skoda, Konstantin Bogino and Sergio Perticaroli, and she has concertised internationally, playing in some of the world's major venues. She has written several books and articles on musicological subjects, and addressed conferences in London, Oxford and Rome. She is particularly interested in studying the relationships between music and Christian spirituality, and has written books and articles aiming at spreading hope through true stories of courage.

Denis Hall has been interested in recordings of pianists since his schooldays, when he could buy new 78 rpm records of his keyboard heroes. He first became aware of reproducing pianos in the early 1960s, and bought his first Duo-Art in 1965. These days he spends much of his time in retirement maintaining his own reproducing pianos in a condition which he hopes does justice to the virtuosi of 100 years ago who entrusted their art to the piano roll medium.

Rex Lawson is a concert pianist who has been involved in research and music-making with these instruments since 1974. He has travelled with his pianola to the USA, Canada and many European countries transporting it by plane, ship, car and even, in 1986, by gondola in Venice. He has made a special study of music written for the pianola, by the hundred or so composers who have been interested in its possibilities during the course of the twentieth century. In 2004, he gave the world première of *Nancarrow Concerto* for Pianola by Paul Usher.

Dominic Murcott is a composer, percussionist, curator and educator based in London. Much of his work combines acoustic instruments with computer work and other media. In April 2012 he curated the critically acclaimed festival "Impossible Brilliance: The Music of Conlon Nancarrow" at London's Southbank Centre, contributing among other things new Nancarrow arrangements for the London Sinfonietta and a new composition for percussionist Joby Burgess. His current projects include composing a new ensemble piece around a 1/2 tonne bronze bell specially made in collaboration with sculptor Marcus Vergette and a new film and performance work for virtuoso harpist Sioned Williams. Starting as a self taught musician, his early career included playing drums with no-wave pioneers 'Blurt' and composing for the highly successful V-Tol Dance Company. Academia and PhD came later. He is currently Head of Composition at Trinity Laban Conservatoire of Music and Dance, plays vibes with the High Llamas and lectures internationally on the music of Conlon Nancarrow.

Notes

