

DOCUMENTING PERFORMANCE THROUGH SOUND RECORDING:
BACH'S *PASSACAGLIA* IN C MINOR, BWV 582

BY
CAROL NAVE

Submitted to the faculty of the
Jacobs School of Music in partial fulfillment
of the requirements for the degree,
Doctor of Music,
Indiana University
December, 2013

Accepted by the faculty of the Jacobs School of Music,
Indiana University, in partial fulfillment of the requirements
for the degree Doctor of Music.

Christopher Young, Research Director

Marilyn Keiser, Chair

Janette Fishell

Eric Isaacson

To all of my teachers.

Acknowledgements

I must begin by thanking my dear teacher and mentor, Dr. Marilyn Keiser, for her constant support and encouragement. Her wisdom, musicianship, compassion, and strength have provided me with inspiration to complete this project. I truly appreciate her willingness to serve as committee chair, even after her retirement. Her love of music and of life (along with a healthy dose of humor, from time to time) has helped me stay the course.

I am deeply grateful to my research director, Dr. Christopher Young, for his contributions to my thinking on the topic of sound recording, and the *Passacaglia* in particular. His knowledge of performance practice, both as a scholar and artist, has been instrumental in guiding my research and writing. I will always be appreciative for Dr. Young's close readings and suggestions for clarification and improvement. His ability to put ideas into practice is truly amazing and inspiring.

Dr. Eric Isaacson and Dr. Janette Fishell provided valuable suggestions that helped to shape the final form of this project. I am grateful to both of these professors for serving on my committee and offering their insights on this topic. Although I didn't know these professors prior to the writing of this document, it has been a privilege to work with them and learn from their musical knowledge and scholarship.

I am indebted to Lindsay Hartfiel for her editorial expertise and knowledge of technology. She was always patient with me, suggesting ideas for

formatting and managing data. I am also thankful to Leslie Nolan, my faithful business consultant and friend, for sending Lindsay my way.

I would like to express my profound gratitude for all my friends and family, too many to name, who have stood by me through this very long journey. Support and encouragement in every imaginable form came to me through these wonderful people. My life has truly been transformed because of their selfless acts and compassionate words.

Table of Contents

Dedication.....	iii
Acknowledgements.....	iv
Table of Contents.....	vi
List of Sound Examples.....	vii
List of Tables.....	viii
Chapter 1: Rationale and Method.....	1
Chapter 2: Analysis of Passacaglia, BWV 582	11
Chapter 3: The Recordings of the Passacaglia and Their Contexts	23
Chapter 4: Tempo	41
Chapter 5: Registration.....	59
Chapter 6: Articulation.....	77
Chapter 7: Ornamentation	87
Chapter 8: Conclusion	99
Appendix I: Listening Rubric	109
Appendix II: Sound Examples and Score Reference.....	115
Appendix III: Stop Lists.....	117
Bibliography	159
Discography.....	163

List of Sound Examples

Sound Example 1: Dupré's Legato Style of Performance	43
Sound Example 2: Variation in Tempo of <i>Passacaglia</i> Theme	45
Sound Example 3: Tempo Differential in <i>Passacaglia</i> Variations	48
Sound Example 4: Transition from the <i>Passacaglia</i> to the fugue	49
Sound Example 5: Theme and Variations 1-4	66
Sound Example 6: Modifying the Plenum Sound	67
Sound Example 7: Basis for Plenum Sound – 16' vs. 8'	67
Sound Example 8: Variations 10 – 15 by Performance Type	69
Sound Example 9: Transition from <i>Passacaglia</i> to Fugue – Registration	71
Sound Example 10: Fugue Development – Unique Registration Choices	71
Sound Example 11: Dupré's Legato Style of Performance	81
Sound Example 12: Schweitzer's Articulation in the <i>Passacaglia</i>	82
Sound Example 13: Distinctions in Baroque Articulation Over Time	82
Sound Example 14: Articulation of Fugue Countersubject	84
Sound Example 15: Articulation in Variations 14 and 15	86
Sound Example 16: Performes From the C. P. E. Bach Manuscript	93
Sound Example 17: Newman's Approach to Musical Elaboration	94
Sound Example 18: Embellishment Before the Final Phrase	95
Sound Example 19: Glandorf's Approach to Musical Rhetoric	97

List of Tables

Table 1: Groupings for the Variations of the <i>Passacaglia</i>	15
Table 2: Common Issues in Preparing the <i>Passacaglia</i>	19
Table 3: Passacaglia in C Minor, BWV 582 Recordings	36
Table 4: Calculations	51
Table 5: Tempo Summary	52
Table 6: Variation Differential and Average Tempo	54
Table 7: Durations at Primary Structural Points	56
Table 8: Registration Summary	73
Table 9: Sound Examples and Score References	115

Chapter 1

Rationale and Method

The study of performances of great works of organ literature is a routine part of becoming a great performer. Attendance at recitals, concerts, and master classes, as well as regular participation in studio class as part of one's academic preparation all provide opportunities to hear other students and professional musicians interpret these works. Listening skills are honed and musical tastes and preference for particular styles of execution begin to emerge.

In addition to live performance, musicians can also study performances through the medium of sound recording, which can greatly increase the potential for tacit learning. For example, one might have only two or three opportunities to hear a live performance of a particular work, but by listening to commercial recordings, online recordings (such as on YouTube), and recordings that document events (such as recorded performances of recitals at conventions or conferences), one can expand one's understanding of that particular work. Study of sound recordings can "deepen our awareness that other styles exist and that our conventions of interpretation are merely that: conventions."¹

Great pedagogues understand that music has a fluid quality that gets lost when one listens repeatedly to a single performance on a sound recording. The recording freezes a particular interpretation, making it normative for the student.

¹ Jose A. Bowen, "Finding the Music in Musicology: Performance History and Musical Works," in *Rethinking Music*, ed. Nicholas Cook and Mark Everist (New York: Oxford University Press, Inc., 1999), 442.

This single interpretation begins to “raise expectations”² and other performances are measured against those ideas that have become standardized through repeated listening. For this reason, teachers have often discouraged listening to recordings during the learning process.³ Understanding the work through score analysis is typically preferred as the first step in learning.

Until recently, the field of musicology, too, has emphasized the study of musical texts, as opposed to the study of musical performance. Musical scores are tangible and enduring. Performances, on the other hand, are much more difficult to study, because they are temporal. Studying a musical text can provide great insight to the musical genius of the composer. Some would argue that the score of the work is what is the most valuable. Compositions in the Western Classical tradition have been passed from performer to performer through musical notation, and these written texts provide the essential elements of the work. Leech-Wilkinson summarizes this phenomenon:

Works and scores became increasingly synonymous. What the composer wrote down gradually came to matter rather a lot, and musicologists increasingly (especially from the later nineteenth century onwards) saw one of their most important functions as ensuring that published scores presented precisely the notes put down by the composer. As a consequence, performers in the twentieth century were increasingly expected to follow that notation strictly and without deviation, and analysts increasingly believed that by studying the written notes they could reach an understanding of the essence of the work.⁴

² Mark Katz, *Capturing Sound: How Technology has Changed Music*, Revised Edition ed. (Berkeley, CA: University of California Press, 2010), 30.

³ Daniel Leech-Wilkinson, "Recordings and Histories of Performance Style," in *The Cambridge Companion to Recorded Music*, ed. Nicholas Cook et al. (Cambridge, UK: Cambridge University Press, 2009), 259.

⁴ Daniel Leech-Wilkinson, "The Changing Sound of Music: Approaches to Studying Recorded Musical Performances 1.1," London: Charm, <http://www.charm.rhul.ac.uk/studies/chapters/intro.html> (accessed 7/7, 2013).

Great musicians know that a convincing performance of any musical work is more than a neutral rendering of pitches and durations that are notated in the score. In music written prior to the mid—19th century, there are many musical decisions to make, because there are very few indications in the score. Even in later compositions, when the composer included specific markings such as tempo, phrasing, articulation, and dynamics, a performance is dependant on the elements that *are not* and *cannot* be part of the written text. The technical proficiency of the performer, the instrument, and the acoustic of the performing space all impact performance.

Performance practice studies have become an important sub-discipline of musicology that attempts to fill in the gaps when it comes to *how* a musical score should be performed. Treatises and other documents give performers information about tempo, ornamentation, and articulation. This written documentary evidence, however, does not provide any indication of how the musical work actually sounded to listeners. Although scholars can study treatises, autographs, letters, and journals written by great composers and theorists, and learn a great deal about performing works of music found in the literature, they will never have documentation in sound because the technology did not exist.

Robert Philip discusses the unique and important function of sound recording in performance studies of the early twentieth century:

In the history of performance, the early twentieth century has an importance which has never applied to any period before it, and which will never occur again. It stands at the end of the era, stretching back over the centuries, in which knowledge of performance practice was imperfectly preserved in written documents, and at the beginning of the modern era, in which performance practice is...preserved on recordings. The recordings

of the early twentieth century are the link between these two eras, and they provide a valuable key to understanding both the development of modern performance practice, and the practices of earlier centuries.⁵

It seems clear, then, that the study of performance through the medium of sound recording provides valuable information about specific musical works, as well as the performers who record those works. A basic assumption of this study is that a recording can represent a performance. A recording is not, technically a performance, because it has qualities that live performance does not: it can be edited and manipulated; it can be listened to out of context (listening to a CD while driving in the car, for example); and it can be listened to repeatedly, without alteration.⁶ Perhaps one of the most obvious, but interesting aspects of studying sound recording as a representation of performance is that it is possible to collect these sound documents, hold them under scrutiny, and compare and contrast them in the same way one might compare other musicological artifacts, such as musical scores or historical instruments. Hearing performance choices and nuances in sound from the great performers of the past gives the modern performer a decided advantage. This type of listening expands awareness of sonic possibilities available in a given work.

Another assumption of this study is that music encompasses more than a written document. Scholars have argued, “Music is a sequence of sounds, each of which appears only in the present and which, therefore has no persistent

⁵ Robert Philip, *Early Recordings and Musical Style: Changing Tastes in Instrumental Performance 1900–1950* (Cambridge, UK: Cambridge University Press, 1992), 2.

⁶ For more examples of how sound recording has changed musical life, see Chapter 1 of Katz, *Capturing Sound: How Technology has Changed Music*.

physical existence.”⁷ In other words, music is not the physical score. The score is a spatial, graphic representation of some of the elements of music, but music is a temporal phenomenon that exists only in the present moment. The score may represent the essential elements of the work, but performers bring interpretive elements, such as tempo, registration choices, articulation, and rhetorical nuance. Recordings become an “aural snapshot”⁸ for analyzing a temporal activity.

Bowen says that study of changes in the performance tradition of a specific work through the use of sound recording is a valuable musicological activity. He says, “What I am suggesting is that we study the performance tradition of a musical work *not* as a separate discipline, irrelevant to the immutable work, but as the history of the changing definition of the work itself. The study of the performance tradition of a musical work *is* the study of the musical work.”⁹ In addition to addressing the personal, regional, institutional, and ideological performance characteristics that are a part of any performance (including recordings), Bowen also suggests that a given musical work takes on a performance tradition in its own right. Johann Sebastian Bach’s *Passacaglia*, BWV 582 is an outstanding example of a work that has taken on a life and tradition of its own.

The *Passacaglia*, BWV 582 is one of the most recorded pieces in the organ repertoire. A brief search on the popular website Amazon for “Bach Passacaglia

⁷ Bowen, *Finding the Music in Musicology: Performance History and Musical Works*, 425.

⁸ Nicholas Cook, “Methods for Analyzing Recordings,” in *The Cambridge Companion to Recorded Music*, ed. Nicholas Cook et al. (Cambridge, UK: Cambridge University Press, 2009), 242.

⁹ Bowen, *Finding the Music in Musicology: Performance History and Musical Works*, 430.

in C Minor, organ” yields 271 recordings.¹⁰ The recordings span an 85—year time frame, with the earliest being a recording by Marcel Dupré in 1927. By studying the sound recordings of this work, it is possible to observe a change in performance style over time. Leech-Wilkinson says “performance style changes inaudibly from year to year, just noticeably over twenty years or so, observably with ease over fifty years, and astonishingly over the history of recording.”¹¹ Because there are so many recordings of BWV 582, and they span such a long period of time, a study of these sound documents can provide a window into the performance history and tradition that surrounds the work.

Although scholars have been interested in the study of sound recording since the early days of the technology, only recently have performance studies that incorporate recordings as documentary evidence been considered to be a serious musicological research approach. To date, there is no single systematic approach or method, so one obvious question is *how* can we create performance studies using sound recordings? Bowen’s answer is, first, simply to listen.¹² Observational studies that use listening techniques as the primary means of data collection have existed since the early days of recording. One of the earliest observational studies was in 1916 by Eugene Riviere Redervill who studied Fritz Kreisler’s vibrato.¹³ Other, more recent studies that use an observational style of research include Robert Philip’s 1992 study related to early instrumental

¹⁰ “"Bach, Passacaglia and Fugue in C Minor, Organ."." Amazon.com, Inc., http://www.amazon.com/s/ref=nb_sb_noss?url=search-alias%3Daps&field-keywords=bach+passacaglia+and+fugue+in+c+minor%2C+organ (accessed February 7, 2012).

¹¹ Leech-Wilkinson, *Recordings and Histories of Performance Style*, 257

¹² Bowen, *Finding the Music in Musicology: Performance History and Musical Works*, 430.

¹³ Leech-Wilkinson, *The Changing Sound of Music: Approaches to Studying Recorded Musical Performances 1.1*, 1:18.

recordings¹⁴ and Dorottya Fabian's 2003 study of Bach performance practice.¹⁵ The observational method, according to Bowen, is useful and informative, and moves beyond a subjective assessment to a more scholarly analysis of various styles.¹⁶

More recent developments in the analysis of sound recording include the use of software that measures various aspects of recordings that are difficult to quantify by listening alone. Nicolas Cook describes the advantages of Chris Cannam's software program called the Sonic Visualiser: "It is . . . possible to use new technology to create an environment that makes it easier to listen effectively, in the sense of moving around a recording to compare different parts of it, or moving between different recordings to hear one against another."¹⁷ Cannam's software has been used in a study of Chopin's Mazurkas¹⁸ and described in detail in *The Cambridge Companion to Recorded Music*.¹⁹ In addition to the Sonic Visualiser, others have used spectrograms, tempo graphs, phrase arches, and other such visual representations and computer analysis as a way to quantify the data that is captured when examining a recorded performance. Mitchell Ohriner's work on the expressive timing in the music of Chopin provides and

¹⁴ Philip, *Early Recordings and Musical Style: Changing Tastes in Instrumental Performance 1900–1950*.

¹⁵ Dorottya Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature* (Hampshire, England: Ashgate Publishing, Limited, 2003).

¹⁶ Bowen, *Finding the Music in Musicology: Performance History and Musical Works*, 430.

¹⁷ Cook, *Methods for Analyzing Recordings*, 222–223.

¹⁸ Craig Sapp, "Style, Performance, and Meaning in Chopin's Mazurkas," AHRC Research Centre for the History and Analysis of Recorded music, http://www.charm.rhul.ac.uk/projects/p2_3.html (accessed 7/10, 2013).

¹⁹ Cook, *Methods for Analyzing Recordings*, 221–245.

excellent example of this type of study.²⁰ In these studies, researchers seek to utilize objective, analytical methods. Generally speaking, these studies are not concerned with issues related to cultural meaning, such as an historical survey or pedagogy. Rather, they seek to uncover general principles related to quantifiable musical elements (such as tempo or dynamics) that can be applied statistically to a larger sample. While Cook agrees that all analyses of recorded performance is “grounded in the act of listening,”²¹ he suggests that technology can expand the analyst’s ability to listen more closely and provide a means of collecting more detailed data.

The purpose of this performance study of Bach’s *Passacaglia*, BWV 582, is to observe interpretive elements in the recordings, including tempo, registration, articulation, and ornamentation. These observations will be synthesized into a discussion of musical decisions that are possible when performing this work, and will illuminate performance choices that have been made in these recordings. These observations will be made without value placed upon any particular interpretation; rather, the study seeks to summarize the range of interpretive choices that have been aurally documented since the first known recording made in 1927.

While the primary means of data collection will be observation through careful listening, the study will also incorporate a listening rubric to document specific information related to each recording, making meaningful comparisons possible (see Appendix I). Although observations regarding each of the musical

²⁰ Mitchell Ohriner, "Durational Countours and Enacted Meaning in Recorded Performances of Chopin's Piano Music" (Ph.D., Indiana University, 2011).

²¹ Cook, *Methods for Analyzing Recordings*, 222

elements will be selective and partial, the focus will turn to the primary performing decisions that are faced by any student of this work. Observations will be limited to treatment of specific motives, phrases, or cadential gestures (outlined specifically in each chapter). These limitations will make it possible to discuss the distinct and perceptible differences in sound that results from each choice. These observations will also allow each recording to be understood in relation to the others. “An interpretation acquires its meaning from its...relationship to expectations established by other performances.”²

Performing decisions chosen for observation will grow out of an analysis of the work, provided in Chapter 2. In addition to a survey of formal, published analyses of the *Passacaglia*, observations regarding a performer’s analysis will be made. The performer’s analysis will discuss specific musical considerations encountered by students of this work that lay outside the notated text. These elements—tempo, registration, articulation, and ornamentation—are the primary focus of the study.

Sound examples are the primary means of conveying the differences in musical choices in each performance. These examples are found on the accompanying CD. Readers may also want to see the musical text while listening to the examples. The sound example schematics, as well as Appendix II, guide the reader in identifying the exact location of the example in a musical score. Sound examples throughout this study are indicated through a schematic that identifies the example, the performer, the CD track number, and the page in the 1984 Bärenreiter score of the *Passacaglia in C Minor*. Appendix II identifies the sound example, the page number, and measure numbers.

² Fabian, *Bach Performance Practice, 1945–1975*, xiv.

A discography of the recordings of the *Passacaglia* is foundational for the study. The compiled list of recordings is intended to be representative, not complete. Only recordings that are accessible for listening are included. The discography spans the entire 85—year history of the recorded performances of the work, and provides a wide range of performers, instruments, countries, and institutional points of view. Information from the physical recordings will be collected and summarized in Chapter 3, along with a discussion of the recordings in their historical contexts. The analysis and the summary of recordings will provide a point of departure for the remainder of the study. Chapters will be dedicated to each of the following musical elements: tempo, registration, articulation, and ornamentation. Chapter 8 will provide a summary and concluding remarks.

This project, a systematic study of the recorded performances of the *Passacaglia*, BWV 582, will provide a performance history of the work and will illuminate specific musical decisions that have been made by various performers in various situations. Performance of this work has changed over time. Interpretive choices that are often taken for granted based on the current approach to musical style and technique, have evolved. Sound recording offers an essentially untapped resource for examining these musical choices.

Chapter 2

Analysis of *Passacaglia*, BWV 582

Rigorous, analytical study can help a performer work out conceptual or technical problems that arise when preparing a given musical work. While some of this analytical work is done at sight, during practice, it is common for a performer to engage in a more systematic approach to analysis. In addition to reliance on their own theoretical understanding of the score, they also look to other scholarly commentary available on the given piece. This type of analytical study “can assist performers in solving conceptual or technical problems, as well as in memorizing and in combating performance anxiety.”¹ For purposes of this document, these types of analyses will be known as “formal analyses.”

Formal analyses help to define the larger structure of the musical work, but how then, does the performer use this information to make performance decisions? What about decisions related to surface level details, those nuances that define a performer’s style? Leech-Wilkinson says that the work of the performer is two—fold: 1) to make aspects of musical structure audible, and 2) to give the musical structure emotional force through expressivity.² In addition to understanding the musical structure through formal analysis, the performer also engages in a “performer’s analysis” to provide a pragmatic approach to details

¹John Rink, *Musical Performance: A Guide to Understanding* (Cambridge, UK: Cambridge University Press, 2002), 39.

²Daniel Leech-Wilkinson, “*The Changing Sound of Music: Approaches to Studying Recorded Musical Performances 1.1*,” London: CHARM, <http://www.charm.rhul.ac.uk/studies/chapters/intro.html> (accessed 7/7, 2013).

that give expression to the musical work. The performer's analysis addresses musical decisions that are not indicated by the composer in the score.

There are many such decisions to be made when performing the *Passacaglia*. The study of the recordings of this work demonstrates that there are countless possible answers to the questions of both musical structure and expressivity. Matters of tempo, registration, articulation, and ornamentation will be considered in detail in subsequent chapters of this document.

The basic construction of the *Passacaglia* is straightforward. This work is considered an outstanding example of continuous variation form. An opening eight—bar theme is presented in the pedal, and is followed by 20 variations of that theme. These variations appear in different voices with a variety of rhythmic, motivic, and contrapuntal textures and treatments highlighting the theme. The *Passacaglia* is followed by a fugue, which is often considered the 21st variation. This fugue uses the first half of the original theme as the subject in the exposition. Subsequent entrances of the subject use a typical harmonic scheme of rising fifths incorporating a countersubject based on the second four bars of the original theme. The final 22 measures of the fugue offer a grand climax to Bach's *Passacaglia in C Minor*, concluding with a plagal cadence (characteristic for German baroque composition), which is the only one found in the entire work.

There is no autograph of the *Passacaglia*; the sources are both copies of tablature and scores. The *Andreas Bach Book*, owned by Johann Christoph Bach, Bach's older brother, includes a version of the work on two staves; J. T. Krebs, Bach's student in Leipzig, owned a version; a third copy was owned by C. P. E. Bach, Bach's son. The work likely dates from circa 1705–1706 following Bach's visit to Lübeck and the influence of Buxtehude. Bach used a four—bar theme

from Raison's "Trio en passacaille" found in *Premier Livre d'Orgue* (1688). He expanded this four—bar theme to the eight—bar ostinato that forms the basis of the entire work.³

It is difficult for the modern performer to know Bach's intentions for presentation of the *Passacaglia*. During the baroque period, performing indications were rarely ever used. Performers were expected to know and apply conventions related to registration, articulation, and embellishment. Musicologists in the past century have studied music, treatises, journals, and other similar documents that illuminate the baroque performing style. Contemporary performers make choices about tempo, registration, articulation, and embellishment based on insights from analysis, as well as an understanding of baroque performance practice established by informed musicological opinion that grows out of the documentary evidence.

In order to survey the ideas related to the larger structure of the *Passacaglia*, several published formal analyses have been examined. These formal analyses represent a broad range of opinion regarding the architecture, or structure of the work. The studies include those found in scholarly publications as well as those offered by performers.

In addition to formal analyses, it is also important to consider criteria for creating a performer's analysis of the work. Rink suggests that these two types of analysis (formal/theoretical and performer's/pragmatic) exist as a parallel conception used to solve problems and formulate decisions.⁴ Ultimately, the decisions that are made as a result of formal and performer's analyses will serve

³ Peter Williams, *The Organ Music of J. S. Bach*, Second ed. (Cambridge, UK: Cambridge University Press, 2003), 182–184.

⁴ Rink, *Musical Performance: A Guide to Understanding*, 36.

as the basis of a given performer's personal style, and will shape the sounds produced and delivered to an audience.

The Formal Analyses of the *Passacaglia*, BWV 582

Because of the wide range of opinion as to groupings and development in the *Passacaglia*, relying on formal analyses that are published in musicological journals and books might prove more confusing than helpful. When analyzing the music of Bach, it is common to look for an overriding principle of architectural construction.⁵ What are these principles in the *Passacaglia*? One possibility is that the variations of the *Passacaglia* may be grouped together to uncover larger sections and an overall structure. There have been many attempts to group the variations by considering musical criteria or process. In addition to groupings, other principles of organization have also been espoused, such as the principle of development or growth.

Christoph Wolff defines basic structural elements in the *Passacaglia* as "placement of the theme; alterations of the theme; motivic design in terms of rhythmic—melodic or harmonic aspects; contrapuntal elaboration; and number of voices"⁶ and uses these as criteria for grouping the variations. Volsänger uses a multi-layered approach to arrive at his method for grouping.⁷ Other schemes include observation of quotations from Lutheran chorales in counterpoint

⁵ Yoshitake Kobayashi, "The Variation Principle in J. S. Bach's *Passacaglia* in C Minor BWV 582," in *Bach Studies 2*, ed. Daniel R. Melamed (New York: Cambridge University Press, 1995a), 62.

⁶ Christoph Wolff, *Bach: Essays on His Life and Music* (Cambridge, Massachusetts: Harvard University Press, 1991), 308.

⁷ Yoshitake Kobayashi, "The Variation Principle in J. S. Bach's *Passacaglia* in C Minor BWV 582," in *Bach Studies 2*, ed. Daniel R. Melamed (New York: Cambridge University Press, 1995b), 63.

accompanying the theme.⁸ The idea of grouping the variations appears to be an important exercise for theorists. For the performer, some type of grouping scheme would be helpful as a way to guide decisions about registration, as well as phrasing and linear movement. But, as the following table shows, there is no consensus on how the variations of the *Passacaglia* are grouped.⁹

Table 1: Groupings for the Variations of the *Passacaglia*

Musicologist	Variations											
Wolff	1-2	3-5	6-9	10-11	12-15	16-18	19-20					
Geiringer	1-2	3	4-5	6-7	8	9-10	11-12	13	14-15	16-17	18	19-20
Vogelsänger	1-2	3-5	6-8	9-12	13-15	16-18	19-20					
Klotz	Theme +1-2	3-5	6-8	9	10-12	13-15	16-18	19-20				
Radulescu	Theme + 1-5	6-9	10-12	13-15	16-18	19-20						
Alain	Theme + 1-2	3-5	6-8	9-11	12-14	15-17	18-20					

As opposed to grouping the variations, some theorists discuss other organizing principles found in the *Passacaglia*. Kobayashi discusses the principle of growth and says “the high point of the work’s tension is reached only at the end after a gradual build-up and not in the middle, as is suggested by a symmetrical architectural model.”¹⁰ Both Kobayashi and Williams consider any

⁸ *Bach: Complete Works for Organ, Vol. 14*, Marie-Claire Alain, Compact Disc, 1994. Liner notes, p. 23, provide Alain's approach to groupings.

⁹ The information provided in this chart is taken from Williams, *The Organ Music of J. S. Bach*, 186, and *Bach: Complete Works for Organ, Vol. 14*, Marie-Claire Alain, Compact Disc, 1994.

¹⁰ Kobayashi, *The Variation Principle in J. S. Bach's Passacaglia in C Minor BWV 582*, 68-69.

attempt to group the variations as suspect. In response to Wolff's analysis,¹¹ Kobayashi offers another point of view:

A symmetrical structure and the sense of stasis that results from it are nowhere to be found in our view of the piece. In contrast, the dynamic of development – one can hardly speak of a static metamorphosis – so characteristic of the genre of variation, is one of the most conspicuous features of Bach's *Passacaglia*.¹²

A performer's response to the idea of dynamic development would include conception of the overall sound through registration, as well as the linear movement through time that incorporates a hierarchy of rhythm and articulation.

Published formal analyses of the fugue that follows the *Passacaglia* are found in Williams¹³ and Wolff.¹⁴ Both analyses outline the use of the first four bars of the original *Passacaglia* theme as the primary subject, as well as the use of two countersubjects. They both also discuss the harmonic plan of rising fifths, as well as a dramatic Neapolitan sixth chord that leads to the final coda. These two formal analyses agree on the major structural features found in the fugue.

The Performer's Analysis

Understanding the structure of a work is vitally important to the performance decisions that an organist will make. Wolff makes this point clear:

It falls to the organist to determine and observe, on the basis of such analysis, the guiding principle of the work – to subject his interpretation to it in a fine balance of musical imagination and clear comprehension of the work's architecture. Merely to render a methodical analysis in performance or to succumb to an arbitrary

¹¹ Wolff, *Bach: Essays on His Life and Music*, 306–316.

¹² Kobayashi, *The Variation Principle in J. S. Bach's Passacaglia in C Minor BWV 582*, 68–69.

¹³ Williams, *The Organ Music of J. S. Bach*, 187–188.

¹⁴ Wolff, *Bach: Essays on His Life and Music*, 313–314.

display of effects—to name the extremes—can never be the artistic goal of performance.¹⁵

The problem, in the *Passacaglia*, of course, is that scholars disagree on what the structure or architecture *is* in this work, although the rationale for determining structure can offer clear guidance to a performer. This is where the performer's analysis begins to be important. The performer's own concept of the work, and how the musical details are communicated to an audience become definitive, and performing decisions are made.

To understand the concepts involved in a performer's analysis, Rink has offered five principles:

1. Temporality lies at the heart of performance and is therefore fundamental to performer's analysis.
2. Its primary goal is to discover the music's shape, as opposed to structure, as well as the means of projecting it.
3. The score is not "the music"; "the music" is not confined to the score.
4. Any analytical element that impinges on performance will ideally be incorporated within a larger synthesis influenced by considerations of style (broadly defined), genre, performance tradition, technique, instrument and so on, as well as the performer's individual artistic prerogatives. In other words, analytically determined decisions should not be systematically prioritized.
5. "Informed intuition" guides, or at least influences, the process of "performer's analysis", although a more deliberate analytical approach can also be useful.¹⁶

A few of these ideas require some explanation. For instance, what does Rink mean by "temporality"? The essence of performance is that each one is unique, happening in real time. Understanding this principle gives the performer freedom to adjust the approach to a given work, based on the performing

¹⁵ Ibid.

¹⁶ Rink, *Musical Performance: A Guide to Understanding*, 39.

situation. Also, the idea of “shape” as opposed to “structure” is primary in this type of analysis. The hierarchy of ideas emerges as the performer addresses the small musical unit—a motive, phrase, statement of the theme, and so on—through articulation, embellishment, and pacing.

Rink’s principles can certainly guide a performer when they are preparing a musical work, but these ideas also help to enlighten the listener of sound recording. What are the unique musical aspects of a specific performance (or recording)? How does one performance sound different from another? What aspects of musical decision—making help create the shape and the flow of a given performance? Why were certain sounds (or orchestrations) selected over others, and what is the impact?

If the primary purpose of a performance is to make aspects of musical structure audible, and to give the structure emotional force through expression, then performing decisions provide an opportunity to emphasize certain aspects of structure, while deemphasizing others. Expressive elements are unique from one performer to the next, although understanding of structure might be based in historical interpretation. “That there is such widespread agreement as to which moments have to be expressively shaped may suggest that composition is more determinative of perceived structure than is expressivity. And one might go on to suggest that, historically speaking, habits of expressivity therefore developed in order to point up details of compositions.”¹⁷

When approaching the *Passacaglia* as a performer, for the first time, there are common musical problems and decisions that must be addressed. The

¹⁷ Leech-Wilkinson, *The Changing Sound of Music: Approaches to Studying Recorded Musical Performances* 1.12:37.

following table outlines the most common issues that performers face when preparing this work.

Table 2: Common Issues in Preparing the *Passacaglia*

The Problem	The Questions
Structure	How are variations grouped? Should this affect registration? What does the transition from one group to the next sound like? Are there major structural points that must be emphasized?
Registration	What is the appropriate registration for each variation? Do the contrapuntal textures speak for themselves, or should the variations be highlighted through sound? One registration throughout? Or change at each variation? Or judicious changes at structural points?
Tempo and Rhythm	How fast should the work be played? Are all variations equal, or should there be some variation from section to section? Should the fugue be played at the same tempo as the <i>Passacaglia</i> ? How flexible should the tempo be within a particular variation?
Ornamentation	How can ornamentation help to emphasize the theme and counterpoint of this work? What should be added and where? How much ornamentation adds to the presentation, and how much detracts? Can ornamentation be used in a rhetorical way?
Gestures	What types of gestures help to create a pleasing emotional connection to the work? Which cadences or rhythmic motives require a specific decision, and what are the technical requirements for executing these gestures?
Articulation	What type of articulation best communicates the music? Does articulation change based on motivic material or counterpoint in a specific variation or section? Does the articulation change, depending on the instrument and the room? What aspects are fixed and which ones are variable?

In performances of a composition such as the *Passacaglia*, where there is little agreement about the structure of the work, performers tend to fall into various groups. Some of the recordings in this study provide readings of the work that emphasize growth and development by gradually building the sound through registration. Others offer changes in sound, timbre, or articulation in

order to group certain variations. Still others perform the entire work on a single sound, allowing the textures of the counterpoint, variations in touch, and their interpretation of the rhetorical elements to do the work of expression.

Recordings of the *Passacaglia* show us that there is no single interpretive approach that defines the work. Rather, there are many approaches to the performance of this work, each of which can be defended by the individual performer (although not every argument will be equally convincing.)

The concept of the performer's analysis is a guiding model when examining the recordings of the *Passacaglia*. Emphasis on expressive elements will help to illuminate the performer's understanding of the work. These details may also give insight into ways the performer understood the work structurally. More important, however, is how the performer communicated the affect, or emotion of the work through these details (registration choices, articulation, tempo and rhythm, and ornamentation). Systematic examination of these elements can offer insight into the range of possibilities that exist for performers of this work.

When examining sound recordings and the performance history of any musical composition, interpretive decisions, which are the fundamental components of a performer's analysis, become the primary focus of study. Rink provides a summary of the intention and purpose of the performer's analysis:

The success of a performance will be measured by oneself and one's audience not so much by its analytical rigour, historical fidelity or even technical accuracy...as by the degree to which "resonance" is achieved in drawing together the constituent elements into something greater than the sum of those parts, into a musically cogent and coherent synthesis. Analysis may well be "implicit in what a performer does", and it may also be explicitly undertaken by performers...But it is important not to elevate it

above the performance it gives rise to, or to use it as a means of subjugating and shackling musicians. Instead, its potential utility must be recognized as well as its limitations, by which I mean simply that “the music” transcends it and any other approach to understanding it. Projecting “the music” is what matters most, and all the rest is but a means to that end.¹⁸

¹⁸ Rink, *Musical Performance: A Guide to Understanding*, 56.

Chapter 3

The Recordings of the *Passacaglia* and Their Contexts

The 44 recordings of the *Passacaglia* used as the basis of study for this project have only one thing in common. The notes of the composition as they exist in modern scores are essentially the same. Beyond that, much of what is heard is unique. While the notes stay the same, the context surrounding each recording is rooted in a particular time, and has a direct impact on the sounds heard when listening to a given recorded performance. The development of modern editions of Bach organ works, restoration and replication of historic instruments and scholarship related to performance techniques were all part of the progression and development of understanding for performers of this repertoire. This study places that progression as evidenced in sound recording as a primary source of material for examination and comment. This study considers the elements in the recordings that are variable, changing over time as a result of the scores, instruments, and research, as well as personal taste and musicality of the individual performers, all of which influence the final result heard in the recordings.

On first consideration of these recordings, it was predicted that they would fall into basic groups, depending on the era they were made, a national point of view, the education and training of the performer, and the type of instrument chosen for the recording. A representative recording from each group would be chosen for review, making comparisons between groups a clean and easily defined task.

Upon initial listening of each recording, however, it becomes apparent that there is a broad continuum of performing choices that don't lend themselves to simple categorization. Observations must go beyond sorting recordings into simple types. Several consistent performing problems emerge, and the recordings themselves demonstrate the performers' solutions to these problems, which are not always predictable. Many performers also apply musical gesture and rhetorical nuance that is unique to their personal performing style, and not necessarily part of a larger trend. These unique elements capture the imagination of the listening audience and shed new light on the familiar work. The limits of scholarship and instruments of their time restricted performers' interpretations of the *Passacaglia*. While it is possible to track trends related to performance issues based on the time period of the recording and general understanding of the performer's point of view, a few recordings highlight the extremes, extending the boundaries of possibility.

This chapter will provide an overview of the recordings used for this study, and summarize the theoretical concepts and historical events surrounding the understanding of Bach performance traditions and scholarship during the 85-year time span of these recordings. Some of the most important contextual considerations are those that involved proponents of the "early music movement." This movement brought editorial changes in performing editions, changes in the types of instruments used in performing through the *Orgelbewegung* or "Organ Reform Movement," and changes in performance execution through research and pedagogy incorporating baroque techniques such as articulation, fingering, and registration. During this time span there were also many advances in recording technology that had an impact on the actual

performances captured and heard on sound recording. Finally, a discussion of the reception history of BWV 582 will be included, highlighting the orchestral transcriptions and how these romantic and modern era performances influence the way that organists initially approach the work.

The Recordings in Historical Context

Consideration of the “early music movement” as it affected organ performance begins with an exploration of Bach organ scores. Editions of Bach organ works made the Bach repertoire accessible to organists.¹ Each edition brought with it a particular point of view. For example, the Dupré edition has many performance indicators, such as fingerings, articulation markings, and registrations. In the preface to the edition, Dupré says, “The present edition of J.S. Bach’s organ works has originally been prepared for my own use in the course of many years. As it has greatly helped me in my work, I have it published now with the hope that it may afford some help to organ students in their turn.”² Through these editorial markings, Dupré provides a window into understanding performance traditions of his time, such as pervasive legato, half-value repeated notes, and registration changes and choices associated with the late Romantic French style. The Widor–Schweitzer edition, on the other hand, is relatively clean, meaning that the editors attempted to reproduce the source material available to them without offering any stylistic interpretations in the score. However, the edition comes with exhaustive commentary regarding performance. There are four pages written on the *Passacaglia* alone, in the preface

¹ These editions include Griepenkerl (original 1844, reprinted in 1950), Bach-Gesellschaft (1851–1900), Dupré (1938), and Widor–Schweitzer (1940).

² Johann Sebastian Bach, *Oeuvres Complètes Pour Orgue De J. S. Bach*, comp. Marcel Dupré (Paris, France: Alphonse Leduc, 1927).

to this edition. The commentary provides performing suggestions based on the best knowledge they had of Bach interpretation at the time. All these editions allowed 20th century musicians to know Bach's music, but didn't offer much in the way of historical performance practice information.

The 1984 Bärenreiter Urtext Edition is based on scholarship of the *Neue Bach Ausgabe*, providing only performance indications (articulation markings, registrations, etc.) found in the most reliable sources.³ Fabian suggests that ongoing research related to critical editions and the *Neue Bach Ausgabe* helped spur interest in re-creating a historical performance style after the Second World War.⁴ It is no surprise that scholarship related to Bach performance dramatically increased following the issue of these urtext editions.

One of the landmarks of the "early music movement" was interest in historical instruments and encouragement for organ builders to return to baroque ideals of organ construction and design. The *Orgelbewegung*, or Organ Reform Movement, began in 1906 with a pamphlet written by Albert Schweitzer entitled *Französische und deutsche Orgelbaukunst* ("The Art of Organ Building in France and Germany"). He suggested using "pre-Romantic pipe scales, slider chests, mechanical key action, low wind pressures, and a 'high and free' placement of pipes."⁵ Builders such as Walter Holtkamp, Rudolph von Becherath, Herman Schlicker, Charles Fisk, and others began to produce instruments that

³ This is similar to the Widor–Schweitzer approach, but without the commentary in the preface. Also, scholarship and science, such as paper and handwriting analysis, had improved greatly in the intervening years.

⁴ Dorottya Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature* (Hampshire, England: Ashgate Publishing, Limited, 2003), 2–3.

⁵ George H. Ritchie and George B. Stauffer, *Organ Technique: Modern and Early* (New York, New York: Oxford University Press, 2000), 307.

represented this neo-baroque ideal. The 1958 Flentrop organ in Busch Hall at Harvard University (heard in the E. Power Biggs recording of the *Passacaglia*) is an example of the early interpretation of a baroque--inspired instrument typical in this era. Beginning in the 1970s, builders began to incorporate techniques such as historically informed voicing, specific pipe materials, and temperament into their designs.

Some performers believed that having instruments capable of re-creating past sonic ideals allowed them to be more faithful to the composer and the music. There were many attempts to create “the Bach Organ,” but there was little agreement as to what that actually meant. Some scholars, performers, and organ builders eventually concluded this endeavor was futile. As Jacques van Oortmerssen observes, “the ‘Bach Organ’ is an unattainable and utopian ideal.”⁶ He suggests that Bach came in contact with a variety of traditions and types of instruments during his lifetime, and therefore many types of instruments are suitable for performing his compositions. This argument lies at the heart of one of the primary discussions related to the “early music movement;” that is, the question of authenticity.

The notion of authenticity is a complex issue that has caused much debate. For some scholars and performers, particularly beginning in the late 1970s and 1980s, “being true to the score,” or “letting the music speak for itself” became the standard. Performers who believed in this theory attempted to create literal renderings of the music. Fabian describes the literal ideal: “The performance is literal because it strives to faithfully translate the written information into a sonic

⁶ Johann Sebastian Bach, *Organ Works, Vol. 6*, Jacques van Oortmerssen, Compact Disc, LC 00950, 2001.

one without imposing the performer's own, supposedly subjective view or feeling; without *interpreting* the music."⁷

There are many performers, however, that believe that performance is collaboration between the composer, the performer, and the audience. For these musicians, authenticity was an elusive concept, because the scores themselves are imperfect and don't display the spirit of the music. Instead, they sought to attain as much information as possible, discover the meaning behind the notes, and then create something beautiful and logical for a contemporary audience.⁸

The recordings used in this study point to the difference in opinion regarding authentic performance. Some recordings attempt a literal rendering of the score. The 1962 recording by Helmut Walcha is a good example of this type of performance. There is little or no change in registration from one variation to the next; the tempo is as steady as humanly possible; and there is very little ornamentation and rhetorical nuance. In the notes to the recording, the commentator says, "All the works of Bach which Helmut Walcha recorded for Archiv Produktion were played on historic instruments in their original settings. Fidelity to the music and fidelity of sound—to Helmut Walcha these two factors formed an indivisible unity."⁹

Yet there are other recordings that lean to the opposite extreme. The most obvious recording in this category is the 1973 recording by Virgil Fox. Tempos and registrations vary dramatically from one variation to the next, and

⁷ Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature*, 6

⁸ *Ibid.* Fabian discusses commentary on Wanda Landowska and Nickolas Harnoncourt and their views on performance.

⁹ Johann Sebastian Bach, *Great Organ Works*, Helmut Walcha, Compact Disc, 453–065, 1962.

ornamentation and elaborate musical gestures are liberally applied. This performance is the only one in this study to be performed on an electronic instrument, the opposite of the historical ideal. Fox was fully aware that his interpretations of Bach were not the norm.

The liberties Fox frequently took with Bach's printed scores in order to impress his insight upon mass audiences earned him many vehement detractors—"the purists" of whom he was to complain all his life. He conceded their right to differ: "I have never said my way is the only way. I have said that my way is the red-blooded way...I never imagined that the same audience that goes for rock 'n' roll could possibly walk across a great chasm and come into the arms of Bach. I breathed that prayer, and that's exactly what has happened...thousands of young people are screaming the names of the great compositions of Johann Sebastian Bach and, brother, if that isn't a miracle I don't know what you're going to call it."¹⁰

These two viewpoints provide two extremes of the performing continuum in this study. The interpretive elements observed in the recordings provide an indication of the performer's point of view. Both individualistic interpretations, as well as more conservative, literal ones can be heard across the entire 85-year time span of this study. Some recordings are praised for unique interpretations, such as the 1954 Richter recording: "[Richter] did not succumb to the cult of 'authenticity' then current for Bach. He brought a new vision and a highly individual approach to the major works."¹¹ Other performers, such as Walter Kraft (1965 recording), resist moving too far from the literal ideal. "The ultimate grandeurs [of BWV 582] well may be unrealizable—at any rate they are surely

¹⁰ Johann Sebastian Bach, *Heavy Organ at Carnegie Hall: The Legendary 1973 Concert*, Virgil Fox, Compact Disc, 1997b.

¹¹ Johann Sebastian Bach, *Bach Organ Recital*, Karl Richter, Compact Disc, 455-291-2, 1997a.

best *suggested*, as the composer intended, by the original organ scoring, leaving everything else to the individual listener's potently stimulated imagination."¹²

Once historically informed scores and instruments were available, traditions surrounding organ technique as it relates to baroque music began to change. In the preface to *Organ Technique: An Historical Approach*, Sandra Soderlund describes the changing style of playing and of pedagogy:

[Historical technique] has gone hand in hand with the use of early techniques in instrument building. More and more performers have begun to try early fingering and pedaling technique and to read and practice what keyboard players of the past had to say about articulation and touch. One thing has become obvious in light of the latest research—a single method or approach to playing simply will not work for the whole literature.¹³

Soderlund's pedagogical book, as well as others by Quentin Faulkner,¹⁴ and George Ritchie / George Stauffer,¹⁵ apply information gathered from historical sources as it relates to performing technique. Teaching methods in university settings began to include both early and modern technique. Informed technique was applied to specific repertoires. "It is important to stress the fact that keyboard playing has gone through several metamorphoses and that there is not just one way to play. The new techniques they [students] will be learning will be used *in addition* to those they know, not in place of them."¹⁶ These early techniques, learned by students beginning in the 1980s, begin to become apparent in the recordings of the late 1980s and beyond.

¹² Johann Sebastian Bach, *Bach: Organ Music, Vol. I*, Walter Kraft, CDX 5059, 1992.

¹³ Sandra Soderlund, *Organ Technique: An Historical Approach*, Second Edition ed. (Chapel Hill, NC: Hinshaw Music, Inc, 1986), v.

¹⁴ Quentin Faulkner, *Historical Organ Techniques and Repertoire: An Historical Survey of Organ Performance Practices and Repertoire*, ed. Wayne Leupold, Vol. Volume II (Boston, Massachusetts: Wayne Leupold Editions, Inc., 1997).

¹⁵ Ritchie and Stauffer, *Organ Technique: Modern and Early*.

¹⁶ Soderlund, *Organ Technique: An Historical Approach*.

Recording technology during the course of the twentieth century changed the way society interacts with music. A survey of the history of recording technology is beyond the scope of this study. However, there are very good sources, including those by Katz,¹⁷ Milner,¹⁸ and Day.¹⁹ In addition to history of the changing technology, these resources begin to consider the impact of sound recording on performing traditions.

Listening to a single recording might be problematic because a single interpretation can become normative, or even authoritative. The ability to listen to many recordings of a single piece, however, can have the exact opposite effect.

The problem can be alleviated by taking a lot of recordings of the same piece: although each is fixed, the variability between them gives a good sense of the apparently endless variety of approaches that can be taken to turning scores into sound. If we take enough samples, as it were, we can come close to a sense of the openness of music to performance—performance in the sense of something made without full knowledge of how it will be made until it happens.²⁰

Without advances in sound technology, these types of comparisons would not be possible.

It is interesting to note that the rise in the study and production of “historically informed performances” as well as the “Orgelbewegung” are directly parallel to the development and expansion of recorded performances.

Robert Philip suggests that changes in performance practice during the twentieth

¹⁷ Mark Katz, *Capturing Sound: How Technology has Changed Music*, Revised Edition ed. (Berkeley, CA: University of California Press, 2010).

¹⁸ Greg Milner, *Perfecting Sound Forever: An Aural History of Recorded Music* (New York: Faber and Faber, Inc., 2009).

¹⁹ Timothy Day, *A Century of Recorded Music: Listening to Musical History* (New Haven, CT: Yale University Press, 2000).

²⁰ Daniel Leech-Wilkinson, “*The Changing Sound of Music: Approaches to Studying Recorded Musical Performances 1.1*,” London: Charm, <http://www.charm.rhul.ac.uk/studies/chapters/intro.html> (accessed 7/7, 2013).

century were actually fueled and accelerated by the influence of sound recording.²¹ Of the 44 recordings studied for this project, 13 were performed on period instruments that had been renovated; another 14 were performed on new instruments built in an historical style. These kinds of instruments signify a growing affinity for clean, articulate playing, and an historically informed approach to registration, ornamentation, and gesture.

The *Passacaglia* comes to current performers and audiences not only as an organ work, but also as an orchestral one. Russell Stinson discusses the reception history of this piece, and says that its popularity is due primarily to the orchestral transcriptions by Heinrich Esser (1850), Leopold Stokowski (1922), and Ottorino Respighi (1929).²² Performing decisions surrounding this work could easily be influenced by the lavish orchestrations and romantic performances that were made popular in the late nineteenth and early twentieth centuries. These orchestrations are juxtaposed to the rising influence of the historically informed performance movement, yielding interesting results in the recordings. Many performances represent either a romantic, orchestral approach, or something much more strict, adhering to performance practice conventions. Some performers, as we will see in later chapters, bring together elements of both performing traditions, creating contemporary performances that are historically informed, yet draw on the capabilities of symphonic instruments. These performances are appealing to a modern sophisticated listener who understands

²¹ Robert Philip, *Early Recordings and Musical Style: Changing Tastes in Instrumental Performance 1900–1950* (Cambridge, UK: Cambridge University Press, 1992), 238.

²² Russell Stinson, *J. S. Bach at His Royal Instrument* (Oxford, New York: Oxford University Press, 2012), 144–145.

the influence of baroque performance practice, yet has also been exposed to orchestrations that draw on larger performing forces.

The group of recordings used for this project span an 85-year history, with the earliest being a recording by Marcel Dupré in 1927 and the latest being a recording by Thomas Trenney in 2012. Recordings of the *Passacaglia* available commercially were collected and categorized by performer, year the recording was made, country and city in which the recording was made, title of the album or CD, the instrument heard in the recording, and the record label. One recording available through the American Guild of Organist Convention Sound Archive was also included. (This recording was Thomas Trenney performing at the 2012 AGO National Convention in Nashville, Tennessee.) While this list of recordings is not exhaustive, it does provide a broad range in scope, and spans the known history of the recorded documents of this work (see Appendix III for stop lists of instruments heard in these recordings). Recordings used in this study are listed in Table 3 (pages 34–35).

Three of the recordings of the *Passacaglia* come from collections of the complete organ works by Bach, played on period instruments. In 1992, Lionel Rogg released his performances of the Bach works performed on the Johann Andreas Silbermann (son of Andreas and nephew of Gottfried) instrument at Arlesheim. The instrument had been restored in the early 1960s. Marie Claire-Alain also released a collection of the complete Bach works for organ in 1993. She began playing historic instruments as early as 1960, but until the late 1980s there were not enough restored instruments, in her opinion, to “do justice to the

immense diversity of the Thomaskantor's works."²³ She describes the value of performing on historic instruments:

Not the least advantage for a performing artist whose career is already as long as mine was the opportunity finally to gain access to instruments such as those played by the great composers of the eighteenth century. The performer learns a great respect for the instrument in this way. The historical organ cannot be rushed: it issues its orders and the artist bends to its will. Tempi are determined by the relatively heavy touch and by the unpredictability of the wind supply. Such organs command respect. But the difficulty of performing on them assumes the guise of a remarkable lesson, a source of wisdom and of joy at knowing that one has mastered the tools of one's trade, tools that provide such enchantment in sound.²⁴

The most recent collection of Bach works included in this study is the 2012 release of Bach organ works played on Silbermann instruments, dedicated to the late Ewald Kooiman. Performers in this set were all students of Kooiman; Bernhard Klapprott performs the *Passacaglia*. This collection surveys eight different instruments built by various members of the Silbermann family. All of these collections represent an enthusiasm for performing on historical instruments.

The recordings used in this study represent a wide variety of viewpoints and contexts. There are instruments from ten countries. Forty-one unique performers are heard, each with distinctive personal, educational, and professional backgrounds. Reasons for making the recordings range from celebrating a new instrument to documenting a live event. Many recordings exist as part of a performer's agreement with a record label to provide performances appropriate for a commercial audience. All these factors combine to offer

²³ *Bach: Complete Works for Organ, Vol. 14*, Marie-Claire Alain, Compact Disc, 1994. Liner notes, 6.

²⁴ *Ibid.*

documentation in sound of the performance traditions surrounding Bach's *Passacaglia* over the past century.

Table 3: *Passacaglia and Fugue in C Minor, BWV 582* Recordings

	Year	Country	Venue & City	Instrument	Album Title	Record Label
Dupré, Marcel	1929	England	Queen's Hall, London	Hill, 1893; Rebuilt Hill, Sonet, Norman and Beard, 1923	Bach: The Art of Marcel Dupre (1999)	Pavilion Records, LTD
Marchal, Andre	1936	France	St. Eustache, Paris	Merklen; Gonzalez, 1927-32	First Recordings (2003)	Arbiter
Schweitzer, Albert	1940	France	Paris Church, Gunsbach, Alsace	Organ of the Paris Church (no builder / date)	Bach Organ Music (2003)	IMD Music
Richter, Karl	1954	Switzerland	Victoria Hall, Geneva	Ziegler, 1949	Bach Organ Recital (1997)	London Records
Biggs, E. Power	1961	USA	Busch-Reisinger Museum, Harvard University, Cambridge, MA	Flentrop, 1958	Mighty Organs (2000)	Sony Music Entertainment
Biggs, E. Power	1961	USA	Busch-Reisinger Museum, Harvard University, Cambridge, MA	Flentrop, 1958	Tocatta & Fugue and Preludes & Fugues (2002)	Sony Classics
Walcha, Helmut	1962	Holland	St. Laurenskerk, Alkmaar	Eckmans et al, 1638-45	Bach: Great Organ Works (1963, 1970)	Duetche Grammophon
Kraft, Walter	1965	Denmark	Krist Kirke, Tonder	Frobenius	Bach Organ Music, V ol. 1 (1992)	VoxBox Music Group
Rogg, Lionel	1970	Switzerland	Dom, Arlesheim	Silbermann, 1761	The Organ Works (Boxed Set) (1992, 2000)	Harmonia Mundi
Heiller, Anton	1971	USA	Harvard University, Boston, Mass	Fisk, Op. 46, 1967	Anton Heiller and Harvard: The Legendary Performances (1971)	Lincoln, Mass.

	Year	Country	Venue & City	Instrument	Album Title	Record Label
Fox, Virgil	1973	USA	Carnegie Hall, New York, NY	Rodgers (Electronic)	Heavy Organ at Carnegie Hall (1997)	BMG Music
Murray, Michael	1979	USA	Methuen Auditorium, Harvard University, Boston, Mass	Walker 1857; Aeolian-Skinner, 1970-71	Bach: The Great Organ at Methuan (1980)	Telarc
Koopman, Ton	1983	Netherlands	Grote Kerk, Maassluis	Garreis, 1730-32; Pels et al, 1975	J. S. Bach: Toccatas and Fugues (1984)	Archiv Produktion
Newman, Anthony	1985	USA	Recital Hall, School of Music, State University of New York, Purchase, NY	Rieger	Bach Favorite Organ Works (1996)	Sony Music Entertainment
Newman, Anthony	1985	USA	Recital Hall, School of Music, State University of New York, Purchase, NY	Rieger	Milestones of the Millinium (1999)	Sony Classical
Rubsam, Wolfgang	1988	USA	Duke Chapel, Duke University, Durham, NC	Flentrop	J. S. Bach: The Great Organ Works (1996)	Naxos
Böhme, Ullrich	1990	Germany	Thomaskirche, Leipzig	Schuke, 1966	Bach, Mendelssohn Organ Works	Capriccio
Herrick, Christopher	1990	Switzerland	Stadtkirche, Zofingen	Metzler, 1983	Bach Toccatas and Fugues	Hyperion Records
Kee, Piet	1990	Netherlands	St. Bavo, Haarlem	Muller, 1735-38; (Marcussen/Flentrop)	The Muller Organ of St. Bavo, Haarlem	Chandos
Zukriegel, Gerhard	1990	Austria	Dom, Salzburg	Rebuilt by Pirchner, 1991	Famous European Organs (1995)	Capriccio
Swann, Frederick	1991	USA	Crystal Cathedral, Garden Grove, CA	Aeolian-Skinner, Ruffati, 1982	Four Masterworks for Organ	Gothic
Alain, Marie- Claire	1993	Germany	Stiftskirche Grauhof, Goslar, Lower Saxony	Treutmann, 1737	Bach, Boxed Set (1994)	Erato

	Year	Country	Venue & City	Instrument	Album Title	Record Label
Bonsaksen, Per Fridtjov	1995	Norway	Nidaros Cathedral, Trondheim	Wagner, 1738-39; Ahrend, 1994	Baroque Organ Music (2005)	Challenge Classics
Newman, Anthony	1996	Poland	Monestary of St. Benedict, Lejansk	Various Builders, 1623	Bach at Lejansk	Helicon Records
Bowyer, Kevin	1997	Denmark	Sct. Hans Kirke, Odense	Marcussen & Son, 1962/87	J. S. Bach (1998)	Nimbus Records
Lippincott, Joan	1997	USA	Duke University Chapel, Durham, NC	Flentrop, 1976	Toccatas & Fugues by Bach	Gothic
Major, Douglas	1999	USA	National Cathedral, Washington, D.C.	Aeolian-Skinner, 1939 (+modifications)	Masterworks by Bach	Gothic
Porter, William	1999	USA	Pacific Lutheran University, Tacoma, WA	Fritts, 1999	One of a Kind (2000)	Loft Recordings
Morrison, Alan	2000	USA	Cathedral Basilica of the Sacred Heart, Newark, NJ	Schantz, 1953-54	Cathedral Basilica of the Sacred Heart	Gothic
Diaz, James	2001	USA	Meyerson Symphony Center, Dallas, TX	Fisk, Op. 100, 1991-92	Organ Classics (2003)	Delos International
van Oortmersen, J.	2001	Neatherlands	Waalse Kerk, Amsterdam	Langlez, 1680; van Eeken, 1993	J. S. Bach Organ Works	Challenge Records
Cho, Eun-Ah	2002	Germany	Evangelischen Stadtkirche, Bad Wimpfen	Johann Adam Ehrlich, 1748	Beitrage Suddeutschlands	Organum Classics
Cramer, Craig	2003	USA	Grace Lutheran Church, Tacoma, WA	Fritts, 1992	A Year of Grace	Dulcian Productions
Ritchie, George	2003	USA	House of Hope Presbyterian Church, St. Paul, MN	Fisk, 1979	Youthful Brilliance (2004)	Raven Recordings
Roth, Daniel	2003	France	Saint-Sulpice, Paris	Clicquot, 1781; Renaud et al, 1988-91	La Tradition de Saint-Sulpice (2004)	IFO Records

	Year	Country	Venue & City	Instrument	Album Title	Record Label
Schonheit, Michael	2004	Germany	Dom, Mereburg	Rebuilt by Eule, Scheffler and Wegscheider, 2001-4	Ladegast Orgel (2005)	MDG
Glandorf, Michael	2005	USA	St. Mark's Lutheran Church, Pennsburg, PA	Patrick Murphy, 2000	The Philadelphia Organbuilder	Raven Recordings
Hurford, Peter	2005	England	Trinity College Chapel, Cambridge	Metzler, 1976	The Art of Peter Hurford	Decca
Heller, David	2007	USA	Center for the Fine & Performing Arts, Texas A&M University Laredo, TX	Kegg, 2006	Bravo Grande!	Pro Organo
Schwandt, John	2008	USA	First Presbyterian Church, Ithica NY	Russell & Co., 2006	Tapestries	Russell & Co. Organ Builders
Karosi, Balint	2009	USA	First Lutheran Church, Boston, Mass	Richards, Fowkes, 2000	Bach in the Back Bay	Dulcian Productions
Gehring, Holger	2010	Germany	Kreuzkirche, Dresden	Jehmlich Company, 1963	Kreutzkirche Dresden	VKJK
Klapprott, Bernhard	2010	Switzerland	Dom, Arlesheim	Silbermann, 1761	Silbermann Boxed Set (2012)	Aeolus Music
Trenney, Thomas	2012	USA	West End United Methodist Church, Nashville, TN	Moller 1983; Luley & Associates	Recording from AGO National Conference	Personal Recording

Chapter 4

Tempo

Tempo is the basic musical element that creates a sense of movement through time. It is one of the most noticeable characteristics of any performance. Listeners will generally perceive the tempo as slow, medium, or fast before they notice other attributes. For performers, finding an appropriate tempo that will be the most expressive for a given composition and circumstance is a fundamental task.

Tempo encompasses more than the concept of speed. Articulation, acoustics, and the type of rhythmic figure all play a part in the way that musical movement is experienced. The Grove article on rhythm suggests that tempo is a basic, but complex phenomenon: “A sense of tempo and motion is a hierarchically emergent property of the musical surface, and not simply a product of note-to-note transitions.”¹

Sorting through tempos, as they are revealed in the recordings of Bach’s *Passacaglia in C Minor* may seem like a simple and objective task. At one level, it is true that tempo is, in the broadest sense, a mathematical division of the performance of the composition. General comparisons can be made among the recordings related to the length of each variation, the average tempo expressed in beats per minute, the overall length of the *Passacaglia*, and the overall length of the fugue. These objective comparisons provide a point of departure for

¹ Justin London, "Rhythm," in *Grove Music Online*, Web ed.: Oxford University Press, Web, <http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/grove/music/45963pg1#S45963.1>, accessed August 6, 2013.

discussing tempo in these recordings. There are subtleties and connections to other musical elements that come into play, however, which limit the usefulness of simple objective mathematical calculations.

David Epstein discusses complexities surrounding the concept of tempo:

[Tempo] is a consequence of the sum of all factors within a piece—the overall sense of a work's themes, rhythms, articulations, “breathing”, motion, harmonic progressions, tonal movement, contrapuntal activity. Yet tempo...is a reduction of this complex Gestalt into the element of speed per se, a speed that allows the overall, integrated bundle of musical elements to flow with a rightful sense.²

All of the elements that Epstein mentions come into play when considering these recordings. Registration, articulation, ornamentation, and gesture all affect the pace and flow of a given performance. The fastest performances, in terms of speed, are not always the liveliest and the most compelling. For example, well-articulated music can sound faster than under-articulated music.³ Consider the opening theme and first variation from recordings by Piet Kee and Douglas Major. Although the Kee recording is actually slightly slower (48 seconds) than the Major recording (44 seconds), Kee's open touch and highly articulated approach make it seem faster. The difference in approach affects the perceived tempo.

² From "Shaping Time: Music, the Brain, and Performance" by David Epstein, quoted in London, <http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/grove/music/45963pg1#S45963.1>, accessed August 6, 2013..

³ Dorottya Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature* (Hampshire, England: Ashgate Publishing, Limited, 2003), 98.

Sound Example 1: Tempo and Articulation			
Theme and Variation 1	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Piet Kee	4/1	98
	Douglas Major	4/2	98

Arriving at the appropriate tempo, then, is a combination of many factors that a performer must explore in each unique circumstance. The tempo can depend on the performing space, the familiarity of the performer with the composition, the instrument, and the performing situation. When considering all these factors together, Fabian suggests that “speed itself is a relative and not overwhelmingly significant matter within which the performer is free to play faster or slower.”⁴ Determining the range appropriate for the piece is more important than a specific tempo indicator, such as a metronome marking.

The Process

In this study, understanding tempo in the recordings of the *Passacaglia* begins by determining the overall tempo of both the *Passacaglia* and the fugue combined. Each recording was entered into the software music management system, iTunes, which provided durations for each track. (Some recordings combined the *Passacaglia* and the fugue into a single track. Other recordings separated the sections into two separate tracks.) The lengths of the recordings in iTunes were compared with the lengths stated in the liner notes of the given recordings. Differences in durations between the stated time and the actual time were noted. In order to be consistent, the durations in iTunes were used as a

⁴ Ibid.

basis of comparison. Overall lengths were added to a general spreadsheet that captured basic data related to each recording (performer, date, location, title, instrument, record label, and overall duration).

Several spreadsheets were created to capture data related to the length of each variation (in seconds) and corresponding metronome markings (expressed in beats per minute). First, time stamps that indicated the beginning and end of the theme, each variation, and the fugue for each recording were collected and converted from minutes and seconds into seconds only. (For instance, 1 minute 40 seconds was entered as 100 seconds.) This conversion reduced time to the lowest common denominator in order to perform calculations that provide comparisons between the recordings. (See Table 4 on p. 47 for a summary of these calculations.) The calculations were used to determine the following:

- The length of each variation (expressed in seconds);
- Metronome markings (expressed in BPM) for the theme, each variation, and the fugue;
- Average BPM for the *Passacaglia*;
- Additional length of Variation 20 (as a result of slowing tempo or final held note in the *Passacaglia*);
- The differential between the slowest variation and the fastest variation in each recording;
- The percentage of overall time consumed by the *Passacaglia*;
- The percentage of overall time consumed by the fugue.

While the information determined by these calculations offers a great deal of objective data allowing general comparisons from one recording to the next, these calculations don't offer any direct information about the flexibility of

tempo within the specified component parts. Careful listening and comparison of specific variations provide more information about the ebb and flow of the musical line within the given time constraints. The flexibility within these limits is dependent on hierarchical articulation, ornamentation, and pacing.

The Recordings

These representative recordings of the *Passacaglia* support the suggestion that tendencies for slower or faster tempos are an individual artistic decision, as opposed to the norm for a particular era or performance style. As evidenced in Table 5 on pp. 48–49, there are wide ranges of tempos found in the collected recordings of the work. This table supplies the following information:

- Performer
- Date
- Duration of the *Passacaglia* and fugue combined
- Duration of the *Passacaglia*
- Duration of the fugue

The shortest version is by Anthony Newman, recorded in 1985, taking 10 minutes 16 seconds to perform; the longest is by Wolfgang Rübsam in 1988, taking 19 minutes 29 seconds. Most of the recordings fell in the 13–14 minute range (20 at 13 minutes and 11 at 14 minutes). Five performers recorded faster versions of this work, and five recorded slower versions.

Sound Example 2: Variation in Tempo of <i>Passacaglia</i> Theme			
Theme	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Anthony Newman	4/3	98
	Wolfgang Rübsam	4/4	98

Newman's performances have been surrounded in controversy related to his quick tempos and elaborate ornamentation,⁵ so it comes as no surprise that his recordings were the three that had the fastest tempos. Newman is of the opinion that in an absolute sense, the only historical performance is one presented by the composer. So, instead of trying to recreate a historical performance (that was neither possible nor desirable, in his opinion) he sought to create an individual and personally authentic statement with his artistic choices.⁶ Newman did, however, advocate the use of historical instruments, as is evidenced on the recording made on the 1680 Studzinski instrument at the Monastery of St. Benedict in Lejansk, Poland. Newman's performance on the historic instrument, while still quite fast, is slightly slower (by five seconds) than his other two performances recorded on a Rieger instrument at the State University of New York that are included in this list of recordings. It is likely that adjustments were made for the performing conditions and space.

The recordings that pre-date 1970 demonstrate an even spread of faster and slower speeds. Dupré (12 minutes 58 seconds) and Marchal (13 minutes 29 seconds) show somewhat faster tempos than their contemporaries. Albert Schweitzer, Karl Richter, and Walter Kraft all came in with slower tempos, in the 15–16 minute range. E. Power Biggs and Helmut Walcha's recordings fell in the middle of the group.

⁵ A brief Google search for "Anthony Newman, musician" yields the following Wikipedia page highlighting Newman's views on performance of Baroque music. "Anthony Newman (Musician)." [http://en.wikipedia.org/wiki/Anthony_Newman_\(musician\)#Baroque_performancecontroversy](http://en.wikipedia.org/wiki/Anthony_Newman_(musician)#Baroque_performancecontroversy) (accessed August 13, 2013).

⁶ Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature*, 23.

While overall durations in these early performances span a broad range, a closer look at the data tells a slightly different story. Performances prior to 1970 have a tendency for one of the two following scenarios:

- A wider differential between the fastest and slowest variations in a single performance of the *Passacaglia*, or
- A greater difference between the average tempos chosen for the *Passacaglia* and the fugue.

With only a few exceptions, most examples after 1970 do not consistently have this much of a significant change in tempo. In other words, tempos in the earlier recordings (prior to 1970) do not necessarily stay steady from one variation to the next, or from the *Passacaglia* moving into the fugue.

The Marchal recording provides a good example of both of these trends. This recording had a differential between variations in the *Passacaglia* of 11 seconds. Variation 1 was 30 seconds in length at 48 BPM, versus Variation 17 lasting 19 seconds at 76 BPM. The difference in tempo between the *Passacaglia* and the fugue was also significant, with the *Passacaglia* at an average of 59 BPM and the fugue at 76 BPM. Some of the other early recordings meet one, but not both criteria. For example, the Schweitzer recording had a variation differential of 10. (The theme was 20 seconds long, at 72 BPM; Variation 8 was 30 seconds long at 48 BPM.) However, there was only one metronome mark difference between the average tempo indication of the *Passacaglia* and the fugue. The *Passacaglia* was 54 BPM, while the fugue was 53 BPM, which is easily accounted for by the lengths of the final notes in each section.

Sound Example 3: Tempo Differential in <i>Passacaglia</i> Variations			
	Performer	Sound File Chapter/Track	Bärenreiter Page #
Variation 1 Variation 17	Andre Marchal	4/5	98 & 104
Theme Variation 8	Albert Schweitzer	4/6	98, 100-101

Although the data shows that some performers vary the tempo from one variation to the next, all but seven performances after 1970 have a differential of six seconds or less. In addition, most performers choose similar tempos for both sections of the work, within one to four BPM difference between the *Passacaglia* and the fugue. Thirty-six out of 44 recordings fall in this category. Table 6 on pp. 50–51 shows the differential between the slowest and fastest variations, as well as metronome markings for both *Passacaglia* and fugue. The increased interest in scholarship surrounding Baroque performance practice (particularly aspects related to tempo and meter), as well as improvements in technology from the 1960s onward, seems to correspond with increasing consistency of tempo as demonstrated in the recordings.

A range of approaches in tempo change at structural points in the work, such as the ending measures of both the *Passacaglia* and of the fugue, are observed in these recordings. While the fugue is often considered the 21st variation, it is definitely set apart from the *Passacaglia* because of its formal structure. It is possible to distinguish between performances that incorporate a ritardando at the end of the *Passacaglia* in order to define the two movements and those that keep a steady tempo, connecting them. The end of the fugue, likewise, has a range of treatments. This is the only place in the entire work bearing a

tempo indication in the earliest copies of the manuscript; the marking “Adagio” is found at the final two bars of the fugue. Table 7 on pp. 52–53 provides information regarding durations at these structural points.

Durations of the final variation of the *Passacaglia* provide evidence of the performer’s plan for connecting the *Passacaglia* with the fugue. Variation 20 was considered independently of the other variations for this reason. In order to determine the difference (if any) in duration, the average length of Variations 1–19 (in seconds) was subtracted from the length of Variation 20. Of the recorded performances considered here, 18 fell in the 5–9 second range; 17 were under five seconds, while eight were 10 seconds or more. The group that came in under five seconds essentially connected the *Passacaglia* to the fugue, creating one overall entity. Ton Koopman’s recording provides an excellent example of this approach. Those that were 10 seconds or longer created two separate movements by setting up Variation 20 as an ending to the *Passacaglia*, then restarting with the fugue. This method can be observed in the Michael Murray recording. Most performers, however, offered something in the middle of the spectrum. Craig Cramer demonstrates this treatment of the transition from the *Passacaglia* to the fugue. In his performance, the two sections are attached, even though he slows and extends the final chord of the *Passacaglia* before beginning the fugue subject.

Sound Example 4: Transition from the <i>Passacaglia</i> to the fugue		
Variation 20 fugue Exposition	Performer	Sound File Chapter/Track
	Ton Koopman	4/7
	Michael Murray	4/8
	Craig Cramer	4/9

There is a broad range of tempo choice in these recordings. Early recordings demonstrate the same range of tempo as later ones. The shortest overall recording by Newman (1985) and the longest by RübSam (1988) were recorded only three years apart. Their era does not seem to impact the overall length of the performance. The recordings prior to 1970 do, however, show greater tolerance for flexibility of tempo than later recordings. There was a greater differential between variations, as well as a greater difference in tempo from the *Passacaglia* to the fugue.

Discussing tempo without reference to other musical characteristics, such as articulation and musical gesture, is somewhat limiting. Qualities inherent in each recording do not come to light by simply looking at mathematical calculations related to lengths in each section. This data, however, can serve as a basis of comparison for the group of recordings considered here, and be used as a point of departure for understanding other musical elements.

Table 4: Calculations

	Description	Calculation
Variation Length	This calculation was based on initial recording of the time stamp of each variation, converting that time stamp to seconds, and recording in a spreadsheet software program.	Time stamp 2 - Time stamp 1 = Variation 1 Length Time stamp 3 - Time stamp 2 = Variation 2 Length Etc.
BPM for the Theme & Each Variation	There are 24 beats in each variation (3 beats per measure x 8 measures.) There are 60 seconds in a minute. This calculation converts the length of the variation in seconds to a more common metronome marking of BPM.	$[24 \div X] \times 60 = \text{Variation BPM}$ where X = length of each variation in seconds
Average MM in BPM for Passacaglia	The length of the first 20 sections (theme + variations 1-19) were averaged. Variation 20 was omitted because it is outside normal tempo parameters as the final variation.	Sum of theme + variation 1-19 ÷ 20 = average length of variation
Additional length of Variation 20 above the average variation length	The final variation differs from the average because of slowing tempos and the length the final note is held. This calculation determines this difference.	Variation 20 length - Average variation length = Variation 20 additional length
Differential between longest variation and shortest variation	Some recordings have steady tempos from one variation to the next. Other performers vary tempos. This calculation determines the greatest differential (in seconds) within a single recording.	Longest variation length - Shortest variation length = differential
Length of Passacaglia as a % of over all length	This calculation shows the amount of overall time that is consumed by the Passacaglia expressed as a percentage of overall time.	Length of Passacaglia ÷ Overall Length (expressed as %)
Length of Fugue as a % of over all length	This calculation shows the amount of overall time that is consumed by the Fugue expressed as a percentage of overall time.	Length of Fugue ÷ Overall Length (expressed as %)

Table 5: Tempo Summary

	Date	Total Time	Passacaglia Total Time	Fugue Total Time
Dupre	1927	12m 58s	7m 32s	5m 25s
Marchal	1936	13m 29s	8m 34s	4m 54s
Schweitzer	1940	16m 27s	9m 25s	7m 1s
Richter	1954	15m 37s	9m 2s	6m 34s
Biggs (Toccat & Fugue)	1961	13m 29s	8m 5s	5m 23s
Biggs(Mighty Organs)	1961	13m 29s	8m 5s	5m 23s
Walcha	1962	13m 43s	7m 53s	5m 49s
Kraft	1965	15m 13s	8m 59s	6m 13s
Rogg	1970	13m 48s	8m 2s	5m 45s
Heiler	1971	14m 59s	8m 26s	6m 32s
Roth	1973	13m 10s	7m 30s	5m 39s
Fox	1973	14m 5s	8m 49s	5m 15s
Murray	1979	14m 46s	8m 48s	5m 57s
Koopman	1983	12m 54s	7m 35s	5m 18s
Newman (Favorites)	1985	10m 13s	5m 46s	4m 26s
Newman (Lejansk)	1985	10m 18s	5m 53s	4m 24s
Rubsam	1988	19m 29s	11m 8s	8m 20s
Bohme	1990	12m 36s	7m 10s	5m 25s
Herrick	1990	13m 9s	7m 29s	5m 39s
Kee	1990	14m 52s	8m 47s	6m 4s
Zukriegel	1990	15m 2s	8m 37s	6m 24s
Swann	1991	13m 45s	8m 1s	5m 43s
Alain	1993	14m 2s	7m 59s	6m 2s
Bonsaksen	1995	13m 32s	7m 55s	5m 36s
Newman (Milestones)	1996	10m 16s	5m 46s	4m 29s
Bowyer	1997	12m 22s	7m 2s	5m 19s
Lippincott	1997	13m 17s	7m 46s	5m 30s
Major	1999	13m 58s	8m 29s	5m 28s
Porter	1999	14m 49s	8m 27s	6m 21s
Morrison	2000	13m 42s	7m 39s	6m 2s
Diaz	2001	13m 32s	7m 53s	5m 38s
van Oortmersen	2001	14m 50s	8m 30s	6m 19s

Table 5: Tempo Summary (Cont'd)

	Date	Total Time	Passacaglia Total Time	Fugue Total Time
Cho	2002	13m 21s	8m 2s	5m 18s
Cramer	2003	13m 16s	7m 43s	5m 32s
Ritchie	2003	14m 26s	8m 22s	6m 3s
Schonheit	2004	14m 22s	8m 39s	6m 2s
Glandorf	2005	13m 16s	7m 43s	5m 32s
Hurford	2005	14m 57s	8m 52s	6m 14s
Heller	2007	13m 34s	7m 50s	5m 43s
Schwandt	2008	15m 16s	8m 47s	6m 28s
Karosi	2009	13m 35s	7m 39s	5m 55s
Gehring	2010	13m 52s	7m 57s	5m 54s
Klapprott	2010	14m 6s	8m 10s	5m 55s
Trenney	2012	13m 21s	8m 18s	5m 2s

Table 6: Variation Differential and Average Tempo

	Date	Differential Between Longest & Shortest Variation	Passacaglia Ave. Tempo	Fugue Ave. Tempo
Dupré	1927	6	67	69
Marchal	1936	11	59	76
Schweitzer	1940	10	54	53
Richter	1954	4	56	57
Biggs (Mighty Organs)	1961	4	62	69
Biggs(Toccat &	1961	4	62	69
Walcha	1962	7	64	64
Kraft	1965	6	56	60
Rogg	1970	4	63	65
Heiler	1971	5	60	57
Fox	1973	18	57	71
Roth	1973	7	57	63
Murray	1979	4	66	70
Koopman	1983	7	86	85
Newman(Favorites)	1985	4	87	84
Newman (Lejansk)	1985	3	87	83
Rubsam	1988	9	45	45
Bohme	1990	4	70	69
Herrick	1990	2	67	66
Kee	1990	5	57	61
Zukriegel	1990	6	58	58
Swann	1991	5	63	65
Alain	1993	5	63	62
Bonsaksen	1995	3	64	66
Newman (Milestones)	1996	4	72	70
Bowyer	1997	3	65	68
Lippincott	1997	3	59	68
Major	1999	6	60	59
Porter	1999	5	66	62
Morrison	2000	4	64	66
Diaz	2001	8	59	59
van Oortmersen	2001	4	63	70

Table 6: Variation Differential and Average Tempo (Cont'd)

	Date	Differential Between Longest & Shortest Variation	Passacaglia Ave. Tempo	Fugue Ave. Tempo
Cho	2002	6	65	67
Cramer	2003	4	60	61
Ritchie	2003	3	67	66
Schonheit	2004	6	58	62
Glandorf	2005	5	65	67
Hurford	2005	7	58	60
Heller	2007	5	64	65
Schwandt	2008	4	57	58
Karosi	2009	2	66	63
Gehring	2010	4	63	63
Klapprott	2010	5	62	63
Trenney	2012	7	61	74

Table 7: Durations at Primary Structural Points

	Date	Extension of Var. 20 above average (in seconds)	Length of the final 8 measure of the fugue (in seconds)
Dupré	1927	11	37
Marchal	1936	11	31
Schweitzer	1940	5	35
Richter	1954	5	44
Biggs (Mighty Organs)	1961	5	33
Biggs (Toccata & Fugue)	1961	5	33
Walcha	1962	10	37
Kraft	1965	3	34
Rogg	1970	7	36
Heiler	1971	13	90
Fox	1973	12	86
Roth	1973	3	38
Murray	1979	18	36
Koopman	1983	1	23
Newman (Favorites)	1985	3	35
Newman (Milestones)	1985	3	31
Rubsam	1988	9	98
Bohme	1990	2	31
Herrick	1990	2	36
Kee	1990	7	45
Zukriegel	1990	4	41
Swann	1991	5	40
Alain	1993	6	43
Bonsaksen	1995	4	29
Newman (Lejansk)	1996	3	35
Bowyer	1997	9	39
Lippincott	1997	2	32

Table 7: Durations at Primary Structural Points in the *Passacaglia* and the fugue (Cont'd)

	Date	Extension of Var. 20 above average (in seconds)	Length of the final 8 measure of the fugue (in seconds)
Major	1999	7	34
Porter	1999	8	41
Morrison	2000	16	96
Diaz	2001	8	43
van Oortmersen	2001	4	36
Cho	2002	4	38
Cramer	2003	7	34
Ritchie	2003	3	37
Schonheit	2004	2	32
Glandorf	2005	8	43
Hurford	2005	6	37
Heller	2007	11	40
Schwandt	2008	8	47
Karosi	2009	5	38
Gehring	2010	2	34
Klapprott	2010	2	32
Trenney	2012	3	37

Chapter 5

Registration

There is no extant manuscript in Bach's hand of the *Passacaglia in C Minor*. We do, however, have three secondary sources of this work, and at least one bears the instruction "con Pedal pro Organo pleno."¹ This instruction seems logical for the fugue. Many fugues that are paired with toccatas or preludes have this indication. Generally speaking, however, the toccatas and preludes are not as clearly structured as the *Passacaglia* (a set of continuous variations), displaying such a variety of texture and figuration. Choice in registration has been a major performing decision for this work throughout its performance history,² and is as varied as the instruments and performers heard in these recordings.

In addition to rhetorical gesture through articulation and ornamentation (which will be considered in chapters 6 and 7,) performers have an opportunity to emphasize the variety of textures and musical figures found in the variations through choice of registration. The theme, introduced in the pedal at the beginning of the work, is heard in a monophonic texture. Generally, the theme is in the pedal, but sometimes migrates to different voices as a solo line (Variation 11), and is sometimes integrated into the figuration (Variations 13, 14, and 15). The accompaniment offers various treatments, including lyrical counter

¹ George B. Stauffer and Earnest May, eds., *J.S. Bach as Organist* (Bloomington, Indiana: Indiana University Press, 1986), 196.

² In speaking of the *Passacaglia* and the *Dorian Toccata* to one of his students, Liszt is reported to have said: "Do you really believe that Bach played both these compositions continuously with the full organ? Absolutely not! He was far too sensitive an artist to have done so. Haven't you read that he is said to have changed stops in a most wonderful way?" Quentin Faulkner, *The Registration of J.S. Organ Works* (Colfax, NC: Wayne Leupold Editions, Inc., 2008), 94.

melodies, scalar passages, arpeggios, and broken chords. Each of these treatments is unique in character, giving rise to questions regarding the registration of this piece. Should registration reinforce the character of the individual variation? Should variations be grouped together through registration, based on similar characteristics in order to create larger sections? How should one apply the instruction “con Pedal pro Organo pleno”? What is the proper treatment of passages that contain solo—type melodies in a single voice?

Performers of the *Passacaglia in C Minor* have sometimes been ridiculed for choices in registration of this work. In her book on Baroque registration, Barbara Owen says that the *Passacaglia* is “sometimes subjected to a lot of registrational silliness.”³ Owen does not elaborate on this statement to describe exactly what she means. Her comments might suggest that performers play strictly on some variation of a plenum registration, avoiding the variety of consort combinations and color stops often used for melodies. Interestingly enough, these colorful sounds are often heard in the group of recordings considered in this study.

Current understanding of registrational practice in the organ works of J.S. Bach is derived from source material (the writings of individuals near to Bach, or acquainted with his work and general organ practice of the time) that can be grouped roughly into three categories. First, there are sources that offer general principles of registration; next, there are sources that offer stop combinations or remarks on the use of specific stops; finally, there are sources that provide

³ Barbara Owen, *The Registration of Baroque Organ Music* (Bloomington, IN: Indiana University Press, 1997), 168.

registration instructions for specific organ works.⁴ One such source, a review of *Sammlung einiger Nachrichten von berühmten Orgelwerken*, written by Johann Friedrich Agricola is considered reliable, because Agricola was closely associated with Bach (as a student from 1738–1741). This writing likely provides information that would reflect the best practices of the time.⁵ Other sources, such as Jacob Adlung’s *Musica mechanica organoedi*, were further removed from Bach’s direct influence (published in 1768, after Bach’s death) yet offer extensive writing on registrational practices of the period.⁶

These sources, and others, give insight into the registrational practices of Bach organ works, yet there are contradictions within the early writings on this subject. For instance, there is some disagreement as to the appropriate construction of a plenum. Agricola limited the plenum to principal scaled stops, allowing flute stops only when a principal was absent at the fundamental pitch. He also allowed manual reeds in the plenum, an instruction contradicted by other writers.⁷ Adlung, on the other hand, suggests that the plenum consist of “all the stops, including third—sounding ranks and multiple 8’ and 4’ registers.”⁸ He disliked manual reeds because of constant tuning issues, and did not include a discussion of them as related to the plenum. Both of these writers are in agreement, however, about the general approach to registration; organists should incorporate variety into their registrational practice. Adlung says:

Variety is the soul of music. This is why so many stops have been built. Both flues and reeds, the better to achieve variety. Therefore one ought to use first this, then that [stop], first this combination,

⁴ Faulkner, *The Registration of J.S. Bach’s Organ Works*, 13

⁵ *Ibid*, 60.

⁶ *Ibid*, 29.

⁷ *Ibid*, 63.

⁸ *Ibid*, 29.

then that. This all depends, though, on one's sense of hearing—one must register according to one's fancy.⁹

These instructions seem to speak to the spirit of registration practice. While some performers adhere to a specific registrational approach (perhaps taught to them by an instructor), others adopt a more eclectic or symphonic style of registration, creating combinations to showcase the instrument they are playing and emphasize their understanding of the work. In effect, they register according to their own “fancy” aided by technological advances, such as combination action and sequencers.

The Recordings

While every registration heard in this group of recordings is unique because of the differences in instruments as well as the creative choices of the performers, these registrations can be divided roughly into three categories, as follows:

- Group A represents those recordings that use a basic plenum (some at an 8' basis, and some at a 16' basis). These recordings alter the registration from one variation to the next very little. They may offer different levels of sound by drawing on plenums in different divisions or by adding and subtracting mixtures and reeds.
- Group B includes those performances that seem to create blocks of sound, changing registration for groups of variations, or sections in the fugue. (One might group Variation 1 and Variation 2, based on figuration; they might change registration for the manualiter section of the fugue). This group frequently uses solo sounds, like a reed or cornet, for specific

lines,

° Ibid, 23.

such as the theme in Variation 11 that has migrated to the soprano voice.

Gradual building is often seen at the end of each major section.

- Group C creates a gradual unfolding of sound, often changing the registration for every variation. These performances typically use a variety of color stops and combinations, both for solo lines and accompaniments. Often, specific aspects of the contrapuntal texture are emphasized through “soloing—out” a line using these sounds. Recordings that demonstrate this treatment are usually on large instruments that have many stops and combinations from which to choose. This group of recordings reflects a preference for an orchestral, romantic sound.

In addition to assigning each recording to a general category—A, B, or C—the specific registrational approach was summarized and significant choices were noted. The recurring issues related to registration become obvious while listening, and unique solutions also become apparent. These are some of the most common questions that arise when considering registration in the

Passacaglia in C Minor:

- Should the entire piece be played on a single sound, or should there be a variety of sounds?
- If using a plenum for the primary registration, should there be various levels, or should there be a single, constant sound? Are manual changes appropriate? Should reeds be used in the plenum, and if so, how much?
- If registration changes are used, how often should they occur, and what are the criteria for making a change?

- How should the opening theme be presented?
- What is the most appropriate way to register Variations 11–15, where the theme moves into the upper voices, with lighter textures?
- How should dynamics be reflected in registration? Is growth in dynamics part of baroque performance practice, or is this related to orchestral transcriptions that are part of the reception of this work? Is the end of the *Passacaglia* dynamically as full as the end of the fugue?
- How does the registration of the *Passacaglia* relate to the registration of the fugue?

Table 8 on pages 68–71 shows the general category assigned to each recording, a summary of the registration used, and highlights of some of the specific solutions to registrational problems indicated above.

General registration categories fall into specific time periods. Up to 1980, all of the performances fell into the B or C category. Registrations frequently changed from one variation to the next and color stops were used liberally. Beginning in 1983 with the recording by Ton Koopman, performers began to adopt registration practices more in line with emerging scholarship. The predominant sound was a plenum, at either a 16' or 8' basis. Performers might vary the sound by changing manuals, or by adding or subtracting reeds. For the next 20 years, this practice was the norm. The few recordings of the work during this time period that didn't adhere to these standards were those performed on large instruments (such as Frederick Swann playing on the Aeolian Skinner/Ruffati instrument at the Crystal Cathedral), which do not demonstrate an historical ideal. Beginning in 2004, there seems to be a slight change in attitude toward the historically informed registration. In the early 2000s there is a

re-emergence of interest in the American symphonic instrument (like Schonstein, for example) and organists (Schwandt, Jacobs, Morrison and others) disseminate ideas related to the use of these instruments in teaching institutions throughout the United States. Five of the nine recordings between 2004 and 2012 reflect this point of view, shifting to a more flexible approach and using a broad range of sounds available, including solo stops and colors. These Group B and C recordings, unlike their earlier counterparts (Groups B and C prior to 1980) have a logical and organic flow from one variation to the next. Smooth, unobtrusive changes in registration occur in this group, and there is a refined approach to pace and timing.

Many of the early recordings demonstrate change of registration from one variation to the next. The theme and first four variations in the 1965 Walter Kraft recording (Sound Example 5) provides a case in point, with a changing registration for each variation. He begins on an 8' principal sound in the pedal. The accompaniment in Variation 1 is an 8' quintadena. Subsequent variations add or subtract stops, such as regal or other types of German reeds, then return to the quintadena. Registration changes could be accomplished simply by changing manuals or adding one stop, since there was typically no combination action on these instruments.

The approach of more contemporary performers can be heard in the 2005 Matthew Glandorf recording, which is a thoroughly romantic version of the piece. Like Kraft, Glandorf plays the theme on an 8' stop. He chooses a reed, the clarinet. In Variation 1, a soft accompaniment enters over the reed stop. In Variation 2, the accompaniment changes further, to some type of string, and the pedal changes to a 16' pitch. In Variation 3, the pedal is slightly fuller and the

accompaniment changes to principals. Variation 4 gradually adds to the sound. This type of subtle registration change characterizes many of the C category performances after 2004. These performers have the added advantage of combination action and, perhaps sequencers to aid them in a fluid change of sound.

Sound Example 5: Theme and Variations 1–4			
Theme and Variations 1–4	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Walter Kraft	5/10	98–99
	Matthew Glandorf	5/11	98–99

Performers that choose to use a more historical approach (Group A) also have choices related to the basic sound. While these performances do not change drastically from variation to variation, many of them use more than one level of plenum sound in order to create variety. Of the 20 recorded performances that adopt this method of registration, five (Koopman, Rübsam, van Oortmersen, Ritchie and Klaprott) do not change registration at all. The entire work, both *Passacaglia* and fugue are played on a single registration. The other 15 performances vary the sound in some way, typically with manual changes, but sometimes by adding or subtracting reeds. Sometimes these performers reserve the loudest or most brilliant stops for the concluding measures of the work. In Sound Example 6, two levels of plenum sound are heard in the Marie-Claire Alain recording; the same variations of the Klaprott recording represent an example of a single registration heard for the entire performance.

Sound Example 6: Modifying the Plenum Sound			
	Performer	Sound File Chapter/Track	Bärenreiter Page #
Variations 8 and 9 (change)	Marie-Claire Alain	5/12	100–101
	Bernhard Klaprott	5/13	99–100

The other choice that Group A performers must make is whether to use a plenum based on 16' sound, or one that is based on 8' sound. Historical sources suggest plenum combinations that have “gravity” and are based on a 16' pitch.¹⁰ Many of the recordings demonstrate plenums that are based on 8' pitch. Group A performers who chose not to vary their sound with manual changes were more likely to base their sound on a 16' pitch. Those performers that created variety, either with manual change or the addition or subtraction of other stops, were more likely to base the plenum on an 8' pitch. In Sound Example 7, James Diaz is heard using a plenum based on an 8' pitch. George Ritchie's sound, based on 16' pitch, has more depth and gravitas.

Sound Example 7: Basis for Plenum Sound – 16' vs. 8'			
	Performer	Sound File Chapter/Track	Bärenreiter Page #
Variation 6	James Diaz	5/14	100
	George Ritchie	5/15	100

Performers across groups must make decisions related to treatment of the variations that have the theme presented in the manuals, instead of the pedal. Movement from Variation 10 through Variation 15 involves one of the most

¹⁰ Owen, *The Registration of Baroque Organ Music*, 167.

difficult registrational decisions in this work. This section is certainly the most varied. Among the recordings examined in this study, the only players that don't have a decision here are those that chose to play the work on a single plenum the entire way through. Table 8 shows that some performers are categorized as A/B. These performers were those that chose a basic plenum sound for the entire work except for some aspect of Variations 10–15. Group A/B performers added some type of stop other than a flue stop in this section. The 1990 recording by Christopher Herrick is a good example of this treatment. He uses a single plenum sound through Variation 10; a reed stop is chosen for the bicinium treatment in Variation 11 with the melody in the right hand; the plenum returns in Variations 12 and 13; an 8' principle in a different division is used as a solo for a portion of the right hand arpeggiation in Variation 14, and a gap registration¹¹ is used for Variation 15. From the beginning of Variation 16 to the end of the work, the plenum returns, but using more sounds, including reeds in the pedal.

Sound Example 8 demonstrates the wide variety of choices that are made in registering Variations 10–15. The recordings by Andre Marchal (1936) and Thomas Trenney (2012) represent registrations of Group C. The types of changes made by Trenney are different than those of Marchal. Trenney moves seamlessly from one sound to the next, retaining aspects of the registration in order to create coherence. Marchal alternates between two registrations in Variations 10–13, adds a reed in 14, and uses a two—manual treatment that incorporates a gap registration and 8' flute in Variation 15.

¹¹ “Gapped” registrations are those that omit one or more stops that represent part of the overtone series of the entire registration. For example, an 8' flute and 2' flute create a “gap” registration, omitting the 4' level pitch. Sometimes these registrations are used as solo combinations or for special effects.

The recording by Frederick Swann provides an example of the types of treatment used by Group B performers. These performers change sounds from one variation to the next using solo sounds combined with basic plenum sounds. Sometimes they will retain a registration in more than one variation in order to create a small grouping. Swann uses the same registration for Variations 11 and 12. Christopher Herrick, as described above, represents Group A/B.

Group A also has two different types of treatment. Performers who change levels of sound (as opposed to those who play on one plenum throughout) always choose to make a change sometime during Variation 10–15. The difference between Group A (who use manual change or vary the plenum) and Group A/B is that the Group A performers always restrict the sound to flue stops. There are no reeds or color combinations. The 1999 recording by William Porter provides an example. During this section he reduces the sound by dropping the level of plenum, moving all the way to a single flute stop in Variation 15. The tone color changes, but not by adding reeds or solo combinations. The 2001 recording by Jacques van Oortmerssen provides an example of Variations 10 through 15 performed without changing registration.

Sound Example 8: Variations 10 – 15 by Group A, B, A/B, and C Performers			
Variations 10–15	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Andre Marchal (C before 2004)	5/16	101-103
	Thomas Trenney (C after 2004)	5/17	101-103
	Frederick Swann (Group B)	5/18	101-103
	Christopher Herrick (Group A/B)	5/19	101-103

	William Porter (Group A – change)	5/20	101–103
	J. Van Oortmerssen (Group A – no change)	5/21	101–103

Registrational choices in the fugue are less problematic because of the straightforward formal treatment of the subject and two countersubjects. The three questions related to registration in the fugue are:

- Should the registration be the same for the fugue as the end of the *Passacaglia*?
- Should there be a registration change for the manualiter section?
- Should the registration increase for the conclusion of the piece? Where and how much?

Generally, Groups B and C reduce the level of sound at the beginning of the fugue. The extent of the reduction, however, varies across performances. Most of the time performers play the fugue exposition on some type of plenum, but occasionally, as demonstrated in Sound Example 9 by Dupré and Glandorf, the registration is reduced to a single stop. More common, however, is some type of reduction in the plenum sound by removing a mixture or the reeds, regardless of the group classification of the performer. The recording by Helmut Walcha provides an example. Finally, there are some performers who retain the same registration when moving from the *Passacaglia* to the fugue. The Gerhard Zukriegel recording demonstrates this approach.

Sound Example 9: Transition from the <i>Passacaglia</i> to the fugue – Registration			
Transition	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Marcel Dupré	5/22	105–106
	Matthew Glandorf	5/23	105–106
	Helmut Walcha	5/24	105–106
	Gerhard Zukriegel	5/25	105–106

Generally, following the exposition of the fugue, registration is reduced (with the exception of performers who choose to play on a single registration throughout). Two notable exceptions, however, are the 1954 performance by Karl Richter and the 1962 performance by Helmut Walcha. In the manualiter section of the work, Richter uses several registration changes, including solo sounds and gap registrations. Helmut Walcha shifts from a rich plenum sound in the exposition, to a gap registration in the manualiter section, then returns to a larger plenum at the entrance of the pedal. It is interesting to note that these two examples are from relatively early recordings. These registrational anomalies are highlighted in Sound Example 10.

Sound Example 10: Fugue Development – Unique Registrational Choices			
Manualiter Section	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Karl Richter	5/26	108–109
	Helmut Walcha	5/27	108–109

The question of increasing registration for the climax of the work varies from one recorded performance to the next. Most performers gradually add

mixtures and reeds to the plenum beginning at the pedal entry (after the manualiter section) in measure 220, and following. Occasionally, the performer will wait until the very end after the Neapolitan cadence at measure 285. In this case, the final bars of the work are on the biggest registration. The only exceptions to these principles, again, are those performances that employ a single registration throughout the entire work.

While the matter of registration is individual to each performance and each instrument, there are general principles that can be observed when considering these recordings as an entire group. The classifications A, B, and C, while somewhat arbitrary, provide a way to make generalizations and comparisons. Early performances (before 1980) typically make changes from one variation to the next, using color combinations and reed stops as well as flue stops. As scholarship around Bach organ registration increased, more performers chose to offer their interpretation of these ideals. From 1980 on, most performances fell in this category. A few performers, however, sought to re-introduce the concept of changing registration from variation to variation, but with a post—modern attitude that embraced organic change and development from one variation to the next. These performers had the added advantage of combination action and sequencers to help them accomplish seamless changes in sound. They demonstrate interest in the American symphonic instrument and its capabilities.

Change in registration is way to create variety in sound utilizing the capabilities of the instrument. Yet, rhetorical aspects of performing, such as hierarchical articulation and ornamentation, generated by the performer, create variety in a different way, as we will observe in chapters 6 and 7.

Table 8: Registration Summary

Registration Categories	
A	= Very Little Change
B	= Change at Structural Points
C	= Frequent Registration Changes

	Date	Instrument	Registration Category	General Description of Registration	Specific Registration Provided	Registration Highlights
Dupré	1927	Sonet, Norman and Beard, 1923	B	Plenum with mixtures & reeds on and off. Frequent changes. Builds at the end of each section.	No	Theme and variation 1-4 demonstrate changes in registration.
Marchal	1936	Gonzalez, 1927-32	C	Changes registration on every variation. Occasional use of colorful solo stops.	No	Variation 9 - 15 demonstrates changes in registration.
Schweitzer	1940	No Information	B	Plenum with reeds on & off. Builds at the end of each section.	No	Variations 10-15 demonstrate changes in basic sound. Serious tuning issues.
Richter	1954	Ziegler, 1949	C	Changes registration often. Gradually builds registration. Occasional use of colorful solo stops.	No	The manuals only section of the Fugue demonstrates use of solo sounds to emphasize aspects of the contrapuntal texture.
Biggs (Tocatta & Fugue)	1961	Flentrop, 1958	C	Changes registration on every variation. Gradually builds sound, using mixtures & reeds.	No	Variations 6-9 show how sound gradually builds, one variation to the next.
Biggs (Mighty Organs)	1961	Flentrop, 1958	C	Changes registration on every variation. Gradually builds sound, using mixtures & reeds.	No	Variations 6-9 show how sound gradually builds, one variation to the next.
Walcha	1962	Eckmans, 1638-45	B	Plenum with mixtures on & off. Reeds added in Fugue.	No	Gap registration used for manual section of the Fugue.
Kraft	1965	Frobenius	C	Changes registration often. Theme on 8' stop. Uses mutations/reeds as accompaniment.	No	The opening theme, plus variation 1 & 2 show use of mutations/reeds in accompaniment.
Rogg	1970	Silbermann, 1761	C	Changes registration often. Uses reeds & mutations for color.	No	Variations 3-6 show progression of sound using mutations.
Heiler	1971	Fisk, Op. 46, 1967	B	Uses registration to define groupings of variations. Builds sound by adding gradually.	No	Theme and variations 1 and 2 show how registration defines groupings of variations.
Roth	1973	Clicquot, 1781; Renaud, 1988-91	B	Generally uses principal sound; only color stop is in variation 14; adds reeds at var. 16; single sound in Fugue.	No	Registration choices in variations 11-13 de-emphasize the change in texture.

Table 8: Registration Summary (Cont'd)

	Date	Instrument	Registration Category	General Description of Registration	Specific Registration Provided	Registration Highlights
Fox	1973	"Black Beauty" Rodgers (Electronic)	C	Changes registration on every variation. Uses solo registration to emphasize particular lines. Electronic sounds are evident.	No	The manuals only section of the Fugue demonstrates use of solo sounds to emphasize aspects of the contrapuntal texture.
Murray	1979	Aeolian-Skinner, 1970-71	C	Changes registration almost every variation; builds the sound, reduces, then builds again. Color stop at 14.	No	Variations 6-9 show gradual build up of sound from one variation to the next.
Koopman	1983	Garreis, 1730-32; Pels, 1975	A	Plenum throughout, at 16' basis; no manual changes	No	Theme and variation 1 demonstrate plenum sound at 16'
Newman (Favorites)	1985	Rieger	C	Changes registration frequently in variations 1-15 Variation 16-20 gradually builds. Reduces at beginning of fugue and builds to end.	No	Theme and variations 1-3 demonstrate the frequent change in registration.
Newman (Milestones)	1985	Rieger	C	Changes registration frequently in variations 1-15 Variation 16-20 gradually builds. Reduces at beginning of fugue and builds to end.	No	Theme and variations 1-3 demonstrate the frequent change in registration.
Rubsam	1988	Flentrop, 1976	A	Plenum throughout; no manual changes. 16' basis.	No	Variation 12-15 demonstrates this section on 16' plenum sound.
Bohme	1990	Schuke, 1966	A	Plenum throughout; manual changes for contrast.	No	Theme and variation 1 demonstrate plenum at 16' basis.
Herrick	1990	Metzler, 1983	A/B	Plenum with solo sounds added in variations 11-15. Reeds added in 16.	No	Variation 10-12 demonstrate plenum with solo colors for contrast.
Kee	1990	Muller, 1735-38; (Marcussen/ Flentrop)	A/B	Plenum with solo sounds added in variations 11-15. Pedal reed in 16; chorus reed in 18.	Yes	Uses cornet in variation 13 as solo color.
Zukriegel	1990	Rebuilt by Pirchner, 1991	A	Plenum throughout; changes manuals for contrast.	No	Theme and variation 1 demonstrate plenum at 8' basis.
Swann	1991	Aeolian-Skinner, Ruffati, 1982	B	Uses registration to define groupings of variations. Builds sound by adding gradually.	No	Addition of reed in variation 11; 8' flute in variation 15.
Alain	1993	Treutmann, 1737	A	Plenum throughout; two different levels; pedal reed in 16.	Yes	Variation 8-9 demonstrates 2 levels plenum.
Bonsaksen	1995	Wagner, 1738-39; Ahrend, 1994	A	Plenum throughout, 8' basis; adds reed to pedal in variation 18.	Yes	Theme and variation 1 demonstrate plenum at 8' basis.

Table 8: Registration Summary (Cont'd)

	Date	Instrument	Registration Category	General Description of Registration	Specific Registration Provided	Registration Highlights
Newman (Lejansk)	1996	Various Builders in Poland, 1623	C	Changes registration often. Adds cymbal in 10-12 and 18-20.	No	Variation 10-12 adds cymbal.
Bowyer	1997	Marcussen & Son, 1962/87	A/B	Changes between 2 plenum sounds with addition of gap registration for variation 14.	No	Variation 5-8 demonstrate moving back and forth between 2 levels of plenum.
Lippincott	1997	Flentrop, 1976	A	Plenum; 3 levels of sound; manual changes for contrast.	No	Variation 4-5 demonstrate 2 levels of plenum.
Major	1999	Aeolian-Skinner, 1939 (+modifications)	C	Changes registration often. Uses a variety of solo sounds in 10-15.	No	Uses 4' flute, hautbois, and gap registration as solos in variations 10-15.
Porter	1999	Fritts, 1999	A	Plenum; reduced sound to 8' principal and flute for variations 14 and 15.	No	Uses 8' principal against 8' flute accompaniment in variation 14, with 8' flute only in variation 15.
Morrison	2000	Schantz, 1953-54	C	Changes registration often. Theme on 8' principal. Gradually builds registration.	No	Uses 8' principal for theme; variation 1 on 8' flute against 8' principal in pedal.
Diaz	2001	Fisk, Op. 100, 1991-92	A	Plenum; 3 levels of sound; mutations in 14 and 8' flute in 15.	No	Variation 12-15 on two levels of plenum, mutations and 8' flute.
van Oortmersen	2001	Langlez, 1680; van Eeken, 1993	A	Plenum throughout; no change in registration; 16' basis.	Yes	Theme and variation demonstrate 16' basis plenum.
Cho	2002	Ehrlich, 1748	A	Plenum; minor changes in registration. Change of manuals, reed on & off.	No	Variation 18-20 demonstrates plenum sound, with reeds added in 19 & 20.
Cramer	2003	Fritts, 1992	A	Plenum; adds in variation 16; changes manuals to modify sound.	No	Variation 12-16 demonstrates the basic plenum sound, manual change and addition in 16.
Ritchie	2003	Fisk, 1979	A	Plenum throughout; no change in registration. 16' basis.	Yes	Variation 12-15 demonstrates this section on plenum at 16'.
Schonheit	2004	Rebuilt by Eule, Scheffler & Wegscheider, 2001-4	C	Changes registration almost every variation; no groupings. Sparing use of solo or color stops.	Yes	Build up of organ is moderate at the end of the Passacaglia; full organ by the end of the Fugue.
Glandorf	2005	Murphy, 2000	C	Changes registration on almost every variation. Theme on 8' reed.	No	Theme and variation 1 on 8' reed in pedal and 8' flute in manual.
Hurford	2005	Metzler, 1976	B	Registration changes define groupings of variations. Gradual build up of sound from 16-20.	No	Variation 10-15 demonstrate 8' sounds for solo lines and manual changes for contrast.
Heller	2007	Kegg, 2006	A / B	Plenum with 8' trumpet in 14. Various levels define groupings.	No	Uses 8' trumpet for solo in 14.

Table 8: Registration Summary (Cont'd)

	Date	Instrument	Registration Category	General Description of Registration	Specific Registration Provided	Registration Highlights
Schwandt	2008	Russel & Co., 2006	C	Uses the colors of the instrument; groups variations with registration. Builds at the end.	No	Variations 14 & 15 use interesting tone colors as the texture is reduced.
Karosi	2009	Richards & Fowkes, 2000	A / B	Plenum at different levels; adds mutations; cornet for solo in 14.	No	Variation 14 uses cornet for solo.
Gehring	2010	Jehmlich, 1963	A	Plenum throughout. 16' basis. Mutations for solo in 14.	No	Plenum at 16' basis is heard at pedal entrance of fugue subject.
Klapprott	2010	Silbermann, 1761	A	Plenum throughout. No variation in level. 8' basis.	No	Transition from Passacaglia to Fugue on same registration.
Trenney	2012	Moller 1983; Luley & Associates	C	Uses colorful solo lines; groups variations to create a logical flow; uses the full range of the instrument.	No	Variations 10 & 11 use solo registration, building in a logical progression.

Chapter 6

Articulation

The term “articulation,” as it relates to music, can have multiple meanings. One narrow definition relates to the manner of touch. Peter Hurford describes touch as “the art of placing the fingers on successive keys in such a manner as will produce a considered musical effect.”¹ Developing the basic technical skill of controlling touch (attack and release, legato and staccato, smooth or detached) is fundamental to a performer’s ability to convey a musical line, gesture, and hierarchical rhythm. A broader definition of articulation incorporates the idea of phrasing and grouping notes together, which relates to patterns of speech and rhetoric. The intentional shaping of small musical segments—particularly relevant in baroque music—can breathe life into dense contrapuntal textures. Both these principles of articulation, the execution of individual notes and the shaping of those notes into groups, play a significant role in the performing history of the *Passacaglia*, as heard in the group of recordings considered here.

Fabian suggests that a complete approach to baroque articulation was formed over decades, emerging as a generally accepted, coherent framework for performance only in the 1990s. She says:

...performers and musicologists [were] compelled to look beyond the segregated facts of performance practice and focus on comprehensive aspects of style in order to find an overarching principle that incorporated rediscovered statements and examples in old sources that had been noted by earlier writers of the twentieth century... In light of past debates and more detailed

¹ Peter Hurford, *Making Music on the Organ* (Oxford, England: Oxford University Press, 1988), 56.

examinations, a new opportunity emerged to use these often throwaway lines for the piecing together of the various elements studied mostly in isolation during the past decades; to establish a more comprehensive approach in aid of obtaining a more complete picture of what may have been the baroque performance style.²

Practical considerations related to baroque articulation were aided by the availability of historic instruments (or those built in that style) as well as guides written to provide instruction in early playing technique. These two considerations are related; the mechanics of the instruments informed performers, who then codified their understanding into a pedagogical approach that was disseminated to the next generations of organists. Interestingly, articulation heard on the earliest recordings produced on historic instruments is not significantly different than articulation heard in recordings of the same period on more modern instruments. The likely reason is that the performers, though playing on historic instruments, were using modern technique. Faulkner says,

Articulation is best understood by firsthand experience on organ keyboards. Briefly stated, it is possible to achieve a more legato effect with early fingering practices on such a keyboard than on any keyboard with a more modern type of action.³

The appropriate technique and the appropriate instruments can help performers understand and realize the baroque sonic ideal. Once the ideal is grasped, the performer can apply the principles to any performing situation.

Writers in the 18th century referred to a type of articulation that was neither legato nor detached, but somewhere in between. This technique is known

² Dorottya Fabian, *Bach Performance Practice, 1945-1975: A Comprehensive Review of Sound Recordings and Literature* (Hampshire, England: Ashgate Publishing, Limited, 2003), 205.

³ Quentin Faulkner, *Historical Organ Techniques and Repertoire: An Historical Survey of Organ Performance Practices and Repertoire*, ed. Wayne Leupold, Vol. II (Boston, MA: Wayne Leupold Editions, Inc., 1997), 42.

as “ordinary touch” and is described as “the sound that results from connecting two adjacent white notes as smoothly as possible with one finger or one toe.”⁴ Based on Friedrich Wilhelm Marpurg’s writing, “this ordinary procedure, since it is always assumed, is never indicated.”⁵ This technique, then, was the characteristic approach to touch in baroque organ music.

The other aspect of articulation, the organization of groupings, is based on meter. Strong beats in the metrical structure are emphasized by placing more space before them; weak beats have less space. These metrical considerations take precedent over motivic ones. Practical application of this principle implies that a bar line represents, not only a metrical division of the music, but also the most prominent point of articulation in the baroque ideal.

Both touch and the organization of groupings are implied in the fingering indications in the *Applicatio* and the *Praeambulum* (found in a method book that Bach created for his son Wilhelm Friedemann) as well as the fingering indications in a copy of the first prelude and fugue from *Das wohltemperierte Clavier II* (BWV 870a) by Johann Caspar Vogler, one of Bach’s students. This evidence indicates that strong fingers (the third finger in the right hand, and the second in the left hand) are assigned to strong beats in most passagework.⁶ Most often, the fingers shift, completely leaving the keys, in order to accomplish the articulation. (For example, the *Applicatio* indicates a 3–4–3–4–3 fingering for the opening scale passage, beginning on middle C.) The result is almost automatic;

⁴ George H. Ritchie and George B. Stauffer, *Organ Technique: Modern and Early* (New York, NY: Oxford University Press, 2000), 172.

⁵ From Marpurg's *Anleitung zum Clavierspielen* (Berlin: Haude und Spener, 1765), p. 29, as quoted in Faulkner, *Historical Organ Techniques and Repertoire: An Historical Survey of Organ Performance Practices and Repertoire*, 39.

⁶ Sandra Soderlund, *Organ Technique: An Historical Approach*, Second Edition ed. (Chapel Hill, NC: Hinshaw Music, Inc, 1986), 123-126.

appropriate articulation is accomplished with ease by using this fingering approach. Other instruments, such as the violin, have similar techniques for baroque articulations. A “down bow” is reserved for strong beats; weak beats are executed with an “up bow.” These types of techniques take advantage of the natural movement and physiology of the body to accomplish the desired sound. The sound produced imitates the natural sound of speech, emphasizing small units (beats) within the context of a larger idea (phrase.)

The Recordings

The changing performance conventions related to appropriate articulation in baroque organ music are apparent upon hearing the recorded performances of the *Passacaglia*. The earliest recordings demonstrate a very different understanding from the later ones. The 1983 performance by Ton Koopman is the first to consistently execute an articulation at the bar line. The recordings prior to 1980 generally exhibit a much more legato approach, slurring motives, even though they may cross from one bar to the next. (There is some crossover here. The Biggs recording sometimes offers articulations at the bar line, but not consistently.)

Examination of the fingerings and pedal indications in the score edited by Marcel Dupré supports the idea of slurring across the bar. For Dupré, legato was the default touch, rather than the “ordinary” touch previously discussed. Notations in the score indicate exceptions to the legato approach, as well as instruction in creating a smooth, legato line. Through examination of the fingerings and pedal markings, it is clear that Dupré intends to create a legato effect from one measure to the next. For example, the theme in the pedal employs

either a heel/toe or a toe/heel indication from beat 3 to beat 1, indicating a smooth legato. At the beginning of Variation 3, Dupré suggests using a 5/3 fingering in the right hand across the bar line, which creates a legato line, as well. Similar pedaling indicators and fingerings are observed throughout this edition. Legato playing is also heard in the Dupré recording, as evidenced in Sound Example 11.

Sound Example 11: Dupré's Legato Style of Performance			
Theme and Variation 3	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Marcel Dupré	6/28	98-99

Albert Schweitzer had a slightly different understanding of articulation, although the end result is still a legato style. Schweitzer acknowledged the significance of articulation when he wrote, “the chief role in Bach’s works belongs not to dynamic shadings, but primarily to phrasing and articulation... Vivacity in a Bach piece depends not on the tempo but on the phrasing and the accentuation.”⁷ Schweitzer is one of the earliest writers to discuss the importance of articulation. His recording of the *Passacaglia*, however, indicates that he understood articulation by grouping of motive, rather than by grouping based on metrical pulse. In Sound Example 12, Schweitzer is heard carefully articulating the theme and scalar passages in Variation 3, but not on the strong pulse. Rather, he slurs across the bar and lifts, emphasizing the motive. The phrasing is prominent, although not particularly nuanced. While Schweitzer’s presuppositions regarding articulation and phrasing are different than current

⁷ Fabian, *Bach Performance Practice, 1945-1975: A Comprehensive Review of Sound Recordings and Literature*, 208

thinking, this is the earliest example of attempts at execution of baroque articulation in this group of recordings of the *Passacaglia* (whatever his understanding of those principles might have been).

Sound Example 12: Schweitzer's Articulation in the <i>Passacaglia</i>			
Theme and Variation 3	Performer	Sound File Chapter/Track	Bärenreiter Page #
		Albert Schweitzer	6/29

From 1983 on, the baroque performance practice of articulating across the bar line became an increasingly prevalent feature of the recordings. Only five of the remaining recordings (Swann, Major, Morrison, Schönheit, and Glandorf) employ the older, more legato style. Not only was the style more prevalent, but also it became increasingly more subtle and nuanced. In Sound Example 13, consider the differences in the 1990 recording by Ulrich Böhme and the 2010 recording by Bernhard Klapprott. For the theme, Böhme generally articulates across the bar line, with a more prominent lift between beats 2 and 3. In the final two measures of the theme, however, he slurs across the bar line. In Variation 3 he shifts, emphasizing beat 1. Klapprott consistently articulates clearly across bar lines; the difference between the two performers lies in the amount of space in the articulations, and the speed at which the articulations are executed.

Sound Example 13: Distinctions in Baroque Articulation Over Time				
Theme and Variation 3	Performer	Sound File Chapter/Track	Bärenreiter Page #	
		Ulrich Böhme	6/30	98-99
		Bernhard Klapprott	6/31	98-99

The slur marking was beginning to be used in musical compositions during Bach's lifetime, but it is unclear as to whether Bach used the slur marking in the *Passacaglia*. There are differences in the earliest copies of this work with regard to a slur indication in the countersubject of the fugue. The version found in the *Andreas Bach Buch* (the earliest copy) does not contain the slur. The slur indication comes to editors through the copy of the *Passacaglia* owned by Krebs, a student of Bach in Leipzig. This indicator occurs in the countersubject of the fugue (played by the left hand in the first four measures) from the second eighth note in beat 1, to the first eighth note of beat 2 in each of those measures (see Score, p. 9.). The Greipenkerl, Widor/Schweitzer, and NBA editions include the slur; the Dupré edition does not. Dupré, however, indicates staccato markings for each of the four notes on beats 2 and 3 of the countersubject. (Dupré assumes that notes are connected unless otherwise indicated, implying the slur.) While the Widor/Schweitzer edition indicates the slur, the remarks in the preface provide additional instruction for the countersubject. The preface indicates that the organist is to slur from the second eighth note in beat 1 to the first eighth note in beat 2, articulate (indicated by a comma), then slur the second eighth note in beat 2 to the first eighth note in beat 3. These various approaches create different effects. (Interestingly, neither Dupré nor Schweitzer follows their own performance plan in their recordings of this piece.)

Of the 44 recordings in this study, 26 performers slur the first two notes of the countersubject and 18 of them do not. Sound Example 14 provides a sampling of the variety of approaches to this figuration. Not only does this example demonstrate the slur discussed previously, but one also hears the treatment of the repeated notes in the countersubject. Dupré begins by slurring

the first note to the second, but clipping the second note, creating a bouncing type of effect. Schweitzer, on the other hand, carefully articulates each note. Heiller adheres to the instruction in the Dupré edition of the score by slurring the first two notes and making the others staccato. Biggs connects the first two notes of the countersubject, but varies his treatment of the remaining notes. Rogg applies a similar treatment as Heiller, but puts slightly more weight into each eighth note in beats 2 and 3. Porter, Karosi, and Klapprott all articulate each note of the countersubject, but with different amounts of weight. Porter applies equal weight to all notes in beats 2 and 3, but comes off the last eighth a little earlier than the others, reinforcing the downbeat that follows. Karosi and Klapprott give agogic accents to the first note of each beat, with less emphasis on the second note.

Sound Example 14: Articulation of Fugue Countersubject			
Fugue Subject	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Marcel Dupré	6/32	106
	Albert Schweitzer	6/33	106
	Anton Heiller	6/34	106
	E. Power Biggs	6/35	106
	Lionel Rogg	6/36	106
	William Porter	6/37	106
	Balint Karosi	6/38	106
	Bernhard Klapprott	6/39	106

Articulation has a particularly important role in passages that include repetitive ideas, whether rhythmic, melodic, or harmonic. Touch and phrasing can be used to reinforce an idea, or to alter it slightly, in order provide rhetorical nuance and interest. Variations 14 and 15 in these recordings offer an insight into this aspect of articulation. These two variations are manuals only, with the theme embedded in the arpeggiated figuration. The textures here are very light, almost harp-like. Most performers reduce registration in these variations as well, creating a much lighter feel. The recordings show a range of articulation possibilities at this point in the composition. Sound Example 15 provides insight into some of the choices that are possible. The Murray example demonstrates two-note groupings, both in the sighing figure in Variation 14 and the arpeggios in Variation 15. Murray's touch is almost staccato. (The Dupré edition places staccato indications on both notes in the sighing figure in Variation 14 and the second note of each pair in Variation 15.) The Ritchie example shows two-note groupings as well, but without being staccato and with more weight.⁸ Craig Cramer plays all of the notes very evenly, without grouping and with equal weight. He holds the notes of the theme in Variation 15 slightly longer than the others in order to highlight it, but otherwise, all the notes are played very consistently. Matthew Glandorf takes yet a different approach. In Variation 14 he alters some of the sighing motives slightly, which serves to create interest. In Variation 15, he offers a similar approach as Cramer, by lengthening the notes of the theme. At the end of this variation, he adds more and more space between

⁸ Many of the recordings in this study use two-note groupings at this point in the composition. This could be because of the way that the notes are beamed in the editions. Every edition, including the NBA, beams the notes in this way. See Score, p. 6.

notes, and the sound seems to dissipate, with an effective silence before beginning Variation 16.

Sound Example 15: Articulation in Variations 14 and 15			
Variations 14 and 15	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Michael Murray	6/40	103
	George Ritchie	6/41	103
	Craig Cramer	6/42	103
	Matthew Glandorf	6/43	103

Articulation, both in terms of touch and note groupings, is one of the primary distinguishing musical characteristics in these recordings. There is a noticeable difference from the early recordings to later ones. Progression of subtlety in performance practice can be observed over time. Schweitzer's recording gives an interesting insight into his approach to articulation, although his ideas are much different than current thinking. Early recordings performed on historic instruments did not demonstrate ideal baroque articulation, likely because these performers were using modern fingerings and technique. The 1983 Ton Koopman recording set a precedent among this group for articulation in a baroque style, and most performers after that time followed his lead. Refinement of articulation occurred over time. By 2005, Matthew Glandorf demonstrates subtle alterations in articulation from one figure to the next. These changes, along with ornamentation (the topic of Chapter 7) combine to create what perhaps might be a comprehensive approach to a baroque style of performance.

Chapter 7

Ornamentation

The topic of ornamentation in Baroque music has been widely discussed and written about, both by 17th and 18th century writers and theorists as well as modern, 20th century musicologists concerned with historically informed performance. Baroque composers sometimes included ornament tables and explanations of the symbols with their compositions. Bach, himself, did this as part of the *Clavier – Büchlein*, the method book for his son Wilhelm Friedemann. (The ornament table Bach provided was likely from one that was printed in D’Anglebert’s 1689 *Pièces de Clavecin*, which he had copied by hand a few years before.) Other writers provided instruction for executing ornaments correctly as related to specific instruments. Quantz discussed ornamentation and the flute; Agricola wrote about ornamentation in singing; C.P.E. Bach offered information on ornamentation and keyboard playing.²

Until the late 17th century, into the 18th century, indications for ornaments were rare. Because ornaments were improvisatory in nature, performers were expected to understand the musical style of the compositions they were playing and embellish appropriately. J.S. Bach often included specific ornament symbols in manuscripts prepared for publication, but in other copies, he was much less specific. Notated ornaments, then, were likely for the

¹ George H. Ritchie and George B. Stauffer, *Organ Technique: Modern and Early* (New York, NY: Oxford University Press, 2000), 317.

² Kenneth Kreitner and et al. *Grove Music Online*: Oxford University Press, http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/grove/music/40272pg1?source=omo_gmo&q=Kreitner%2C+Kenneth&article_section=contributors&search=article&pos=3&start=1#firsthit (accessed August 26, 2013).

instructional benefit of students or individuals for whom the copies were created.

The earliest “modern” concerns related to reclaiming authentic styles of playing started with research and writing on ornamentation. As early as 1893, 17th and 18th century writings on ornamentation began to be considered in a historical context.³ The research on this topic, however, was filled with debate. Writers in the first half of the 20th century failed to consider national schools (French, Italian, and German) in their discussions. In 1950, Putnam Aldrich acknowledged the French influence in Bach ornamentation practices and by the 1980s, the idea that Bach wrote in various styles, warranting various performance methods, began to be considered a possibility.

A discussion of ornamentation in the recordings of the *Passacaglia* involves two distinct issues: ornaments that are indicated by symbols (*agréments*—a French practice) and figurative embellishments (*decoratio*—an Italian practice) such as improvised *cadenza*—like passage. Both of these types are found in the recordings—sometimes applied liberally, and sometimes with great caution. The first type, ornaments of single notes, can be heard in every recording. The second type, elaboration and improvised material beyond the notes indicated in the score, is much less common.

In the 17th century, the organ *passacaglia* was a popular vehicle for ascertaining the improvisatory skills of organists during auditions. For this reason, a case could be made for elaborate ornamentation and improvisation. It is likely, however, that this audition practice was becoming obsolete by the 18th

³ Dorottya Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature* (Hampshire, England: Ashgate Publishing, Limited, 2003), 135.

century. The *Passacaglia* is the only one of its genre in the Bach keyboard repertory. The original intended use of the work is unclear.⁴

The Bärenreiter edition of the *Passacaglia* (which is based on the *Neue Bach Ausgabe*) provides two distinct versions of the work through variation 5. The first performing version is complete and is based on manuscript copies by Johann Christoph Bach (Bach's older brother) and Johann Ludwig Krebs (one of Bach's best students in Leipzig). The second version is from a manuscript copy held by C.P.E. Bach (Bach's second oldest son) and is included as an Appendix, offering only the first 48 measures as an example. The only difference between the two versions is the degree to which ornaments are included. The C.P.E. Bach score includes 62 ornament symbols in the first five variations, while the performing version found in this edition has only six ornament symbols in the same amount of space. (The complete version of the *Passacaglia* found in the Bärenreiter edition has only 15 ornaments indicated with symbols in the entire piece.) Except for a single mordent, all the symbols in the primary version of the work are trills. In the C.P.E. copy, a variety of ornament symbols are seen, including trills, mordents, turns, and appoggiaturas. The ornamented version, while not the primary copy used as the basis for most performing editions, gives rise to the idea that elaborate ornamentation might have been a valid approach to performance of the work, and what Bach intended from the beginning.

In most performing editions, trills and mordents are the only symbols seen and are relatively rare. When they occur these ornament signs are placed

⁴ Commentary in the liner notes to this recording, written by George Stauffer. Johann Sebastian Bach, *J.S. Bach Organ Works, Volume 6: Youthful Brilliance*, George Ritchie, Compact Disc, Oar-740, 2004.

⁵ Johann Sebastian Bach, *Organ Works: Volume 7*, comp. Dietrich Kilian (Germany: Barenreiter; 1984).

above notes of short duration (dotted eighth notes are the most common) and are at cadence points. There is one very long trill indication near the end of the fugue, covering two entire measures and executed by both hands over alternating thirds in the pedal (measures 269–270). In variation 18, there are two descending appoggiaturas written into the line. A single mordent is observed on the upper note of the half cadence in variation 2.

Because ornaments are notations of something that is contextual and freely adapted, there are obstacles that arise in understanding them. Frederick Neumann's thorough study of ornamentation in all Baroque music is a good source of information for ornaments in Bach. Although there may be other valid possibilities, the French approach to trills is heard in almost all of these recordings. The trill begins on the beat on the auxiliary tone, and conforms to the key signature of the composition. The speed at which the trills are executed depends on the context.⁶ Appoggiaturas are generally given half the value of the principal note, although there is some disagreement regarding the exact manner of performance.⁷

In addition to the few symbols that indicate ornaments, some performers take the opportunity to include figurative, improvised cadenza—like embellishments as well. The primary place that this treatment is heard in this work is at the penultimate cadence of the fugue in measure 285. The Neapolitan

⁶ Peter Hurford, *Making Music on the Organ* (Oxford, England: Oxford University Press, 1988), 108.

⁷ Kreitner and et al, *Grove Music Online*, http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/grove/music/40272pg1?source=omo_gmo&q=Kreitner%2C+Kenneth&article_section=contributors&search=article&pos=3&start=1#firsthit (accessed August 26, 2013).

sixth chord with a fermata, followed by rests, seems to capture the imagination of some performers and inspire them to add improvised passages. Cadenzas were not unheard of in Bach's organ works. In fact, one copy of BWV 594, a Vivaldi concerto transcribed by Bach for the organ, includes a cadenza—like passage.⁸ It is unclear, however, if Bach would have intended this type of improvised passage in a large—scale free work, originally for organ, such as the *Passacaglia*.

The attitude of freedom in Baroque performance becomes the underlying issue in embellishment throughout the recorded performances considered here. This aspect of a performer's style and artistry becomes apparent in the execution of the ornaments, including flexibility, pacing, number of repercussions, and the weight the first note of the appoggiatura or trill. Many of the performances heard in this group of recordings take a very conservative approach to ornamentation, playing the notated ornaments in a style that would be considered (by Baroque specialists) appropriate for Bach. A few of the recordings, however, are less literal; they adopt a spirit of improvisation that permeates the performance. Along with registration and articulation, ornamentation becomes a primary means of musical expression.

The Recordings

While the majority of performers in this group of recordings take a conventional approach to ornamentation, neither adopting highly embellished

⁸ Eva Bandura—Skoda, et al, ed. *Grove Music Online*: Oxford University Press. "Cadenza" In *Grove Music Online*, Oxford University Press. <http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/grove/music/43023?q=cadenza&search=quick&pos=1&start=1#firsthit> (accessed August 26, 2013).

versions of the work nor an improvisatory manner, there are a few notable exceptions. These exceptions highlight an interesting component of the performance history of the work, and insight into rhetorical possibilities of ornamentation and embellishment. In addition to expressing the personal style and preference of these performers, some also highlight an interesting aspect of the history of this work, utilizing a partial copy of the score rarely used in performance.

There are three recordings (Rübsam, 1988; Ritchie, 2003; and Gehring, 2010) that base the first five variations on the C.P.E. Bach manuscript, offering extremely ornamented versions of the *Passacaglia*. In this abbreviated manuscript (consisting of measures 1–48) variation 1, 3, 4 and 5 are highly ornamented. Variation 2 is not. Each of these performers approaches the manuscript additions in a slightly different way. Rübsam supplies ornaments that are indicated in the C.P.E. version of the score, but also provides additional ornaments in variation 2 in a similar manner to the other variations. He then abandons the approach following variation 5, including only ornaments that are found in the other copies. There is no information in the liner notes to the recording to explain Rübsam's approach.

Both Ritchie and Gehring include information about the manuscript in the liner notes to their recordings. Liner notes to the Ritchie recording state that the performer "incorporates ornaments...that are derived from a manuscript that appears to have been owned by...Carl Philipp Emanuel."⁹ The recording reveals that Ritchie added some of the ornaments in the embellished manuscript, but not

⁹ Bach, J. S. *Bach Organ Works, Volume 6: Youthful Brilliance* Liner notes by George Stauffer, p. 6.

all of them. Like Rüksam, Ritchie abandons the elaborate ornaments after variation 5. The Gehring recording reproduces the C.P.E. Bach copy exactly, and then continues the practice throughout the remainder of the *Passacaglia*. In the liner notes, Gehring states:

A version was chosen [for the performance] which has been transmitted in three copies, which in their turn seem to go back to a copy, which belonged to Carl Philipp Emanuel Bach – the first 48 bars are completely ornamented. This ornamental technique was applied to the rest of the work accordingly.¹⁰

To summarize, in listening to these three recordings, Rüksam and Ritchie followed the C. P. E. Bach manuscript (with slight modifications) through the first five variations, but abandoned the highly ornamented style for the rest of the piece. Gehring, however, continues the practice throughout the *Passacaglia*, adding turns, appoggiaturas, trills, and mordents. The ornamented versions are heard in Sound Example 16.

Sound Example 16: Variations 1–5 Performed From the C. P. E. Bach Manuscript			
	Performer	Sound File Chapter/Track	Bärenreiter Page #
Variations 1–5	Wolfgang Rüksam	7/44	148–149
	George Ritchie	7/45	148–149
	Holger Gehring	7/46	148–149

The three recordings by Anthony Newman demonstrate a unique approach to ornamentation and elaboration unlike any other recordings in this group. Newman’s ideas on this topic, like the topic of tempo, were cause for

¹⁰ From liner notes written by the performer, p. 19. Various Composers, *Die Jelmlich—Orgel in Der Kreuzkirche, Dresden*, Holger Gehring, Compact Disc, VKJK 1021, 2010.

debate.¹¹ In Sound Example 17, Newman’s elaborations are heard, including the French practices of double dotting (French Overture style) and *notes inégales* (variation 3), as well as individually ornamented notes. The example includes variations 1–5, as well as the concluding measures of the fugue, where Newman adds an elaborate flourish before the final phrase.

Sound Example 17: Anthony Newman’s Approach to Musical Elaboration			
Variations 1–5 and Conclusion of Fugue	Performer	Sound File Chapter/Track	Bärenreiter Page #
	Anthony Newman	7/47	98–99, 113

Newman’s elaboration at the end of the fugue leads to the topic of cadenza—like passages inserted before the final phrase. In addition to Newman’s flourish, four other recordings offer some type of embellishment at this point. John Schwandt (2008) ornaments the line immediately preceding the fermata, rolling the Neapolitan sixth chord in harpsichord—like fashion. Both Matthew Glandorf (2005) and Thomas Trenney (2012) offer short figures, one to two measures in length, played with great flexibility before moving back to the notes of the score. Frederick Swann (1991) provides the longest and most elaborate improvisation, adding a full cadenza, similar to one that might be heard in a solo concerto. (The notes Swann plays are strikingly similar to the end of Bach’s F Minor Prelude, BWV 534, with slight variations at the beginning and end.)

¹¹ This article outlines the controversial nature of Newman's performances. Dean Farwood, "The High Priest of Bach is Still Controversial," Classical.net, <http://www.classical.net/music/recs/reviews/farwood/anthonynewman.php> (accessed August 28, 2013).

Sound Example 18: Embellishment Before the Final Phrase			
Beginning at measure 280	Performer	Sound File Chapter/Track	Bärenreiter Page #
	John Swandt	7/48	113
	Thomas Trenney	7/49	113
	Matthew Glandorf	7/50	113
	Frederick Swann	7/51	113

Christoph Wolff discusses an instance when Bach was criticized by Scheibe (1737) for writing out all the melodic embellishments and for not leaving space for the performer's improvisation: "Every ornament, every little grace, and everything that one thinks of as belonging to the method of playing, he expresses completely in notes."¹² This statement was cause for much debate for 20th-century musicologists in understanding the best approach of *where* to ornament in Bach compositions. Some writers said that because Bach wrote out many of the ornaments, following the score in a strict manner was appropriate. Others believed that Bach's dense indications were provided as performing scores and these scores offer evidence that the pieces should be played in a flexible, quasi-improvisational way. The differences in the three surviving scores of the *Passacaglia* would certainly support the latter idea. Fabian puts the argument in the context of Baroque performance style:

...the key to the whole issue of ornamentation and embellishment is the recognition that during the Baroque period melodies were varied during performance and that notation only crudely reflected the rhythmic flexibilities of such improvisations. The implications of this are much more significant for the style of a performance

¹² Christoph Wolff, *The New Bach Reader — A Life of Johann Sebastian Bach in Letters and Documents* (New York and London: Norton, 1998), 338.

than the occasional difference in the delivery (or lack) of trills and other graces.¹³

Fabian's argument applies to the spirit of ornamentation and embellishment, rather than the specific rules surrounding the execution of particular ornaments.

Adopting an improvisational style for the sake of rhetorical expression is the final idea considered in this discussion of ornamentation in the *Passacaglia*. In her discussion on music and rhetoric, Judy Tarling discusses the extemporaneous addition of ornaments and other embellishments:

In rhetoric, figural ornamentation consists not of adding material to an existing phrase, but of the slight alteration of...groups of notes when they reoccur in the composition, to delight. These are contrasted with the use of more complex figures of construction, which aim at stronger emotions and are more forcibly apt to persuade...The principal characteristic of the rhetorical style of speaking is the decoration of a thought or idea when repeated to help impress its affect on the listener.¹⁴

Ornamentation that has been used for the purpose of altering a repetition for rhetorical emphasis can be heard in several recordings in this collection. The recording by Matthew Glandorf, in particular, demonstrates this approach. He ornaments a repetitive melodic line, not consistently, but rather in a way that changes the repetition in the line just enough to create interest. Sound Example 19 demonstrates Glandorf's approach in variations 4 and 5 (heard in the soprano line); variation 14 (heard in the arpeggiated figure); and variation 18 (heard in the several voices).

¹³ Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature*, 139.

¹⁴ Judy Tarling, *The Weapons of Rhetoric: A Guide for Musicians and Audiences* (St. Albans, Hertfordshire, UK: Corda Music Publications, 2004), 189.

Sound Example 19: Glandorf's Approach to Ornamentation and Rhetoric			
	Performer	Sound File Chapter/Track	Bärenreiter Page #
Variations 4–5 Variations 13–14			
Variation 18	Matthew Glandorf	7/52	99, 102–103, 104

Scholarly writing on ornamentation and Baroque performance practice has focused, particularly in the 20th century, on the “correct” way to execute a given symbol. These recordings demonstrate that these musicians generally adopted conventions that correspond to ornament tables of the period (including the one Bach wrote out for his son, Wilhelm Friedemann.) Only a few of the performers in these recordings, however, experimented with the improvisational and spontaneous nature of ornamentation and embellishment. In speaking about ornamentation in mid—20th century performances of Bach works, Fabian says:

The focus on debating the minutiae of recommended execution of specific graces covered up the sporadic mention of the need to keep ornamentation spontaneous. Inevitably this led to mechanistic application of rules and to the interpretation of Bach's own embellishments as if they were rhythmically complex exact melodies.¹⁵

Some of these recordings certainly demonstrated spontaneity. The later recordings, after 2000 (such as the Glandorf performance), begin to demonstrate how the improvisational aspects of ornamentation, combined with hierarchical rhythm and articulation, work together to create a thoughtful and refined approach to Baroque performance practice.

¹⁵ Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature*, 167

Chapter 8

Conclusion

Collecting a detailed history in sound of any given musical work offers a way to examine the work in addition to study of the musical text, alone. If music truly exists as sound, created in a specific moment, then sound recording gives us a way to reconsider those moments, after the fact, and study them.

Performance studies of this kind require a shift in thinking of the musical work and the performance of that work as separate entities; rather, changes in performing traditions provide a window into the changing meaning of the work itself.

What, then is the value of such a study to the performer, the pedagogue, or the student? Sound recording is a growing part of what it means to be a performer in our time. Major performing artists are known through their recordings, and their ideas about style are distributed easily by means of recording. Prize—winners of major competitions (such as the National Young Artist Competition in Performance) are awarded recording contracts to help launch their careers as performers. The exposure an artist gains through such projects gives them the opportunity to shape performance style, adding to the body of performance history of any given work.

Teachers and students also have an opportunity to use sound recording to understand the nature of performance (fluid and always changing) as well as to develop their own answers to questions related to performing decisions and a performer's analysis. As musicologists continue to develop tools to help analyze recordings, use of recordings as a growing body of musicological evidence will

increase. It is up to the teacher to train students in methods for studying and evaluating recordings. The teacher also assists students in understanding performance style in the context of performance history. By doing so, the student learns that conventions of performing are fluid and new possibilities for presentation of a given work will, most certainly change over time. This study, a survey of recordings of the *Passacaglia* in an historical context, is an example of one possible way to study sound documents as part of the performance history of a given musical work.

Modern performers come to Bach's *Passacaglia* with layers of performance history and tradition that surrounds the piece. The rich orchestrations of the work from the 19th and 20th centuries offer colorful examples, easily copied by organists through changes in registration. As instruments became more technologically advanced, these symphonic changes were made easier through the use of combination action. Organists were influenced by the editions of music available to them and the general technical approach to playing that they were taught.

Early recording artists, such as Albert Schweitzer, considered the idea of performing in a way that would be more true to Baroque ideals. Only after years of scholarship related to Baroque performance practice, with the availability of restored instruments of the 17th and 18th centuries, was the ideal fully realized. Through sound recording, it is possible to hear the progression of understanding, realized audibly through sound. As with any new concept or change, the adoption of Baroque playing techniques and registration happened slowly, over time. Identifying the broad changes in approach requires listening

to many recordings, in order to make a distinction between general shifts in period style from any individual's specific performing habits. Bowen says:

Sorting out the difference between period, geographic and national styles, work—specific performing tradition, and individual innovations becomes a great deal easier when there are multiple recordings for each geography, orchestra, conductor, period, hall, and performance condition.¹

So then, by listening to a broad range of recordings it is possible to trace the path that organists have taken as they approach this work. We can compare today's styles with those of almost a century ago, something that was impossible in earlier times.

In addition to recognizing broad shifts in performance style, it is also possible to hear ways that style has become more nuanced and refined over time. A shift to more "authentic" styles of performance, based on scholarship surrounding Baroque performance practice, supported by musical editions and pedagogical guides gradually began to permeate the performance tradition of the *Passacaglia*. Although there are glimpses of this "authentic" style in earlier recordings, the 1983 Ton Koopman recording solidifies the approach. In this recording, Koopman uses a plenum registration throughout, as well as a consistent articulation that demonstrates both "ordinary" touch and a hierarchy of phrasing that is based on the metrical pulse.

Organists trained in the 1980s and beyond have the benefit of learning both modern and early techniques, allowing them to make appropriate alterations in style, as dictated by the musical work. The recordings of the *Passacaglia* support this trend. The performances heard in recordings of the 1980s

¹ Jose A. Bowen, "Finding the Music in Musicology: Performance History and Musical Works," in *Rethinking Music*, ed. Nicholas Cook and Mark Everist (New York: Oxford University Press, Inc., 1999), 434.

and 1990s lean toward an approach based on historically informed ideas. There was a general consensus that a plenum registration of some type was preferred and “ordinary” touch became the norm. Application of this approach varies from one performance to the next, but the general trend can be observed.

It is impossible, however, to completely escape the performance history and the reception of the work prior to the detailed Baroque performance practice scholarship that was influential throughout the 20th century. While many organists were taking advantage of the opportunities to play on restored instruments, or encouraging the building of new instruments in a historic style, others were still playing this repertoire on symphonic style instruments. Recordings by Swann at the Crystal Cathedral, Major at the Washington National Cathedral, and Morrison at the Basilica of the Sacred Heart in Newark all demonstrate this approach. Would an “authentic” style performance based on Baroque performance practice research make sense on an instrument created in a symphonic style? Or is it more reasonable to take inspiration from the orchestrations of the work, in order to create a musical result on an instrument that reflects the builder’s intention?

The answer to this question may lie in the performances beginning with Michael Schonheit in 2004, including those by Glandorf, Schwandt, and Trenney. These performers seem to be successful in combining an understanding of symphonic registration with knowledge of Baroque articulation and rhetorical nuance. These organists take full advantage of the instruments they are playing, incorporating stops and combinations that were unheard of on 17th century instruments. (The Glandorf recording, playing the theme on a solo clarinet, is one example.) The rhetorical aspects of sound achieved through articulation, pacing,

and ornamentation are a reflection of the training in Baroque performance style. The interaction between performer, musical text, and listening audience seems most apparent in these recordings. These performers seem to capture the concept that C.P.E. Bach wrote about in *Essay on the True Art of Playing Keyboard*

Instruments:

Keyboardists whose chief asset is mere technique are clearly at a disadvantage...They overwhelm our hearing without satisfying it and stun the mind without moving it. A mere technician, however, can lay no claim to the rewards of those who sway in gentle undulation the ear rather than the eye, the heart rather than the ear, and lead it where they will.²

These 21st century performers are beginning to achieve a true synthesis of Baroque performance practice studies and the performance history of this work, incorporating both into a new performance style.

There were very few definite trends that emerged when examining these recordings in relationship to tempo. Quick, medium, and slow tempos were heard in every performing era. Greater consistency in tempo developed over the course of the time period examined. Early recordings were less likely to be consistent in tempo from one variation to the next, or from the *Passacaglia* to the fugue. Later recordings maintained even tempos throughout the work, regardless of the chosen metronome marking.

Discussion of tempo without a corresponding discussion of articulation, ornamentation, and rhetorical nuance is limiting, because such a discussion misses the qualitative aspects of the concept. Even though tempos in later recordings were more consistent than earlier ones, there seems to be more attention to rhetorical aspects of performance in the later recordings. A hierarchy

² As translated and reprinted in Peter Hurford, *Making Music on the Organ* (Oxford, England: Oxford University Press, 1988), 5.

of articulation becomes the norm, and individual motivic units are treated accordingly. There is more evidence of flexibility within the individual variations and musical motives, and ornaments are used to vary repeated patterns, even though lengths of the variations remained fairly consistent.

Trends with regard to registration of the *Passacaglia* are clear. Earlier recordings (prior to 1980) approached the work with more of a symphonic tendency, utilizing frequent registration changes and colorful stops or combinations to emphasize thematic material. The majority of recordings, with few exceptions, from 1980 to 2004 based registrations on historical principles, using primarily plenum sounds in various divisions with manual changes for variety. Some performances utilize a single registration throughout the entire work, maintaining a very strict approach to a historically informed style.

The musical elements of articulation and ornamentation are somewhat more subjective to measure than tempo and registration. Changes in performance style related to these two issues can be observed across the 85-year period of these recordings. Romantic ideals of pervasive legato are evident in the earliest recordings. As scholarship around Baroque performance increased, and restored 17th and 18th century instruments became available, ideas related to articulation and ornamentation began to change. Fabian describes this phenomenon:

As the various results of research and practical experience accumulated and the desire for greater expression grew, the significance of articulation became apparent. By the time the seemingly separate topics of old instruments, tempo, dynamics, rhythm, ornamentation, improvisation, continuo playing and so on had been mapped, certain performers were beginning to recognize the interrelationship between them all...Lessons learned about tempo, rhythmic flexibility and, eventually, the importance of meter, resulted in a newly—found interest in articulation as a

general signifier of performance style: a convenient term that comprises in itself most other components of performance practice and is not at all limited to referring exclusively to such issues as whether notes are slurred or separated.³

By the 1980s, performers were beginning to assimilate this information, which is reflected in the recorded performances. With only a few exceptions, “ordinary touch” and hierarchical note groupings are the norm for performers after 1982. Experiments with ornamentation as a rhetorical device are evident during this time period as well. RübSam’s recording is the earliest that uses C.P.E. Bach’s ornamented copy of the *Passacaglia* as a basis for performance.

One quality that is apparent when listening to the 44 recordings of the *Passacaglia* in succession by date is the increasing standard of clarity and accuracy. No doubt, some of the differences are related to technology. Recorded performances today are produced and edited, and listeners have little tolerance for anything less than perfection. But performers today are acutely aware that any inaccuracies will live on in a recording, and be repeated every time that recording is heard. (This phenomenon, alone, is enough to improve accuracy.) Early recordings, on the other hand, are more likely to be reproductions of live performances; even those that are not live sound that way. Likely, these performers had no idea that their performances would take on a life of their own, available to anyone willing to purchase a CD or search for the performance on YouTube. Robert Philip describes these early recordings: “They are of the new world, in that they are available and repeatable, but the performances which they

³ Dorottya Fabian, *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature* (Hampshire, England: Ashgate Publishing, Limited, 2003), 207.

preserve are largely of the old world, survivals of a style evolved for unique performance to an audience.”⁴

It is interesting to contemplate the degree to which recordings have accelerated the changes in performance style during the 20th century. Access to a wide variety of performances and instruments through sound recording provides an unprecedented amount of data related to performance style and sonic possibility. Close examination of the performance history of a specific work through sound recording (like Bach’s *Passacaglia in C Minor*) provides a way of looking telescopically at the evolution of our current thinking.

The difficulty in interpreting Bach’s music is that we come to it from the vantage point of the 21st—century musician, with layers of musical reception and performance history that color our thinking. No doubt, the study of Bach performance practice, the availability of historic instruments, and even access to historically informed performances on sound recording has profoundly affected our perceptions and ideals related to this repertoire. But we will never know what a performance of the *Passacaglia* sounded like in 1720, because the technology did not exist.

It seems then, that an authentic performance of the *Passacaglia* today would take account of the entire performance history. We must rely on our ability to synthesize what we have learned to this point, through the wide variety of interpretations. Performance studies that incorporate sound recording in a historical context can facilitate increased knowledge and comprehensive understanding of the *Passacaglia*. Future performances will certainly rely on this

⁴ Robert Philip, *Early Recordings and Musical Style: Changing Tastes in Instrumental Performance 1900–1950* (Cambridge, UK: Cambridge University Press, 1992), 230.

synthesis in order to provide a basis for continued exploration of sonic possibility.

Appendix I

Sound Recording Listening Rubric

The listening rubric found on the following pages was created to collect data on each recording in a uniform manner. Information about the physical recording, liner notes, performer, instrument, and performance of the *Passacaglia in C Minor* was included. This provided a point of departure for inquiry and also allowed meaningful comparisons to be made.

This rubric formed the basis of data collected, but complete information was not available for all recordings. For instance, early recordings, or reissues of older recordings frequently did not have liner notes. Also, performer bios and instrument stop lists were often missing. There is no standard of consistency when it comes to the physical recording.

Sound Recording Listening Rubric

J. S. Bach: *Passacaglia in C Minor, BWV 582*

Identifying Information

Recording Title: _____

Performer: _____

Recording Label: _____

Release Date: _____ Recording Date: _____

Location Performed: _____

Liner Note Information

- Tracks Performer Bio Composition Notes Recording Information
- Instrument Information Organ Specifications
- Other (Describe below)

Organ Information

Builder: _____

Original Date: _____ Rebuilt: _____

Size (No. of Ranks) _____ Action _____

Other Information (Describe below)

Purpose and Intent of Recording (List all that apply)

- Historic Recording Part of recorded set of Composer's Complete Works
- Showcases a particular instrument or builder Documents an event
- Showcases the recording artist Other (list below)

Performer's Biographical Information

Birth Date _____ Where? _____

Death Date _____ Where? _____

Education:

Career:

What is this performer known for?

Interpretive Elements Heard in this Recording

Timestamps on each Variation

Therme	1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20	Fugue

Duration and Tempo

Total listed track length: _____ Actual total length: _____

Passacaglia length: _____ Fugue length: _____

Passacaglia beginning mm: _____

Fugue beginning mm: _____

MM Marking for each variation

Theme	1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20	Fugue

Articulation (Describe)

Registration

- Same throughout Block reg w/ occasional change Changes every var

Describe the registration

Describe specific interpretive factors in this recording:

Ornamentation: _____

Overall Pacing: _____

Initial statement of theme: _____

N6 in Var. 8: _____

“Harpichord” passages in var. 14 & 15 _____

Approach to Var. 16: _____

Treatment of figure in Var. 16: _____

Final cadence of the Passacaglia: _____

How Passacaglia & Fugue are connected: _____

N6 before final cadential passage: _____

Other remarkable interpretive ideas in this recording (Describe)

General Discussion

How does this recording relate to other recorded performances of this work?

What is unique or significant about this recorded performance?

Additional comments:

Appendix II

Sound Examples and Score Reference

Because this study focuses on comparing and contrasting performances of the *Passacaglia*, BWV 582 heard in sound recording, all the musical examples have been sound examples (found in the accompanying CD) rather than visual ones. It is helpful, however, to support these sound examples with references to the actual musical text.

The page numbers that are referenced in the sound example schematics are from the 1984 Bärenreiter edition of the work.¹ This includes the full score of the *Passacaglia*, as well as an Appendix containing a copy of the first two pages, which were owned by C. P. E. Bach, heard in Chapter 7, Sound Example 16.

The following table provides page numbers and measure numbers for all examples.

Table 9: Sound Examples and Score References

Chapter	Sound Example	Bärenreiter Page Number	Measure Number
4	1	98	1–16
4	2	98	1–8
4	3 (Marchal)	98 & 104	1–8, 136–144
4	3 (Schweitzer)	98, 100–101	1–8, 64–72
4	4	105–106	160–174

¹ J. S. Bach, *Organ Works, Volume 7* (Kassel, Germany: Barenreiter-Verlag; 1984).

Chapter	Sound Example	Bärenreiter Page Number	Measure Number
5	5	98–99	1–40
5	6 (Alain)	100–101	64–80
5	6 (Klapprott)	99–100	40–56
5	7	100	48–56
5	8	101–103	80–108
5	9	105–106	160–174
5	10	108–109	197–220
6	11	98–99	1–8, 24–32
6	12	98–99	1–8, 24–32
6	13	98–99	1–8, 24–32
6	14	106	169–174
6	15	103	112–128
7	16	148–149	1–48
7	17	98–99, 113	1–43, 280–286
7	18	113	280 and following
7	19	99, 102–103, 104	32–48, 104–120, 144–152

Appendix III

Stop Lists

The following stop lists correspond to the instruments heard in the recordings. Stop lists were taken from the liner notes to the recordings, whenever possible. (The purpose of the stop lists is to serve as an aid when listening, so it was important to find the stop list that matched the year of the recording.) Many of the liner notes did not include stop lists, so these documents were discovered through library and Internet searches, and correspondence to churches, organ builders and museums. An effort was made to discover all the stop lists, but some were not available. The lists that were obtained, however, provide insight into choices in sound made in these recordings.

Summary of Available Stop Lists

1. "Black Beauty" (The electronic touring instrument for Virgil Fox), Rodgers Organ Company, 1966.
2. Busch—Reisinger Museum, Harvard University, Cambridge, Massachusetts; Flentrop Orgelbouw, 1958.
3. Cathedral Basilica of the Sacred Heart, Newark, New Jersey; Schantz Organ Company, 1953–54.
4. The Crystal Cathedral, Garden Grove, California; Aeolian-Skinner, 1959; Ruffati, 1982.
5. Dom, Arlesheim, Switzerland; Johann Andreas Silbermann, 1761.
6. Dom, Salzburg, Austria; Pirchner, 1991.
7. Duke University Chapel, Durham, North Carolina, Benjamin N. Duke Memorial Organ; Flentrop Orgelbouw, 1976.
8. First Lutheran Church, Boston, Massachusetts; Richards, Fowkes & Company, Opus 10, 2000.

9. First Prebyterian Church, Ithaca, New York; Russell & Company Organ Builders, Opus 47, 2006.
10. Grace Lutheran Church, Tacoma, Washington; Paul Fritts & Company, 1992.
11. Grote Kerk, Maassluis, Neatherlands; Rudolf Garrels, 1730–32; restored by Pels & Van Leeuwen, 1975.
12. House of Hope Presbyterian Church, St. Paul, Minnesota; C. B. Fisk Organ Company, Opus 78, 1979.
13. Kreuzkirche, Dresden, Germany, Jehmlich Company, 1963.
14. Pacific Lutheran University, Tacoma, Washington; The Gottfried and Mary Fuchs Organ, Lagerquist Concert Hall; Paul Fritts & Company, 1998.
15. Merseburger Dom, Merseburg, Germany; Ladegast, 1866; rebuilt by Eule, Scheffler, and Wegscheider, 2001–04.
16. Methuen Memorial Music Hall Organ, Methuen, Massachusetts; E. F. Walcker & Company, Opus 200, 1857–63; Rebuilt by Methuen Organ Company, 1909, and Aeolian—Skinner Organ Company, 1947.
17. The Meyerson Symphony Center, Dallas, Texas; The Lay Family Concert Organ; C. B. Fisk, Opus 100, 1991/92.
18. Monastery of St. Benedict, Lejansk, Poland; Stanislaw Studzinski, 1680; restored by Robert Polcyn, 1965–68.
19. Nidaros Cathedral, Trondheim, Norway; Wagner, 1738–39; rebuilt by Jürgen Ahrend, 1994.
20. Saint-Eustache, Paris, France; Merklin Organ, rebuilt by Gonzalez, 1927–32.
21. Texas A & M International University, Laredo, Texas; The Sharkey—Corrigan Pipe Organ, Center for the Fine and Performing Arts; Keggs Pipe Organ Builders, 2006.
22. Sct. Hans Kirke, Odense, Denmark; Marcussen & Son, 1962/87.
23. St. Bavokerk, Haarlem, The Netherlands; Muller, 1735–38; Marcussen/Flentrop, 1959–61.
24. Grote Sint Laurenskerk, Alkmaar, Holland; Van Hagerbeer, 1639046; Schnitger, 1722–25; restored by D. A. Flentrop, 1947–49.

25. St. Mark's Lutheran Church, Pennsburg, Pennsylvania; Patrick J. Murphy & Associates, Opus 36, 2000.
26. Saint—Sulpice, Paris France; Clicquot, 1781; Renaude & Company, 1988–91.
27. Stadtkirche, Zofingen, Switzerland; Metzler, 1983.
28. Evangelische Stadtkirche, Bad Wimpfen, Germany; Johann Adam Ehrlich, 1748.
29. Stifskirche Grauhof, Goslar, Lower Saxony; Treutmann, 1737.
30. Trinity College, Cambridge, England; Trinity Chapel; Father Smith, 1694, 1706; Metzler, 1975.
31. Waalse Kerk, Amsterdam, Neatherlands; Langlez, 1680; Müller, 1734; Ahrend and Brunzema, 1965; van Eeken, 1993.
32. Washington National Cathedral, Washington, D. C.; Earnest Skinner and Sons, 1939; Aeolian—Skinner console, 1958, 1963–4; Joseph Whiteford, 1971–75; Rodgers Organ Company with R. A. Dafer and Son, 1989.
33. West End United Methodist Church, Nashville, Tennessee; Möller, Opus 11616, 1983; additions by Luley and Associates, Inc.

“Black Beauty” electronic touring instrument for Virgil Fox

Rodgers Organ Company, 1966

Great

16' Quintaton
8' Prinzipal
8' Bourdon
8' Gemshorn
4' Octave
4' Flute
2 $\frac{2}{3}$ ' Twelfth
2' Fifteenth
1 $\frac{1}{3}$ ' Nineteenth
1' Prinzipal
Furniture IV
Cymbal III
8' Cor Anglais

Swell

16' Rohrgedeckt
8' Geigen
8' Rohr Flute
8' Salicional
8' Voix Celeste
8' Flauto Dolce
8' Flute Celeste
4' Prestant
4' Nachthorn
2 $\frac{2}{3}$ ' Rohr Nasat
2' Waldflute
Plein Jeu V
16' Fagotto
8' Trompette
8' Hautbois
8' Vox Humana
4' Clarion

Choir

16' Flute Conique
8' Viola
8' Viola Celeste
8' Nachthorn
8' Quintade

8' Erzahler
8' Erzahler Celeste
4' Prinzipal
4' Lieblich Flute
4' Quintadena
2 $\frac{2}{3}$ ' Nazard
2' Block Flute
1 $\frac{3}{5}$ ' Tierce
1 $\frac{1}{3}$ ' Larigot
1' Sifflute
8' Trompette
8' Cromorne
8' Schalmey
8' Harp
4' Harp
Flemish Carillon

Pedal

32' Contra Prinzipal
32' Untersatz
16' Prinzipal
16' Bourdon
16' Lieblich Gedackt
16' Dulciana
8' Octave
8' Bourdon
8' Still Gedackt
8' Gemshorn
4' Choralbass
4' Nachthorn
Mixture III
32' Contra Bombarde
16' Bombarde
16' Fagotto
8' Trumpet
8' Krummhorn
4' Clarion
4' Schalmey

**Busch-Reisinger Museum, Harvard University
Cambridge, Massachusetts**

Flentrop Orgelbouw, 1958

Hoofdwerk

8' Prestant
8' Roerfluit
4' Octaaf
4' Speelfluit
2 $\frac{2}{3}$ ' Nasard
2' Valkfluit
1 $\frac{3}{5}$ ' Terts
 Mixtuur IV

Rugpositief

8' Holpijp
4' Prestant
4' Roerfluit
2' Gemshoorn
1 $\frac{1}{3}$ ' Quint
 Mixtuur II
8' Kromhoorn

Borstwerk

8' Zingend Gedekt
4' Koppelfluit
2' Prestant
1' Sifflet
8' Regaal

Pedaal

16' Bourdon
8' Prestant
8' Gedekt
4' Fluit
 Mixtuur III
16' Faggot
8' Trompet

Cathedral Basilica of the Sacred Heart
Newark, New Jersey

Schantz Organ Company, 1953–54

Gallery Great

16' Montre
8' First Diapason
8' Second Diapason
8' Flûte Harmonique
8' Bourdon
8' Viola da Gamba
8' Gemshorn
4' First Octave
4' Second Octave
4' Flûte Octaviane
2 $\frac{2}{3}$ ' Twelfth
2' Fifteenth
1 $\frac{3}{5}$ ' Seventeenth
Fourniture IV
Scharf III
8' Trumpet
4' Clairon
Chimes (*Solo*)

Gallery Swell

16' Flûte Contique
8' Open Diapason
8' Gedackt
8' Salicional
8' Voix Céleste
8' Spitzflöte
8' Spitzflöte Celeste
4' Geigen Octave
4' Fugara
4' Hohlflöte
2' Octavin
Sesquialtera II
Plein Jeu IV
Cymbal III
16' Petite Bombarde
8' Trompette
8' Hautbois
8' Voix Humaine
4' Clairon

Gallery Choir

16' Quintaton
8' Geigen Principal
8' Rohrflöte
8' Quintaton
8' Viola
8' Viola Celeste
8' Dolce
8' Dolce Celeste
4' Octave
4' Nachhorn
4' Flûte d' Amour
2 $\frac{2}{3}$ ' Rohr Nasat
2' Piccolo
1 $\frac{3}{5}$ ' Terz
1 $\frac{1}{3}$ ' Larigot
1 $\frac{1}{7}$ ' Septième
Mixture III
8' Petite Trompette
8' Cromorne
8' Deagen Harp

Gallery Solo

16' Contra Gamba
8' Principal
8' Doppelflöte
8' Gross Gamba
8' Gamba Celeste
4' Major Octave
4' Flûte Ouverte
2' Doublette
Grand Fourniture V
16' Ophicleide
8' Tuba
8' Trompette Militaire
8' Corno di Bassetto
8' French Horn
8' English Horn
4' Tuba Clairon
8' Trompette en
Chamade (*Chancel*)

continued

Cathedral Basilica of the Sacred Heart, page 2 of 2

Gallery Pedal	Chancel Swell	Chancel Pedal
32' Double Open Wood	16' Rohrbordun	32' Resultant
32' Contra Bourdon	8' Diapason	16' Open Diapason
16' Open Wood	8' Rohrflöte	16' Subbass
16' Principal	8' Salicional	16' Rohrbordun
16' Bourdon	8' Voix Céleste	16' Quintaton
16' Echo Lieblich	4' Octave	16' Gemshorn
16' Flûte Conique	4' Flûte Ouverte	8' Octave
16' Quintaton	2' Waldflöte	8' Major Flute
16' Contra Gamba	Mixture IV	8' Dolce Flute
16' Gemshorn	16' Fagatto	8' Gemshorn
16' Contra Dulciana	8' Trompette	4' Super Octave
10 $\frac{2}{3}$ ' Grosse Quinte	8' Oboe	4' Flute
8' Octave	8' Vox Humana	Mixture IV
8' Bourdon	4' Clairon	32' Cornet des
8' Lieblich Gedackt	8' Trompette en	Bombards VIII
8' Cello	Chamade	16' Bombarde
8' Gemshorn	Chancel Choir	16' Fagotto
8' Dulciana	16' Quintaton	8' Bombarde
5 $\frac{1}{3}$ ' Quinte	8' Geigen Diapason	8' Oboe
4' Super Octave	8' Concert Flute	4' Clairon
4' Flûte	8' Quintaton	8' Trompette en
4' Flûte Conique	8' Dulciana	Chamade
Furniture III	8' Unda Maris	
Cymbale IV	4' Geigen Octave	
32' Contra Posaune	4' Koppelflöte	
16' Posaune	2 $\frac{2}{3}$ ' Nazard	
16' Ophicleide	2' Fifteenth	
16' Petite Bombarde	2' Harmonic Piccolo	
4' Clairon	1 $\frac{3}{5}$ ' Tierce	
4' Zink	Mixture III	
Chancel Great	8' Clarinet	
16' Gemshorn	8' Bombarde	
8' Open Diapason	8' Trompette en	
8' Bourdon	Chamade	
8' Gemshorn		
4' Octave		
4' Harmonic Flute		
2 $\frac{2}{3}$ ' Octave Quint		
2' Super Octave		
Mixture IV		
8' Trumpet		
8' Trompette en Chamade		

The Crystal Cathedral

Garden Grove, California

Aeolian-Skinner, 1959; Ruffati, 1982

Great Organ

16' Montre
 16' Kontra Geigen
 16' Bourdon
 8' Diapason
 8' Principal Major
 8' Principal
 8' Holz Bourdon
 8' Flute Harmonique
 8' Spitzflote
 8' Spitz Celeste
 5 $\frac{1}{3}$ ' Gross Quinte
 4' Octave
 4' Oktav
 4' Flute a Cheminee
 4' Flute Ouverte
 3 $\frac{1}{5}$ ' Gross Tierce
 2 $\frac{2}{3}$ ' Quinte
 Sesquialtera II
 Jeu de Tierce II
 2' Fifteenth
 2' Super Octave
 2' Blockflote
 Grand Fourniture II–VII
 Ripieno IV
 Mixture IV–VI
 Cimbalo IV
 Zimbel III–V
 16' Contra Trompette
 16' Posaune
 16' Fagotto
 8' Trompette
 8' Trompete
 4' Clairon
 Chimes

Choir Organ

16' Gemshorn
 8' Viola Pomposa
 8' Viola Celeste
 8' Cor de Nuit
 8' Flauto Dolce
 8' Flauto Celeste
 4' Principal
 4' Koppelflote

2 $\frac{2}{3}$ ' Rohr Nasat
 2' Prinzpal
 2' Zauberflote
 1 $\frac{3}{5}$ ' Tierce
 1 $\frac{1}{3}$ ' Larigot
 Scharff IV
 16' Fagotto
 8' Petite Trompette
 8' Clarinet
 4' Fagotto
 8' Millenial Trumpet
 Zimbelstern
 8' Harp
 4' Celesta

Swell Organ

16' Flute Courte
 16' Quintadena
 8' Montre
 8' Principal
 8' Viole de Gamba
 8' Viole Celeste
 8' Salicional
 8' Voix Celeste
 8' Erzahler
 8' Erzahler Celeste
 8' Flute Couverte
 8' Bourdon
 4' Prestant
 4' Octave
 4' Flute a Pavillon
 4' Cor de Nuit
 2 $\frac{2}{3}$ ' Nazard
 2' Doublette
 2' Flute a Bec
 1 $\frac{3}{5}$ ' Tierce
 1 $\frac{1}{3}$ ' Larigot
 1' Piccolo
 Plein Jeu III
 Ripieno V
 Cymbale III
 Cornet V

continued

The Crystal Cathedral, page 2 of 3

16' Bombarde
16' Contre Trompette
16' Basson
8' Premiere Trompette
8' Deuxime Trompette
8' Deuxieme Trompette
8' Hautbois d'Orchestre
8' Hautbois
8' Voix Humaine
4' Premiere Clairon
4' Deuxieme Clairon

Positiv Organ

8' Principal
8' Rohrflote
4' Prinzipal
4' Spillflote
2' Oktav
1 $\frac{1}{3}$ ' Larigot
1' Sifflothe
Scharff IV
Terz Zimbel III
8' Krummhorn
4' Rohr Schalmei
8' Tuba Mirabilis (Solo)
Glockenstern

Solo Organ

8' Geigen
8' Voce Umana
8' Gambe
8' Gambe Celeste
8' Doppelflote
4' Major Octave
4' Orchestral Flute
2 $\frac{2}{3}$ ' Quinte Flute
Harmonics VI
Gross Fourniture III
Cymbel IV
16' English Post Horn
8' Trompette Harmonique
8' English Post Horn
8' French Horn
8' Corno di Bassetto
4' Clairon Harmonique
8' Flauto Mirabilis
8' Flute d'Arvella
8' Herald Trumpet

8' Millenial Trumpet
8' Tuba Mirabilis
4' Tuba Clarion

Trompeteria Organs

Gospel

16' Trompette en Chamade
8' Trompette en Chamade
4' Trompette en Chemade

Epistle

16' Trompette en Chamade
8' Trompette en Chamade
4' Trompette en Chamade
2' Trompette en Chamade
8' Mounted Cornet V

Pedal Organ

32' Double Diapason
32' Kontra Geigen
32' Contra Bourdon
21 $\frac{1}{3}$ ' Diapente Grave
16' Diapason
16' Contre Basse
16' Contra Basso
16' Geigen
16' Montre
16' Principal
16' Bourdon
16' Subbasso
16' Gemshorn
16' Flute Courte
16' Quintadena
10 $\frac{2}{3}$ ' Quinte
8' Octave
8' Principal
8' Violone
8' Geigen
8' Spitzflote
8' Principal (*Positiv*)
8' Bourdon
8' Bordone
8' Gemshorn (*Choir*)
8' Flute Courte (*Swell*)
5 $\frac{1}{3}$ ' Octave Quinte
4' Choralbass
4' Octave
4' Principal
4' Spillflote

continued

The Crystal Cathedral, page 3 of 3

4' Spireflote
 2' Octave
 2' Spindleflote
 Fourniture IV
 Ripieno VI
 Acuta II
 Grand Cornet IV (*derived*)
 32' Kontra Posaune
 32' Contra Fagotto
 16' Posaune
 16' Contre Trompette (*Great*)
 16' Bombarde (*Swell*)
 16' Basson (*Swell*)
 16' English Post Horn (*Solo*)
 16' Fagotto (*Choir*)
 8' Trompete
 8' Trompette
 8' Fagotto (*Choir*)
 8' Krummhorn (*Positiv*)
 4' Klarine
 4' Trompette
 4' Rohr Schalmel (*Positiv*)
 2' Zink (*Positiv*)

South Balcony Gallery Great Organ

8' Grande Montre
 8' Principal
 8' Holzgedeckt
 4' Octave
 4' Koppelflote
 2' Fifteenth
 1 $\frac{1}{3}$ ' Nineteenth
 1' Twenty-second
 Fourniture V
 Zimbel IV
 8' Millennial Trumpet
 8' Herald Trumpet (*Solo*)

Celestial Organ

16' Bourdon Doux
 16' Flauto Dolce
 8' Principal
 8' Viola Pomposa
 8' Viola Celeste
 8' Flauto Dolce
 8' Flauto Celeste
 8' Flute a Cheminee
 4' Principal
 4' Italian Principal
 4' Flute Traversiere
 Sesquialtera II

2' Doublette
 2' Octavin
 Plein Jeu V
 Cymbale IV
 Jeu de Clochette II
 16' Contre Trompette
 16' Ranquette
 8' Trompette
 8' Cor Anglais
 8' Cromorne
 8' Voix Humaine
 4' Cor de Schuller
 4' Chalumeau
 Etoile de Grand Matin
 Rossignol

String Organ

16' Viola
 16' Viola Celeste
 8' Dulciana
 8' Unda Maris
 8' Salicional
 8' Voix Celeste
 8' Dulcett
 8' Dulcett Celeste
 8' Muted Viole I
 8' Muted Viole I Celeste
 8' Mute Viole II
 8' Muted Viole II Celeste
 8' Violoncello
 8' Violoncello Celeste
 8' Rohrpfeife
 4' Nachthorn

Gallery Pedal Organ

32' Untersatz
 16' Montre le Tour
 16' Open Wood
 16' Bourdon
 16' Bourdon Doux
 16' Viola
 16' Viola Celeste
 8' Prestant
 8' Bourdon
 8' Viola Celeste II
 4' Bass de Choral
 Mixture V
 Grand Harmoniques IV (*derived*)
 32' Contre Bombarde
 16' Bombarde
 16' Contre Trompette

Dom
Salzburg, Austria

Rebuilt by Pirchner, 1991

Gospel Side

Manual I

8' Principal
8' Viola
4' Octav
4' Flöte
2 $\frac{2}{3}$ ' Nasat
2' Octav
Mixture IV

Manual II

8' Copel
4' Rohrflöte
2' Principal
Cornet

Pedal

16' Subbaß
8' Octavbaß
8' Posaune

Epistle side

Manual I

8' Principal
8' Metallgedackt
4' Octav
2 $\frac{2}{3}$ ' Quint
2' Octav
Mixture IV

Manual II

8' Copel
4' Gedackt
2' Flöte
1 $\frac{1}{3}$ ' Nasat

Pedal

16' Subbaß
8' Octavbaß
5 $\frac{1}{3}$ ' Quintbaß

Duke University Chapel
Durham, North Carolina

The Benjamin N. Duke Memorial Organ
Flentrop Orgelbouw, 1976

Hoofdwerk	Bovenwerk
16' Prestant	8' Prestant
16' Bourdon	8' Baarpijp
8' Octaaf	8' Gedekt
8' Roerfluit	8' Quintadeen
4' Octaaf	4' Octaaf
2 $\frac{2}{3}$ ' Quint	4' Fluit
2' Octaaf	2 $\frac{2}{3}$ ' Nasard
1 $\frac{3}{5}$ ' Terts	2' Fluit
Mixtuur V–VII	1 $\frac{3}{5}$ ' Terts
Scherp IV–V	1' Sifflet
Cornet V	Mixture V–VI
16' Bombarde	8' Trompet
8' Trompette	8' Hobo
8' Trompet	8' Vox Humana
4' Clarion	
	Echo
	8' Gedekt
	4' Prestant
	4' Fluit
	2' Nachthoorn
	Cornet III
	8' Hautbois
	Pedal
	16' Prestant
	16' Subbas
	10 $\frac{2}{3}$ ' Quint
	8' Octaaf
	5 $\frac{1}{3}$ ' Quint
	4' Octaaf
	2' Nachtoorn
	Mixture VI–VIII
	16' Bazuin
	8' Trompette
	8' Trompet
	4' Clairon
	2' Zink
	Rossignol

Horizontal

16' Trompeta magna
8' Clarin
4' Trompeta Batalla

Rugwerk

8' Prestant
8' Gedekt
4' Octaaf
4' Fluit
2 $\frac{2}{3}$ ' Nasard
2' Octaaf
2' Fluit
1 $\frac{3}{5}$ ' Terts
1 $\frac{1}{3}$ ' Larigot
 Sesquialtera II
 Mixture V–VI
 Scherp IV–V
8' Schalmei
8' Cromorne
4' Trompet
 Cimbelster

**First Lutheran Church
Boston, Massachusetts**

Richards, Fowkes & Company, Opus 10, 2000

Werk	Pedal
16' Bourdon	16' Subbass
8' Principal	8' Octave
8' Rohrflöte	8' Gedackt
8' Viol d'Gamba	4' Octave
4' Octave	16' Posaune
4' Spitzflöte	8' Trompet
3' Nasat III/II	2' Cornet
4' Octave	
Mixture V	
8' Trompet	Cimbelstern
8' Vox Humana	

Rückpositiv

8' Gedackt
4' Principal
4' Rohrflöte
Sesquialtera II
2' Waldflöte
Scharff IV
16' Dulcian
8' Krummhorn
4' Schalmei

Temperament after Kellner

Wind pressure: 70mm

**First Presbyterian Church
Ithaca, New York**

Russell & Company Organ Builders, Opus 47, 2006

Great	Solo	Pedal
16' Principal	16' Cello	32' Principal
16' Gemshorn	8' Flute	32' Contra Bourdon
8' Montre	8' Cello	16' Open Wood
8' Principal	8' Cello Celeste	16' Principal
8' Bourdon	8' Gamba	16' Gemshorn
8' Flûte	8' Gamba Celeste	16' Bourdon
8' Harmonique Gemshorn	8' English Horn	16' Lieblich Gedeckt
4' Octave	8' Tuba Mirabilis	8' Cello
4' Rohrfloete	8' Silver Trumpet	8' Octave
2 $\frac{2}{3}$ ' Nasard	Chimes	8' Bourdon
2' Fifteenth		8' Lieblich Gedeckt
Fourniture IV–V	Choir	4' Gemshorn
16' Double Trumpet	8' English Diapason	4' Choral Bass
8' Trumpet	8' Hohlfloete	4' Spitzfloete
	8' Quintadena	32' Flute Mixture V
Swell	8' Erzähler	16' Contra Posaune
16' Lieblich	4' Erzähler	8' Posaune
8' Gedeckt	4' Celeste	8' Fagotto
8' Diapason	4' Octave	8' Corno di Bassetto
8' Bourdon	2 $\frac{2}{3}$ ' Nasard	4' Tromba
8' Viola	2' Koppelfloete	4' Trumpet
8' Viola Celeste	1 $\frac{3}{5}$ ' Tierce	4' Fagotto
4' Flauto Dolce	16' Flute	4' Schalmeei
4' Flute	8' Tierce	Chimes
4' Nachthorn	8' Corno di Bassetto	
2' Principal	8' Waldhorn	Antiphonal Great
Plein Jeu IV–V	8' Clarinet	8' Prestant
16' Fagotto		8' Stopped Flute
8' French Trumpet	Positiv-Continuo	
8' Oboe d'Amore	8' Gedeckt	Antiphonal Swell
8' Vox Humana	4' Spillfloete	8' Gedeckt
4' Clarion	4' Prestant	8' Viole Aetheria
	2' Principal	8' Vox Angelica
	1 $\frac{1}{3}$ ' Quint	8' Flute d'Amour
	Sesquialtera II	8' Orchestral Oboe
	Scharff III–IV	8' Vox Humana
		Antiphonal Pedal
		<i>continued</i>
		16' Gedeckt
		8' Prestant
		8' Stopped Flute

Some pipework from the previous Austin organ, 1969

**Grace Lutheran Church
Tacoma, Washington**

Paul Fritts & Co., 1992

Manual I

16' Quintadena
8' Principal
8' Rohrflöte
4' Octave
Quint/Sesquialtera II
2' Octave
Mixture IV
8' Trompet

Pedal

16' Subbass
8' Principal
8' Gedackt*
4' Octave*
16' Posaune
8' Trumpet*

Manual II

8' Rohrflöte*
8' Gemshorn
4' Spitzflöte
2' Waldflöte
1 $\frac{1}{3}$ ' Sifflöte
8' Trichterregal

* transmissions

Variable Tremulant

Suspended key action and mechanical stop
action Zymbelstern

Compass: Manual 58 notes, Pedal 30 notes

Grote Kerk
Maassluis, Neatherlands

Rudolf Garrels, 1730-32; restored by Pels & Van Leeuwen, 1975

Hoofdwerk

16' Prestant
8' Octaaf
8' Holpijp
4' Octaaf
4' Nachthoorn
3' Quint
2' Octaaf
Cornet IV
Mixture IV-VI
Scherp IV
16' Dulciaan
8' Trompet

Bovenwerk

8' Baarpijp
8' Holpijp
8' Quintadeen
8' Viola
4' Prestant
4' Fluit
3' Nasard
2' Octaaf
1' Sifflet
Tertiaan II
Mixtuur IV-V
8' Trompet
8' Dulciaan
8' Vox Humana

Rugwerk

16' Prestant
8' Prestant
8' Holpijp
4' Octaaf
4' Roerfluit
3' Quint
2' Octaaf
2' Woudfluit
Sexquialter III
Mixtuur IV-VI
8' Trompet

Pedaal

16' Open Subbas
16' Bourdon
12' Roerquint
8' Octaaf
4' Octaaf
Mixtuur V
32' Bazuin
16' Bazuin
8' Trompet
4' Trompet

House of Hope Presbyterian Church
St. Paul, Minnesota

C. B. Fisk Organ Company, Opus 78, 1979

Great

16' Prestant
8' Octave
8' Gambe
8' Flûte Harmonique
8' Bourdon
4' Octave
4' Rohrflöte
2' Superoctave
Grave Mixture II
Cornet
Mixture VIII–XII
16' Double Trumpet
8' German Trumpet
8' French Trumpet
4' Orlos I–III

Rückpositiv

16' Holzquintadehn
8' Prestant
8' Bourdon
4' Octave
4' Baarpijp
3 $\frac{1}{5}$ ' Grosse Tierce
2 $\frac{2}{3}$ ' Nazard
Sesquialtera II
2' Night Horn
2' Doublet
Sharp V–VIII
16' Dulcian
8' Trechterregal
8' Cromorne

Swell

16' Stillgedackt
8' Diapason
8' Viola da Gamba
8' Voix Cèleste
8' Chimney Flute
4' Italian Principal
2 $\frac{2}{3}$ ' Quinta
Sesquialter II
2' Fifteenth
Fourniture IV–VI
16' Contra Hautboy
8' Trumpet
8' Oboe
4' Clarion

Brustwerk

8' Gedackt
4' Quintadena
2' Waldflöte
1 $\frac{3}{5}$ ' Tierce
Echo Cornet III
1 $\frac{1}{3}$ ' Quinta
Cymbal III
8' Regal
4' Schalmey

Pedal

32' Contra Bourdon
16' Prestant
16' Subbass
8' Octave
8' Gedackt
4' Superoctave
Mixture V
32' Contra Bassoon
16' Trombone
8' Cornopean
4' Shawm

**Pacific Lutheran University
Tacoma, Washington**

The Gottfried and Mary Fuchs Organ, Lagerquist Concert Hall
Paul Fritts & Company, 1998

Great

16' Praestant
8' Octave
8' Rohrflöte
8' Salicional
8' Spielflöte
4' Octave
4' Spitzflöte
2 $\frac{2}{3}$ ' Quinte
2' Octave
Mixture V–VII
Cornet V
16' Trompete
8' Trompete
8' Baarpfeife

Positive

8' Praestant
8' Gedackt
4' Octave
4' Rohrflöte
2' Octave
2' Waldflöte
Sesquialter II
1 $\frac{1}{3}$ ' Nasat
Scharff IV–VII
16' Fagott
8' Trompete
8' Dulcian

Swell

16' Quintadena
8' Principal
8' Bourdon
8' Viole de gamba
8' Voix celeste
4' Octave
4' Koppelflöte
2 $\frac{2}{3}$ ' Nazard
2' Gemshorn
1 $\frac{3}{5}$ ' Tierce
Mixture VI–VII
8' Trompete
8' Hautbois
8' Voix Humaine
8' Schalmey

Pedal

16' Praestant
8' Octave
4' Octave
2' Nachthorn
Mixture V–VII
32' Subbass
16' Subbass
32' Posaune
16' Posaune
8' Trompete
4' Trompete
2' Cornett

Merseburger Dom Merseburg, Germany

Friedrich Ladegast, 1866; rebuilt by Eule, Scheffler, and Wegscheider, 2001-04

Hauptwerk	Oberwerk	Pedal
32' Bordun	16' Quintatön	32' Untersatz
16' Principal	8' Principal	16' Principal
16' Bordun	8' Rohrflöte	16' Salicetbass
8' Principal	8' Gambe	16' Violonbass
8' Hohlflöte	8' Flauto amabile	16' Subbass
8' Doppelflöte	8' Gedeckt	10 ² / ₃ ' Grossnassat
8' Gemshorn	4' Oktave	8' Principal
8' Gambe	4' Spitzflöte	8' Violoncello
5 ¹ / ₃ ' Quinte	4' Rohrflöte	8' Bassflöte
4' Oktave	2 ² / ₃ ' Quinte	6 ² / ₅ ' Terz
4' Spitzflöte	2' Waldflöte	5 ¹ / ₃ ' Rohrquint
4' Gedackt	1 ³ / ₅ ' Terz	4' Oktave
Doublette II	1' Sifflöte	4' Flöte
2 ² / ₃ ' Quinte	Mixtur IV	4' Scharfflöte
2' Oktave	8' Schalmey	Mixtur IV
Mixtur IV	Stahlspiel	Cornett IV
Scharff IV		32' Posaune
Cornett III-V		16' Posaune
16' Fagott		16' Dulcian
8' Trompete		8' Trompete
	Brustwerk	
	16' Lieblichgedeckt	
	8' Geigenprincipal	
	8' Lieblichgedeckt	
	8' Flauto dolce	
	8' Salicional	
	8' Unda maris II	
	4' Oktave	
	4' Zartflöte	
	4' Salicional	
	2 ² / ₃ ' Nassat	
	2' Oktave	
	Cimbel III	
	Progressive-	
	harmonica II-IV	
	16' Aeoline	
Rückpositiv		
16' Bordun		
8' Principal		
8' Flauto traverso		
8' Fugara		
8' Quintatön		
4' Octave		
4' Gedeckt		
2' Octave		
Mixtur IV		
Cornet II-V		
8' Oboe		

Methuen Memorial Music Hall Organ
Methuen, Massachusetts

E. F. Walcker & Company, Opus 200, 1857-63;
 Rebuilt by Methuen Organ Company, 1909,
 and Aeolian-Skinner Organ Company, 1947

Great		Pedal
16' Principal	2 $\frac{2}{3}$ ' Nazard	32' Principal
16' Viola Major	2' Octavin	16' Principal
16' Bourdon	2' Piccolo	16' Contre Basse
8' Principal	1 $\frac{3}{5}$ ' Tierce	16' Bourdon
8' Gemshorn	Plein Jeu IV	16' Quintaten
8' Gedeckt	16' Basson	16' Lieblich Gedeckt
5 $\frac{1}{3}$ ' Quint	8' Trompette	8' Octave
4' Octave	8' Hautbois	8' Cello
4' Spitzflöte	4' Clairon	8' Spitzflöte
4' Koppelflöte	Positiv	5 $\frac{1}{3}$ ' Quint
4' Flûte d'Amour	8' Gedeckt	4' Super Octave
3 $\frac{1}{5}$ ' Terz	8' Quintaten	4' Nachthorn
1 $\frac{1}{2}$ ' Septième	4' Principal	3 $\frac{1}{5}$ ' Terz
Cornet IV-VI	4' Nachthorn	2' Waldflöte
Fourniture IV	2 $\frac{2}{3}$ ' Nasard	Mixtur VI
Scharff IV	2' Octav	Grand Bourdon IV
Kleine Mixture IV	2' Blockflöte	32' Contre Bombarde
16' Trumpet	1 $\frac{3}{5}$ ' Tierce	16' Bombarde
8' Trumpet	1 $\frac{1}{3}$ ' Quinta	16' Basson
4' Clarion	1' Super Octave	8' Trompette
Swell	Scharff III	4' Clairon
8' Principal	Zimbel III	2' Rohr Schalmel
8' Viole de Gambe	Choir	
8' Viole Céleste	16' Quintaten	
8' Aeoline	8' Viola	
8' Flûte à Cheminée	8' Unda Maris	
4' Prestant	8' Konzert Flöte	
4' Flute Couverte	4' Traverse Flöte	
	2' Gemshorn	
	Cymbel II-III	
	16' Dulzian	
	8' Krummhorn	
	4' Regal	

**The Meyerson Symphony Center
Dallas, Texas**

The Lay Family Concert Organ
C. B. Fisk, Opus 100, 1991/92

Résonance	Positive II	Pedal
<p>I and/or IV</p> <p>32' Prestant 16' Montre 8' Montre 8' Violoncelle 8' Flûte harmonique 8' Bourdon 5 1/3' Quinte 4' Prestant 4' Octave 2 2/3' Quinte les Octaves III les Quintes VI Plein jeu VIII 16' Bombarde 8' Trompette 4' Clairon</p> <p>Great I</p> <p>16' Principal 16' Quintadehn 8' Octava 8' Spillpfeife 4' Octava 4' Rohrflöte 2' Superoctava Mixtur VIII–XII 16' Trommeten 8' Trommeten</p>	<p>16' Bourdon 8' Principal 8' Dulciane 8' Gedackt 4' Octave 2 2/3' Nazard 2' Doublette 2' Tierce 1 3/5' Tierce Sharp VI–VIII 8' Trompette 8' Cromhorne 8' Trechterregal</p> <p>Swell III</p> <p>8' Flûte traversière 8' Viole de gambe 8' Voix céleste 8' Bourdon 4' Prestant 4' Flûte octaviante 2' Octavin Cornet III 16' Basson 8' Trompette 8' Hautbois 8' Voix humaine 4' Clairon</p> <p>Tuba IV</p> <p>16' Tuba Magna 8' Tuba 8' Royal Trumpet 4' Tuba Clarion</p>	<p>32' Prestant* 32' Untersatz 16' Prestant 16' Contrebasse 16' Montre* 16' Bourdon 10 2/3' Quinta 8' Montre* 8' Flûte* 8' Violoncelle* 8' Flûte harmonique* 8' Bourdon* 5 1/3' Quinte* 4' Prestant* 4' Octave* 2 2/3' Quinte* Mixture VI 32' Tuba Profunda 16' Bombarde* 16' Tuba Magna (<i>ext.</i>) 16' Posaune 8' Trompette* 8' Tuba (<i>ext.</i>) 8' Royal Trumpet (<i>borrow</i>) 4' Clairon*</p>

* Pedal stops in common with the Résonance manual keyboards

Monastery of St. Benedict
Lejansk, Poland

Stanislaw Studzinski, 1680; restored by Robert Polcyn, 1965–68

Manual I

16' Pryncypal
8' Praestant
8' Flet major
8' Gemshorn
4' Octava
4' Flet minor
2²/₃' Quinta
2' Superoctava
1' Octavin
 Cornet III–IV
 Mixtura major V–VI
 Mixtura minor III–IV
 Cymbel VII–X
8' Trompet

Manual II

8' Pryncypal
8' Salicet
8' Flet bambusowy
4' Octava
4' Flet bambusowy
2' Flauto
 Sesquialtera II
 Mixtura IV
8' Dulcian

Manual III

8' Bourdon
8' Quintadena
4' Gemshorn
2' Pryncypal
1¹/₃' Quinta
 Acuta III–V
8' Vox humana

Pedal

32' Subcontrabas
16' Pryncypalbas
16' Violonbas
16' Subbas
8' Pryncypal
8' Fletbas
4' Pryncypal
 Mixturbas IV
16' Bombardon
8' Trompet

Saint-Eustache

Paris, France

Merklin Organ, rebuilt by Gonzalez, 1927–32

Grand-Orgue	Positif de dos	Récit expressif
16' Montre	16' Bourdon	16' Flûte à cheminée
8' Montre	8' Montre	8' Principal
8' Flûte harmonique	8' Bourdon	8' Flûte harmonique
8' Bourdon	4' Flûte douce	8' Bourdon
8' Gemshorn	2 $\frac{2}{3}$ ' Quinte	8' Viole de gambe
8' Viole de gambe	2' Doublette	8' Voix céleste
8' Flûte à pavillon	1 $\frac{3}{5}$ ' Tierce	4' Prestant
4' Prestant	1 $\frac{1}{3}$ ' Larigot	4' Flûte octaviante
4' Flûte à cheminée	1 $\frac{1}{7}$ ' Septième	2 $\frac{2}{3}$ ' Nasard
2 $\frac{2}{3}$ ' Nasard	1' Piccolo	2' Flageolet
2' Doublette	Plein jeu III–IV	Plein jeu III–IV
Plein jeu IV–VI	8'–16' Basson	Cymbale III
Grand Cornet V	8' Trompette	Cornet V
16' Bombarde	8' Cromorne	16' Trombone
8' Trompette	4' Clairon	8' Trompette harmonique
4' Clairon		8' Basson-hautbois
	Positif expressif	8' Voix humaine
	8' Quintaton	4' Clairon
	8' Flûte traversière	
	8' Salicional	Pedal
	8' Unda maris	32' Flûte
	8' Kéraulophone	16' Flûte
	4' Dulciane	16' Soubasse
	2 $\frac{2}{3}$ ' Nasard	16' Violon
	8' Cor de basset	10 $\frac{2}{3}$ ' Quinte ouverte
		8' Flûte
		8' Bourdon
		8' Violoncelle
		4' Flûte
		32' Contrebombarde
		16' Bombarde
		16' Basson
		8' Trompette
		8' Basson
		4' Clairon

Texas A&M International University

Laredo, Texas

The Sharkey-Corrigan Pipe Organ, Center for the Fine and Performing Arts

Kegg Pipe Organ Builders, 2006

Great

16' Violone
8' Principal
8' Violone (*ext.*)
8' Rohrflute
8' Harmonic Flute
4' Octave
4' Spitzflute
2 $\frac{2}{3}$ ' Twelfth
2' Fifteenth
1 $\frac{3}{5}$ ' Seventeenth
 Full Mixture IV
 Sharp Mixture III
16' Contra Trompete
8' Trompete (*ext.*)
16' Tromba (*Solo*)
8' Tromba (*Solo*)
4' Clarion (*Solo*)

Swell

16' Bourdon (*wood/metal*)
8' Principal
8' Bourdon (*ext.*)
8' Salicional
8' Voix Celeste
8' Flauto Dolce (*Solo*)
8' Flute Celeste (*Solo*)
4' Octava
4' Flute
2 $\frac{2}{3}$ ' Nazard
2' Piccolo
1 $\frac{3}{5}$ ' Tierce
 Plein Jeu V

16' Basson
8' Trompette
8' Hautbois (*ext.*)
16' Basson
8' Trompette
8' Hautbois (*ext.*)
8' Vox Humana
4' Clairon

Positiv

8' Principal
8' Gedeckt (*wood*)
4' Octave
4' Koppelflute
2 $\frac{2}{3}$ ' Quinte
2' Octave
1 $\frac{1}{3}$ ' Quinte (*ext.*)
 Sesquialtera II-III
 Mixture IV
16' Holz Regal
8' Krummhorn

Continuo

(duplexed from Positiv)

8' Gedeckt
4' Koppelflute
2' Flute
2' Principal
1 $\frac{1}{3}$ ' Quinte

continued

Solo

8' Solo Diapason IV (*derived*)
8' Gamba
8' Gamba Celeste
8' Flauto Dolce
8' Flute Celeste
8' Clarinet
8' English Horn
16' Tuba
8' Tuba
4' Tuba (*ext.*)
16' Tromba
8' Tromba (*ext.*)
4' Clarion

Pedal

32' Subbass
16' Open Diapason (*wood*)
16' Violone (*Gt.*)
16' Subbass (*ext.*)
16' Viole
16' Bourdon (*Sw.*)

8' Octave
8' Violone (*Gt.*)
8' Subbass (*ext.*)
8' Viole (*ext.*)
8' Bourdon (*Sw.*)
4' Choralbass
4' Cantus Flute
Mixture IV
32' Trombone (*full length*)
32' Harmonics (*derived*)
16' Trombone (*ext.*)
16' Trompete (*Gt.*)
16' Basson (*Sw.*)
8' Trombone (*ext.*)
8' Trompete (*Gt.*)
4' Clarion (*ext.*)
4' Clarinet (*Solo*)
4' Krummhorn (*Positiv*)

Zimbelstern (*5 handbells*)

**Sct. Hans Kirke
Odense, Denmark**

Marcussen & Son, 1962/87

Hovedvaerk

16' Bordun
8' Principal
8' Rorflojte
4' Octav
4' Spidsflojte
2 $\frac{3}{5}$ ' Spidsquint
2' Octav
Mixtur V
Cymbel III
8' Trompet

Rygpositiv

8' Gedakt
8' Quintaton
4' Principal
4' Rorflojte
2' Gemshorn
1 $\frac{1}{3}$ ' Nasat
Sesquialtera II
Scharf IV
8' Krumhorn

Brystvaerk

8' Traegedakt
4' Gedakflojte
2' Principal
2' Blokflojte
1' Octav
Cymbel II
16' Regal

Pedal

16' Traeprincipal
16' Subbas
8' Oktav
8' Gedakt
4' Oktav
4' Kobbelflojte
2' Nathorn
Rauschquint V
16' Fagot
8' Trompet
4' Skalmjeje

St. Bavokerk
Haarlem, The Netherlands

Muller, 1735–38; Marcussen/Flentrop, 1959–61

Hoofdwerk	Bovenwerk
16' Praestant	16' Quintadena
16' Bourdon	8' Praestant
8' Octaaf	8' Quintadena
8' Roerfluit	8' Baarpijp
8' Viola di Gamba* (<i>conical</i>)	4' Octaaf
5½' Roerquint	4' Flagfluit
4' Octaaf	2⅔' Nasard
4' Gemshorn	2' Nachthoorn
2⅔' Quint-praestant	1' Flageolet
2' Woudfluit	Sesquialter II
Tertiaan II	Mixtuur IV–VI*
Mixtuur IV–X	Cymbaal III*
Scherp VI–VIII**	8' Schalmei
16' Trompet	8' Dolceaan
8' Trompet	8' Vox humana
8' Hautbois	
4' Trompet	
	Pedal
	32' Principaal
	16' Praestant
	16' Subbas*
	10⅔' Roerquint
	8' Octaaf
	8' Holfluit
	5½' Quintpraestant
	4' Octaaf
	2' Holfluit
	Ruischpijp IV*
	Mixtuur VI–X**
	32' Bazuin
	16' Bazuin
	8' Trompet
	4' Trompet
	2' Cink
Rugpositief	
8' Praestant	
8' Quintadena*	
8' Holpijp	
4' Octaaf	
4' Fluit Douce	
2⅔' Speelfluit	
2' Super Octaaf	
Sesquialter II–IV	
Cornet IV	
Mixtuur VI–VIII	
Cymbaal III*	
16' Fagot	
8' Trechterregaal*	

* new in 1961, replacement for original stop

** new in 1961, addition to original stoplist

Tuning: Equal temperament

Pitch: a=435 Hz

Tracker action rebuilt in 1961

Keyboards: manuals from 1738; pedals new in 1961

Grote Sint Laurenskerk
Alkmaar, Holland

Van Hagerbeer, 1639–46; Schnitger, 1722–25;
restored by D. A. Flentrop, 1947–49

Groot Manuaal (II)	Bovenwerk (III)
16' Praestant	8' Praestant
8' Praestant	8' Baarpyp
6' Praestantquint	8' Rohrfluit
4' Octaav	8' Quintadena
2' Flachfluit	4' Octaav
Ruyschpyp II	4' Fluit Dous
Tertiaan II	3' Spitsfluit
Mixtuur VI	2' Superoctaav
16' Trompet	2' Speelfluit
8' Viool di Gamba	Sexquialtera II
4' Trompet	Scherp IV
	Cimbel III
	8' Hautbois
	8' Vox Humana
	Pedaal
	22' Principaal
	16' Praestant
	12' Rohrquint
	8' Octaav
	6' Quinta
	4' Octaav
	2' Nachthoorn
	Ruyschpyp III
	Mixtuur VIII
	16' Basuin
	8' Trompet
	4' Trompet
	2' Cornet

Split keys for D-sharp and A-sharp on all manuals
Transposing mechanism
Tuning: Equal temperament, A=415 Hz
Soundboards: spring-chests
Wind pressure: 76 mm, via six diagonal bellows

St. Mark's Lutheran Church
Pennsburg, Pennsylvania

Patrick J. Murphy & Associates, Opus 36, 2000

Great

16' Gedackt (*ext.*)
8' Principal
8' Bourdon
8' Viola (*Sw.*)
4' Octave
4' Nachthorn
2½' Twelfth
2' Fifteenth
Mixture IV
8' Trumpet
8' Clarinet (*Sw.*)

Pedal

16' Contrabass
16' Bourdon
16' Gedackt (*Gt.*)
8' Octave (*ext.*)
8' Bourdon (*ext.*)
8' Viola (*Sw.*)
4' Choralbass
2' Flute (*Gt.*)
16' Posaune (*Gt.*)
8' Trumpet (*Gt.*)
4' Clarinet (*Sw.*)

Swell

8' Geigen
8' Rohrflute
8' Viola
8' Viola Celeste
4' Principal
4' Flute Octaviate
2' Spitzflute
Cornet II
Mixture III
16' Clarinet
8' Hautbois

Zimbelstern

Saint-Sulpice
Paris, France

Clicquot, 1781; Renaude & Company, 1988–91

<p>Grand-Orgue</p> <p>16' Principal 16' Montre 16' Bourdon 16' Flûte conique 8' Montre 8' Diapason 8' Bourdon 8' Flûte a pavillon 8' Flûte traversière 8' Flûte harmonique 5$\frac{1}{3}$' Quinte 4' Prestant 2' Doublette</p> <p>Grand-Choœur</p> <p>8' Salicional 4' Octave 16' Bombarde 16' Basson 8' 1ère Trompette 8' 2e Trompette 8' Basson 4' Clairon 2' Clairon Doublette Cornet V Fourniture IV Plein-Jeu IV Cymbale VI</p> <p>Positif</p> <p>16' Violonbasse 16' Quintaton 8' Quintaton 8' Flûte traversière 8' Salicional 8' Gamba 8' Unda maris</p>	<p>4' Flûte douce 4' Flûte octaviane 4' Dulciane 2$\frac{2}{3}$' Quinte 2' Doublette 1$\frac{3}{5}$' Tierce 1$\frac{1}{3}$' Larigot 1' Picolo Plein Jeu III–VI 16' Basson 8' Baryton 8' Trompette 4' Clairon</p> <p>Récit expressif</p> <p>16' Quintaton 8' Flûte harmonique 8' Violoncelle 8' Diapason 8' Bourdon 8' Voix céleste 4' Prestant 4' Dulciana 4' Flûte octaviane 2$\frac{2}{3}$' Nazard 2' Doublette 2' Octavin Fourniture V Cymbale IV Cornet V 8' Cromorne 8' Basson Hautbois 8' Voix humaine 16' Bombarde 8' Trompette 4' Clairon</p>	<p>Solo</p> <p>16' Bourdon 16' Flûte conique 8' Principal 8' Violoncelle 8' Gambe 8' Kéraulophone 8' Flûte harmonique 8' Bourdon 5$\frac{1}{3}$' Quinte 4' Prestant 4' Octave 4' Flûte octaviane 3$\frac{1}{5}$' Tierce 2$\frac{2}{3}$' Quinte 2$\frac{2}{7}$' Septième 2' Octavin Cornet V 16' Bombarde 8' Trompette 4' Clairon 8' Trompette en Chamade</p> <p>Pédale</p> <p>32' Principal 16' Principal 16' Contrebasse 16' Soubasse 8' Principal 8' Violoncelle 8' Flûte 4' Flûte 32' Bombarde 16' Bombarde 16' Basson 8' Trompette 8' Ophicleide 4' Clairon</p>
---	--	---

**Stadtkirche
Zofingen, Switzerland**

Metzler, 1983

Hauptwerk	Schwellwerk
16' Quintade	16' Bourdon*
8' Principal	8' Principal*
8' Hohlflöte*	8' Rohrflöte*
8' Viola*	8' Gamba*
4' Octave	8' Suavial* (<i>tenor C</i>)
4' Spitzflöte	4' Octave*
2 $\frac{2}{3}$ ' Quinte	4' Nachthorn*
2' Superoctave	2 $\frac{2}{3}$ ' Nasard*
Mixtur IV	2' Doublette*
Cimbel III	1 $\frac{3}{5}$ ' Terz*
Cornet V	Mixtur IV-V
16' Fagott	8' Trompete
8' Trompete	8' Oboe
Rückpositiv	Pedalwerk
8' Gedackt*	16' Principal
4' Principal	16' Subbass
4' Flauto*	10 $\frac{2}{3}$ ' Quinte*
Sesquialtera II	8' Bourdon*
2' Octave	4' Octave*
2' Gemshorn	Mixture V*
1 $\frac{1}{3}$ ' Larigot	16' Posaune
1' Sifflet	8' Trompete
Scharf III-IV	4' Clairon
8' Dulcian	

* pipework incorporated from the former Hass organ of 1845

**Evangelische Stadtkirche
Bad Wimpfen, Germany**

Johann Adam Ehrlich, 1748

Hauptwerk

8' Principal
8' Groß Gedackt
8' Quintatöne
8' Viola de Gamba
4' Octav
4' Klein Gedackt
3' Quint
2' Super Oktav
Mixture IV-V
Cornet III

Pedal

16' Principal Baß
16' Sub Baß
8' Octav
4' Octav
4' Pardon Fleute
16' Posaunen Baß

Positiv (Hinterwerk)

8' Musikalisches Still Gedackt
4' Spitzflöte
4' Floete gedeckt
2' Octav
1½' Quint
Mixture III

**Stifskirche Grauhof,
Goslar, Lower Saxony**

Treutmann, 1737

Hauptwerk	Hinterwerk
16' Principal	8' Gedackt
16' Viola di gamba	8' Quintadena
8' Lieblich principal	4' Principal
8' Spitzflöte	4' Flöte traverse
8' Viola di gamba	2' Octava
6' Quinta	2' Waldtflöte
4' Octava	1½' Quinta
3' Nassat	Scharff III
Rauschpfeife III	8' Hautbois
Mixtur IV–V	
16' Trommet	Pedal
8' Trommet	16' Principal
	16' Soubbas
Oberwerk	12' Rohrflöte
8' Principal	8' Octava
8' Rohrflöte	4' Superoctava
4' Octava	Mixture IV
4' Spitzflöte	32' Gross Posaunenbass
3' Quinta	16' Posaunne
2' Superoctava	8' Trummet
Sesquialtera II	4' Schalney
Mixture V	
16' Fagott	
8' Vox humana	Tremulant

**Trinity College
Cambridge, England**

Trinity Chapel

Father Smith, 1694, 1706; Metzler, 1975

Hauptwerk

16' Principal*
8' Octave*
8' Hohlflöte
4' Octave*
4' Spitzflöte
2 $\frac{2}{3}$ ' Quinte*
2' Superoctave*
Sesquialter III
Cornett IV
Mixtur IV-V
8' Trompete
8' Vox Humana

Schwellwerk

8' Viola
8' Suavial
8' Rohrflöte
4' Principal
4' Gedacktlöte
2 $\frac{2}{3}$ ' Nasard
2' Doublette
1 $\frac{3}{5}$ ' Terz
Mixtur IV
16' Fagott
8' Trompete

Ruckpositiv

8' Principal*
8' Gedackt
4' Octave
4' Rohrflöte
2' Octave
2' Gemshorn
1 $\frac{1}{3}$ ' Larigot
Sesquialter II
Scharf III
8' Dulcian

Pedal

16' Principal*
16' Subbass
8' Octavbass
8' Bourdon
4' Octave
Mixtur V
16' Posaune
8' Trompete
4' Trompete

* Father Smith stops

Waalse Kerk
Amsterdam, Neatherlands

Langlez, 1680; Müller, 1734; Ahrend and Brunzema, 1965; van Eeken, 1993

Hoofdwerk

16' Prestant (1734)
8' Prestant (1734)
8' Roerfluit (1734)
8' Quintadeen (1734)
4' Octaaf (1734)
3' Quint (1734)
 Mixtuur IV-VI (1734)
16' Trompet (1734/1965)
8' Trompet (1734)
8' Vox Humana (1734)

Pedaal

16' Bourdon (1680)
8' Prestant (1680/1965)
6' Roerquint (1680)
4' Octaaf (1734)
2' Nachthoorn (1734)
16' Fagot (1734)
8' Trompet (1734)

Rugwerk

8' Prestant (1734)
8' Hopijp (1680)
4' Octaaf (1680)
3' Quint (1965)
2' Octaaf (1734)
1³/₅' Terts (1965)
 Mixtuur II-IV (1965)
 Scherp VI (1965/1993)

Three ventils

Pitch: one semitone above normal

Wind pressure: 84 mm

Temperament: Neidhardt

Washington National Cathedral
Washington, D.C.

Ernest Skinner and Sons, 1939; Aeolian-Skinner console, 1958, 1963–4
Joseph Whiteford, 1971–75; Rodgers Organ Company
with R.A. Dafer and Son, 1989

Great

16' Violon
16' Quintade
8' Prinzipal
8' Spitz Prinzipal
8' Waldflöte
8' Holz Bordun
8' Salicional
8' Violon
8' Erzähler
4' Oktav
4' Spitz Oktav
4' Koppel Flöte
2²/₃' Quinte
2' Super Oktav
2' Block Flöte
Terzzymbel VI–X
Mixtur IV–V
Klein Mixtur IV
Scharf IV
Sesquialtera II
16' Bombarde
8' Trompette en Chamade (*Solo*)
8' Tuba Mirabilis (*Solo*)
8' Posthorn
8' Trompette
4' Clairon
Zimbelstern

Choir

16' Gemshorn
8' Chimney Flute
8' Viola Pomposa
8' Viola Céleste
8'–4' Choeur des Violes V (*Sw.*)
8' Kleiner Erzähler II
4' Principal
4' Harmonic Flute
4' Fugara
2²/₃' Rohr Nasat
2' Hellflöte
1³/₅' Terz
Mixture III–IV
Glockenspiel II

16' Bassoon
8' Trompette en Chamade (*Solo*)
8' Posthorn (*Gt.*)
8' Tuba Mirabilis (*Solo*)
8' Trumpet
8' Cromorne
4' Regal
Sub Celesta
Celesta

Swell

16' Flûte Courte
8' Bourdon
8' Flûte à Fuseau
8' Flûte Céleste
8' Viole Céleste
8' Voix Céleste II
4' Octave
4' Flûte Traversière
2²/₃' Nasard
2' Octavin
1³/₅' Tierce
Petit Jeu IV
16' Posaune
8' 2ème Trompette
8' Hautbois
8' Cor d'Amour
4' 2ème Clairon

Sowerby Memorial Division

16' Violoncelle
8' Montre
8' Violoncelle Céleste II
4' Prestant
Plein Jeu V
Cymbale IV
16' Bombarde
8' Trompette
4' Clairon

continued

Washington National Cathedral, page 2 of 2

Swell String Division

- 8' Flûte d'Argent II
- 8'-4' Choeur des Violes V
- 8' Eolienne Céleste II
- 8' Voix Humaine

Solo

- 8' Diapason
- 8' Solo Flute
- 8' Cello
- 8' Cello Céleste
- 4' Orchestral Flute
- Terzzymbel VI-X (*Gt.*)
- Full Mixture VII
- 16' Posthorn
- 16' Bass Clarinet
- 8' Trompette en Chamade
- 8' Tuba Mirabilis
- 8' Posthorn
- 8' Trumpet
- 8' French Horn
- 8' Clarinet
- 8' English Horn
- 8' Flugel Horn
- 4' Clairon
- Chimes

Pedal

- 32' Subbass
- 32' Kontra Violon
- 16' Contre Basse
- 16' Principal
- 16' Bourdon
- 16' Violon (*Gt.*)
- 16' Violoncelle (*Sw.*)
- 16' Violoncelle Céleste (*Sw.*)
- 16' Gemshorn (*Ch.*)
- 16' Flûte Courte (*Sw.*)
- 10²/₃' Quinte
- 8' Octave
- 8' Spitzflöte
- 8' Gedackt
- 8' Violoncelle Céleste II (*Sw.*)
- 8' Flûte Courte (*Sw.*)
- 5¹/₃' Quinte
- 4' Choral Bass
- 4' Cor de Nuit
- 2' Fife

- Gross Kornett IV
- Rausch Quinte II
- Fourniture IV
- Acuta III

- 64' Bombarde Basse
- 32' Contre Bombarde
- 32' Contre Fagot
- 16' Ophicléide
- 16' Bombarde (*Sw.*)
- 16' Fagot
- 8' Trompette en Chamade
- (*Solo*)
- 8' Posthorn (*Gt.*)
- 8' Tuba Mirabilis (*Solo*)
- 8' Trompette
- 8' Bombarde (*Sw.*)
- 4' Clairon
- 2' Zink

Brustwerk (Gallery)

- 8' Spitz Prinzipal
- 4' Praestant
- 2²/₃' Koppel Nasat
- 2' Lieblich Prinzipal
- Mixtur IV-VI
- 8' Rankett

Positiv (Gallery)

- 8' Nason Gedackt
- 4' Rohrflöte
- 2' Nachthorn
- 1³/₅' Terz
- 1¹/₃' Larigot
- 1' Siffflöte
- Zymbel IV
- 4' Rankett (*Brustwerk*)

Gallery Pedal

- 16' Gedackt Bass
- 8' Oktav
- 8' Nason Gedackt (*Positiv*)
- 4' Super Oktav
- 4' Rohrflöte (*Positiv*)
- 16' Rankett (*Brustwerk*)
- 4' Rankett (*Brustwerk*)

**West End United Methodist Church
Nashville, Tennessee**

M.P. Möller, Opus 11616, 1983; additions by Luley and Associates, Inc.

<p style="text-align: center;">Great</p> <p>16' Violone 16' Pommer 8' Principal 8' Principal Celeste 8' Violone 8' Harmonic Flute 8' Gemshorn 8' Bourdon 5$\frac{1}{3}$' Violone Quint 4' Octave 4' Koppelflote 3$\frac{1}{5}$' Gross Terz 2' Super Octave 2' Waldflote Sesquialtera II Fourniture III–IV Scharf III–IV Cornet V 16' Kontra Trompete 16' Tuba Mirabilis 8' Trompete 8' Tuba Mirabilis 8' Trompette en Chamade Chimes Harp-Celesta Zimbelstern</p> <p style="text-align: center;">Swell</p> <p>16' Gedeckt 8' Geigen Principal 8' Gedeckt 8' Viole 8' Viole Celeste 8' Flute en Bois 8' Bois Celeste 4' Octave 4' Spitzflote 2$\frac{2}{3}$' Nazard 2' Principal 2' Gedeckt 1$\frac{3}{5}$' Tierce Plein Jeu III–IV Cymbale III–IV Jeu de Clochette II</p>	<p>16' Trompette Harmonique 16' Basson 16' Basse Clarinette 8' Trompette Harmonique 8' Trompette 8' Hautbois 8' Clarinette 8' Voix Humaine 4' Clairon Harmonique 4' Clairon</p> <p style="text-align: center;">Positif</p> <p>16' Quintaton 8' Principal 8' Viola Pomposa 8' Viola Celeste 8' Nachthorn 8' Spillflote Flute Celeste II 4' Principal 4' Blockflote 2' Octave 2' Hohlflote 1$\frac{1}{3}$' Quint 1' Klein Principal Mixture III–IV Zimbel III–IV 16' Dulzian 8' Krummhorn 8' Hautbois String Organ VI 16' Festival Trumpet 16' Tuba Mirabilis 16' Trompette en Chamade 8' Festival Trumpet 8' Tuba Mirabilis 8' Trompette en Chamade Chimes</p>
---	---

continued

West End United Methodist Church, page 2 of 2

Pedal		Gallery Swell
32' Contra Violone	32' Double Trombone	16' Gemshorn
32' Contre Bourdon	32' Contre Bombarde	8' Principal
16' Contrebasse	32' Contre Basson	8' Rohrflöte
16' Open Wood	16' Trombone	8' Gemshorn
16' Violone	16' Bombarde	8' Gemshorn Celeste
16' Contra Gamba	16' Kontra Trompete	4' Spitzprincipal
16' Bourdon	16' Basson	4' Rohrflöte
16' Quintaton	16' Dulzian	2 ² / ₃ ' Nazard
16' Pommer	16' Trompette Harmonique	2' Spitzoctave
16' Gedeckt	16' Tromba	2' Rohrflöte
10 ² / ₃ ' Quint	8' Trompette en Chamade	1 ¹ / ₃ ' Larigot
8' Principal	8' Trumpet	Plein Jeu III
8' Violone	8' Bombarde	16' Contre Trompette
8' Gamba	8' Trompette Harmonique	8' Trompette
8' Bourdon	8' Trompete	8' Trompette Majeure
8' Spitzflöte	8' Hautbois	8' Festival Trumpet
8' Gedeckt	4' Clairon	4' Clarion
6 ² / ₅ ' Gross Terz	4' Schalmee	
5 ¹ / ₃ ' Violone Quint	Chimes	
4' Octave	Gallery Great	Gallery Pedal
4' Cantus Flute	16' Bourdon	32' Resultant
4' Bourdon	8' Principal	16' Principal
2' Conical Flute	8' Bourdon	16' Bourdon
Cornet IV-V	8' Gemshorn	16' Gemshorn
Mixture IV-VI	4' Octave	8' Principal
Scharf IV	4' Koppelflöte	8' Gemshorn
	2' Super Octave	8' Rohrflöte
	2' Blockflöte	4' Choral Bass
	1' Siffelöte	4' Gedeckt
	Sesquialtera II	Mixture IV
	Mixture III-IV	32' Contre Trompette
	16' Trompette Harmonique	16' Contre Trompette
	16' Trompette en Chamade	8' Trompette
	8' Cromorne	4' Cromorne
	8' Trompette Harmonique	
	8' Tuba Mirabilis	Zimbelstern
	8' Trompette en Chamade	
	4' Clarion Harmonique	

Bibliography

- "Bach, Passacaglia in C Minor, organ." Amazon.com, Inc.
http://www.amazon.com/s/ref=nb_sb_noss?url=search-alias%3Daps&field-keywords=bach+passacaglia+and+fugue+in+c+minor%2C+organ (accessed February 7, 2012).
- Bach, Johann Sebastian. *Organ Works: Volume 7*. Comp. Dietrich Kilian. Revised ed. Germany: Bärenreiter, 1984.
- Bandura-Skoda, Eva, et al, ed. "Cadenza." In *Grove Music Online*. Web ed. Oxford University Press.
<http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/grove/music/43023?q=cadenza&search=quick&pos=1&start=1#firsthit> (accessed August 26, 2013).
- Bayley, Amanda, ed. *Recorded Music: Performance, Culture and Technology*. Cambridge, UK: Cambridge University Press, 2010.
- Berry, Wallace. *Music Structure and Performance*. New Haven, CT: Yale University Press, 1989.
- Bowen, Jose A. "Finding the Music in Musicology: Performance History and Musical Works." In *Rethinking Music*, ed. Nicholas Cook and Mark Everist, 424–451. New York: Oxford University Press, 1999.
- Cook, Nicholas. "Methods for Analyzing Recordings." In *The Cambridge Companion to Recorded Music*, ed. Nicholas Cook, Eric Clarke, Daniel Leech-Wilkinson, and John Cook, 221–245. Cambridge, UK: Cambridge University Press, 2009.
- Fabian, Dorottya. *Bach Performance Practice, 1945–1975: A Comprehensive Review of Sound Recordings and Literature*. Hampshire, UK: Ashgate Publishing, Limited, 2003.
- Farwood, Dean. "The High Priest of Bach is Still Controversial." Classical.net.
<http://www.classical.net/music/recs/reviews/farwood/anthonynewman.php> (accessed August 28, 2013).
- Faulkner, Quentin. *The Registration of J.S. Bach's Organ Works*. Colfax, NC: Wayne Leupold Editions, Inc., 2008.
- . *Historical Organ Techniques and Repertoire: An Historical Survey of Organ Performance Practices and Repertoire*. J.S. Bach: Basic Organ Works. Ed. Wayne Leupold. Volume II. Boston, MA: Wayne Leupold Editions, Inc., 1997.

- Hurford, Peter. *Making Music on the Organ*. Oxford, UK: Oxford University Press, 1988.
- Katz, Mark. *Capturing Sound: How Technology Has Changed Music*. Revised Edition ed. Berkley, CA: University of California Press, 2010.
- Kobayashi, Yoshitake. "The Variation Principle in J.S. Bach's Passacaglia in C Minor BWV 582." In *Bach Studies 2*, ed. Daniel R. Melamed. New York, NY: Cambridge University Press, 1995.
- Kreitner, Kenneth, et al. "Performing Practice, Western." In *Grove Music Online*. Web ed. Oxford University Press.
http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/grove/music/40272pg1?source=omo_gmo&q=Kreitner%2C+Kenneth&article_section=contributors&search=article&pos=3&start=1#firsthit
 (accessed August 26, 2013).
- Leech-Wilkinson, Daniel. *The Changing Sound of Music: Approaches to Studying Recorded Musical Performances 1.1*. London: Charm.
<http://www.charm.rhul.ac.uk/studies/chapters/intro.html> (accessed July 7, 2013).
- Leech-Wilkinson, Daniel. Recordings and Histories of Performance Style. In *The Cambridge Companion to Recorded Music*, ed. Nicholas Cook, Eric Clarke, Daniel Leech-Wilkinson, and John Rink, 246–262. Cambridge, UK: Cambridge University Press, 2009.
- London, Justin. "Rhythm." In *Grove Music Online*. Web ed. Oxford University Press.
<http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/grove/music/45963pg1#S45963.1> (accessed August 6, 2013).
- Meyer, Leonard. *Explaining Music*. Chicago: University of Chicago Press, 1973.
- Ohriner, Mitchell. "Durational Countours and Enacted Meaning in Recorded Performances of Chopin's Piano Music." Ph.D. Dissertation. Indiana University, 2011.
- Owen, Barbara. *The Registration of Baroque Organ Music*. Bloomington: Indiana University Press, 1997.
- Parrott, Andrew and Neal Peres Da Costa. "Performance Practice." In *The Oxford Companion to Music*. Web ed. Oxford University Press.
http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/opr/t114/e5090?q=Parrott&article_section=contributors&search=article&pos=1&start=1#firsthit
 (accessed August 26, 2013).

- Philip, Robert. *Early Recordings and Musical Style: Changing Tastes in Instrumental Performance 1900–1950*. Cambridge, UK: Cambridge University Press, 1992.
- Rink, John. *Musical Performance: A Guide to Understanding*. Cambridge, UK: Cambridge University Press, 2002.
- Ritchie, George H. and George B. Stauffer. *Organ Technique: Modern and Early*. New York: Oxford University Press, 2000.
- Scholes, Percy, et al. "Tempo." In *The Oxford Companion to Music*. Web ed. Oxford University Press.
http://www.oxfordmusiconline.com.ezproxy.lib.indiana.edu/subscriber/article/opr/t114/e6699?source=omo_t114&q=scholes%2C+percy&article_section=contributors&search=article&pos=30&start=26#firsthit (accessed July 23, 2013).
- Soderlund, Sandra. *Organ Technique: An Historical Approach*. Second Edition Chapel Hill, NC: Hinshaw Music, Inc., 1986.
- Stauffer, George B. and Earnest May, eds. *J.S. Bach as Organist*. Bloomington: Indiana University Press, 1986.
- Tarling, Judy. *The Weapons of Rhetoric: A Guide for Musicians and Audiences*. St. Albans, Hertfordshire, UK: Corda Music Publications, 2004.
- Williams, Peter. *The Organ Music of J.S. Bach*. Second ed. Cambridge, UK: Cambridge University Press, 2003.
- Wolff, Christoph. *The New Bach Reader: A Life of Johann Sebastian Bach in Letters and Documents*. New York and London: Norton, 1998.

Discography

- Bach: Complete works for organ, vol. 14.* 1994. Marie-Claire Alain. . Compact Disc.
- Bach, Johann Sebastian. 2012. *Bach complete organ works played on Silbermann organs, vol. 19.* Bernhard Klapprott. Aeolus. AE-10961. Compact Disc.
- . 2009. *Bach in the Back Bay.* Bálint Karosi. Dulcian Productions. CD D007. Compact Disc.
- . 2004. *J. S. Bach Organ Works, Volume 6: Youthful Brilliance.* George Ritchie. Raven Recordings. Oar-740. Compact Disc.
- . 2003. *Bach Organ Music, Vol. 3.* Albert Schweitzer. IMD Music Distribution LTD. ARPCD 0198. Compact Disc.
- . 2002. *J. S. Bach: Le musicien-poète.* Francois Ménissier. Éditions Hortus. Hortus 020 CF 41. Compact Disc.
- . 2002. *Tocatta & Fugue; Preludes & Fugues.* E. Power Biggs. Sony Music Entertainment. SBK 89955. Compact Disc.
- . 2001. *Organ Works, Vol. 6.* Jacques van Oortmerssen. Challenge Classics. LC 00950. Compact Disc.
- . 2000. *One of a Kind.* William Porter. Loft Recordings. LRCD 1025. Compact Disc.
- . 1999. *Masterworks by Bach.* Douglas Major. Gothic Records, Inc. G49104. Compact Disc.
- . 1999. *National Public Radio - Milestones of the Millennium: The Brook and the Wellspring.* Various Artists. Sony Music Entertainment, Inc. SMK 60990. Compact Disc.
- . 1998. *J. S. Bach: The Works for Organ, Vol. 9.* Kevin Bowyer. Nimbus Communications International, Limited. LC 5871. Compact Disc.
- . 1997. *Bach Organ Recital.* Karl Richter. Decca Record Company, Limited. 455-291-2. Compact Disc.
- . 1997. *Heavy Organ at Carnegie Hall: The Legendary 1973 Concert.* Virgil Fox. BMG Music. . Compact Disc.
- . 1997. *Toccatas & Fugues by Bach.* Joan Lippincott. Gothic. G 49093. Compact Disc.

- . 1996. *Bach at Lejansk*. Anthony Newman. Helicon Records, Ltd. . Compact Disc.
- . 1996. *Favorite Organ Works*. Anthony Newman. Sony Music Entertainment, Inc. QK 62385. Compact Disc.
- . 1996. *The Great Organ Works*. Wolfgang Rübsam. Naxos of America, Inc. LC 5537. Compact Disc.
- . 1992. *Bach: Organ Music, Vol. I*. Walter Kraft. The Vox Music Group, SPI Music, Inc. CDX 5059.
- . 1990. *The Organ Toccatas and Passacaglia*. Christopher Herrick. Hyperion Records Limited. CDA66434. Compact Disc.
- . 1990. *Piet Kee Plays Bach on the Müller Organ of St. Bavo, Haarlem*. Piet Kee. Chandos Records Ltd. EBTD 0510. Compact Disc.
- . 1984. *J. S. Bach: Toccata & Fugue*. Ton Koopman. Archiv Produktion. 447 292-2. Compact Disc.
- . 1980. *Bach: The Great Organ at Methuen*. Michael Murray. Telarc Internation, Corp. CD-80049. Compact Disc.
- . 1962. *Great Organ Works*. Helmut Walcha. Deutsche Grammophon. 453-065. Compact Disc.
- Bach, Johann Sebastian and Franz Liszt. 2005. *Ladegast Orgel: Dom zu Merseburg*. Michael Schönheit. Musikproduktion Dabringhaus und Grimm. MDG 906 1334-6. Compact Disc.
- Various Composers. 2010. *Die Jehmlich-Orgel in der Kreuzkirche, Dresden*. Holger Gehring. Des Verlages Klaus-Jürgen Kamprad. VKJK 1021. Compact Disc.
- . 2007. *Bravo Grande!* David Heller. Zarex Corporation. CD 7218. Compact Disc.
- . 2005. *The Art of Peter Hurford*. Peter Hurford. Decca Music Group Limited. LC 00171. Compact Disc.
- . 2005. *Baroque Organ Music at the Wagner Organ From 1741*. Per Fridtjov Bonsaksen. Challenge Records. CC 72146. Compact Disc.
- . 2005. *The Philadelphia Organbuilder*. Wesley Parrott and Matthew Glandorf. Raven Recordings. Oar-780A. Compact Disc.
- . 2004. *La Tradition de Saint-Sulpice*. Daniel Roth. IFO Records. ifo 00086. Compact Disc.

- . 2003. *First Recordings -Paris: 1936 & 1948*. André Marchal. Arbiter 135. Compact Disc.
- . 2003. *For Unto Us a Child is Born: Festive Organ Music*. Various Artists. Delta Entertainment Corporation. 14 599. Compact Disc.
- . 2003. *Organ Classics*. James Diaz. Delos International, Inc. DE 3325. Compact Disc.
- . 2003. *A Year of Grace: Music for the Liturgical Year*. Craig Cramer. Dulcian Productions. CD-D008. Compact Disc.
- . 2002. *Beiträge Süddeutschlands zur Orgelmusik - Einflüsse und Impulse*. Christoph Bossert. Organum Classics. Ogm 220057. Compact Disc.
- . 2000. *Cathedral Basilica of the Sacred Heart*. Alan Morrison. Gothic Records, Inc. G 49114. Compact Disc.
- . 2000. *Mighty Organs*. E. Power Biggs, Glenn Gould, Christian Muller, Anthony Newman, and Gustav Leonhardt. Sony Music Entertainment, Inc. A2 30680. Compact Disc.
- . 1995. *Salzburg: Die Domorgeln*. Zukriegel, Gerhard and Metzger, Heribert. Capriccio. LC 8748. Compact Disc.
- . 1991. *Four Masterworks for Organ*. Frederick Swann. Gothic Records, Inc. G 49049. Compact Disc.