

For the three "pure audio" discs (BD 1, 2 and 3), if you prefer to listen to music without visual stimulation, you may turn off your TV or computer screen after selecting a specific program. You can then use the Blu-ray remote control to navigate: **RED** for 5.0 surround, **YELLOW** for 2.0 stereo, and ►► to skip tracks.

THE VIRTUAL **HAYDN** Complete Works for Solo Keyboard

Keyboardist/musicologist Tom Beghin, record producer Martha de Francisco, and acoustical architect Wieslaw Woszczyk have joined forces to apply "virtual acoustics" for the first time to a commercial recording of this magnitude: a complete recording of Haydn's works for solo keyboard. More than fourteen hours of music are performed in nine "virtual rooms." These are actual rooms where Haydn or a typical player of his keyboard music would have performed. They have been acoustically sampled, electronically mapped, then precisely recreated in the recording studio. Featured rooms range from the most private to the most public, from Haydn's own study in his Eisenstadt home to the Holywell Music Room in Oxford, England.

Further enhancing this unique experience of the Haydn repertoire are the seven historical keyboards on which the music is performed. All seven instruments, from a 1760s clavichord to a 1798 English grand piano, were built for this project by today's leading artisans. Three of these—a 1755 harpsichord with an idiomatic "Viennese short octave," a 1788 *Tafelklavier*, and a 1780 fortepiano with an early-Viennese *Stossmechanik*—are world premieres. Modern audiences can now hear these instruments again in the acoustical environments for which they were originally designed.

For Haydn's "Six Prince Esterházy Sonatas" (1774), for example, the team sampled and mapped the acoustics of Eszterháza Castle's Ceremonial Room, where Haydn would have presented his patron with a copy of the published sonatas. Back in the laboratories of the Centre for Interdisciplinary Research in Music Media and Technology of the Schulich School of Music at McGill University (Montreal, Canada), enveloped in a "sphere" of twenty-four loudspeakers, Tom Beghin performs these sonatas on a freshfrom-the-workshop French double manual harpsichord *as if* he is "in" the Ceremonial Room and *as if* we are sitting in the Prince's own chair. By contrast, we experience Haydn's sonatas for Princess Marie Esterházy, played on a Kober square piano, in the intimate setting of a *Prunkraum* of Vienna's Albertina. Or we embrace the more public eighteenth-century concert experience of the acoustically accurate yet virtual English concert hall for a performance on a Longman, Clementi & Co. piano of the two concert sonatas that Haydn wrote for the celebrated Therese Jansen.

Musicking happens through instruments, in rooms, by people. No repertoire celebrates this experience more than Haydn's keyboard works. This revolutionary recording project stands as a tribute to the timeless appeal of a composer whose life and career revolved around similarly experimental interactions with technologies and audiences.



PROGRAM ONE. COURTING NOBILITY, c. 1755 - 1769. Harpsichord Johann Leydecker (1755) by Martin Pühringer (2004). Music Room, Eszterháza (Fertöd).

PROGRAM TWO. QUALITY TIME, c. 1750 - 1772. Clavichord in Saxon Style (c. 1760) by Joris Potvlieghe (2003). "Room Five," Haydn's House (Eisenstadt).

PROGRAM THREE. THE MUSIC LESSON, c. 1755 - 1767. Harpsichord Johann Leydecker (1755) by Martin Pühringer (2004). Spiegelsaal, Esterházy Palace (Eisenstadt).

PROGRAM FOUR. HAYDN'S WORKSHOP, c. 1760 - 1771. Clavichord in Saxon Style (c. 1760) by Joris Potvlieghe (2003). Study, Haydn's House (Eisenstadt).

PROGRAM FIVE. "YOUR MOST SERENE HIGHNESS!" ("Prince Esterházy Sonatas," 1774). Harpsichord in French Style (c. 1770) by Yves Beaupré (2007). Ceremonial Room, Eszterháza (Fertöd).

PROGRAM SIX. THE SCORE ("Anno 776 Sonatas," 1776). Tafelklavier Ignaz Kober (1788) by Chris Maene (2007). Salle de Nantes, Château Ramezay (Montreal).

PROGRAM SEVEN. "EQUAL TO THE FINEST MASTERS" ("Auenbrugger Sisters Sonatas," 1780). Fortepiano Anton Walter (1782) by Chris Maene (2005). Music Room, Eszterháza (Fertöd).

PROGRAM EIGHT. MUSICAL LETTERS TO A PRINCESS ("Marie Esterházy Sonatas," 1784). Tafelklavier Ignaz Kober (1788) by Chris Maene (2007). Prunkraum, Albertina (Vienna).

PROGRAM NINE. VIENNESE CULTURE, 1789 - 1798. Fortepiano Anton Walter (after 1791) by Chris Maene (2005). Festsaal, Palais Lobkowitz (Vienna).

PROGRAM TEN. THE LONDON SCENE, 1794 - 1795. Piano Longman, Clementi & Co. (1798) by Chris Maene (2004). Holywell Music Room (Oxford).

PLAYING THE ROOM: THE MAKING OF THE VIRTUAL HAYDN

a documentary film directed by Robert J. Litz and Jeremy Tusz

VIDEO PERFORMANCES

BD 1 PURE AUDIO

ΒD

2 PURE AUDIO

BD 3 PURE AUDIO

ΒD

4 HD VIDEC

- 1. CAPRICCIO IN G MAJOR, "Acht Sauschneider müssen seyn," Hob. XVII:1 (1765)
- 2. SONATA IN G MAJOR, Hob. XVI:40 (publ. 1784)
- 3. FANTASIA ("CAPRICCIO") IN C MAJOR, Hob. XVII:4 (1789)
- 4. ADAGIO FROM SONATA IN E-FLAT MAJOR, Hob. XVI:49 (1789 1790)
- 5. ALLEGRO FROM SONATA IN E-FLAT MAJOR, Hob. XVI:52 (1794)

7 X 9 MATRIX: ANDANTE FOR MUSICAL CLOCK, Hob. XIX:10

on seven instruments, in nine rooms, for a total of 63 combinations GALLERY: photos of instruments and rooms



PROGRAM ONE COURTING NOBILITY c. 1755 - 1769

Viennese harpsichord, salon of a noble household $a^1 = 435$ Hz, Werckmeister III (1691)

SONATA IN C MAJOR, Hob. XVI:3 (early 1760s)

- 1. ALLEGRETTO 3:39
- 2. ANDANTE 8:27
- 3. MENUET / TRIO 1:14

CAPRICCIO IN G MAJOR, "Acht Sauschneider müssen seyn," Hob. XVII:1 (1765) tuning: quarter-comma meantone

4. MODERATO 8:43

SONATA IN D MAJOR, Hob. XVI:4 (before 1765)

- 5. **[NO INDICATION]** 6:30
- 6. MENUET / TRIO 3:29

SONATA IN B-FLAT MAJOR, Hob. XVI:2 (c. 1762)

- 7. MODERATO 8:25
- 8. LARGO 4:45
- 9. MENUET / TRIO 4:45

SONATA IN A MAJOR, Hob. XVI:12 (before 1765)

- 10. ANDANTE 5:44
- 11. MENUET / TRIO 4:05
- 12. FINALE 2:10

SONATA IN A-FLAT MAJOR, Hob. XVI:46 (c. 1768 - 1769)

- 13. ALLEGRO MODERATO 8:21
- 14. ADAGIO 9:38
- 15. FINALE: PRESTO 4:47

APPENDIX 16. ADAGIO FROM SONATA IN A-FLAT MAJOR, Hob. XVI:46, "as written" 5:42

HARPSICHORD JOHANN LEYDECKER, Vienna, 1755, by Martin Pühringer, Haslach, 2004 MUSIC ROOM, ESZTERHÁZA, Fertöd

Michel-Barthélemy Ollivier, Le thé à l'anglaise, dans le Salon des quatre glaces, au Temple, avec toute la cour du prince de Conti, écoutant le jeune Mozart, oil on canvas, 1766 (Musée du Louvre, Paris)



PROGRAM TWO QUALITY TIME c. 1750 - 1772

clavichord, music room of an upper middle-class household a¹ = 408 Hz, adjusted Kirnberger III (1779)

SONATA IN C MAJOR, Hob. XVI:1 (c. 1750 - 1755) 17. ALLEGRO 3:04 18. ANDANTE 3:47 19. MENUET / TRIO 3:08

SONATA IN G MAJOR, Hob. XVI:6 (before 1760) 20. ALLEGRO 6:03 21. MINUET / TRIO 4:25 22. ADAGIO 3:57 23. FINALE: ALLEGRO MOLTO 2:50

SONATA IN D MAJOR, Hob. XVII:D1 (c. 1750 - 1755) 24. THEMA / VAR. I – III 4:12 25. MENUET 0:54 26. FINALE 2:03

SONATA IN E MAJOR, Hob. XVI:13 (early 1760s) 27. MODERATO 5:03 28. MENUET / TRIO 3:53 29. FINALE: PRESTO 3:08

SONATA IN B-FLAT MAJOR, Hob. XVI:18 (c. 1770 - 1772) 30. ALLEGRO MODERATO 8:39 31. MODERATO 10:02

SONATA IN G MINOR, Hob. XVI:44 (c. 1771) 32. MODERATO 9:34 33. ALLEGRETTO 5:08

CLAVICHORD IN SAXON STYLE, c. 1760, by Joris Potvlieghe, Tollembeek, 2003

"ROOM FIVE," HAYDN'S HOUSE, Eisenstadt

Johann August Rosmaesler, engraving in Franz Seydelmann, Sechs Sonaten für zwo Personen auf einem Clavier (Leipzig, 1781)



PROGRAM THREE THE MUSIC LESSON c. 1755 - 1767

Viennese harpsichord, private room of a noble household $a^1 = 435$ Hz, Werckmeister III (1691)

SONATA IN C MAJOR, Hob. XVI:7 (before 1760) 34. ALLEGRO MODERATO 1:32 35. MENUET / TRIO 3:03 36. FINALE: ALLEGRO 1:41

SONATA IN D MAJOR, Hob. XVI:14 (early 1760s) 37. ALLEGRO MODERATO 7:33 38. MENUET / TRIO 4:40 39. (FINALE): PRESTO 3:44

VARIATIONS IN A MAJOR, Hob. XVII:2 (before 1767) 40. (MENUET) / VAR. I - XX 16:30

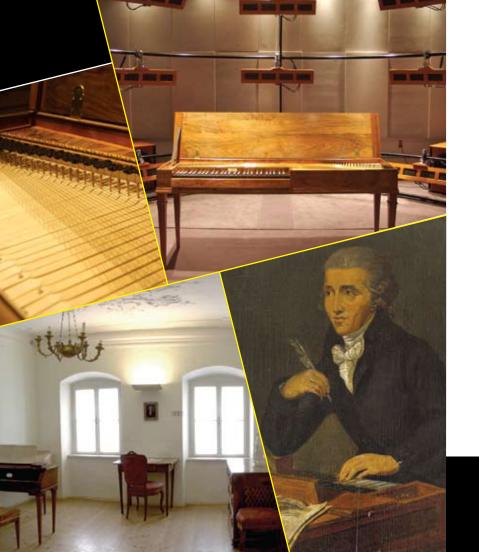
SONATA IN G MAJOR, Hob. XVI:G1 (before 1760) 41. ALLEGRO 4:32 42. MINUETTO / TRIO 2:58 43. FINALE: PRESTO 2:17

SONATA IN E MINOR, Hob. XVI:47 (c. 1765) 44. ADAGIO 4:26 45. ALLEGRO 5:43 46. FINALE: TEMPO DI MENUET 3:55

SONATA IN E-FLAT MAJOR, Hob. XVI:45 (1766) 47. MODERATO 11:49 48. ANDANTE 6:23 49. FINALE: ALLEGRO DI MOLTO 4:34

HARPSICHORD JOHANN LEYDECKER, Vienna, 1755, by Martin Pühringer, Haslach, 2004 SPIEGELSAAL, ESTERHÁZY PALACE, Eisenstadt

Jean-Honoré Fragonard, La leçon de musique, oil on canvas, 1765 (Musée du Louvre, Paris)



PROGRAM FOUR HAYDN'S WORKSHOP c. 1760 - 1771

clavichord, Haydn's study a¹ = 405 Hz, Kirnberger III (1779)

SONATA IN C MAJOR, Hob. XVI:10 (before 1760) 50. MODERATO 3:39 51. MENUET / TRIO 3:29 52. FINALE: PRESTO 3:05

SONATA IN D MAJOR, Hob. XVI:19 (1767) 53. MODERATO 8:51 54. ANDANTE 6:43 55. FINALE: ALLEGRO ASSAI 3:46

VARIATIONS IN E-FLAT MAJOR, Hob. XVII:3 (early 1770s) 56. MODERATO / VAR. I - XII 13:52

SONATA IN F MAJOR, Hob. XVI:9 (before 1760) 57. ALLEGRO 2:34 58. MENUET / TRIO 3:11 59. SCHERZO: (ALLEGRO) 0:52

SONATA IN G MAJOR, Hob. XVI:8 (before 1760) 60. ALLEGRO 2:38 61. MENUET 0:52 62. ANDANTE 1:15 63. ALLEGRO 0:42

SONATA IN C MINOR, Hob. XVI:20 (1771) 64. MODERATO 12:03 65. ANDANTE CON MOTO 7:35 66. ALLEGRO 4:43

CLAVICHORD IN SAXON STYLE, c. 1760, by Joris Potvlieghe, Tollembeek, 2003

STUDY, HAYDN'S HOUSE, Eisenstadt

Ludwig Guttenbrunn, Portrait of Joseph Haydn, oil on canvas, 1770 or 1791 (Haydn-Haus, Eisenstadt)



PROGRAM FIVE "YOUR MOST SERENE HIGHNESS!" published 1774

double manual harpsichord, Eszterháza Ceremonial Room a¹ = 415 Hz, Barca (1786)

SIX SONATAS DEDICATED TO PRINCE NICOLAUS ESTERHÁZY (KURZBÖCK, 1774)

SONATA IN C MAJOR, Hob. XVI:21 (1773)

- 1. ALLEGRO 10:18
- 2. ADAGIO 6:29
- 3. FINALE: PRESTO 3:17

SONATA IN E MAJOR, Hob. XVI:22 (1773)

- 4. ALLEGRO MODERATO 8:35
- 5. ANDANTE 7:14
- 6. FINALE: TEMPO DI MENUET 3:57

SONATA IN F MAJOR, Hob. XVI:23 (1773)

- 7. [NO INDICATION] 5:33
- 8. ADAGIO 8:30
- 9. FINALE: PRESTO 4:21

SONATA IN D MAJOR, Hob. XVI:24 (1773) 10. ALLEGRO 7:19

- 11. ADAGIO 3:11

12. FINALE: PRESTO 2:40

SONATA IN E-FLAT MAJOR, Hob. XVI:25 (1773) 13. MODERATO 7:25 14. TEMPO DI MENUET 2:44

SONATA IN A MAJOR, Hob. XVI:26 (1773) 15. ALLEGRO MODERATO 11:03 16. MENUET AL ROVESCIO / TRIO [AL ROVESCIO] 2:50 17. FINALE: PRESTO 0:56

APPENDICES

18. ADAGIO FROM SONATA IN F MAJOR, Hob. XVI:23 (1773), without repeats 4:24 19. MENUET AL ROVESCIO - TRIO [AL ROVESCIO] FROM SONATA IN A MAJOR,

Hob. XVI:26, "prima vista" 1:57 20. IDEM. "techno" 1:28

HARPSICHORD IN FRENCH STYLE, c. 1770, by Yves Beaupré, Montreal, 2007

CEREMONIAL ROOM, ESZTERHÁZA, Fertöd

Anonymous, Portrait of Prince Nicolaus Esterházy I (1714-1790), oil on canvas (Haydn-Haus, Eisenstadt)



PROGRAM SIX THE SCORE 1776

square piano, "far away" location a¹ = 430 Hz, Valotti (1781)

SIX SONATAS "VON ANNO 776"

SONATA IN G MAJOR, Hob. XVI:27 (1776 or before) 21. ALLEGRO CON BRIO 6:20 22. MENUET / TRIO 4:49 23. FINALE: PRESTO 3:22

SONATA IN E-FLAT MAJOR, Hob. XVI:28 (1776 or before) 24. **ALLEGRO MODERATO** 7:40 25. **MENUET / TRIO** 5:03 26. **FINALE: PRESTO** 3:57

SONATA IN F MAJOR, Hob. XVI:29 (1774) 27. MODERATO 9:32 28. ADAGIO 5:16 29. TEMPO DI MENUET 4:24

SONATA IN A MAJOR, Hob. XVI:30 (1776 or before) 30. ALLEGRO 6:01 31. ADAGIO 1:28 32. TEMPO DI MENUET: CANTABILE / VAR. I – VI 7:36

SONATA IN E MAJOR, Hob. XVI:31 (1776 or before) 33. MODERATO 5:15 34. ALLEGRETTO 3:13 35. FINALE: PRESTO 2:36

SONATA IN B MINOR, Hob. XVI:32 (1776 or before) 36. ALLEGRO MODERATO 7:21 37. MENUET / TRIO 4:22 38. FINALE: PRESTO 3:45

TAFELKLAVIER IGNAZ KOBER, Vienna, 1788, by Chris Maene, Ruiselede, 2007 SALLE DE NANTES, CHÂTEAU RAMEZAY, Montreal

Figures 104 and 105 from The Gallery of Fashion vol. 3, 1796 (Victoria and Albert Museum, London)



PROGRAM SEVEN "EQUAL TO THE FINEST MASTERS" published 1780

Viennese fortepiano with "stoss"-action, formal salon a¹ = 430 Hz, Valotti (1781)

SIX SONATAS DEDICATED TO KATHARINA AND MARIANNA VON AUENBRUGGER (ARTARIA, 1780)

SONATA IN C MAJOR, Hob. XVI:35 39. ALLEGRO CON BRIO 6:21 40. ADAGIO 5:40 41. FINALE: ALLEGRO 3:08

SONATA IN C-SHARP MINOR, Hob. XVI:36 42. **MODERATO** 8:33 43. **SCHERZANDO: ALLEGRO CON BRIO** 3:45 44. **MENUET: MODERATO** 5:15

SONATA IN D MAJOR, Hob. XVI:37 45. ALLEGRO CON BRIO 4:28 46. LARGO E SOSTENUTO 2:53 47. FINALE: PRESTO MA NON TROPPO 3:27

SONATA IN E-FLAT MAJOR, Hob. XVI:38 48. ALLEGRO MODERATO 8:22 49. ADAGIO 4:16 50. FINALE: ALLEGRO 3:45

SONATA IN G MAJOR, Hob. XVI:39 51. ALLEGRO CON BRIO 5:07 52. ADAGIO 8:07 53. PRESTISSIMO 3:23

SONATA IN C MINOR, Hob. XVI:20 54. **ALLEGRO MODERATO** 12:29 55. **ANDANTE CON MOTO** 4:08 56. **FINALE: ALLEGRO** 4:47

FORTEPIANO ANTON WALTER (STOSS), Vienna, 1782, by Chris Maene, Ruiselede, 2005 MUSIC ROOM, ESZTERHÁZA, Fertöd

François Dequevauviller, L'Assemblée au concert, colored etching and engraving after a painting by Niklas Lafrensen the Younger, late 18th century



PROGRAM EIGHT MUSICAL LETTERS TO A PRINCESS c. 1782 - 1790

square piano, private salon of a noblewoman a¹ = 430 Hz, Valotti (1781)

VARIATIONS IN C MAJOR, Hob. XVII:5 (1790)

1. THEMA: ANDANTE / VAR. I - VI 7:00

SONATA IN E MINOR, Hob. XVI:34 (c. 1782)

- 2. PRESTO 5:41
- 3. ADAGIO 5:23
- 4. VIVACE MOLTO (innocentemente) 3:22

THREE SONATAS DEDICATED TO PRINCESS MARIE ESTERHÁZY (BOSSLER, 1784)

SONATA IN G MAJOR, Hob. XVI:40

5. ALLEGRETTO E INNOCENTE 8:11

6. PRESTO 3:25

SONATA IN B-FLAT MAJOR, Hob. XVI:41

7. ALLEGRO 6:39

8. ALLEGRO DI MOLTO 2:39

SONATA IN D MAJOR, Hob. XVI:42

9. ANDANTE CON ESPRESSIONE 9:44

10. VIVACE ASSAI 3:08

APPENDIX

11. ALLEGRETTO E INNOCENTE FROM SONATA IN G MAJOR, Hob. XVI:40, "prima vista" 8:19

SINGLE PIECE I SONATA IN D MAJOR, Hob. XVI:33 (c. 1772 - 1773) Clavichord in Saxon Style, c. 1760, by Joris Potvlieghe, Tollembeek, 2003 - "Room Five," Haydn's House, Eisenstadt - a' = 405 Hz, Kirnberger III (1779) 12. ALLEGRO 7:13 13. ADAGIO 4:53 14. TEMPO DI MENUET 4:04

TAFELKLAVIER IGNAZ KOBER, Vienna, 1788, by Chris Maene, Ruiselede, 2007

PRUNKRAUM, ALBERTINA, Vienna

Angelica Kauffmann, Das lesende Mächen, drawing, 1770 (Landesmuseum Ferdinandeum, Innsbruck)



PROGRAM NINE VIENNESE CULTURE 1789 - 1798

Viennese fortepiano with "prell"-action, formal music salon $a^1 = 430 \text{ Hz}$, Valotti (1781)

FANTASIA ("CAPRICCIO") IN C MAJOR, Hob.XVII:4 (1789) 15. PRESTO 7:08

SONATA IN E-FLAT MAJOR, Hob. XVI:49 for Marianne von Genzinger (1789 - 1790)
16. ALLEGRO 10:20
17. ADAGIO E CANTABILE 8:39
18. FINALE: TEMPO DI MINUET 4:15

VARIATIONS ("SONATA") IN F MINOR, Hob. XVII:6 for Barbara von Ployer (1793) 19. ANDANTE 15:28

SONATA IN E-FLAT MAJOR, Hob. XVI:52 for Magdalena von Kurzböck (Artaria, 1798) tuning: quasi-equal, Hummel (1829) 20. ALLEGRO 9:22 21. ADAGIO 7:19 22. FINALE: PRESTO 6:40

SINGLE PIECE II SONATA IN C MAJOR, Hob. XVI:48 (Breitkopf, 1789) Fortepiano Anton Walter, c. 1795, by Chris Maene, 2005 (from the collection of McGill University) - Salle de Nantes, Château Ramezay, Montreal - a' = 430 Hz, Valotti (1781) 23. ANDANTE CON ESPRESSIONE 8:48 24. RONDO: PRESTO 4:18

FORTEPIANO ANTON WALTER (PRELL), Vienna, after 1791, by Chris Maene, Ruiselede, 2005

FESTSAAL, PALAIS LOBKOWITZ, Vienna

Carl Schütz, Ansicht des Kohlmarkts, colored etching and engraving, Artaria, 1786 (Wien Museum Karlsplatz, Vienna)



PROGRAM TEN THE LONDON SCENE 1794 - 1795

English grand piano, concert hall and drawing room $a^1 = 430$ Hz, Young (1799)

PRELUDE IN C MAJOR, from Appendix to the Fifth Edition of Clementi's Introduction to the Art of Playing on the Piano Forte Op. 42 (1811) 25. ALLEGRO 0:21

SONATA IN C MAJOR, Hob. XVI:50 (probably 1794) for Therese Jansen 26. ALLEGRO 8:35 27. ADAGIO 5:52 28. ALLEGRO MOLTO 2:42

SONATA IN D MAJOR, Hob. XVI:51 (probably 1794) possibly for Maria Hester Park Salle de Nantes, Château Ramezay, Montreal 29. ANDANTE 4:07 30. FINALE: PRESTO 1:56

SONATA IN E-FLAT MAJOR, Hob. XVI:52 (1794) for Therese Jansen 31. **ALLEGRO** 9:30 32. **ADAGIO** 7:00 33. **FINALE: PRESTO** 6:42

ADAGIO IN G MAJOR, Hob. XV:22 (in or before 1795) 34. ADAGIO MA NON TROPPO 5:25

CODA

VARIATIONS IN G MAJOR on "Gott, erhalte Franz den Kaiser!" Hob. III:77 (1797) Fortepiano Anton Walter ("stoss"), c. 1782, by Chris Maene, 2005 - Tom Beghin's Studio, Montreal - a¹ = 430 Hz, Valotti (1781) 35. POCO ADAGIO / VAR. I - IV 6:36

PIANO LONGMAN, CLEMENTI & CO., London, 1798, by Chris Maene, Ruiselede, 2004 (from the collection of Malcolm Bilson)

HOLYWELL MUSIC ROOM, Oxford

Karl Anton Hickel, William Pitt addressing the House of Commons, 1793 (National Portrait Gallery, London)

A COMPOSER, HIS DEDICATEE, HER INSTRUMENT, THEIR ROOM

Tom Beghin

Some fifteen years ago, when I first planned to study and eventually record "the complete Haydn keyboard sonatas" or "Hoboken XVI," I was very much a child of my times. As a graduate student at Cornell University during the 1991 Mozart Bicentenary, I watched my mentors plunge into similar "complete" recording projects. Embarking on one of my own, so I thought, would not only be personally satisfying but would also earn the approval of a professional community to which I aspired to belong. This was to be my "master work," not in a romantic self-glorifying way, but in the eighteenth-century sense of being accepted to a guild. With this Blu-ray set I submit my overdue report. If it weren't for the Haydn Bicentenary of 2009, I might still be contemplating the project's concepts and definitions. But as the Year approached, I began collaborating with masters from other disciplines—researchers, professionals, craftsmen. It is with two of these—Martha de Francisco and Wieslaw Woszczyk, both colleagues at McGill University—that, in Spring 2007, we finally recorded some fourteen hours of music over a marathon of four months.

The project is still very much about Haydn, but it has become about so much more. These discs challenge all conventions of performing, recording, and listening, and introduce new paradigms. The most spectacular of these is "virtual acoustics," the technological feat of transporting oneself to a different acoustic environment, turning the recording studio into the room of one's choice. In addition, there are the historical instruments built especially for this project, some not heard or played since the eighteenth century; a fresh awareness of socio-cultural contexts and mixing techniques applied to a classical music commercial release with new and fascinating results.

PER EXEMPLUM

September 16, 2007, 1:00 p.m. I board the ferry in Calais, bound for Dover. Fragments of a letter from Haydn to his dear friend Marianne von Genzinger keep invading my thoughts:

After attending Holy Mass, I boarded the ship, at 7:30 a.m. [on New Year's Day 1791], and at 5 p.m., God be thanked!, I arrived safe and sound in Dover. [...] During the entire passage I stayed on deck, so as to gaze my fill at that mighty animal, the sea. As long as there was no wind, I wasn't afraid, but as the wind grew stronger and stronger, and I saw those frighteningly high waves slamming into the ship, a little fear took hold

of me, along with a little nausea. But I survived it all without... you know, and arrived safely to shore. (January 8, 1791)

Like Haydn, for most of the one-and-a-half-hour journey, I too stayed on deck. The purpose of the trip: to bring a 1798 Longman, Clementi & Co. piano from its present home in Belgium back to England, specifically to Oxford's Holywell Music Room, "Europe's oldest concert hall." Our task: to sample the room—that is, to take many acoustical snapshots of it—and make a reference recording of the instrument, positioned in recital-style, on the stage, lid up. The piece I played was Haydn's "grand" E-flat Sonata no. 52, written for the London-based, professionally trained pianist Therese Jansen, pupil of the "Father of the (modern) Piano," Muzio Clementi. To further transport myself into an appropriate concert mood, I invited a few British guests, seated at an appropriate distance on built-in benches. (See BD 4 for a video recording of this event.)

With this information—digital data on our hard drives as well as vivid memories of the actual performance experience—our team flew back home to Montreal, Canada. There, in the heart of the city, in a laboratory on the eighth floor of the Schulich School of Music, the new home of McGill's Centre for Interdisciplinary Research in Music Media and Technology (CIRMMT), we replicated everything. Thus, sitting at a 2004 replica of the same Longman. Clementi & Co. grand, in a three-dimensional "dome" of twenty-four loudspeakers, I play as if I were in the Holywell Music Room, ever so conscious of the acoustical spaciousness that surrounds me. As microphones pick up the sounds of the piano, the computer makes the fastest of calculations. sending reverberation responses identical to those in Oxford through the loudspeakers. With the confidence expected of a recitalist, I project those grand opening chords into a virtual hall (BD 3, track 31). Then, as I play those repetitions in the higher register, dropping silences in between, I actively engage with the acoustical feedback, which complements those lazily dampened, resonant though somewhat muffled English tones amazingly well. Through those moments of "staged" hesitation, I assert my authority as a professional performer, at the English instrument, in a virtual concert space, with an imaginary audience.

THE WEIGHT OF AN IDEOLOGY

Arguably no other classical "repertoire" has suffered more under the modern ideology of "musical works" than Haydn's works for solo keyboard. In spite of genuine efforts by individual scholars and performers these fifty-plus works have largely remained in the shadow of those by his younger colleagues Mozart and Beethoven. The one big exception is Sonata no. 52. Why?

Nowadays, when we speak of a "sonata by Haydn," we think first and foremost of a musical score to which we gain access through performing, listening, or, if one feels up to it, simply looking at it. But none of these activities is considered an unfiltered,

direct line to the true identity of the work, whose idealized "perfect" proportions dazzle us for reasons that keep warranting more study and interpretation. It is from this "imaginary museum of musical works" (Lydia Goehr 1992) that musicians borrow scores—reflections of "the work"—to be shared with their audiences. A recent reviewer of a piano recital, which included no fewer than two Haydn sonatas, describes the pianist as "turning to the audience with a smile after the final chord, as if to say, 'Quite a masterpiece, don't you agree?" (Incidentally, the piece in question was not a Haydn sonata, but one by Mozart.) All too often, the communication between performer and listener begins and ends with this tacit agreement.

Consider the particulars of "Haydn in London." We ended up in Oxford only because the Hanover Square Rooms, whose acoustics Haydn was intimately familiar with, simply don't exist anymore. (Haydn did, incidentally, make it to Oxford: he received his Honorary Doctorate on July 8, 1791, just one block away from Holywell Street in the Sheldonian Theatre.) At first glance, we find ourselves relating to Therese Jansen's gratitude upon receiving a score from Haydn (that great composer from Vienna, that bastion of Classical Music), her eagerness to learn the piece (whether it's the Hanover Square Rooms or Carnegie Hall, the only way to get there was and is through practice), and her ambition to deliver it on stage (every note exactly as written). But, as we look closer, we begin to realize that, having traveled from Vienna to London and now working for a new and unfamiliar market, Haydn may have needed Jansen more than she needed him. When Haydn met Therese, both Dussek and Clementi, two major figures on the London scene, had already dedicated sonatas to her. Who better than la celebre Signora Terese de Janson (as Haydn calls her in his manuscript) to advise the famous out-of-town guest on the possibilities of the English instruments (which were fundamentally different from the Viennese ones) and to school him in the demands of a professional concert sonata (a design totally new to Haydn)? The only other such Haydn sonata is no. 50 in C Maior. also for Jansen.

After composing the sonata in 1794 "expressly for Mrs. Bartolozzi" (Therese went on to marry the engraver Gaetano Bartolozzi, an event to which Haydn was an official witness), Haydn apparently succumbed to the temptation of making the score available to a wider continental public, offering it to his Viennese publisher Artaria in 1798. Jansen quickly took steps to release her own edition in 1799 by Longman, Clementi & Comp^v in London. But Haydn had re-dedicated the Viennese edition to Magdalena von Kurzböck. "It speaks well for the lady named on the title page that the honorable Haydn, who surely has no inclination nor time to give empty compliments, has intended such a sonata especially for her," the German reviewer of the *Allgemeine musikalische Zeitung* wrote on May 15, 1799. So who is the true dedicatee: *Mademoiselle Kurzbek* or Mrs. Bartolozzi? Both, incidentally, had strikingly similar profiles—they were both in their mid-to-late twenties, both were accomplished players, both had studied or were about to study with *maestro* Clementi. For Haydn the two *personae* simply may have been interchangeable. Having returned from London a celebrity and having just written

when it came to his business as a composer. Never mind Therese or Madeleine, it's his sonata. With the Vienna print, Haydn indeed seems to have endorsed, for the first time, a conceptual separation of context and "work." From a larger historical perspective, it seems no coincidence that this double edition occurred at a time when from various sides—publishers, biographers, secretaries—he was encouraged to start thinking about his legacy.

So we start our account with a paradox. In no. 52 Haydn very much showed himself the master-orator who, much more clearly than ever before, was able to tailor his composition to a specific pianist, a specific piano, and a specific city. London with its generous opportunities for public speaking and performing must have inspired Haydn to write in grand, broadly oratorical gestures—but also unambiguous ones, simple enough to be understood and appreciated by many at the same time in the same large room. Yet, this summum of rhetorical writing transcended its contextual origins to become a "work" that asserts its place in the Classical Canon and became a "must" in every aspiring pianist's repertoire. Ironically, perhaps because no. 52 happened to be the last sonata Haydn wrote, it became emblematic of a "Viennese" Classical (Piano) Style.

The same reviewer for the *Allgemeine musikalische Zeitung* stressed the sonata's "grand, rich, and difficult" aspects. These particular epithets eventually contributed to Haydn's earlier keyboard works being overshadowed by most of Mozart's and all of Beethoven's. In 1799, however, "rich," "difficult," or "grand" were not value judgments: they described concrete and socio-culturally determined aspects of the music, different, as the reviewer rightly observed, from anything Haydn had written before. How then to assess the majority of Haydn's keyboard oeuvre? Clearly, the onus is on us—performer, recording engineer, and listener.

SHORT OCTAVES MÜSSEN SEIN!

We recorded Sonata no. 52 twice: first, showcasing its English roots (BD 3, tracks 31-33), then, in its Viennese appropriation (BD 3, tracks 20-22). The tuning systems used for each performance reflect a similar shift from the specific to the generic. In England, we used a "well temperament" by Thomas Young, as submitted to the Royal Society in 1799. In Vienna, we bet on the future with Johann Nepomuk Hummel's "easy and convenient" quasi-equal temperament of 1829. (In 1803 Haydn recommended Hummel as his successor at the Esterházy Court.) The shock of an equal temperament—which comes across as bland after extended exposure to the various colors of unequal tunings—reminds us of another cultural prejudice: it is perfectly possible that listeners used to modern tuning will find our earlier temperaments shocking. At the other end of the spectrum, near the top of the complete set (BD 1, track 4), stands a unique Capriccio on the folk tune "Acht Sauschneider müssen sein," Hob. XVII:1 (1765). Standardization— whether it relates to tuning, instrument, notation, rhetoric, or performance—is definitely not the keyword here.

Haydn scholarship has long known that three of his keyboard pieces—the Variations in A Major Hob. XVII:2 (BD 1, track 40), the Sonata in E Minor Hob. XVI:47 (BD 1, track 44), and this Capriccio—are impossible to play on a "regular" (chromatic) keyboard. Instead, they require one with a so-called "Viennese short octave," meaning that certain keys in the lowest register are divided into two or even three smaller parts. The idiomatic constellation may be gauged from fig.1. Originally this design was an ingenious solution to an instrument maker's problem: how to allow for more strings to be plucked (resulting

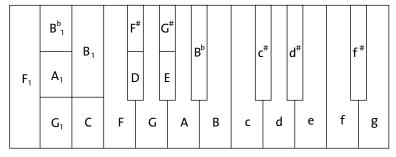


FIGURE 1. VIENNESE MULTIPLE-BROKEN OCTAVE ("SHORT OCTAVE")

in more notes being produced) within the confines of an existing construction. But an interesting bonus for the keyboardist was the ability to grasp wider chords with her left hand. This is exactly what Haydn exploits in the three named pieces. But what scholarship has long ignored is that harpsichords with such a "multiple-broken octave" were the norm in eighteenth-century Vienna until well into the 1770s. The keyboards we now consider normal—the fully chromatic ones—were then considered exotic: they were called "French." An edited volume by Alfons Huber (2001) put the eighteenth-century Austrian harpsichord back on the map and a few years ago Martin Pühringer finished the construction of such an instrument (modeled on a 1755 Johann Leydecker, presently in the Joanneum in Graz) for our recording project. We play two full programs on it, not just the three "extraordinary" pieces.

"It takes eight Sauschneider to castrate a boar: two in front, two in the back, two to hold, one to bind, and one to make the cut." (A Sauschneider, lit. pig cutter or castrator porcorum, typically from Lungau—the region of Salzburg—was a professional skilled in the castration of cattle, pigs, and horses. With one or two assistants, he traveled on foot from village to village, offering his services to farmers.) With each repeat of the song the group thins out. The second verse starts with "It takes seven Sauschneider." At the end only one remains, and he does the holding, the binding, and finally—successI—the

cutting. In Haydn's Capriccio it is quite possible to make the count: excluding the G Major presentation of the tune at the outset, as well as two reminders of this home key through the course of the piece, there are exactly eight new beginnings. Our castrating adventures read as follows. It's a narrator who first announces them in the home key of G Major (13:24). We begin in a confident D Major (13:57) but as we move up the circle of fifths, not towards major keys but to A Minor (14:50), E Minor (15:27), and B Minor (17:03), the difficulties pile up, provoking some sarcastic comments by the narrator (16:06). We're fighting the devil, so it seems. (The remarkable chromatic sequence in 17:14 – 17:49, where voices move away from one another by just the smallest of steps, was known in music theory as *Teufelsmühle* or "devil's mill.") No point in trying any longer: we call a time-out in C Major (17:50). As we change our tactics (triplets in the left hand, 17:55), we regain our confidence. Cheered on by distinctive horn calls in a combative F Major (18:50), we slowly but steadily gain ground. Will we make it? The narrator drops the question (19:30). Cleverness rather than force may be necessary: G Minor (19:42) and B-flat Major (20:14). We now return to G Major (20:44) for the grand finale. After a few deep breaths the last remaining Sauschneider makes his move... gotcha! Hold on (21:29)! Then.... At this point I invite the reader to look at the videotaped performance on BD 4. Just ask yourself the following question: if you were the player/ composer and you had to choose a key on the keyboard (in the sense of the mechanical part) to represent... well, you know, something that needs to be cut, which would it be?

This is slap-stick of the "purest" kind: Haydn as Mr. Bean—can it be? Working with comic genius Joseph Felix Kurz in 1750s Vienna, Haydn had once had to overcome his own inhibitions. Carpani (1812) tells us that, after trying out several ways to portray the "rising and falling waves of a storm, Haydn became desperate and started to bang his hands mid-range on the keyboard and to move them up and down, fast and glissando." Haydn wasn't so sure but "Bernardon [as Kurz was known on the stage] was delighted and embraced him," exclaiming "That's it, that's it!" On another occasion Haydn couldn't keep his eyes off Kurz' "studying" in front of a large mirror. He was "making all kinds of faces and contorting his hands and feet in the most ridiculous positions." In the *Sauschneider* Capriccio, I suggest that we are the ones now observing Haydn exercise in front of his mirror, practicing his old skills as a comic theater scorer. The connection through Kurz with the Viennese tradition of Hanswurst (the presence on stage of a character like Mr. Bean) is more than tangential. Joseph Stranitzky, Kurz' godfather (both spiritually and in actual life), had copyrighted the first Hanswurst as a Salzburg peasant or *Sauschneider*.

When I first worked my way through the Capriccio on the new Leydecker harpsichord, I felt both silly and frustrated. The first verse—with the wide tenths in the bass—gave me lots of confidence and pride, especially since I'd never tasted this kind of power on the keyboard before. But increasingly, and culminating in a passage where my left hand is forced down over and over towards ever elusive octaves, I felt painfully inadequate. What happened? Had I become one of those poor *Sauschneider*, an unsuspecting bystander suddenly entangled in a busker's act on some street corner of Vienna? Or,

as I continued to analyze and practice my own bodily contortions over the next days, months, and years, did I eventually turn the short octave "handicap" into an asset, thus becoming a stage-worthy Hanswurst myself? This tension—a "before" and "after," if you will—has informed many if not all interpretations on these discs. The difficulty is this: often the recognition that Haydn is taking us in—he's the master-puppeteer gives meaning to the very performance one is engaged in. Under the pressures of the modern concert stage (or the compact disc) this "meaning" often simply evaporates, unless (and this is a big unless) one finds a way to hold on to it, even amplify it, and exploit it in a theatrical sense.

To give another example: with the minuet "al rovescio" in Sonata no. 26 (BD 2, tracks 16, 19 and 20) Haydn asks the performer to "read backwards" the very lines printed on the page. A delightful task, in the privacy of one's own music or living room, to be shared, even, with one or two household members who lean over your shoulder, comparing text and execution, but much more awkward when you've got some hundred concertgoers staring at you. To give meaning to such a specifically rhetorical moment requires the theatrical talent to "pretend" amusement or bewilderment (track 19). Or, one can take the matter one level deeper by carefully rehearsing an even more sophisticated rendition in which one's ornaments (added by the performer) can also be executed backwards (track 16). Finally, we couldn't resist putting Haydn's contrapuntal game to a sound-technology test: on track 20 it is the computer that plays the sound file of the minuet backwards, literally note-by-note.

For the Capriccio, we deliberately chose to tune the harpsichord in a quarter-comma mean tone temperament. This tuning, though referred to as the "old" system, was still explained in an 1805 Viennese tuning manual. Certain extant organs or fretted clavichords confirm that the temperament was used well into the eighteenth century. The unavoidable "wolf's fifth" in our tuning is between E-flat and G-sharp. The pain, as I play my first D-sharp, is excruciating. It's not the howling of a wolf, but (enough with decorum!) the squealing of a pig.

Though extant in manuscript (with the full title of the folk song written in Haydn's hand on the cover), the piece was eventually first published as a simple "Caprice" (without further specification) by Artaria only in 1788, revised to eliminate the need for a short octave keyboard, which by that time had become obsolete. Just one year later, Haydn offered for print another Capriccio in C Major Hob. XVII:4, composed, as he wrote to Artaria, "during a most cheerful session" (was he nostalgic of those sessions with Bernardon?), once more based on a folk song, this time about a farmer, his wife, her cat, and its mouse. Interestingly, confirming our physical analysis of the 1765 Capriccio, Haydn wrote the new capriccio as he familiarized himself with his brand new fortepiano (see below). (Both the *Sauschneider Capriccio* and this *Bäurin* "Fantesia"—as Artaria dubbed it—are offered on BD 4, to be viewed up-close.) I vividly remember a crisis. I was two-thirds through an extended cycle of concerts featuring the Complete Haydn. Nearing the end, I was supposed to feel energized, happy to finally reach my goal of grasping a repertoire. Instead I felt regret and dissatisfaction. The typical two-part process for a performer of today—preparation in the practice room, consummation in the concert hall—clearly didn't apply.

Increasingly less concerned with surveying the repertoire as a whole, I became intrigued by the creative forces behind individual pieces. (I dutifully finished the series, but audience members—those who noticed—must have been puzzled by my experiments.) Whenever I learned a new sonata, I found myself trying with ever greater determination to enter Haydn's mind: why am I playing this particular statement; what does it mean; what do I want to achieve; how can I best do so? This is exactly what eighteenth-century sources tell me to do. The ideal of composer and performer as one persona is strongly present in most treatises on performance, and especially in those on playing the keyboard, where it is readily assumed by the listener that the player is also the composer. Even if one plays pieces by someone else, as C.P.E. Bach (1753) urges his readers (including Haydn in his formative years), one is called upon to perform them as if one had composed them oneself.

Sonata in F Major Hob. XVI:23 has a beautiful, heart-rending Adagio (BD 2, track 8). Towards the end of this movement, the keyboardist breaks out of an interiorized, melancholy mode, veering off into something that resembles a cadenza, one final outburst of passion before wrapping up the movement. This observation is useful in itself. It allows me to "loosen up" and play Haydn's notated bars in a free, quasi-improvising manner. I may even be grateful, since in contrast to comparable slow movements of earlier sonatas (nos. 6 in G Major, 19 in D Major, or 46 in A-flat Major), where Haydn, by way of a customary fermata sign, had left it up to the performer to improvise, here I'm provided with material that bears his direct approval. But I'm also faced with a dilemma. If a cadenza, as Quantz (1752) observed, is supposed to "surprise the unsuspected listener one final time at the end," then what to do in the repeat? (The eighteenth-century expectation, especially from a proficient player, would be that she'd play "something different" the second time.) To repeat Haydn's written-out cadenza would be to undermine my credibility as a musical orator, and, by extension, Haydn's. I would literally be taking the surprise out of the surprise.

To sidestep this dilemma we recorded this particular movement twice: once in a version that bears my own approval as performer-composer, where I "simplify" the first runthrough, saving Haydn's cadenza for the repeat (track 8); and once "as written," without any repeat (track 18). It is my belief that, had Haydn not prepared the movement for engraving on copper plates but for digitalization as performance on a compact disc (the latter being the socio-cultural equivalent of the former—much like jazz or pop recordings), he would have endorsed version one rather than version two.

Sonata no. 23 is the third of the Six Sonatas dedicated to Prince Nicolaus Esterházy

HAYDN THE ORATOR

(1774), the first opus ever to appear in a printed edition authorized by Haydn, not just of keyboard music. This special event, carried out in collaboration with Joseph Edler von Kurzböck, imperial printer in Vienna and father of Magdalena (who grew up to become our Viennese dedicatee of Sonata no. 52), must have carried psychological weight. Haydn meticulously prepared the scores, paying careful attention to the notation of ornaments, both essential (marked by shorthand notation) and arbitrary (to be added by the performer). This focus led him to combine his own performative skills with his compositional goals, which more critically than ever before were made to cohabitate a single medium, that of the printed page. With wider and more prestigious distribution on the horizon (previous sonatas had been distributed in handwritten copies through less controlled channels) and having to prepare a whole opus of sonatas (instead of single ones as before), Haydn's reputation was at stake as an all-round musical orator. Not only inventio, dispositio and elocutio had to co-exist (those being the three stages involved in the preparation of a text: finding ideas, ordering them, clothing them in words), actio (delivery; the fifth stage, with memoria or memorization as the fourth) now claimed room for itself too. In other words: whatever Haydn had done previously or asked his students to do in performance, now needed to be firmly imprinted on the written page. This special event was to be Haydn's compact disc: a testimony of what he was capable of offering his Prince, whom he praises in the preface as a true connoisseur of music. He performs for His Excellency, not in the magnificent Eszterháza Ceremonial Room, but on typeset plates, for the whole world to see.

This performance is an ideal one. Never mind the repeats. We witness Haydn at his best, at the one and only run-through. But which do we record? The "ideal" or the "factual" version? With or without repeats? Opting for a live performance in the Eszterháza Ceremonial Room, we have "reconstructed" less ornamented versions in several sonatas (nos. 21 in C Major, 22 in E Major, 23 in F Major, 24 in D Major) for our first run-through, keeping the printed ornaments for the repeat. With these surgical procedures I am fully aware I might offend those who believe in "the score and nothing but the score." But my allegiance here is to my rights and obligations as composer-performer.

In the Anno 776 and Auenbrugger sets Haydn gradually reconnected with a context of live performance, no longer featuring himself or selected students, but increasingly the generic keyboard player. (Haydn's renegotiated contract with the Esterházy court of 1779 officially cleared the way for out-of-court publishing.) Slowly he resolved problems like the "cadenza" of the second movement of no. 23. So it is that, when in the slow movement of the Sonata in G Major Hob. XVI:39 of 1780 (BD 2, track 52, 1:11:36), he prescribes a real fermata again for the first time since pre-1773, he unambiguously indicates the need for a cadenza. But then, rather than expecting the performer to come up with an extended improvisation of her own, he interpolates one. What to do in the repeat? In his first collaboration with Artaria, a new and promising firm in Vienna, whose specialized music publishing targeted a growing market of players, Haydn resolves the dilemma before it ever becomes one: he simply removes the repeat sign.

DEDICATEES

So far I have introduced one collaborator and three dedicatees: Kurz/Bernardon (Capriccio Hob. XVII:1), Prince Esterházy (Hob. XVI:21-26), Therese Jansen and Magdalena von Kurzböck (competing for Hob. XVI:52). I have no trouble identifying myself, first, with Haydn (practicing in front of his mirror or performing one-on-one for the Prince) and, then, with Jansen/Kürzbock (performing for a larger English or Viennese audience). But the search for a single performing persona becomes more complex in the sonatas written and published between 1780 and 1790, all dedicated to women.

Here's the problem. I'm a professional, twenty-first century performer, trained in historical performance practices. But a "master of music"—the historical equivalent of myself (or so I wish)—would not have performed Haydn sonatas; he (indeed masculine by overwhelming majority) might have been curious about them and studied them (at least those available to him, as they circulated through Europe at a rate of three to six every three to five years), but his own merits as a professional would have been judged in the composition and performance of his own sonatas, or more prestigiously still, his concertos. Mozart, Steffan, or Kozeluch come to mind as obvious examples. Players of Haydn sonatas, by contrast, would have included students such as the nine-vear-old Marianna Martines or the Countesses Thun and Morzin: his dear friend Frau von Genzinger and English acquaintance Maria Hester Park; and dedicatees such as the accomplished von Auenbrugger sisters (daughters of the well-known physician Leopold von Auenbrugger), the newly wed Princess Marie Esterházy, and Jansen/ Kurzböck. Prince Nicolaus Esterházy, the only male dedicatee, is excluded from this list: that Haydn did not intend him as a player but as prime listener is clear from his preface, in which the Kapellmeister praises his patron's connoisseurship of music in general and his performing skills on the violin and the baryton in particular, but conspicuously not—for a set of keyboard sonatas—those on the keyboard. Thus, apart from Jansen/ Kurzböck (the only "professionals" in the list) and Martines (the only child, who would grow up to become a master-composer herself), Haydn's clientele was overwhelmingly female, socially well-established (financially independent and with plenty of free time). and dilettante (the latter term applied here without pejorative ring but in the context of the general cultural and artistic development of a lady, which showed especially in her ability to play the keyboard).

The model of "Haydn the orator" needs refinement. Sometimes, Haydn is not "orating," but simply "communicating"—employing the rules of etiquette while interacting with people in real-life situations. (This is not to deny a personal or occasional element in the previous examples. On the contrary: what I propose is to broaden the scope from oratory to rhetoric, the latter including the former but allowing for a much wider range of activities, both private and public.) One of those people was the fifteen-year old Princess Marie Esterházy, née Liechtenstein, recipient of three wonderful Sonatas Hob. XVI:40-42, printed by Bossler in 1784. Not long before, on September 15, 1783, this youngest of the reigning Liechtenstein family had wed the seventeen-year old Nicolaus Esterházy von Galantha, the future Prince Nicolaus II and grandson of the reigning Prince Nicolaus I. The title page of these "Marie Esterházy Sonatas" (fig. 3) makes explicit reference to the wedding: the decorated oval at the bottom depicts an altarpiece with ceremonial fire, a sublimated version of the hearth. Almost certainly, the opus has to be understood as a wedding gift, a token of welcome by the *Kapellmeister* ("your humble servant") to a new member of the Esterházy family. Whereas the princely sonatas were announced



FIGURE 2. TITLE PAGE OF NICOLAUS ESTERHÁZY SONATAS (HOB. XVI: 21-26), KURZBÖCK EDITION, 1774



FIGURE 3. TITLE PAGE OF MARIE ESTERHÁZY SONATAS (HOB. XVI:40-42), BOSSLER EDITION, 1784

in Italian (the language of the music connoisseur), its title page suggesting the image of a cover of a learned book (fig. 2), those for the princess were presented in French (the language of nobility, especially of women), with flowers and garlands adorning the frame of a painting, to be enjoyed rather than studied.

Compare the opening of the Sonata in E Major Hob. XVI:22 (BD 2, track 4) and that of the Sonata in G Major Hob. XVI: 40 (BD 3, track 5). Seated at the most magnificent harpsichord of the court (a French double, perhaps, conforming to the Prince's French taste), Haydn addresses the Prince with the utmost confidence. He introduces his first thought, clear and logical, yet—conforming to the rules of oratory—in need of proof. He lifts his right hand as if asking his listener and himself: "Is this true?" (20:15). As he switches to a different harmony (from tonic to dominant, 20:16), he sinks into a vast arpeggio, adopting an even graver tone of voice. The end of his opening statement, a deep four-voice chord (20:22), is spaced out in a most correct manner and punctuates a clear end of an equally clear period, the first of an assertive and learned three-movement oration, the second in a long series of six.

Now switch to a more intimate setting. With eager anticipation, mother-in-law, governess, or music teacher by her side, the Princess puts her copy of sonatas on the desk of her delicate instrument (a Viennese one, almost certainly a square). She starts playing. A gentle flow of thoughts express themselves, on a tonic pedal, a touch of subdominant on a light part of the beat, a "je ne sais quoi"—is it a gentle look in

the eye; a warm smile; a comforting, inviting gesture of the arm? The ideas are very simple—a three-voiced chord first opens up, then closes. Various melodic motifs— now slurred, then staccato, now with upbeat, then without—gently interact with one another to create an overall lilt of loosely punctuated *commata*, disarmingly innocent. Clarity is not at stake: in the fourth bar a pro-active left hand weakens a possibly clear mark of punctuation (21:39); towards the end of the first eight bars, the low E in the bass reluctantly (but then graciously) gives in to what musical etiquette prescribes: closure on a half cadence (21:46).

What we're "reading," I suggest, is a musical letter, addressed to a lady-in-waiting, a reigning-princess-in-becoming. Curious about Marie's personality (beyond well-known anecdotes about her public life at a later age, including her fond patronage of Haydn), I traveled to the Esterházy Archives in Budapest and found piles of largely unstudied documents: poems, musings, quasi-philosophical notes, abundant letters in her own hand as well as letters addressed to her. As I read more—especially those letters directed to her close friend Maria Ludovica Beatrix, Austrian Empress and third wife of Emperor Franz—I was struck by similarities between Joseph's sonata and Marie's letters. Often Marie's letters start with a celebration of friendship—keen sentimental observations, having to do with the heart and emotion. Then, suddenly, without transition or logic, there's a shift to an informative concluding part: a quick, upbeat, and gossipy report of some party or theater performance. This exact shiftfrom a long empfindsam first part, twice involving variations, to a fast, short, and witty finale—we find in each of the sonatas. The model, clearly, is not that of a learned three-part oration, but the more private, conversational letter, a genre that women—as men readily acknowledged—excelled in. Judging by his own wellcomposed letters to female friends such as Marianne von Genzigner, Haydn had also mastered the genre.

But who's speaking? Is Marie Esterházy "imagining" Joseph Haydn's voice as she reads his letters, or is he lending his words to her, to be declaimed at some other occasion on her own terms? To find a possible answer, we must fast forward to the third and last sonata of the set, no. 42 in D Major. While almost identical to the G Major from a structural point of view, its tone and execution are much more "oratorical"—in the learned, public, indeed "male" sense—than 40. With 42, is Haydn perhaps setting an example? Is he teaching his new pupil how to use to her advantage rehearsed oratorical principles and structures, skills that she might apply—however discreetly and with subtle humor—in her own public life as a Princess? But if such master-pupil interactions exist through the course of this set of sonatas, how do "I" show them in my "professional" rendition of them? To demonstrate my dilemma, yet again, I've recorded two versions of the Allegretto e innocente of Sonata no. 40: a "professionalized" one, along the lines of Haydn's own example in no. 42 (track 5), and one "prima vista" (track 11), literally "innocently," as Marie might have read Haydn's letter before learning from nos. 41 and 42.

On October 26, 1788, Haydn writes to his publisher Artaria:

In order to compose your 3 Clavier sonatas well [Hob. XV:11-13], I was compelled to buy a new Forte-piano. Now, since you must have long been aware that from time to time even the learned are short of money, which is the case with me now, I must entreat you, Sir, to pay 31 gold ducats to Herr Wenzl Schanz, the organ and instrument maker, who lives on the Leimgruben at the "Blauen Schiff," no. 22. I will repay these 31# with thanks by the end of January next year 1789.

Is Haydn buying a new fortepiano to replace an older one, or is he finally buying the new thing that everyone has been raving about? (Almost overnight, in the early 1780s, Vienna had become a center of fortepiano-building. A good point of comparison, I suggest, would be Silicon Valley and the new personal computers of the 1980s.) What exactly did he buy? Thirty ducats would not have been nearly enough for a grand, but about right for a square. (The one ducat would have been for transportation, as Richard Maunder revealed.)

The traditional take is that of course Haydn acquired a grand. The thought of the great composer being satisfied with a square has never been seriously entertained. But I'm not so sure. Though I would not go as far as Maunder who states that "almost certainly, Haydn's Wenzel Schanz was a square," I would not be offended if it were. Interestingly, when it comes to identifying the "Schanz fortepiano" that Haydn advised his friend Marianne von Genzinger to acquire, scholars have been more accepting of the fact that it might have been a square. This correspondence—of great significance also for the premise of our recordings—has been widely discussed in the literature.

After sending the Sonata in E-flat Major Hob. XVI:49 (BD 3, tracks 16-18) to Frau von Genzinger, Haydn explains, "I know I ought to have arranged this sonata in accordance with your kind of keyboard [*Clavier*; from a few sentences before it is clear that harpsichord is meant], but I found this impossible because I am no longer accustomed to it" (June 27, 1790). If Haydn bought a new piano in the fall of 1788, celebrating his purchase in March of 1789 with a new Fantasy Hob. XVII:4 (BD 3, track 15), then it makes sense that he can't go back. (Once computer literate, dusting off the old typewriter isn't an option anymore.) But Haydn is clearly embarrassed. The etiquette of writing a piece for someone required taking into account the type of instrument the person owned. Haydn's quite drastic solution is to convince Frau von Genzinger to buy a Schanz herself. That's exactly what he tries, over and over, through his subsequent letters—and he succeeds. Prince Esterházy himself decides to donate a piano n Haydn's behalf, through her husband Peter von Genzinger, a physician at the Esterházy court. The special triadic relationship of composer, dedicatee, and instrument was dissolving; it took Haydn's best diplomatic efforts to restore it.

But the question still remains: what instrument did Haydn want her to have? Von Genzinger was not a professional like Mozart, who bought his Walter grand in 1782, then used it in all his subsequent academies. Squares were no less a status symbol than grands: in fact, as a piece of furniture, they were often more visibly expensive, with fine inlays and elaborate decorations. Then, there's acoustics. In her salon or music room, a square would have met the purpose of both her informal and formal music-making perfectly. In his letters, Haydn hints at the "agreeable mechanism" and "lightness of touch" of a Schanz, which "your beautiful hands deserve." Almost certainly, he was referring to a Viennese *Stossmechanik*, which in grands would have been replaced by a *PrelImechanik* by the early 1790s, but which remained exclusively used in squares well into the 1790s. If von Genzinger's instrument was a square, why would Haydn's have been different?

As with the issue of the ideology of a canon, introduced at the outset of this essay, rather than the larger picture of "old" and "new" (in this case traditionally the harpsichord versus the piano) we're interested in closer snapshots of tangents, hammers, plectra, hand stops, knee levers, striking points, actions, short octaves—technological features that together and in various combinations defined clavichords, harpsichords, and pianos. Haydn and his dedicatees would have been well aware of this kaleidoscope of alternatives. In terms of performing and composing, instruments mattered. Arguably more than Mozart's or C.P.E. Bach's, Haydn's compositions reflect his creative responses to technological realities, which often become an important part of the compositional "narrative" itself. The clearest examples, so convincingly based on organological parameters, are Haydn's English sonatas. Take the following hypothesis: "At the end of the eighteenth century, there existed two distinct schools in piano building, playing, and writing." Experiment: "Take a Viennese composer, transfer him to an English environment, and observe him: will he change his style?" The answer is a resounding yes, remarkably so for a 62-year old master, who had nothing to prove, but on the contrary had been invited to London on the strength of his existing reputation.

In the same spirit of technological discovery, we have collaborated with no less than four distinguished keyboard makers. These collaborations have resulted in a unique collection of instruments, all made specifically for this project and some for the very first time:

1. VIENNESE HARPSICHORD, JOHANN LEYDECKER, Vienna, 1755 by Martin Pühringer, Haslach, 2004

Location of original: Steiermärkisches Landesmuseum Joanneum, Graz Inscription on original: "Joann. Leydecker k: k: hofforgelmacher fecit Vienna 1755," in ink on the back of the nameboard Case: walnut, 2168 x 829 x 220 mm Stringing: brass/double throughout, two 8' ranks movable from inside the instrument Scale: c² = 266 mm, C = 912 mm Keyboard: single manual; FF/C to f³ with "multiple-broken octave" (*Wiener Baßoktav*) in the bass; naturals topped with ebony; sharps with bone (original: ivory) Three-octave span: 491 mm

This is a world premiere replica of an eighteenth-century Viennese harpsichord. Of ten extant wing-shaped harpsichords by Austrian (including Bohemian) makers, seven have the feature of the multiple-broken octave, which appears to have been the norm from c. 1700 to the 1760s or later. Haydn scholarship has long known that four pieces—Hob. XVI:47, XVII:1 and 2, and the four-hand XVIIa:1—are physically impossible to play without such a short octave. We're now able to experience the instrument as "normal," also for those pieces where a short octave is not a must.

The advantages are real. Listen, for instance, to my left hand in Sonata in A Major Hob. XVI:12 (BD 1, track 10, 52:19) where I navigate the figurations in the bass with more elegance than would otherwise have been possible. On the other hand, a peculiar and, from a modern perspective, totally unnecessary jump in the left hand in the third movement of the Sonata in A-flat Major Hob. XVI:46 (BD 1, track 15, 1:21:58) makes sense only if one realizes that Haydn's harpsichord simply did not have an E-flat in the bass.

The two eight-foot ranks can be moved only from inside the instrument and only with difficulty, which suggests spare or calculated register changes. The instrument invites the player to "sing." The touch is very pleasant. The option of almost "gliding" from one key to the other—thanks to a generally low key dip, especially noticeable when moving from a sharp key to a natural—is a great asset in realizing the short slurs and harmonic resolutions that we have long recognized as "Viennese."

2. SAXON-STYLE CLAVICHORD, c. 1760

by Joris Potvlieghe, Tollembeek, 2003

Case: French walnut, 1704 x 508 x 172 mm Stringing: brass/double throughout Scale: c² = 274 mm, C = 1311 mm Keyboard: unfretted, FF to f³, naturals topped with ebony, sharps with bone Three-octave span: 483 mm

The expressive power of this big Saxon-style clavichord lends itself superbly to the dramatic, larger-scale sonatas of the late 1760s/early 1770s, which Haydn must have written for his own experimentation. (We do not know whether he had advanced students at this time.) The most famous of these "workshop-style sonatas" (László Somfai) is the C Minor Hob. XVI:20 (BD 1, tracks 64-66). (Haydn "recycled" it as the last of the Auenbrugger Sonatas in 1780. We recorded the piece twice, first on clavichord, then on fortepiano.) In addition, because of its "long octave," we chose the clavichord for those pieces up to 1774 that cannot be played with a short octave. To be sure, one extant Viennese clavichord does have a short octave, but our choice between a short-octave harpsichord and a long-octave clavichord happens to confirm

Richard Maunder's speculation that sonatas needing a fully chromatic keyboard (such as nos. 6 and 19) "were written for an imported instrument of some kind." This instrument, he continues, could have been a German five-octave clavichord.

The variety of colors to be drawn from the clavichord is endless. There's a closeness of touch, incomparable to any of the other keyboards. Since the tangent remains in touch with the string after a key has been activated, the player is able to influence the tone as the string continues to vibrate. Paradoxically, as the softest of all earlier keyboards, the clavichord also has the widest dynamic range, allowing for innumerable "orchestral" effects. A Viennese Johann Bohak clavichord (1794, presently in the Royal College of Music, London), on which Haydn famously composed his Creation, is the only authenticated Haydn keyboard extant today. But we opted for a "top of the bill" model contemporaneous with the music we had in mind.

3. FRENCH-STYLE HARPSICHORD, c. 1770

by Yves Beaupré, Montreal, 2007

Case: mahogony, 2390 x 930 x 275 mm Stringing: brass (FF – B) and iron (c – f³) Scale: c² = 355 mm, C = 1155 mm Keyboard: two manuals, FF to f³, naturals topped with ebony, sharps with bone Three-octave span: 474 mm Registers: two 8', one 4', buff stop, all to be engaged from the keyboard

Viennese harpsichords had one manual and two eight-foot registers—very much like their Italian counterparts. The question of whether a French-style harpsichord, with two manuals and a wider spectrum of options for registration, is needed at all for Haydn remains unresolved. For the Prince Esterházy Sonatas, however, with their florid, court-like, and formal gestures, I follow A. Peter Brown, who argues that the Prince's French taste—evident in the construction of Eszterháza in imitation of Versailles—surely resulted in the purchase of one or more French harpsichords. Incidentally, this set of pieces requires a fully chromatic or "French" octave (as it was called in Vienna), as well as a full five-octave range, and occasionally benefits from a two-manual disposition, as for the intricate canon between left and right hands of the Fifth Sonata's second movement (BD 2, track 14). The alternation of Haydn's contrapuntal skills.

The instrument, in its grandeur, demands total attention from listener and player. Because of the wider registration possibilities (my own favorite is the F Minor Adagio from Sonata no. 23, BD 2, track 8), more than for any other program, I felt a need to carefully prepare myself in advance, and, for the audience with the Prince, to put on a well-ironed shirt and tie.

4. SQUARE PIANO (TAFELKLAVIER), IGNAZ KOBER, Vienna, 1788

by Chris Maene, Ruiselede, 2007

Location of original: Kunsthistorisches Museum, Vienna Inscription in original: "Ignatz Kober, Bürg. Orgel und Instrumentmacher [...] in Wien. 1788. Am 1 September," on a paper label on the soundboard Case: spruce, 1620 x 531 x 215 mm Stringing: brass/single FF-E, brass/double F – d-sharp, iron/double e – f³ Scale: c² = 298 mm, C = 1207 mm Keyboard: FF to f³, naturals topped with ebony (with decorative bone inlays), sharps with bone Three-octave span: 481 mm Registers: two knobs through the front side of the case, left to engage the moderator (single pieces of felt), right to raise all the dampers Action: Viennese Stosszungenmechanik

Increasingly, Haydn scholarship is coming to terms with the fact that the piano that Haydn purchased for himself in 1788 from Wenzel Schanz was "almost certainly" a square. (No instruments from Wenzel have survived, only those built by his younger brother Johann.) From a socio-historical point of view, this type of instrument has been acknowledged as the domestic keyboard instrument *par excellence* mostly for women in the last decades of the eighteenth century. If we accept that Haydn also owned one, the oft-quoted correspondence with Frau von Genzinger, in which he comments on the light touch and agreeable mechanism of Herr Schanz' pianos, which "your Grace's beautiful hands" deserve, is in need of re-interpretation. For example, the type of action that Haydn is referring to must be a *Stoss*- and not a *Prellmechanik*, now commonly and misleadingly known as "the Viennese action" (see infra, under 5 and 6). The instrument has two hand stops: one to raise the damper block (on the right hand side, operated by pulling a knob through the front of the case) and another, on the left, to engage a moderator (single pieces of felt that slide between strings and hammers).

This is the second modern-day copy of a Viennese square. (The first, of the same model, was made by Alexander Langer and Albrecht Czernin in 2001 and is housed in the Technisches Museum in Vienna.) The extremely light action nonetheless requires a minimum of speed and pressure to "push" the long hammers all the way to the strings. The hammers have narrow tops that are covered with the tiniest strips of leather. They produce distinct but miniature gestures that closely follow one's musical imagination, without much need for contemplation (as on the French harpsichord) or exaggeration (as on the clavichord). The "pantalon" stop (by which all the dampers are raised, in imitation of a mallet-operated dulcimer) can be employed to great effect, both enchanting and dramatic. For an example of the former, listen to the middle movement of the Sonata in A Major Hob. XVI:30 (BD 2, track 31); for the latter, witness the finale of the Sonata in B Minor Hob. XVI:32 (BD 2, track 38).

 "EARLY" VIENNESE FORTEPIANO, ANTON WALTER, Vienna, 1782, with Stossmechanik by Chris Maene, Ruiselede, 2005

Location of original: Mozart's Geburtshaus, Salzburg Inscription in original: none, but certainly by Walter, probably 1782 Case: walnut, 2204 x 1015 x 275 mm Stringing: brass/double FF – D-sharp, iron/double E – a', iron/triple a-sharp' – g³ Scale: c² = 277 mm, C = 1627 mm Keyboard: FF – g³ (original: FF – f³), naturals topped with ebony, sharps with bone Three-octave span: 480 mm Registers: two hand stops on sides of keyboard, left and right, to raise the dampers; moderator (one long piece of felted cloth) to be operated by left knee (original: knob through nameboard) Action: Viennese *Stosszungenmechanik*

A second world premiere, this instrument was inspired by the spectacular findings of Michael Latcham, Alfons Huber et al. that the fortepiano long referred to as "Mozart's piano"—a true icon of the "classical" fortepiano—had been substantially altered after the composer's death, almost certainly by Anton Walter, the original builder. The piano that Mozart would have known since 1782 had a *Stossmechanik* (or "pushing action"). When Mozart's widow asked Walter to "restore" the instrument, the latter may have used this opportunity to also "modernize" the instrument, turning what originally was a *Stossmechanik* into a *PrelImechanik* and adding knee levers to supersede the original damper-raising hand stops. (We must remember that "restoring" and "modernizing" were not yet understood to be contradictory activities.)

If Walter succeeded in updating the instrument's technology, then—to follow Chris Maene's train of thought—it should be possible to go the other way. Within the existing structural design of Mozart's Walter, he reverse-engineered a Viennese *Stossmechanik* and restored the original hand stops. These technologies, as scholarship has since learned, would actually have been the norm in the fortepiano-building in Vienna of the early 1780s. That they conform to the norms of square pianos, not just those of the 1780s but those built until after 1800, adds another layer of continuity and insight.

A hopper or *Stosszunge* pushes a hammer—which hangs in its own rail independently over the key—towards the string, "catapulting" it into free flight. In contrast to an English action (cf. infra, under 7), the hammer is turned towards the player. At a certain point, the hopper "escapes" its ascent, allowing the hammer to fall back. Though the action is light, a minimum of finger pressure is required for the hammers to hit the strings at all (cf. supra, under 4). Hammers are covered with only one layer of leather. The resulting tones are either hard and harpsichord-like or disarmingly warm and tender, with surprisingly little in between. For the player, the choice is between hitting the string with wood (the actual hammer) or gently caressing it with leather (the hammer's cap).

This "early" Walter is my instrument of choice for the 1780 Auenbrugger Sonatas (Program Seven), where I exploit "forte" versus "piano." Compare, for instance, the Sonata in D Major Hob. XVI:37 (BD 2, tracks 45-47) with the Sonata in E-flat Major Hob. XVI:38 (BD 2, tracks 45-50). Furthermore, throughout the program, I use the damperless register in ways that are not possible with the later technology of knee levers. Here, it is not a matter of simply "on" or "off." One can choose to raise only the left (or bass) side of the damper block or only the right (or treble) side, to lift it all the way up or only alfway, or to lift it just a touch. The possibilities are endless.

 "LATE" VIENNESE FORTEPIANO, ANTON WALTER, Vienna, c. 1790, with Prellmechanik by Chris Maene, Ruiselede, 2005

Location, case, stringing, scale: same as 5

Keyboard: FF – g³, naturals topped with bone, sharps with ebony Three-octave span: 481 mm Registers: two knee levers, left for moderator (one strip of felt), right for raising the dampers

Action: Viennese Prellmechanik

Maene did not stop with a reverse-engineered "early" Walter. He built a second action a *Prellmechanik* ("flipping action"), identical to Walter's modernized version—to be used in one and the same instrument. Pull one action out, replace it with the other, and the instrument is literally transformed from a 1780s grand into one representative of the 1790s. This is the "fortepiano"—with its "Viennese" action and knee levers—that the Early Music Revival has long been familiar with. The hammer hangs in a *Kapsel* that is attached to the key. When the keyboardist's finger goes down, the hammer is pulled up at the back, the ascending hammer perfectly paralleling the descending motion of the finger. There's no dependence on "free flight": the keyboardist perfectly controls the movement of the hammer, slow or fast. The latter is now covered with three layers of leather. As a result, the dynamic focus shifts from the extremes to the many shades in between. This significant gain in expressivity, however, comes with a loss in percussive bite and overall intimacy. The new action turns the instrument into one that is more expansive, more *bel canto*, more capable, indeed, of projecting in a larger room.

We use the "modernized" Walter in Program Nine. It is the perfect instrument for the F Minor Variations Hob. XVII:6 (BD 3, track 19), with its "Beethovenian" sublimations of sound and expression, impossible to pull off without the comfort of a knee lever. The Fantasy in C Major Hob. XVII:4 may be appreciated in two versions: on the "late" Walter as part of Program Nine (BD 3, track 15) and on the "early" counterpart as a videotaped performance on BD 4.

7. ENGLISH GRAND PIANO, LONGMAN, CLEMENTI & CO., London, 1798

by Chris Maene, Ruiselede, 2004 (from the collection of Malcolm Bilson)

Location of original: collection Chris Maene, Ruiselede, in restored condition Inscription in original: "New Patent/LONGMAN, CLEMENTI & COMP"./CHEAPSIDE/London" Number of original: 229 Case: mahogany Stringing: triple throughout Scale: c² = 270 mm, C = 1548 mm Keyboard: FF – c⁴, naturals topped with bone (original: ivory), sharps topped with ebony Three-octave span: 489 mm Action: English *Stossmechanik* Registers: two pedals with rods through the front legs, left for *una corda* or *due corde* (determined by the position of a slide in treble end block), right to raise the dampers

Haydn bought his first piano—his Schanz—to create compositions that would please his publisher. In London, these roles were reversed. Haydn had published a number of works with Longman & Broderip. To thank Haydn for past services and to foster a continued business relationship, the firm gave him a grand piano. Haydn took it home and kept it until his death. The instrument we use is similar if not identical to Haydn's L & B. Ours is an L & C, Clementi having replaced Broderip as principal shareholder of the company in 1798.

How did the English instrument compare to a Viennese one *anno* 1795? A Viennese piano had a *Prellmechanik*, firm wedge-shaped dampers, lighter hammers with fewer layers of leather, a thinner soundboard, unequal striking points, and knee levers; an English piano had the heavier *Stossmechanik* (with hammers facing away from the player, in contrast to the earlier Viennese version of this "pushing action"), loose "feather-duster" dampers, heavier hammers with more layers of softer leather, a thicker soundboard, and equal striking points. The Viennese instrument allowed for greater control over nuanced shadings, immediate stopping of the sound after the release of a key, a crystal-clear attack, relatively quick decay of sound, and variety in register and tone color, whereas the English instrument produced a potentially louder tone, more after-ring, and a full but muffled, more resonant and homogeneous sound.

Haydn clearly knew how to exploit these differences. In Program Ten, listen to the grand, orchestral opening chords of the Sonata in E-flat Major Hob. XVI:52 (BD 3, track 31), the drum bass at the beginning of its third movement (track 33), the various pedal effects in the first movement of the Sonata in C Major Hob. XVI:50 (track 26), the "romantic" textures of the Sonata in D Major Hob. XVI:51 (track 29), or witness the sheer pleasure of sound (rather than the conscientious articulation of words and phrases) in the Adagio from Hob. XV:22 (track 34).

ROOMS

When Wieslaw Woszczyk approached me with the idea of "virtual acoustics," I was initially hesitant. My focus had been on Haydn, his dedicatees, and their instruments. Now also their rooms? What about their clothes, also relevant for a specific composure at the keyboard? Candles? (For reading a score.) Humidity? (For tuning.) Suddenly, all the many traps of historical reconstruction felt wide open. We want to be inspired, not enslaved by history. We want to breathe life into scores, not because we feel a moral obligation to the past, but because we want them to speak to open-minded twenty-first-century audiences, making full use of present-day know-how and technology. I had no antiquarian desire to record on various "authentic" instruments in museums. The newly built instruments are simply much better and much more reliable—just as the old ones were in their own time. Why chase nostalgia?

My interest in instruments and Woszczyk's in rooms, however, quickly proved complementary. Woszczyk was interested in a variety of rooms, not privileging one over another, but allowing each to highlight a different aspect of the music. Building this collection of rooms, rather than making our story of Haydn the Orator more complex, ultimately proved to further validate it. *Musicking* (to put the verb back in music, following ethnomusicologist Christopher Small) happens through instruments, by people, in rooms. Using the plural for the first two precludes reverting to the singular ("the" recital hall or "the" recording studio) for the third.

Perception of a room, through headphones or through speakers, became an essential factor in my recorded performances. The damper-less effects in Program Seven obtained by operating hand stops rather than knee levers mingled lusciously with the acoustics of the Eszterháza Music Room. I found myself looking up to a virtual high ceiling, wondrously following the reverberations that came out of my self-created pantalon. The less-spectacular acoustics of smaller rooms featuring the square piano (Programs Six and Eight) did not tempt me to make my gestures unnecessarily grand. Not projecting my sound to some listener "out there," I felt encouraged to play solely for myself, perhaps with a special guest at my side, or a few household members behind me. In Program Four, cast in the smallest room of all, the clavichord became almost a room unto itself, a most private space (with its own resonance, in the case itself) that I treasured for free fantasizing and experimenting. At the other end of the spectrum, the Holywell Music Room demanded a deliberate projection of sound to an audience: Program Ten is the only one where we use the piano lid as a sound reflector in the modern way-away from the player, the instrument sideways (on stage), the audience on the player's right.

There are many more examples. Overall, I played better when the room was "on" than when it was "off." Psychologically aware of an actual acoustical environment, I found myself literally "playing the room."

After much planning, scouting, revisiting, and sampling, the following rooms eventually made it into our collection:

1. HAYDN'S STUDY

Location: Haydn's house (1766-1778, presently Haydn Museum), Eisenstadt, Austria (43 km south-east of Vienna)

Dimensions: 6 m 17 cm long, 4 m 17 cm wide, 2 m 83 cm high (average of irregular measuring results)

Materials: softwood floor (planks of 16 or 19 cm wide), plastered brick walls and ceiling

On May 2, 1766, Haydn bought a house in Eisenstadt within walking distance of Esterházy Palace. A few months before this purchase, following the death of Gregor Werner, Haydn had been promoted to full *Kapellmeister*. He eventually sold the house on October 27, 1778. The two front rooms on the first floor are nearly identical. One would have been his living room, the other his study. For practical reasons we selected the former to represent the latter. It is entirely possible that Haydn composed his "workshop sonatas" in this room.

2. "ROOM FIVE"

Location: same as 1 Dimensions: 4 m 98 cm long, 6 m 06 cm wide, 2 m 79 high (average)

Materials: same as 1

Marked as "Room Five" in the Museum's catalogue, this spacious room—the largest of the house, with a view of a narrow courtyard—had, in Haydn's days, probably not yet been incorporated into the living quarters. We use it generically as a middle-class living room.

3. SALLE DE NANTES

Location: Château Ramezay, Montreal, Quebec, Canada Dimensions: two adjacent rooms, the first 8 m 23 cm long, 5 m 34 cm wide, 4 m 11 cm high, the second 5 m 60 cm long, 5 m 58 cm wide, 4 m 13 cm high; total average: 14 m 07 cm long, 5 m 42 cm wide, 4 m 12 cm high Materials: hardwood floor, walls entirely covered with carved mahogany panels, painted ceiling, six moderately sized mirrors

Originally the mansion of Montreal governor Claude de Ramezay (1704-1724), who called it "undeniably the most beautiful house in Canada," the Château Ramezay changed hands a few times during the eighteenth century, from the Compagnie des Indes to the American Revolutionary Army. (Benjamin Franklin is said to have stayed in the house.) The Salle de Nantes—a most exquisite drawing room—has its own "virtual" feature: surrounding mahogany panels, carved with images of musical

instruments, were imported from another eighteenth-century mansion in Nantes, France. They were on display in the French pavillion at the 1967 Montreal World Expo, and subsequently acquired and permanently installed by the Museum. We use the room as a "far away" location. The "Anno 776" sonatas had already made it into print in Amsterdam and Berlin. Surely a copy reached the faraway Province of Quebec too.

4. ALBERTINA PRUNKRAUM

Location: Albertina, Vienna, Austria

Dimensions: 8 m 51 cm long, 7 m 42 cm wide, 5 m 83 cm high Materials: parquet floor largely covered with carpet, walls largely covered with silk, plastered ceiling with gilded bas-relief, two large windows with silk satin draperies, two high wooden French doors

Facing the imperial gardens (*Burggarten*) in the heart of Vienna this Habsburg *Prunkraum* was once the reception room (*Empfangssalon*) for the private apartments of Princess Henriette of Nassau-Weilburg (1797–1829), the young wife of Archduke Charles of Austria, Duke of Teschen (1771–1847). They married in 1815. One visitor declared that, "upon entering the apartment, one is greeted by great splendor and beauty." Yellow silk wall coverings, proudly restored in 2003, as well as a large carpet on the expensive hardwood floor, contribute to intimate acoustics defined by a heavy absorption of sound. Substitute one young bride for another (Marie Liechtenstein was fifteen when she married Nicolaus II Esterházy) and imagine a young princess spending a private hour in exquisite surroundings: this is the theme of our Program Eight.

5. SPIEGELSAAL, ESTERHÁZY PALACE

Location: Esterházy Palace, Eisenstadt, Austria (43 km south-east of Vienna) Dimensions: 14 m 45 cm long, 5 m 75 cm wide, 6 m 45 cm high Materials: parquet floor, plastered walls and curved ceiling, three windows with thick velvet curtains, four large mirrors, four rectangular textile-covered panels

When Haydn was hired as Vice-*Kapellmeister* of Prince Paul Anton Esterházy in 1761, he would have expected to spend most of his time in Eisenstadt, a Burgenland town mapped around *Schloss* Esterházy. Before and after the reign of Nicolaus I (1762–1790), this Palace was the principal residence of the Esterházy family. Centrally located at the front (South) wing on the first floor, the *Spiegelsaal* once served as the main reception room of the Prince. It features views of the courtly stables (built under Prince Anton, 1790-94) and the town below. Ornamental bas-reliefs of musical instruments on the walls inspired us to use this room as a salon appropriate to the music lessons of a well-to-do countess.

6. ESZTERHÁZA MUSIC ROOM

Location: Eszterháza, Fertöd, Hungary (87 km south-east of Vienna) Dimensions: 12 m 53 cm long, 10 m 98 cm wide, 9 m 01 cm high Materials: parquet floor, plastered brick walls, plastered ceiling, gilded bas-reliefs

It was Prince Nicolaus "The Magnificent" (1714-1790) who converted a modest hunting lodge in the distant countryside into a brilliant center of courtly life. The main building of Eszterháza was finished in 1766. It took another eighteen years to complete the various surrounding buildings (including an opera house) and to landscape an immense park. A visitor in 1784 called it "le petit Versailles de l'Hongrie." The first floor, directly accessible from outside by a double staircase, houses two central rooms, separated only by tall French doors. The first of these, on the North side, would have been the Music Room. An almost exact cube, the room has extraordinarily luscious acoustics. We use the room as a generic salon of the high aristocracy. Though entirely possible, there's no evidence that solo keyboard was performed in this particular room during Haydn's service.

7. ESZTERHÁZA CEREMONIAL ROOM

Location: same as 6 Dimensions: 17 m 23 cm long, 12 m 32 cm wide, 9 m 07 cm high Materials: same as 6, fresco on ceiling, six large mirrors

In size and magnificence, the Eszterháza Music Room is surpassed by the adjoining Ceremonial Room, which the literature variously refers to as *Prachtsaal*, *Prunksaal*, *Paradesaal*, banquet hall, or simply "the famous salon." "Splendid" is the term that comes to mind when entering from the Music Room. Tall mirrors lining the walls—white offset by gold—reinforce incoming daylight and conspire in the conceit of glorifying Apollo who, riding his Chariot of the Sun, adorns the richly painted ceiling. The artist of this recently restored fresco was the court painter Johann Basilius Grundemann. Allegorical statues of the four seasons guard each of the room's corners. (These had been removed for restoration in July 2008 at the time of our photo session.) The panoramic view of the park on the south side of the Palace is stunning.

8. LOBKOWITZ FESTSAAL

Location: Palais Dietrichstein-Lobkowitz, Vienna, Austria Dimensions: 15 m 16 cm long, 7 m 08 cm wide, 8 m 40 cm high Materials: parquet floor, marble walls, huge oil-painted canvas on curved ceiling

Following the Battle of Vienna in 1683, Count von Dietrichstein erected the city's first significant Palais in baroque style. Under the ownership of the Lobkowitz family (since 1745) it became a "true residence and academy of music," as observed by Johann Friedrich Reichardt in 1808. From 1793 to the early 1800s, the Palais was famous for its participation concerts in which professional musicians and noble amateurs performed

string quartets, piano trios, symphonies, or oratorios—both before and after supper. Prince Franz Joseph Maximilian, himself a big fan of Haydn, played the violin and cello, and had a fine bass voice. Now known as the *Eroica-Saal* (after Beethoven's Third Symphony which premiered there in 1804), the *Festsaal* features a most impressive vaulted ceiling. Affixed by marouflage is a huge canvas with oil-painted allegorical representations of various sciences and arts—engineering, measuring, gardening, optics, geography, music, poetry—as well as a view of a workshop at the Imperial Academy for Painting and Sculpture. Jakob van Schuppen, the first director of this newly founded Academy designed and executed the project in 1729. At that time, the room may very well have functioned as the Academy's official Ceremonial Room.

9. HOLYWELL MUSIC ROOM

Location: Holywell Street, Oxford, England Dimensions: 21 m long (curved back wall), 10 m 01 cm wide, 9 m 10 cm high Materials: hardwood floor, fixed wooden benches, plastered walls and ceiling

"The oldest music room in Europe" (as John Henry Mee dubbed it in 1911), the Holywell Music Room was, from the start, a public venture: funded by public subscription, conceived as a public music venue. Designed by Thomas Camplin, then Vice-Principal of St Edmund Hall, Holywell was probably the brainchild of William Hayes, then professor of music and choral conductor at Oxford University. "Music for the chamber" was performed there: sonatas, quartets, trios, concertos, symphonies, and Handel oratorios. The room was restored to its original condition in 1959/60, including the side seating on rows of benches. We use the room as an English concert hall with an impressive history.



MAKING DECISIONS TEN PROGRAMS

Regardless of approach or ideology—past or modern—any project to record the "complete works of" had to be practical. Exactly which pieces was I to play? More specifically: which of the pieces that Haydn scholarship has labeled "doubtful" (because of their uncertain authenticity status) should be included? In studies of authenticity i.e., establishing which works are genuinely by Haydn—a distinction is made between "authentic" and "spurious," with "doubtful" in between. To paraphrase James Webster, would I go for "Haydn and nothing but Haydn," risking that some genuine Haydn would fall between the cracks, or would I include the "doubtful" pieces, considerably raising the odds of my playing "the whole Haydn" but surely adding a few works that are not his?

My approach became pragmatic. On one hand, I followed existing scholarship, specifically the newest work list by Georg Feder in the new New Grove. Thus, taking the scores of the authoritative *Joseph Haydn Werke* (edited by the Haydn-Institut in Cologne) as my starting point, I play all "authentic" and "probably authentic" works. But the four "doubtful" ones (Hob. XVI:16 in B-flat Major and Hob. XVI:5 in A Major, as well as *JHW*'s nos. 8 [Eb2] and 9 [Eb3], the so-called "Raigern Sonatas") had to go, and apart from one sentimental moment (no. 5 happens to be the first "Haydn sonata" that I played on the piano, when I was twelve), I have sensed no loss.

The restriction "keyboard solo," now taken for granted, was once pragmatic too. The twelve volumes of Haydn's *Oeuvres complettes* (Breitkopf & Härtel, 1800 – 1806), intended as his complete works for keyboard, still included songs, trios, and additional violin parts. It was Anthony von Hoboken who in 1957 provided us with a catalogue of neatly separated genres, each represented by a roman numeral. Thus, these recordings are devoted to "XVI" (sonatas) and "XVII" (*Klavierstücke*), the latter offering a welcome diversion to the former (though the famous "F Minor Variations" Hob. XVII:6 might technically belong to group XVI, since Haydn himself, as Sonja Gerlach has stressed, called them a "sonata").

The next question concerns ordering. Would we stress chronology and development, going piece-by-piece from the beginning to end, or would we zoom in on moments or occasions, creating self-contained sub-plots with chronology only as a backdrop? We opted for the latter and selected ten programs. Like every eighteenth-century publisher and composer, we embraced the number six. Taking Haydn's own published sets as a guide (Esterházy, Anno 776, Auenbrugger), we start in a simple C Major, and, whenever possible and appropriate, end in a dramatic minor key. No key was to be repeated within one program. Like Haydn, we also craved a variety of "shadow and light" (*Schatten und Licht*). Two Sonatas—no. 48 in C Major, written for publication by Breitkopf in 1789 and no. 33 in D Major, published in 1783/84, but clearly composed much earlier—stand apart as "single pieces."

The first pages of this booklet represent a menu. Each program comes with an image a historical painting, engraving, or drawing—conveying some scene or theme. During our recording sessions, these pictures have spoken thousands of words. They have helped me strike what I conceived as the proper tone. They also helped Martha de Francisco find corresponding microphone positions. Each of the programs explores a different way of performing and listening. Extremes of the spectrum are Program Four (where the performer is the listener) and Program Ten (where listener and performer are most clearly separated).

PROGRAM ONE: Courting Nobility. We remove the lid of our Viennese harpsichord, and, like the young Mozart, try to impress the noble patrons informally gathered around us as they listen and enjoy their tea. The dimensions of Prince de Conti's *Salon des quatre glaces*, especially its high ceiling, remind us most strikingly of the Eszterháza Music Room.

In old age he liked telling the story of a time when, sitting at the keyboard, Countess Morzin leaned over in order to see the notes and the scarf around her neck came undone. Haydn recalled that "it was the first time I'd ever seen such a sight; I got confused, my playing faltered, my fingers stuck to the keys. – Haydn, what are you doing? cried the Countess; most respectfully I answered. But, Countess, your grace, who would not lose his composure in such a situation?"

Georg August Griesinger, Biographische Notizen über Joseph Haydn (Leipzig, 1810)

PROGRAM TWO: Quality Time. The attentive listener is seated at the acoustical "sweet spot" of the room on the side of the clavichord's soundboard.

After dinner, which was eleganty served, and chearfully eaten, I prevailed upon him to sit down again to a clavichord, and he played, with little intermission, till near eleven o'clock at night.

Charles Burney, on C.P.E. Bach, *The Present State of Music in Germany, the Netherlands, and the United Provinces* (London, 1775)

PROGRAM THREE: The Music Lesson. Haydn, in his young adult years, stands at the harpsichord, encouragingly nodding his approval. Our historical counterpart would have been a countess, a countess' daughter, or the nine-year old Marianna Martines. It is hard not to notice the cat in the foreground of the Fragonard painting. It stares us in the eye, as if to remind us that a lesson is sometimes about more than just music.

Once again he started composing those little sonatas that had turned out so well before. The most beautiful of these fell in the hands of Countess Thun, a noble woman with a passion for music. She found it charming and wished to know its composer. [...] "Every day you will give me harpsichord and singing lessons and I will make sure you won't be deprived of anything."

Nicolas Étienne Framery, Notice sur Joseph Haydn (Paris, 1810)

PROGRAM FOUR: Haydn's Workshop. We focus on Haydn's portrait, entering the mind of the master at work: performer and listener are one. We sit at the clavichord and "fantasize."

I sat down [at the keyboard] and began to improvise [phantasiren], sad or happy, serious or playful, depending on my mood. Once I got hold of an idea, my sole purpose was to execute and sustain it in keeping with the rules of art. That's how I tried to work, and this is precisely how so many of our new composers don't work; they string one little piece to the other, breaking off what they've barely started: but nothing sticks in the heart, after one has heard it.

Haydn quoted in Georg August Griesinger, *Biographische Notizen über Joseph Haydn* (Leipzig, 1810)

PROGRAM FIVE: "Your Most Serene Highness!" The Prince graciously receives us in his Ceremonial Room. His throne and our French harpsichord are a respectful three meters apart. Both are positioned in the center of this most magnificent space. The harpsichord's lid has been removed for the full spatial experience.

Among the unique attributes and much noted qualities that adorn Your Most Serene Highness is a complete command of all music, not just of the violin and baryton. [...] This knowledge [...] compels me to dedicate this small portion of my talent to the superabundance of your worthiness.

Haydn, preface to the first edition of the "Nicolaus Esterházy Sonatas" (Vienna, 1774)

PROGRAM SIX: The Score. Curious about the latest Haydn publication, his "anno 776 Sonatas," we perform at the square piano in the drawing room of the house, one listener (mother, uncle, governess) on our side, standing or sitting.

These sonatas, like the former set, are in many places intended to imitate the whimsical stiles of certain masters: and they are very well executed, for they abound with odd flights, strange passages, and eccentrick harmonies.

Samuel Arnold, European Magazine and London Review (October 1784)

PROGRAM SEVEN: "Equal to the Finest Masters." Vienna, 1780. We're attending a musical *soirée* held by the sisters von Auenbrugger, daughters of the respected physician Leopold von Auenbrugger. The lid of the piano has once again been removed. Between sonatas the sisters engage in casual conversation with the salon guests.

The approval of Freilen von Auenbrugger is of the utmost importance to me, because their manner of performance and genuine insight in composition equals those of the greatest masters. Both deserve to be known in all of Europe through the channels of public advertising.

Haydn to Artaria, February 25, 1780

PROGRAM EIGHT: Musical Letters to a Princess. We eavesdrop on a Princess, who, in her dazzling apartment, is seated at a gorgeously decorated square piano. Appreciative of Haydn's special gift, she reads and learns from the *Kapellmeister*'s sonatas.

He had to take his place next to Princess Esterházy. On the other side sat Miss von Kuzböck. [...] Haydn thought he felt a little draft. The ladies sitting near him noticed. Princess Esterházy took her scarf and put it around him. Several other ladies followed suit, and soon Haydn was completely covered with scarves.

Albert Christoph Dies, on Haydn's last public appearance, *Biographische Nachrichten von Joseph Haydn* (Vienna, 1810)

PROGRAM NINE: Viennese Culture. Again in Vienna, now in the late 1790s, at the Palais Lobkowitz, we listen to the distinguished Magdalena von Kurzböck. Among the pieces she decided to share, she brought Haydn's newest Sonata no. 52. All scores may be purchased from Artaria at the Kohlmarkt. The piano has been positioned at the far end of the room, lid removed, keyboard in the back, its tail facing the audience. (Here, I go against common musicological belief that no record exists of formal performances of a piano sonata in Vienna until the 1820s. In fact, we do have evidence of a certain Stäbel playing the piano at the Lobkowitz's on April 16, 1800, and Joseph Carl Rosenbaum's diary reports an academy in Eisenstadt on October 16, 1799 where "Pölt played a piano sonata by Haydn.")

Well—here I sit isolated—forsaken—like a poor orphan—almost without human contact [gesellschaft]—sad—full of memories of past precious days—yes past alas—and who knows when those agreeable days will come again? those beautiful gatherings [gesellschaften]? where an entire circle is [of] one heart, one soul—all those beautiful musical soirées—which can only be imagined, not described where are those transporting moments?—they are gone—and gone for so long.

Haydn to Marianne von Genzinger, February 9, 1790, upon his return to Eszterháza from Vienna

PROGRAM TEN: The London Scene. Programmed between a symphony and an aria, we listen to a concert sonata. We paid dearly for our ticket. But no regrets: we're in awe of the performer, who's a fully trained professional. The piano on stage has been turned sideways, its lid raised. (In a society with an emphasis on public speaking—in parliament,

in court, or at ceremonies—we're used to formality and soliloquy.) At another occasion, a dinner party at a cottage in the countryside, we discover Haydn's "little sonata" in D, played most charmingly by the lady of the house.

Holding me by the arm, the entrepeneur drew me right through the middle of the hall to the front, all the way to the orchestra. I was gawked at and showered with a torrent of English compliments. [...] Yet I wished I could escape to Vienna even for a little while to find some peace and quiet to work. The noise from those shopkeepers in the streets is just intolerable.

Haydn to Marianne von Genzinger, January 8, 1791, one week upon his arrival in London

There's an epilogue. In my own studio in Montreal, on my favorite piano, I perform the hymn "Gott, erhalte Franz den Kaiser!" along with Haydn's self-arranged variations from his Emperor Quartet in C Major Hob. III:77. Is the work for keyboard, voice, or string quartet? This personal thank-you note deliberately redirects all questions of genre and repertoire back to the person: "Gott, erhalte Joseph den Musikus!" But with this valediction and farewell we've purposely blurred another conceptual line. On all these discs, this is the only recording made in a "real" as opposed to a "virtual" —what's the difference?

More elaborate versions of my arguments as well as references to primary and secondary literature may be found in my contributions to *Haydn and the Performance of Rhetoric* (ed. Tom Beghin and Sander Goldberg, Chicago 2007), *The Cambridge Companion to Haydn* (ed. Caryl Clark, Cambridge 2006), *Haydn-Studien* 9 (2006), and *Haydn and his World* (ed. Elaine Sisman, Princeton 1997).

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VIRTUAL ACOUSTICS

Wieslaw Woszczyk

My interest in rooms comes from work in music and film recording, and from studies of musical instruments and electroacoustic transducers. It always amazes me how room can complement the sound of a musical instrument and present it to the musician and the listener. The moment I enter a room, I am introduced to a unique new world of sound. Virtual acoustics enables me to repeat and share this experience.

For the Haydn Project we created nine "virtual rooms." A virtual room is constructed in two essential steps: first, we measure in detail the impulse responses of a selected room; second, we replicate the sonic image of that room in the laboratory.

ROOM IMPULSE RESPONSE MEASUREMENT

We "excite" the real room through an 80-second logarithmic sine-sweep ranging from 18Hz to 48 kHz. The signal is radiated through multiple loudspeakers distributed in the area of the room where we've decided the musician would be performing. HDIR software developed by Pinguin Ing. Büro in Germany allows us to register the response in eight channels of high-resolution 96kHz/24bit audio. Sound sources of the sweep are 10 to 14 loudspeakers covering a full frequency range from 25 to 50 kHz. The loud-speakers, arranged to approximate the radiation pattern of a keyboard instrument's soundboard, produce strong early reflection and reverberation. Eight high-quality, low-noise and wide-frequency microphones on a spaced array tree capture a cluster of impulse responses at three different heights of 2m, 3m, and 4m. In any selected room we measure 24 responses, eight responses at each of the three heights. Four of the microphones are omnidirectional, arranged in Omni-Square with two-meter spacing, and four microphones are bi-directional arranged as spaced crossed-pairs with 90° angle. Low-noise external microphone preamplifiers built by Grace Design provide line level signals to the RME Fireface 800 digital interface connected to the Firewire port of the laptop PC. The microphone preamp levels are adjusted remotely allowing us to optimize the signal to noise ratio in each measurement.

RENDERING OF VIRTUAL ROOMS IN THE LABORATORY

Back in Montreal, in the Immersive Presence Laboratory of CIRMMT, the key components for building our virtual room are twenty-four synchronized low-latency convolution engines and a semispherical loudspeaker array built with 96 full-range ribbon drivers installed in 24 flat-panel arrays. This auditory display system consists of six low-frequency drivers (ranging from 25 to 300 Hz) and 96 mid- and high-frequency drivers (ranging from 300 to 30,000 Hz). The lower-frequency drivers are placed at standard locations for the six main speakers in surround sound reproduction. (The speaker angles in degrees

relative to the median plane are 0°, \pm 30°, \pm 110°, and 180°.) The upper-frequency drivers are dipole radiating, full-range electro-dynamic ribbon transducers placed four units wide in 24 panels (two loudspeakers per audio channel, two channels per panel) in 24 locations on the surface of an imaginary sphere of 4-meter diameter. There are six panels at extreme high elevation, and three planes of panels at elevation angles of –15°, +25°, and +45° relative to the horizontal plane. The height channels contribute to an increased sense of immersive presence, of being within the virtual acoustic environment.

To ensure sufficient processing power for real-time applications in music where latency must be negligible, our virtual room system employs a massive digital audio processor custom-designed by Weiss Engineering in Switzerland. Its efficient FFT segmentation allows for fast convolution of eight impulse responses with 10ms latency, each up to 15 seconds long, at 96kHz sampling frequency with 24-bit word-length resolution. Each channel uses two Sharc DSP engines with 16 Mega Words of fast dedicated onboard memory. Floating point 32-bit architecture ensures sufficient dynamic range for the most demanding applications and post-processing. A host-internal 32-bit processor provides the control of DSP and interface to external controllers via Ethernet, MIDI, RS232 or Flash Card. The hardware allows for a maximum of eight input and output channels, however multiple units can be synchronized and used in parallel, with linked control using a common GUI interface. As a result, a large number of convolution channels can be used simultaneously. A high-speed data interchange buss, furthermore, links all DSP modules allowing for quick uploading of impulse responses for processing.

One can normally expect a risk of acoustic feedback between loudspeakers and microphones when the loudspeakers radiate amplified sound captured in the same sound field by microphones. Our use of directional microphones and in some cases differential microphones proved sufficient to protect us from feedback.

PERFORMING AND RECORDING IN VIRTUAL ACOUSTICS

There is a world of difference between performing with a reverb effect (as in playing an electric guitar with a Fender Reverb amplifier) and feeling immersed within the virtual ambience of a magnificent sounding room. At first encounter, the acoustic presence of the virtual room is both astonishing and slightly disorienting as one's auditory senses overpower all visual sense of the laboratory space. Soon, however, the "room" becomes perceptually transparent and interactively attached to the sound production of the performer. This perfect illusion of music flowing in space is instantly crushed when the virtual room is turned off, causing great disappointment both for the listener and the performer: with the flip of a switch, this rich sonic environment becomes suddenly and disturbingly dry, transformed from tropical garden to blasted desert.

To achieve this immersiveness, the sound of the instrument is monitored via two or more close microphones, their signals convolved with 24 impulse responses of the room. The resulting coordinated 24 views of the room are radiated into the space that envelops the musician, reaching her from all directions. Any action of the musician is accompanied by a response of the room. Instrument and room thus become one animation under the artistic control of the performer, whose tempo, timing, dynamics, and articulation are determined by how well the room responds to her musical modulations. The room in effect becomes an extension in space of the instrument. It establishes a virtual reality in which the musician and the music live and where the music flows like a river.

When measuring impulse responses in real rooms we focus on capturing early reflections and diffused reverberation rather than direct sounds from the loudspeakers. These direct sounds from the loudspeakers are in fact edited out from the impulse responses, since, once in the immersive lab, instrument and artist will take their place. Conversely, during actual recording in the laboratory, microphone arrays are placed to capture mainly those earliest direct sounds of the instrument before any onset of room reflection. The laboratory itself has to be non-reverberant since we do not want to confuse its acoustical characteristics with those of the virtual room.

Tom Beghin commented that in a virtual room he does not perform for any audience. The listener is simply a silent witness to the acoustic dialogue between instrument and room, with the performer as moderator. On several occasions, a small audience was invited to sit in the virtual space during performance. For Tom these moments of sharing his "private" virtual world with the audience were enormously satisfying. The audience, for its part, was delighted to be intimately present with the artist, the music, and the acoustics.

Virtual spaces offer many previously unattainable possibilities for the performer. The environment can be adjusted to respond with vigor or subtlety, to bring out important tonal qualities of the instrument or voice, and to set the ambient mood for the performance. The adjustments are in the structure of the ambience, the architecture of sound reproduction, the position of the instrument, and in the microphone technique capturing the initial sound of the instrument or voice. Thus, the impression of a virtual stage support can be developed and adjusted incrementally. These adjustments can be made to serve not just solo performers but entire ensembles, each member receiving a specific level of acoustic support for hearing herself and the others, enabling each player to communicate with ease on the virtual stage.

RECORDING THE VIRTUAL HAYDN

Martha de Francisco

A fairly futuristic image would have greeted visitors to the CIRMMT labs of McGill University during the recording of The Virtual Haydn. They would have found Tom Beghin seated at the keyboard, surrounded by a semisphere of loudspeakers designed to re-transmit the captured performance almost instantaneously through a digital processing system based on convolution and wave field synthesis. The performer interacted live with the recreated acoustics and kept control over his interpretation, which was being recorded in multiple channels in order to convey the sound-enveloped ambience in the richest possible way.

The sound of any musical instrument is a combination of the direct sound from the instrument and the reaction that the surrounding walls, ceiling, and floor have on that sound. Reflections bounce again and again against the surrounding surfaces until they lose energy and the diffuse sound, the reverberation, finally fades out. The challenge for The Virtual Haydn was to isolate components of direct and reflected sound before putting these together again using the virtual acoustics of the selected historical rooms.

In preparation for the recording, using that most precise of measuring instruments, the human ear, we followed an auditory scan around the instrument and positioned several microphone arrays of different polar patterns at varying distances from the instrument. Ten to fourteen microphones captured a whole collection of sounds with accents on different timbres and distances. Three-point stereo arrays of omni-directional microphones (DPA 4006TL, Neumann KM 183) were used as main microphones to capture a general sound picture, while two- or three-point arrays of cardioid, wide cardioid, and omni-directional microphones (Neumann KM 84, Schoeps MK 21, DPA 4060) were placed in positions where different shades of defined sound could be found. By mixing the different microphone signals together in the right proportion, the resulting sound was rich, full and three-dimensional.

To this direct sound, in itself multi-layered, we added yet new layers of convolution reverberation, aiming for a "natural" integration of the instrumental sound with its virtual surroundings. But rather than just adding reverberation, we realized that the mix of the various layers of sound in the close range needed to be adjusted in very specific ways to the quality of the diffuse sound that we were mixing in. For instance, an increase of as little as one decibel of added reverberation, resulting in a more diffuse perspective, required a reduction in the prominences of certain qualities of the direct sound. A small adjustment of as little as half a decibel of the signal of the MK 21 microphones usually restored a more natural sound perspective. In this way, an increased sense of realism was reached by fine-tuning the different elements of the composed sound.

Retaining control over the individual components of the sound throughout the production process was essential. Equally fundamental, though, was Tom Beghin's commitment to adjusting his performance to the virtual acoustics that he had selected for a certain program. This raised the question of how we could isolate components for later assembly while providing the performer with a much-needed global impression. Our solution was both simple and bold. After Tom practiced each program in the Immersive Sphere, exploring the new virtual surroundings in a free and uninhibited way, when time came for the actual recording we replaced speakers with headphones. From our control room, we sent a live stream of recorded sound mixed with convolution responses back to Tom, who, though playing in a dry laboratory, heard himself through the headphones in a very different, acoustically rich virtual room. Many months later, when we were ready to mix more than fourteen hours of edited material with its corresponding diffuse sounds, we systematically (re)created, this time also for the listener, a sense of "actually being there." (There's one exception to this procedure: the video performance of the Adagio of Sonata Hob. XVI:49, featured on BD 4, was recorded "live" in the dome of speakers, without the use of headphones and with only minimal additional mixing.)

Much thought was given to the perspective of the listener. In most cases we placed the listener in a position where we believe he or she would have sat listening to the music being played in the actual historical room. Only in Program Four (Haydn's Workshop) is the perspective that of the player/composer, as we imitate how he may have heard the music that he himself was playing.

The Virtual Haydn was recorded in high-definition audio to professional quality standard and presented for commercial release both in stereo and multichannel 5.0 surround sound. The Merging Technologies Pyramix platform was used for recording, editing, mixing and mastering. Preamplifiers and converters were RME Micstasy (converted to AE5/EBU signal); for monitoring we used the Grace M906 surround system and B&W 802D speakers. Sampling frequency was 96 kHz and bit depth 24.

During postproduction, as we prepared the final versions of the recordings for release, technology and research gradually took a back seat to musical and sound-aesthetics considerations, which have always been our primary concern. We did, however, make room for a special experiment. In addition to the sonatas and *Klavierstücke*, we recorded performances of an Andante for Musical Clock (Hob. XIX:10) on each of the seven instruments. We later placed the sound of each instrument in each of the nine rooms, resulting in 7 x 9 or sixty-three combinations (see BD 4). The choice of a "mechanical" medium of performance (though, of course, it is still Tom Beghin performing) was a deliberate attempt to keep an isolated focus on instrument and/or room. For similar reasons of clarity and contrast, the characteristics of each room have been made more audible and slightly exaggerated. We invite the listener to evaluate how the sound of each instrument to decide which combinations are most successful.

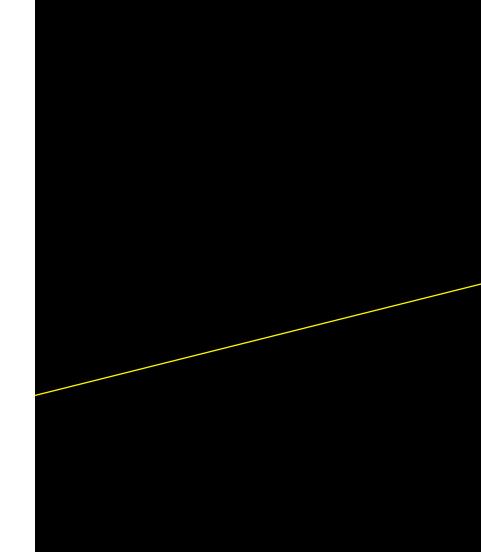
I'd like to share a few personal discoveries. The Virtual Haydn has made me conscious of the development of keyboard instruments in the second half of the eighteenth century. We've gained a panoramic and complex view of this development. The use of different temperaments was also a unique experience. A variety of new sonic nuances emerged that are not obvious when using equal temperament on modern pianos, but which clearly formed part of musicians' daily lives in earlier times. Remarkably, the clavichord and the square piano had their own resonance chamber "built in." Even when playing in an acoustically dry room they sounded "reverberant." There are mechanical noises associated with performance on historical instruments that we are not used to hearing in recorded music, such as the noise of wooden parts being moved during stop changes. Rather than deciding to smoothen or edit out these noises, we embraced their presence as a reminder of a performance context different from ours, without the expectation of precision and straight lines, but with an abundance of surprise and spontaneity, characteristics shared by the musical interpretations found on these discs.

BIOGRAPHIES

Tom Beghin is at the forefront of a new generation of interpreters of eighteenth- and early-nineteenth-century music. His discography includes 10 CDs on the Bridge, Claves, Eufoda, and Et'cetera labels. As a scholar he has published in major musicological journals and volumes, and has co-edited *Haydn and the Performance of Rhetoric* (University of Chicago Press, 2007). His mentors include Malcolm Bilson, James Webster, Rudolf Buchbinder, Jean Goverts, and Alan Weiss. He is currently Associate Professor at McGill University.

An internationally acknowledged leader in the field of sound recording and record production, **Martha De Francisco** has credits on over 300 recordings, most of them for worldwide release on the main record labels. She has worked in the best concert halls and has collaborated with some of the greatest classical musicians of our time. Her research topics include the latest surround-sound techniques, music recording with virtual acoustics, and the aesthetics of recorded music. At present she is Associate Professor at McGill University.

Wieslaw Woszczyk holds the James McGill Professorship in Sound Recording at McGill University. Internationally recognized as a researcher and educator in audio technology, he is the founding director of CIRMMT and McGill's Graduate Program in Sound Recording. He was President of the Audio Engineering Society, Chair of the AES Technical Council, and is currently AES Governor. His current research addresses virtual acoustics, high-resolution audio, and remote real-time communication of multisensory content using broadband networks.



ACKNOWLEDGMENTS

Many people have contributed to the success of The Virtual Haydn. We have listed their names as part of the end credits of Playing the Room, fully aware that any such list cannot be complete.

Two major grants from the Fonds québécois de la recherche sur la société et la culture (FORSC) and the Social Sciences and Humanities Research Council of Canada (SSHRC) (2003-2008) enabled the actual recordings, which we executed at the Centre for Interdisciplinary Research in Music Media and Technology (CIRMMT) of the Schulich School of Music of McGill University.

Additional support for technological research was provided by the Canada Foundation for Innovation (CFI), the Natural Sciences and Engineering Research Council of Canada (NSERC), and Valorisation-recherche Ouébec (VRO).

We thank the Schulich School of Music of McGill University (Dean Don McLean), the Centre for Interdisciplinary Research in Music Media and Technology (Director Stephen McAdams), and MSBi Valorisation (MSBiV) for financial contributions in the final stages of production.

Francoys Labonté (Office of Technology Transfer, McGill University) oversaw the final business arrangements of the project with admirable efficiency and persistence. Costa Pilavachi, Geert Robberechts and Herbert Waltl offered us much appreciated help and advice.

The Virtual Havdn is a CIRMMT/McGill project and uses McGill Virtual Acoustics Technology (VAT)

CREDITS

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Copy editing: Imogen Brian and Robert J. Litz Compression and authoring of the Blu-ray discs: Plasma Postproduction, Montreal Design of booklet, cover, and Blu-ray interface: Mookai Communications, Montreal

Recorded, edited, and mixed at McGill University, Montreal, Canada, from April 2007 to March 2009











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