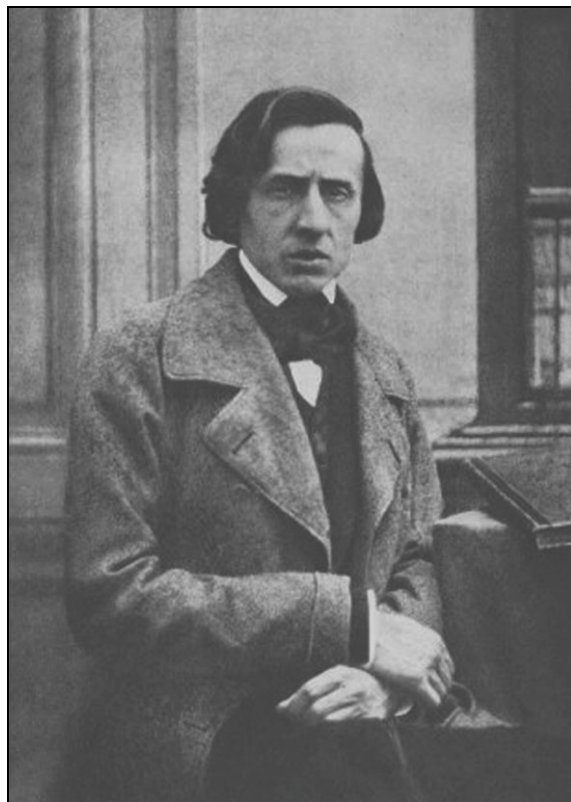


PIANO MANNERISMS, TRADITION AND THE GOLDEN RATIO IN CHOPIN AND LISZT

Performing mannerisms by ten celebrated pianists born in the 19th century taken from reproducing piano roll recordings of the Chopin Nocturne in F sharp major opus 15 no. 2; the mysterious tradition of the Klindworth D natural in the Liszt Sonata; and some astonishing discoveries about the golden ratio in the Chopin Etudes and the Liszt Sonata.

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CHAPTER 1

PERFORMING MANNERISMS BY TEN CELEBRATED PIANISTS BORN IN THE 19TH CENTURY TAKEN FROM REPRODUCING PIANO ROLL RECORDINGS OF THE CHOPIN NOCTURNE IN F SHARP MAJOR OPUS 15 NO. 2

Mannerisms

Recordings show that pianists born in the nineteenth century used the following mannerisms:

1. Melody delaying: playing the left hand slightly before the right hand melody;
2. Melody anticipation: playing the left hand slightly after the right hand melody (this was less common);
3. Arpeggiata: arpeggiation, rolling, breaking, spreading of chords where not so marked by the composer, for reasons other than the limitations of an insufficiently large hand.

Recordings also show that these mannerisms fell almost completely into disuse by the 1930s.

The purpose of this project was to consider the use of these mannerisms, as recorded on reproducing piano rolls, by comparing the playing of ten pianists born in the nineteenth century. No disc recordings were used. The recordings were of Chopin's Nocturne in F sharp major opus 15 no. 2 composed in 1830/31.

The reproducing piano rolls were recorded between 1905 and 1921 and in one case in 1933. The proposition that they represent nineteenth century performing practice is predicated on the assumption that the use by the recording artists of the mannerisms did not substantially vary over their performing career.

The writer had access, through the kindness of Denis Condon of Newtown, Sydney, to his collection of reproducing pianos and reproducing piano rolls and, in particular, to recordings of the Nocturne by ten different pianists. Reproducing piano rolls were issued from 1905 to the early 1930s and were able and are able, on a properly adjusted reproducing piano, to recreate the expression, including pedalling and nuances of dynamics, as recorded by the pianist. Reproducing pianos are not to be confused with player pianos. Player pianos were often called generically 'pianolas' after the first make. They could not reproduce the pedalling or dynamics of the recording artist although the operator of the player piano could vary the dynamics and tempi by manipulating certain controls, and could also use the sustaining and soft pedals.

Whether a reconstruction of the recording artist's dynamics was later manually perforated in the roll by the recording engineers is controversial, but it is thought that at least Welte

used some automatic process. Reproducing piano rolls, when played back on a properly adjusted reproducing piano, accurately represent the playing of the artists as was often attested to in writing by the artists themselves.

The present project was based on the Henle *urtext* edition but did not analyse the textual differences in the various recordings. Some differences may be due to the use of different editions and others to the circumstance that pianists in former times did not always pay the respect to the details of musical texts that is customary nowadays.

The project did not analyse the use of rhythmic freedom. This included the Chopin rubato of speeding up and then slowing down within a phrase, the Schumann rubato of slowing down towards the end of a phrase, the Liszt rubato of lingering on individual notes, the speeding up or slowing down of whole phrases, and the use of *accelerando* particularly in crescendo passages. These kinds of rhythmic freedom were part of nineteenth century performing practice. They are still used but to a much lesser extent.

The project did not analyse the use of the sustaining pedal although this could easily be observed when the reproducing pianos were playing the rolls back. The recording artists took liberties with Chopin's pedal markings as do most present-day performers, usually by pedalling more frequently than indicated by the composer and by occasional omission of the pedal. Chopin composed in the 1830s and 1840s for a Pleyel grand piano with less sonority than a modern grand piano. Those pianists who consider the question at all often argue that this entitles a pianist to modify the composer's markings.

The project did not analyse the use of the soft pedal although this could also be easily observed. Chopin never indicated the use of the soft pedal although it is known that he used it.

The project did not analyse the various tempos. As to the outer sections of the Nocturne, Saint-Saëns approximated the tempo indicated by Chopin's metronome marking of one crotchet equals 40 and all the other recordings were slower.

The fortunate circumstance of having access to ten reproducing piano roll recordings of the same piano work provided a large and diverse sample for analysis.

1. Camille Saint-Saëns (1835-1921)

Saint-Saëns was also an organist and composer and a number of his compositions are still popular. He played for Chopin and thus is the only one of the recording artists with a personal link to Chopin. It is not known what he played for Chopin on that occasion or what Chopin's reaction was. Nor is it known if Saint-Saëns ever heard Chopin himself play. Saint-Saëns was a friend of Franz Liszt and visited him at Weimar. Saint-Saëns used to forbid 'expression' in piano playing but his playing of the nocturne does contain melody delaying and *arpeggiata* although it has less rubato than that of his

contemporaries. This Welte reproducing piano roll was recorded in about 1920 and was played back on Denis Condon's Steinway-Welte upright piano.

Timing: 2:31

Melody delaying: high

Melody anticipation: nil

Arpeggiata: medium

Mannerisms index: 56%

2. Vladimir de Pachmann (1848-1938)

Pachmann was noted for his Chopin interpretations which Liszt greatly admired. His playing reached the high water mark in its use of mannerisms. This London Duo-Art reproducing piano roll was recorded in 1933 and was played back on Denis Condon's Yamaha grand piano by his custom-made Duo-Art vorsetzer.

Timing: 3:14

Melody delaying: high

Melody anticipation: high

Arpeggiata: high

Mannerisms index: 100%

3. Xaver Scharwenka (1850-1924)

Scharwenka often visited Liszt at Weimar and attended his master classes. He was noted for his Chopin interpretations and was also a popular composer in his day. This Welte reproducing piano roll was recorded in the early 1900s and was played back on the Steinway-Welte.

Timing: 3:46

Melody delaying: high

Melody anticipation: low

Arpeggiata: high

Mannerisms index: 78%

4. Raoul Pugno (1852-1914)

Pugno was noted for his Chopin interpretations and was also a composer. Naxos A – Z of Pianists states: 'Pugno's most important recording ... is that of Chopin's Nocturne in F sharp Op. 15 no. 2. Pugno stated that he thought this nocturne was habitually played too fast. "The tradition was passed on by my teacher George Mathias who himself studied it with Chopin and it seems to me that the metronome marking would correspond better to a bar at 4/8 than the 2/4 time indicated. I played it at 52 to the quaver ..." ' This Welte reproducing piano roll was recorded in the early 1900s and was played back on the Steinway-Welte.

Timing: 3:29

Melody delaying: high

Melody anticipation: nil

Arpeggiata: medium

Mannerisms index: 56%

5. Ferruccio Busoni (1866-1924)

Busoni heard Liszt play and played privately for Liszt at the age of seven but was never a pupil. He studied with Liszt pupil Arthur Friedheim and was noted for his Liszt performances. Some of Busoni's compositions have been revived. This Welte reproducing piano roll was recorded in 1905 and was played back on the Steinway-Welte.

Timing: 3:45

Melody delaying: high

Melody anticipation: nil

Arpeggiata: medium

Mannerisms index: 56%

6. Harold Bauer (1873-1951)

Bauer studied with Paderewski and was noted for his Schumann and Chopin interpretations and his Schumann editions. This Duo-Art reproducing piano roll was recorded in 1920 and was played back on the Yamaha by the Duo-Art vorsetzer.

Timing: 4:22

Melody delaying: medium

Melody anticipation: nil

Arpeggiata: medium

Mannerisms index: 44%

7. Ernest Schelling (1876-1939)

Schelling studied for several years with Paderewski. His playing approached the high water mark in its use of expressive devices. He was also a composer. This Duo-Art reproducing piano roll was recorded in 1915 and was played back on the Yamaha by the Duo-Art vorsetzer.

Timing: 4:00

Melody delaying: high

Melody anticipation: medium

Arpeggiata: high

Mannerisms index: 88%

8. Arthur Rubinstein (1887-1982)

Rubinstein had a long and illustrious career as a pianist, being particularly noted for his Chopin interpretations. Despite the fact that his career commenced in the late nineteenth century, Rubinstein's playing seems always to have been free of melody delaying and arpeggiata. He was no relation to Anton Rubinstein who declined to record for the cylinder and otherwise did not survive into the recording era. This Duo-Art reproducing

piano roll was recorded in 1920 and was played back on the Yamaha by the Duo-Art vorsetzer.

Timing: 3:23

Melody delaying: nil

Melody anticipation: low

Arpeggiata: nil

Mannerisms index: 11%

9. Leo Ornstein (1892-2002)

Ornstein later moved to America where he was involved in avant-garde composition. This Ampico reproducing piano roll was recorded in 1916 and was played back on the Yamaha by Denis Condon's custom-made Ampico vorsetzer. This was the only Ampico roll of the Nocturne ever issued.

Timing: 3:31

Melody delaying: high

Melody anticipation: nil

Arpeggiata: high

Mannerisms index: 67%

10. Guiomar Novaes (1895-1979)

Novaes was renowned for her interpretations of Chopin, Schumann and Debussy. This Duo-Art reproducing piano roll was recorded in 1921 and was played back on the Yamaha by the Duo-Art vorsetzer.

Timing: 4:07

Melody delaying: nil

Melody anticipation: low

Arpeggiata: nil

Mannerisms index: 11%

Findings

The following groups of pianists had the average mannerisms index specified:

Four pianists born before 1860	73%
Three pianists born between 1860 and 1880	63%
Three pianists born between 1880 and 1900	30%

Five pianists who recorded the nocturne before 1918	69%
Five pianists who recorded the nocturne after 1918	44%

Footnote (1)

The internet article 'Cylinder of the Month: For May 2000' provides an audio recording from 1898 of a 'beautifully recorded piano solo, on a Bettini cylinder, of the Chopin

Nocturne played by Joseph Pizzarello.’ The cylinder is from the collection of the Library of Congress. The author of the article, Glenn Sage of Portland, Oregon goes on to say that this is ‘a very rare 19th Century recording of a piano solo on an extremely rare record from Gianni Bettini’s New York City phonograph laboratory ... In the 1890’s, the brilliant and inventive Gianni Bertini operated his New York phonograph laboratory (110 Fifth Avenue) into which he was able to bring many of the city’s greatest social and artistic luminaries. Hundreds of priceless recordings were created in his studios using his customized recording equipment. Only a very few of his premium-priced commercial recordings survive today. Bettini brought many of his best records with him to Europe, where it is believed most were destroyed during the first World War. Practically a fixture for accompaniment purposes, during this time the piano was seldom highlighted in solo recordings. In part this was due to a feeling that the piano recorded weakly, especially in the lower ranges – a perception that Bertini, who with his characteristic Italian accent announces this selection, demonstrates was not necessarily so. In this copy, the cutting (duplicate) phonograph was switched off before the final note had finished, creating an accelerating pitch effect.’

Using a methodology similar to that used for the reproducing roll recordings the following were noted:

Timing: 2:16 (but there were several cuts apparently to comply with the time constraints caused by the recording medium)

Melody delaying: high

Melody anticipation: nil

Arpeggiata: medium

Mannerisms index: 56%

The Catalogue of the National Conservatory (1894-95) (from the internet) shows that the then Director was ‘Dr Antonin Dvorak’, that at the head of the list of piano teachers was the celebrated Liszt pupil ‘Mr Rafael Joseffy’ and that ‘Monsieur Joseph Pizzarello’ taught ‘Solfeggio’ and was the ‘Accompanist’. No other details of Joseph Pizzarello were shown and in particular his years of birth and death are unknown to the present writer. The importance of this cylinder recording is that it was made in the nineteenth century and is one of the earliest solo piano recordings to have come down to us. So far as the pedalling in the performance captured on the cylinder recording is concerned, it was not possible to deduce anything definite in view of the thinness of the recorded sound and the impossibility of physically observing the use of the sustaining and soft pedals.

Footnote (2)

The individual recordings by Scharwenka, Saint-Saëns, Pugno and Busoni of the opening bars of the Nocturne were incorporated onto a ‘Special Comparison Roll’ issued by Welte-Mignon in the late 1920s. As the roll unwinds it displays printed comments drawing attention to the mannerisms of the recording artists. The comments convey the impression that by the late 1920s those mannerisms were regarded as old-fashioned.

Footnote (3)

After a substantial part of this article had been prepared the present writer came across the following notice on the internet: ‘Evidence of 19th century performance practice found in 24 performances of Chopin’s Nocturne Op. 15 No. 2 recorded by pianists born before 1900, by Artis Wodehouse. The recordings of pianists born before the turn of the century provide perhaps the most tangible link available to a previous performance practice. Evidence such as eye-witness accounts of live performances, editions and recorded performances of pianists born before 1900 suggest overwhelmingly that in the 19th century the printed page had nowhere near its present significance. This dissertation is a groundbreaking attempt to document and compare temporal and dynamic deviations employed by a representative group of early recorded pianists with respect to both Chopin’s score and 19th century performance treatises. It features a unique methodology for evaluating and summarizing common performance approaches of the 19th century in fine detail.’ The notice invites internet users to purchase a copy of that dissertation. The present writer has not seen the dissertation and has no further knowledge of its contents.

Pianist	Melody delaying	Melody anticipation	Arpeggiata	Mannerisms index %
1. Saint-Saëns 1835-1921 1920 2:31	3	0	2	56
2. Pachmann 1848-1938 1933 3:14	3	3	3	100
3. Scharwenka 1850-1924 1900s 3:46	3	1	3	78
4. Pugno 1852-1914 1900s 3:29	3	0	2	56
5. Busoni 1866-1924 1905 3:45	3	0	2	56
6. Bauer 1873-1951 1920 4:22	2	0	2	44
7. Schelling 1876-1939 1915 4:00	3	2	3	88
8. Rubinstein 1887-1982 1920 3:23	0	1	0	11
9. Ornstein 1892-2002 1916 3:31	3	0	3	67
10. Novaes 1895-1979 1921 4:07	0	1	0	11

Note: The numerals 1 represent a low level, 2 a medium level and 3 a high level.

CHAPTER 2

THE MYSTERIOUS TRADITION OF THE KLINDWORTH D NATURAL IN THE LISZT SONATA

Karl Klindworth (1830-1916) was born in Hanover on 25 September 1830 and died in Stolpe, near Potsdam, on 27 July 1916. He settled in Hanover as a teacher and composer and from there he went to Weimar in 1852 where he studied with Franz Liszt (1811-1886) at the Altenburg. Among his fellow pupils were Hans von Bülow (1830-1894) and William Mason (1829-1908). Liszt completed his monumental Sonata in B minor in February 1853 and Klindworth was his first pupil to play the Sonata, which was then in manuscript. He learned it in six days and performed it from memory for Liszt. He heard Liszt himself play his Sonata on 7 May, 4 June (probably) and 15 June 1853. Klindworth moved the next year to London and subsequently on 5 April 1855 he played the Sonata for Wagner and became on friendly terms with him. Klindworth remained in London for fourteen years, studying, teaching and occasionally appearing in public. He moved to Moscow in 1868 to take up the position of professor of piano at the Moscow Conservatorium where he taught until 1884. While in Russia he completed his piano arrangements of Wagner's Ring Cycle which he had commenced in 1855 during Wagner's visit to England. He also completed his critical edition of Chopin's piano works. On his return to Germany he became a conductor of the Berlin Philharmonic in 1882, in association with Joachim and Bullner. He was also the conductor of the Berlin Wagner Society and founded a music school which merged with the Scharwenka Conservatory in 1893. He remained in Berlin until 1893, when he retired to Potsdam, continuing to teach. He composed a number of pieces for the piano and edited the Beethoven piano sonatas and Liszt's piano concertos and Transcendental Studies but did not issue any recordings.

José Vianna da Motta (1868-1948) was one of Liszt's last pupils, at the Hofgärtnerei in Weimar. His notes to the Sonata, dated 'Spring 1924', are contained in his editor's report in the Franz Liszt-Stiftung edition. The Sonata and several other works, together with his notes, were reprinted by Dover Publications, Inc, New York, in 1990. Motta had this to say about the D in bars 738 and 740 (in the coda to the Sonata):

'The Liszt pupils have some doubts as to whether the first note should be D sharp or D natural. Manuscript and published sources have D sharp. In her Liszt-Pädagogium, Ramann says somewhat laconically, without foundation: "the D sharp should not be changed to D natural". On the other hand, Klindworth assured the editor that he played D natural for the master at the latter's instruction. In this connection he called attention to the continuity of the harmony ... in which the C double sharp [bar 743] continues the previous D natural enharmonically, while the anticipation of the D sharp in the succeeding final cadence would not be as beautiful. Played with the minor suspended note D natural ... the chord contains a twinge of bygone sorrow; with D sharp it seems

considerably more peaceful, cooler. It is quite conceivable that the master wanted to change the D sharp to D natural later, after the publication of the sonata. However, I have not yet been able to find a reliable document.'

Motta acknowledged in his notes having consulted the autograph manuscript of the Sonata with the permission of the Marchese di Casanova, so it follows that the manuscript was in the Marchese's possession no later than, and probably well before, Spring 1924. Motta and Arthur Friedheim (1859-1932) were fellow Liszt pupils at the Hofgärtnerei in the 1880's and Motta either did not know the provenance of the manuscript or, as is more likely, did know that the Marchese had acquired it from Friedheim (if this was the case) but avoided any public disclosure about it in his notes to the Sonata in the 'Old Liszt Edition'. Motta had discussions with Friedheim when Motta was preparing 'Harmonies Poétiques et Religieuses' for publication. We know this because in Motta's notes, dated 'Summer 1926', he refers to a symbol in 'Bénédiction de Dieu' (which is the third piece in that collection of six pieces) which 'should, as Arthur Friedheim told me, simply signify a long pause.' Professor Kellermann is referred to once in those notes and twice in the notes to the Ballades.

Motta makes no other references by name to any other Liszt pupils in his notes to the Sonata, the Harmonies Poétiques et Religieuses, the Ballades, the Bénédiction de Dieu, the Consolations or the Légendes. It seems likely that Motta discussed the Sonata with Friedheim as they had been fellow pupils together and had been in discussion over 'Bénédiction de Dieu'. It seems, then, that Friedheim was included in the 'Liszt pupils' indicated by Motta's statement that '[T]he Liszt pupils have some doubts as to whether the first note should be D sharp or D natural'. If this is so then the mystery deepens because Friedheim on a number of occasions played the Sonata for Liszt and performed it in his presence and had the opportunity to ask Liszt for his authoritative answer and, if he had received an answer, would have conveyed it to Motta. Unfortunately, Friedheim's Triphonola reproducing piano roll of the Sonata has not been located by the present writer so we do not know whether Friedheim played the D sharp or D natural.

In any event, accepting that Klindworth did in fact play D natural for Liszt, and at Liszt's instruction, this may have been before Klindworth left Weimar in early 1854 to settle in London, most likely when he performed the Sonata from memory for Liszt shortly after it was completed in February 1853. The Sonata was published and printed copies became available from April 1854 and Klindworth, by then in London, would have first seen a printed copy a week or so after he received Liszt's letter to him of 2 July 1854 in which Liszt enquired as to the best way of mailing him a printed copy. Kenneth Hamilton, at page 598 of his 'Liszt: Sonata in B Minor' (Cambridge University Press, 1996), expresses the view that if Liszt 'did indeed instruct Klindworth to play D natural then it can only have been a short-lived change of mind soon after the Sonata's publication.' In the present writer's view, however, Liszt's 'D natural' idea may have occurred well before publication, even before a manuscript was sent to the publishers, and Liszt may have simply forgotten to notify the publishers so as to have it incorporated into the original edition of 1854 or, for that matter, the 1880 reprint.

August Stradal (1860-1930), the Bohemian pianist who later entered Liszt's masterclass at the Hofgärtnerlei, Weimar, in September 1884, had played the Sonata for the composer as a teenager in the 1870s. By this time the D natural controversy was well established, if not resolved, because Liszt's official biographer Lina Ramann, working on notes taken by Stradal, wrote in her *Liszt Pädagogium* that 'the D sharp should not be changed to D natural'.

Liszt pupil, Emil von Sauer (1862-1942), heard Arthur Friedheim perform the Sonata in Liszt's presence on 23 May 1884. The Peters edition by Sauer printed D sharp without comment, as did the Augener edition by Thumer, the Schirmer edition by Liszt pupil Rafael Joseffy (1853-1915) and the New Liszt Edition. The autograph manuscript (as reproduced in the Henle facsimile edition) clearly has D sharp. Hamilton, at page 58, states that D sharp is in all the editions he has seen. These would presumably include the original Breitkopf & Härtel edition and the editions by Liszt pupils Eugen d'Albert (1864-1932) and Moriz Rosenthal (1862-1946). Hamilton refers, at page 62, to the decision of the New Liszt Edition not to publish 'Liszt's various occasional instructions presumably made during teaching and preserved in a copy of the first edition of the Sonata now held in the Academy of Music, Budapest', a decision which at this stage prevents the possibility of any elucidation from that source of the Klindworth D natural question.

Hamilton expresses the view, at page 59, that 'the D natural reading is much inferior to the D sharp, casting an unwanted gloom over the atmosphere of fragile expectancy' and states that he has 'yet to hear any performance in which D natural was played'. The present writer notes, however, that Liszt pupil Eugen d'Albert, who was one of Liszt's most brilliant pupils and whose playing was much admired by Liszt, played the D natural in his 1913 Welte piano roll recording. The present writer ascertained this for the first time in 2004 when he was listening to this roll being played back by Denis Condon at his studio in Newtown, Sydney. D'Albert's recording of the Sonata was issued on CD (together with Ernest Schelling's recording) and was included with, and discussed in, the present writer's book 'Franz Liszt's Piano Sonata'. D'Albert may have got the D natural idea from Karl Klindworth who lived until 1916, or maybe he got it direct from Liszt. D'Albert's recording provides convincing support for the Klindworth tradition. The present writer has never heard the D natural played in any other performance or recording.

The Klindworth D natural (bars 738 & 740) preserves the D natural of the original statement of the second motif (bar 10) and the D natural (or its equivalent in other keys) of its subsequent transformations during the Sonata. The D natural is eventually transformed to a D sharp in the triumphant Prestissimo section (bars 683 – 695), so that the Klindworth D natural is a reversion to the original D natural thus detracting somewhat from the emotional achievement of the Prestissimo section.

The present writer agrees with Hamilton's view, at page 58, that '[T]his is no paltry change, for the D natural gives the melody a completely different, depressive, quality and totally changes the character of this section.' The present writer does not agree, however,

that the D natural is 'much inferior' but does believe that it is less consistent with, interrupts, or delays the commencement of, the 'atmosphere of fragile expectancy' (to quote Hamilton's felicitous phrase) which Liszt creates towards the very end of the Sonata.

The full truth surrounding the Klindworth D natural cannot be established in the light of present knowledge and it must remain for the time being, or perhaps forever, an unsolved mystery in the saga of Franz Liszt's piano sonata and in the byways of musical history.

CHAPTER 3

SOME ASTONISHING DISCOVERIES ABOUT THE GOLDEN RATIO IN THE CHOPIN ETUDES AND THE LISZT SONATA

THE GOLDEN RATIO

In mathematics two quantities are in the golden ratio if the ratio between the sum of the quantities and the larger quantity is the same as the ratio between the larger quantity and the smaller. The golden ratio is a constant, is an irrational number and is $(1 + \sqrt{5}) \div 2$ which is 1.62 to the nearest two decimal places. Many artists and architects have proportioned their works to the golden ratio and composers such as Mozart, Beethoven and Chopin are said to have used it in their works, consciously or unconsciously. In terms of barring, the climax in Debussy's *Reflets dans l'eau* marks out the golden ratio as does the commencement of the fugue in Bartók's *Sonata for two Pianos and Percussion*. The golden ratio in the form of a golden rectangle contributes to overall visual satisfaction and it has been hypothesised that, in a similar way, the golden ratio contributes to overall musical satisfaction by being a natural way of dividing a musical composition. We shall explore this 'golden ratio hypothesis' in relation to the *Etudes* opus 10 and opus 25 by Frédéric Chopin and the *Sonata in B minor* by Franz Liszt. The reciprocal of the golden ratio is called the conjugate golden ratio and exactly equals the golden ratio minus 1. For ease of illustration we will work with the conjugate golden ratio.

THE GOLDEN RATIO IN THE CHOPIN ETUDES

Timing proportions

Column 1 shows the timing up to the tonic recapitulation AM. Column 2 shows the total performance timing AB. All timings were taken from Idil Biret's recording on Naxos CD of the Chopin *Etudes* and are in minutes and seconds. Column 3 shows the timing proportion AM:AB.

Opus 10

1.	1 17	2 15	0.57	49	77	0.64
2.	1 05	1 41	0.64	36	48	0.75
3.	3 13	4 28	0.72	62	74	0.84
4.	1 17	2 11	0.59	51	82	0.62
5.	0 54	1 43	0.52	49	84	0.58
6.	2 20	3 25	0.68	41	52	0.79

7.	0 52	1 38	0.52	34	59	0.58
8.	1 38	2 47	0.59	61	95	0.64
9.	1 13	2 32	0.48	37	67	0.55
10.	1 45	2 39	0.66	55	77	0.71
11.	1 26	2 41	0.53	33	54	0.61
12.	1 18	2 53	0.45	41	84	0.48

Opus 25

1.	1 35	2 36	0.60	35	49	0.71
2.	0 59	1 41	0.58	51	69	0.73
3.	1 14	2 07	0.58	49	72	0.68
4.	0 55	1 51	0.49	39	66	0.59
5.	2 25	3 44	0.65	98	138	0.71
6.	1 26	2 07	0.68	35	63	0.56
7.	3 45	5 54	0.63	45	68	0.66
8.	0 39	1 20	0.49	21	36	0.58
9.	0 30	1 16	0.50	25	51	0.49
10.	3 53	4 30	0.86	107	119	0.82
11.	2 50	3 58	0.71	69	96	0.72
12.	1 30	2 56	0.52	55	83	0.66

Bar proportions

Column 4 shows the number of bars up to the tonic recapitulation AM. Column 5 shows the total number of bars AB. Column 6 shows the bar proportion AM:AB. Barring is taken from the Henle edition.

Findings

Average timing proportion	0.60
Average bar proportion	0.64
Average	0.62
Conjugate golden ratio	0.62

Conclusion

If the golden ratio hypothesis is accepted as plausible then it supports common aural experience that the placements of the tonic recapitulation in the Chopin Etudes opus 10 and opus 25 contribute to overall musical satisfaction by being a natural way of dividing those Etudes.

THE GOLDEN RATIO IN THE LISZT SONATA

Three curtains

Franz Liszt's Sonata in B minor consists almost entirely of transformations of the three motifs stated at the outset. The first motif (bars 1-7) consists of a muffled double drumbeat and descending scale played twice. The second motif (bars 8-13) consists of rising octaves and descending diminished sevenths. The third motif (bars 14-17) consists of the hammerblow played twice. Three auditory musical 'curtains' may be perceived, each being solely composed of the first motif, the descending scale of which receives various scalar and modal modifications to provide different moods. The opening curtain (g minor, bars 1-7) states the first motif with mystery. The middle curtain (f sharp minor, bars 453-459) states it with foreboding. The final curtain (tonic, bars 748-760) states it with fragile expectancy followed by consummation. Common aural experience is that the middle curtain, opening onto the allegro energico (fugato) at bar 460, contributes to overall musical satisfaction by being a natural way of dividing the Sonata. On a classical four movement analysis, bar 460 opens the scherzo leading to the final movement, and is preceded by the first movement and slow movement. On Sharon Winklhofer's classical first movement analysis, bar 460 opens the recapitulation and is preceded by the exposition and development. (It should be pointed out, however, that most analysts take the view, as does the present writer, that on a classical first movement analysis the recapitulation commences at bar 533.)

Timing proportions

Column 1 shows the number of minutes taken to play bars 1-459 and column 2 shows the total performance time in minutes. All timings are from CDs, the timings for Eugen d'Albert and Ernest Schelling being taken from a CD made in 2004 from reproducing piano rolls recorded in 1913 and 1916.

Eugen d'Albert	13	21	0.61
Martha Argerich	16	26	0.62
Claudio Arrau	21	32	0.66
Daniel Barenboim	21	32	0.66
Lazar Berman	18	29	0.62
Jorge Bolet	19	30	0.66
Alfred Brendel	19	29	0.66
Nikolai Demidenko	21	33	0.64
Ian Holtham	18	29	0.62
Vladimir Horowitz	17	26	0.65
Jenő Jandó	20	31	0.61
Paul Lewis	19	30	0.63
Yundi Li	19	30	0.63
Stephanie McCallum	21	31	0.68

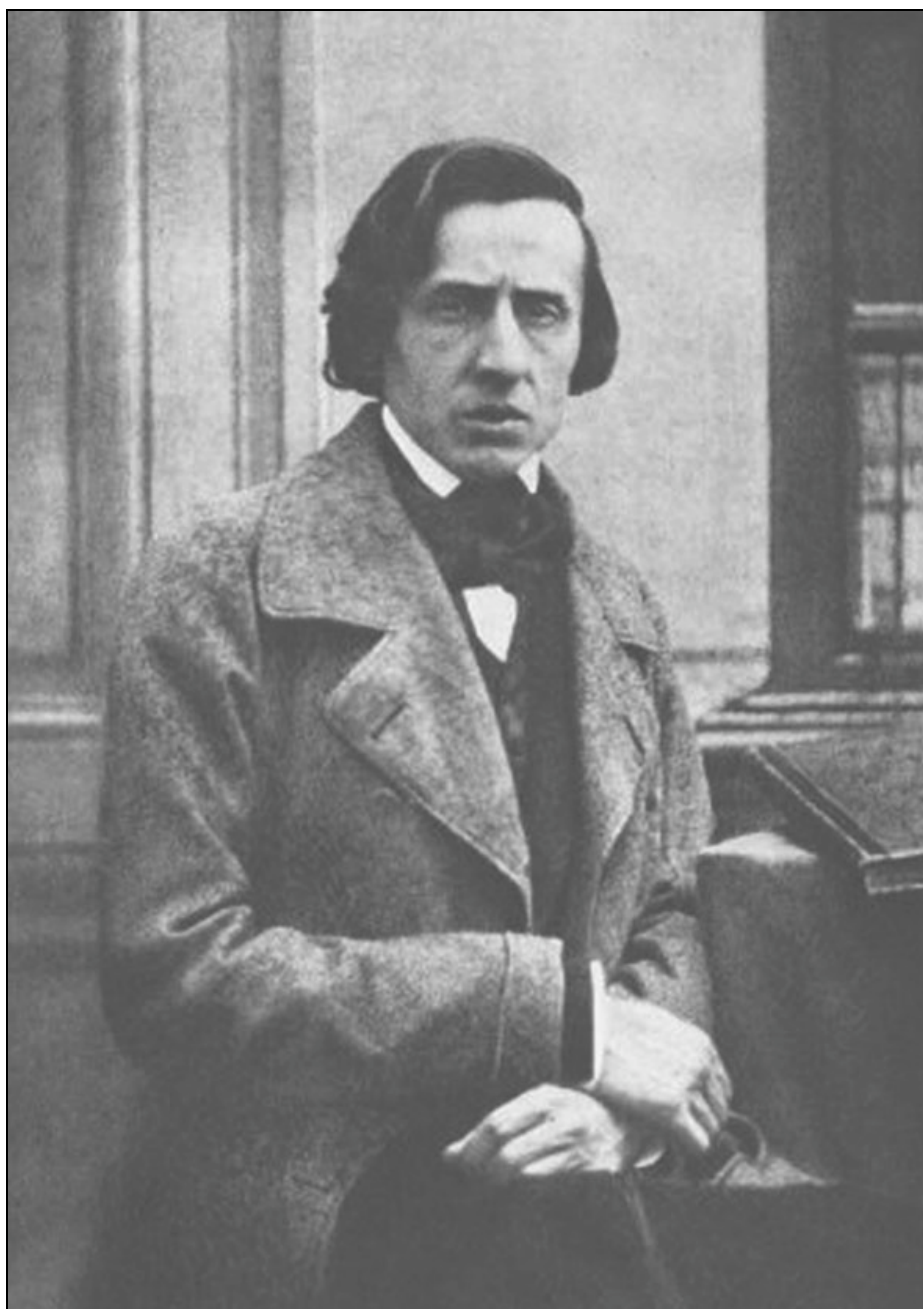
Cécile Ousset	19	29	0.66
Mathieu Papadiamandis	19	30	0.63
Mikhael Pletnev	22	33	0.67
Ernest Schelling	16	25	0.64
Hüseyin Sernet	19	30	0.63
André Watts	19	29	0.66

Findings

Average timing proportion	0.64
Bar proportion	0.60
Average	0.62
Conjugate golden ratio	0.62

Conclusion

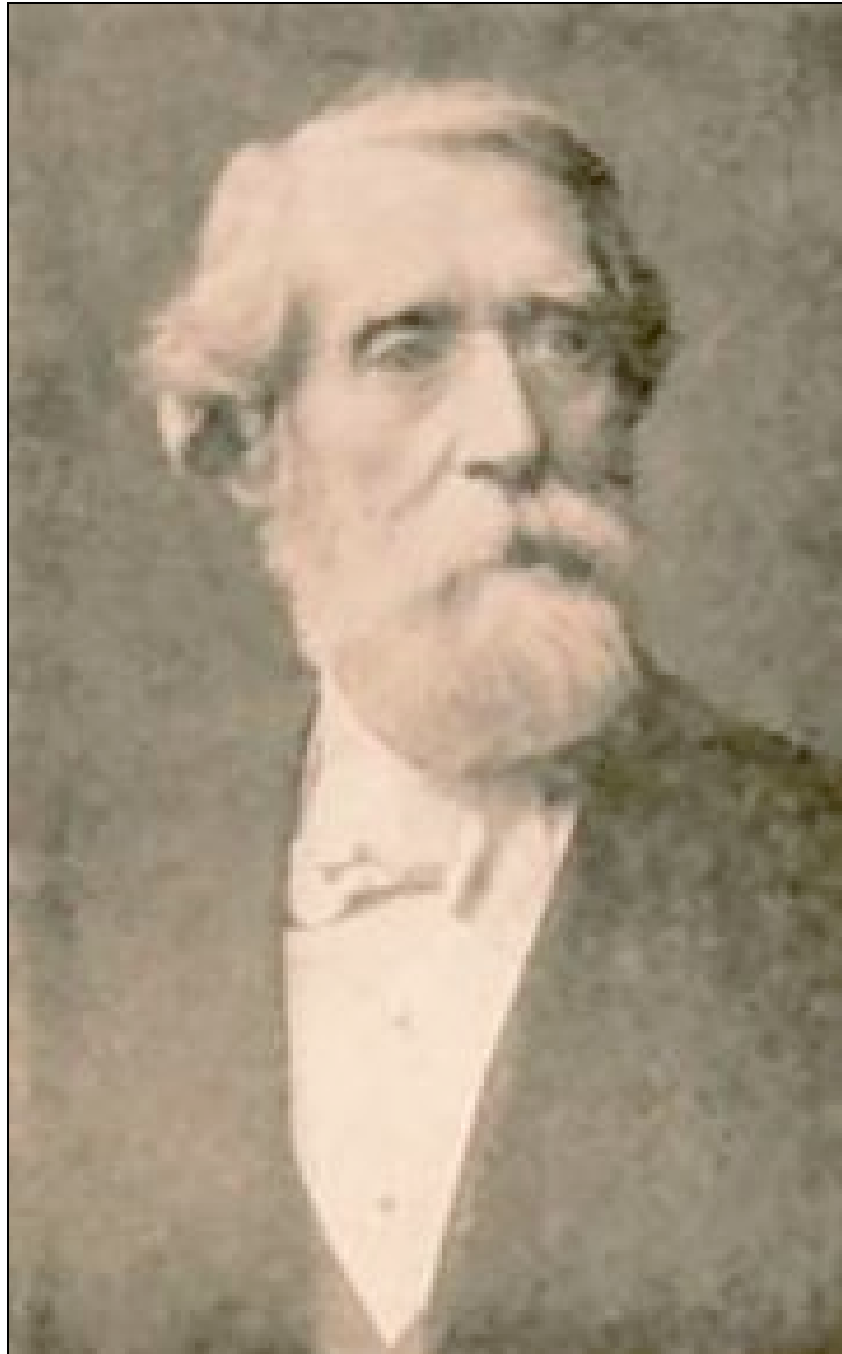
If the golden ratio hypothesis is accepted as plausible then it supports common aural experience that the middle curtain of the Liszt Sonata contributes to overall musical satisfaction by being a natural way of dividing the Sonata. Postscript: The present author's own 1991 recording shows a timing proportion of 0.62 (18:29).



Frédéric Chopin



Franz Liszt



Karl Klindworth



Camille Saint-Saëns



Vladimir de Pachmann



Xaver Scharwenka



Raoul Pugno (and Eugen Ysaye)



Ferruccio Busoni



Harold Bauer



Ernest Schelling



Arthur Rubinstein



Leo Ornstein



Guiomar Novaes

ABOUT THE AUTHOR

Gerard Carter holds the degrees of Bachelor of Economics and Bachelor of Laws from the University of Sydney, practised as a lawyer for over thirty years, lectured in commercial law and is the published author of nine books on legal subjects. He studied piano with Eunice Gardiner at the Sydney Conservatorium of Music and gained his Associate Diploma in Music (Piano Performing). He studied César Franck's organ works with Maître Jean Langlais at the Cavaillé-Coll grand organ in the Basilica of Ste Clotilde in Paris. Jean Langlais was a pupil of Franck's last pupil, Charles Tournemire. Franck, Tournemire and Langlais presided in succession at the tribune of Ste Clotilde for many years. Gerard Carter has performed and recorded piano works by Beethoven, Brahms, Chopin, Liszt and others. He has recorded Franck's Chorale in A minor and Cantabile on the Puget Père et Fils organ at Kincoppal-Rose Bay School, Vacluse, has recorded on the Hill and Son organ at St Augustines' Church, Balmain, and is the author of an article in the Sydney Organ Journal on the authentic performance of Franck's organ works. He has recorded his piano transcriptions of Franck's *Pièce Héroïque* and Chorales in E major and A minor and has published and recorded his own 'Fantasy on the Maiden's Wish' for piano. His books 'Franz Liszt's Piano Sonata' and 'Rediscovering the Liszt Tradition' (which enclose CDs of historic reproducing piano recordings of Liszt's piano works performed by his celebrated Weimar pupils) and his 'Liszt Sonata Companion' are published by Wensleydale Press, Sydney. Gerard Carter's continuing commitment to both the *urtext* and the historical performing practice movements goes back to the early 1960s.

