From Gentle to Giant

Signs of a Continuing Tradition of Organ Building in Central and Southern Germany

1750-1850

by

Brandon Lee Burns

A Research Paper presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Musical Arts

Approved November 2019 by the
Graduate Supervisory Committee:

Kimberly Marshall, Co-Chair
Russell Ryan, Co-Chair
Catherine Saucier

ARIZONA STATE UNIVERSITY

December 2019

ABSTRACT

When one thinks of the great German Romantic organs of Ladegast, Walcker, Schulze, and Sauer, visions of the large colossus organs of the cathedrals of Merseburg, Schwerin, and Berlin come to mind. These instruments were rich in power but also in timbre and dynamic contrasts, able to crescendo from barely audible to thundering and back. On the other hand, their eighteenth-century predecessors in the Southern and Central German regions of Baden-Württemburg, Bavaria, Thuringia, and Saxony showed a softer side characterized by few reeds and mixtures, generally small size, and gentle voicing and winding. However, many of the traits found in these earlier instruments, including an abundance of 8' registers, a focus on color rather than contrapuntal clarity, tierce mixtures, and a relatively low proportion of mixtures and reeds to foundation stops are carried over to the early Romantic organs.

Especially interesting are the transitional instruments around the turn of the nineteenth century. The end of the eighteenth century and beginning of the nineteenth, the time between the death of J. S. Bach in 1750 and E. F. Walcker's construction of the Paulskirche organ in Frankfurt in 1833, often appears as a sort of "Dark Ages" for the organ in which little happened to advance the organ into the new century. Modern scholarship has largely overlooked these instruments. However, the Central and Southern German states were among the few areas that saw a continuation of organ building through the economic and political disaster resulting from the Napoleonic Wars, the

secularization of many institutions including the grand abbeys of Swabia, and a rapid change in musical aesthetic toward the symphonic and the virtuosic.

In this document, I examine organs of the Southern and Central German territories of Baden-Württemberg, Bavaria, Thuringia, and Saxony. I focus on organs that show development from the late Baroque to the early Romantic Period, culminating in the organs of Eberhard Friedrich Walcker in Baden-Württemberg and Friedrich Ladegast in Thuringia. These little-known transition instruments provide intriguing insight into the genesis of the famous German Romantic organs, giants in stature and sound.

ACKNOWLEDGMENTS

There are many individuals who have greatly contributed to this document and who made this research project possible. First, I would like to express my deepest gratitude to my doctoral committee members Kimberly Marshall, Russell Ryan, and Catherine Saucier for their feedback and suggestions and support throughout this project. I would also like to thank Christopher Stover, who also provided feedback and suggestions to me during the early stages of the research and writing process.

I would like to give special thanks to the following organists in Germany who allowed me to have access to their instruments and who provided me with research materials and insight, which I would not have been able to obtain from any other resource:

David Dehn, organist at the Evangelische Stadtkirche in Neuenstadt am Kocher, who also introduced me to the Mezler organ in the Evangelische Kirche in Bürg, and who spent a large part of his day showing me the organs and answering my questions about them.

Renate Lüdeking-Schreiber, the administrator for the Evangelische Stadtkirche in Bad Wimpfen, who allowed me several hours with the Ehrlich instrument and provided me with copies of various original documents from Rensch Orgelbau, who were responsible for restoring the Ehrlich instruments in both Bad Wimpfen and Neuenstadt am Kocher.

Alexander Eckhardt, who is leading the restoration team for the Schmahl organ at the Ludwigsburg Residence Palace, and who spent several hours allowing me access to both the Schmahl and Walcker organs there and answering my questions about them.

Ulrich Höflacher at the Abbey of Saints Peter and Paul at Weißenau for giving me time on the instrument, a tour through the organ, and for sharing his expertise on the organs of Johann Nepomuk Holzhey.

Pater Albert Knebel, prior of the Benedictine Abbey of Neresheim, for allowing me several hours of access to the organ there.

Jan Ernst, organist at Schwerin Cathedral, for allowing me to have several hours of time alone on the Ladegast organ there and for showing me the insides of the instrument.

Hans Christian Martin for allowing me access to the Hildebrandt organ of the Stadtkirche St. Wenzel.

Tom Anschütz, assistant organist in Waltershausen for access to the Trost organ, a tour of the instrument, for telling me about several other instruments in the area which will no doubt lead to future research projects, and for providing me with copies of several years of the *Thüringer Orgel Journal*, which were extremely helpful.

All of these individuals were so welcoming and generous with their time, even with their undoubtedly busy schedules; for that I am grateful.

I also want to thank Carole Terry and the students of the University of Washington for allowing me to go along with them on their study tour of organs in the area around Leipzig in Thuringia. With them, I was able to visit and play the Ladegast organs of Merseburg Cathedral and the Petrikirche in Chemnitz and the Sauer organ of the Michaeliskirche in Leipzig. I was also able to hear the Sauer organ of the Thomaskirche in Leipzig. Thanks to Carole Terry for wonderful conversations about her experiences with the Romantic organs of Germany, especially in Schwerin, and for offering valuable advice regarding this document. Thanks to my good friend Andrew Koch, who is also one of the organ students at the University of Washington, for his note-taking and recording of several of the instruments we visited.

Finally, thanks to those who have offered their advice and support through the writing and research process and who have helped me in various ways, including Craig Cramer, Florence Jowers, Sharon Hansen, David Rachor, and Jeffrey Anthony.

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

GLOSSARY OF TERMS

Boot. The bottom portion of a reed pipe which contains the shallot and tongue. These may be made of either wood or metal, and in some cases reed blocks are used instead of boots. A reed block is a long block of wood into which several holes are bored, each of which acts as an individual reed boot.

Cornet. Either a stop or set of stops consisting usually of flutes at 8', 4', 2-2/3', 2', and 1-3/5', which when combined imitate the timbre of a horn-like instrument. In some German Romantic instruments, the ranks of the cornet may be principals instead of flutes.

Cut-up. The height of the mouth of the pipe in proportion to its width.

Flue pipe. A pipe that makes sound by sending air through a thin slot, called a flue, against the upper lip of its mouth. These work much like whistles or modern flutes.

Flute. A wide-scale pipe with a high cut-up and a hollow tone.

Hybrid. A pipe that has characteristics of both a string and flute stop.

Languid. The plate in a flue pipe that blocks all but a thin slot at the front of the pipe, the flue, through which the air is blown.

Mixture. A set of several ranks of pipes, usually at high pitch, that play various pitches in the overtone series, mostly sounding at the octave and at the fifth, but sometimes including other pitches. They usually lend a sparkling or bright character to the registration.

Mutation. A pipe that plays a tone in the overtone series other than at octave or unison pitch. These are denoted with a fraction in their pipe length, such as 10-2/3 or 1-3/5.

Principal. A pipe of medium scale that is roughly halfway between a flute and a string. This is the primary sound of the organ.

Quint. A mutation that sounds a fifth above the octave of the fundamental pitch. The term used on its own usually refers to a principal pipe. When it is present as a flute rank, the terms quint-flute or nazard are usually used.

Quintadena. A hybrid with a low cut-up and a wide scale which possesses the resonance of a flute with the incisive attack and speech of a string. It is so named for the high prevalence in its sound of the the third harmonic, an octave and a fifth above the fundamental pitch.

Reed pipe. A type of pipe that makes sound when a brass reed beats against a hollow brass tube, the shallot, similar to the way a clarinet reed produces sound. The reed vibrations are usually fed through a resonator that determines the final sound quality. Some reeds pipes are free reeds, where the reed merely vibrates freely to produce sound instead of beating against the shallot, much like the sound production in harmonicas or accordions.

Scale. The proportion of a pipe's length to its diameter.

Shallot. The hollow tube, usually made of brass, against which the brass reed beats. The shallot is analogous to the mouthpiece of a woodwind instrument to which a reed is attached.

String. A narrow-scale pipe with a low cut-up and a harmonically rich tone. These pipes are meant to imitate bowed stringed instruments.

Tierce. A mutation that sounds a third above the octave, usually resulting in a horn-like quality in the sound of the organ when added. It contributes the defining characteristic of the Cornet registration. The term may indicate any pipe playing that pitch, but usually refers to a wide-scale flute. Mixtures may contain tierce ranks of principal scale.

Ventil. A valve operated from the console which closes off the wind supply to either all or part of a windchest in order to facilitate quick registration changes.

Windchest. The pressurized box that controls the admission of air to organ pipes. The pipes usually sit directly on top of the windchest unless they are in the façade or are too large to fit.

CHAPTER 1

INTRODUCTION

When one thinks of the German Romantic organ, visions of the mighty cathedral instruments of Ladegast in Schwerin, Walcker in Ulm, and Sauer in Berlin, and the dramatic and virtuosic music of the nineteenth-century composers Franz Liszt, Julius Reubke, Gustav Merkel, and Max Reger come to mind. These organs are known for their thundering power, full-bodied sound, and sheer massive size. On the other hand, a style of organ building existed in the regions of what is now Central and Southern Germany during the eighteenth-century which produced small and gentle instruments known for their sweet sound and small size. At first, one might think there is little linking the two styles of organ building and little influence the South and Central German organ schools would have had on the later nineteenth-century instruments, but that would be an over-simplified view. In reality, there is much from this under-researched area of organ history that would later inform the Romantic builders.

The transitional period from the end of the eighteenth century through the beginning of the nineteenth, the time between the death of J. S. Bach in 1750 and E. F. Walcker's construction of the Paulskirche organ in Frankfurt in 1833, often appears as a sort of "Dark Ages" for the organ in which little happened to advance the organ into the new century. There is relatively little scholarship available in English on anything organ-related during this time period, and the little that does exist tends to treat this period as unimportant or even as an anomaly. For instance, the following assessment is given by

eminent organ scholars Barbara Owen and Peter Williams in their article on the organ for *Oxford Music*:

> Quite apart from the Napoleonic disruption, the organ historian must feel that the multiplied colour stops of St Florian and Oliwa monastic churches (1770s), the reeds of Saint-Maximin-la-Sainte-Baume, Poitiers and Toledo, and the choruses of Hamburg and Rostock parish churches, all pushed the classical organ as far as it would go. A total rethinking was necessary early in the next century.[1]

Poul-Gerhard Andersen devotes little room in his book *Organ Building and Design* to this transitional period, stating, "Any description of organ building during the late eighteenth century, a transitional period where old and new were wrestling and blending, would be a very complicated undertaking."[2] This is an interesting statement considering his otherwise thorough treatment of the history of organ building before and after this point.

One possible reason scholarship seems to have largely overlooked this transitional period is the relative lack of music composed for the organ during this time and its relative lack of quality as traditionally defined by the earlier contrapuntal styles of the seventeenth and eighteenth centuries. Between Johann Ludwig Krebs and Felix Mendelssohn, with the possible exception of the works of Johann Christian Heinrich Rinck, there is little music written for the organ that has stayed in the repertoire or is known and performed by contemporary organists. Graham Barber begins his chapter in the *Cambridge Companion to the Organ*, "German organ music after 1800," by noting

---

[1] Barbara Owen, Peter Williams, and Stephen Bicknell, "Organ," *Grove Music Online,* 2001, accessed November 10, 2019. https://www-oxfordmusiconline-com.ezproxy1.lib.asu.edu/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000044010.

[2] Poul-Gerhard Andersen, *Organ Building and Design*, trans. Joanne Curnutt (New York: Oxford University, 1969), 179.

the perceived lack of quality of German organ music during this period, though he identifies Rinck and his student Adolf Friedrich Hesse as counter-examples.[3]

In this document, I will present evidence to show that there is a line of development in organ construction and design during the transitional period between the Baroque and Romantic Periods in the Central and Southern German regions. I will begin by addressing the characteristics of late Baroque organs in these regions, specifically those of Baden-Württemberg, Bavaria, Thuringia, and Saxony, that lay the foundation for the creation of a symphonic organ type, which is typical of the nineteenth century. I will then explore the transitional instruments, positioning them within a broader historical context. Finally, I will discuss the early Romantic instruments built by two of the most important builders during this period, Friedrich Ladegast (1818-1905) from Thuringia and Eberhard Friedrich Walcker (1794-1872) from Baden-Württemberg.

This broad subject has elicited relatively little scholarly discussion, so I will focus on the organs of the transitional period, about which the least is generally known. Currently, there is little written in English about the organs from this transitional period, and most of the information available in German comes from books and journals based on regional- and time period-specific organs. For instance, large amounts of information are published in regional organ histories such as Fischer and Wohnhaas' *Lexikon süddeutscher Orgelbauer*, the series of organ books published by Kamprad including

---

[3] Graham Barber, "German organ music after 1800," in Nicholas Thistlethwaite and Geoffrey Webber, eds., *The Cambridge Companion to the Organ* (New York: Cambridge University, 1998), 250-251. A thorough discussion of organ music during this period transcends the scope of this paper.

Orgeln in Sachsen-Anhalt - Ein Reiseführer and *Orgeln in Thüringen - Ein Reiseführer*, Helmut Völkl's *Orgeln in Württemberg*, Georg Brenninger's *Orgeln in Schwaben*, and Fischer and Wohnhaas' *Orgeldenkmale in Mittelfranken*.

Scholarship about Thuringian organs before 1750 is ample, as these instruments relate to the music of Johann Sebastian Bach, but little has been done on later Thuringian instruments.[4] Several articles from the *Thüringer Orgel Journal*, an annual publication of the local historical society, the Verein Thüringer Orgelsommer, include information about these organs, studies of which are nearly nonexistent outside of the region of Thuringia. There have also been several publications on Ladegast's and Walcker's early Romantic organs, but these are mostly in German. In all of these cases, the organs are treated mostly in isolation. There are few sources which connect the different regional organ building schools or draw the connection between the eighteenth- and nineteenth-century instruments. In the beginning of his book *Romantischer Orgelbau in Deutschland*, Wolfgang Metzler compares the mid-eighteenth-century organs of Joseph Gabler in Swabia (now part of Baden-Württemberg) and the organs of his contemporary, Michael Engler, in Silesia (now part of western Poland). Metzler lists them both as early precursors to the German Romantic style, but he does not elaborate on the transitional instruments or the connections between them and the later nineteenth-century organs.

---

[4] Two examples of this sort of Bach-focused scholarship are Christoph Wolff and Markus Zepf, *The Organs of J. S. Bach: A Handbook*, trans. Lynn Edwards Butler (Chicago: University of Illinois, 2012), and Lynn Edwards, "The Thuringian Organ 1702-1720: ein wohlgerathenes gravitätisches Werk," *The Organ Yearbook* 22 (1991): 119-150.

Organs from the late Baroque and early Romantic periods help to provide a complete picture of the continuity of practice and to reveal salient areas of innovation. From the late Baroque, I will include examples of Thuringian organ building and organs from Baden-Württemberg, showing their differences and demonstrating ways that they influenced the style adopted by early Romantic builders. Eberhard Friedrich Walcker and Friedrich Ladegast were two of the most important builders for developing and disseminating the German Romantic organ building style. Walcker, from Ludwigsburg, and Ladegast, from Weißenfels, effectively present both the differences and similarities of approach in the nineteenth-century Southern and Central German organ building schools. They are also important because they taught many of the other builders from this time.

This study is primarily organological, based upon examination of the instruments themselves. Interaction with the original instruments is the surest and most reliable way to obtain information about their function, use, and sound. Where organs have been altered over time, I will make distinctions between original parts and later replacements or alterations, some of which may have occurred within the historical framework of the original builder. I endeavor to provide a balance between comprehensive and specialized evaluation, including a variety of instruments to create a more comprehensive scope while also providing detailed analysis for each organ.

Much of the material in this document comes from my personal experience playing and interacting with the historical organs, listed in the References section of this document under “Primary Sources: Organs.” However, other landmark instruments that are important to this discussion no longer exist, were irretrievably altered, or are

inaccessible. I generally limit my comments to those instruments which I have visited and played, supplementing this information with documentation from other organs to provide a more complete overview. Information regarding each organ's specifications including accessories such as couplers, percussion stops, and registration aids are provided in Appendix A to save space within the document and to give a convenient database where this information can be accessed and compared easily. Within the document, I retain the original spellings of the registers of these organs and give clarification where needed to avoid any possible mistakes which could occur in updating the spellings, such as inadvertently assigning a register the incorrect modern name. The figures in this document showing the mechanical workings of the organs are my original drawings.

The instruments in this study vary in size, revealing different aspects of their builders. Small organs must be versatile and contain only the essentials, so their specifications show what is most important to the builder, i.e. the necessary features required for full function within a particular style. Large organs, on the other hand, show what the builder includes with fewer limitations of space or money. In other words, the omission of certain features from a large instrument indicates their relative unimportance, while the inclusion of features on a small instrument indicates their importance.

The organs are housed in churches of different denominations, with different musical goals that could result in differences of construction. Nevertheless, despite the institutional differences, there is more consistency than one might at first expect. It can be tempting to generalize that organs built in the Northern areas were largely inspired by Protestant practice and those in the Southern regions by the Catholic liturgy. Yet, the

reality is more nuanced and must take into account the subtleties of religious practice between different regions, especially the prominence of Protestant churches in Baden-Württemberg, and the similarities between organs of different denominations. Differences in the individual instruments often have more to do with regional style and financial constraints than particular preferences between denominations, though the influences of different churches are still present.

One difficulty in relying primarily on the organs themselves for information is the lack of those still in mostly original condition. There are many instruments from this time in small villages and towns throughout the Germanic regions, but many are in poor repair or have had such significant alterations that discerning the original sounds and playing characteristics is nearly impossible without reliable documentation.

The twentieth century unfortunately saw the replacement, alteration, or complete destruction of many examples of historical organ building. Changing aesthetics led many institutions to pay for improvements or upgrades to their instruments, sometimes even replacing them outright. The view of preserving historical objects is relatively modern; prosperous churches often replaced their organs before they were even a century old. Therefore, many instruments that survived did so because they were in economically depressed areas or small villages that could not afford to alter the organs. As a result though, these instruments are often in need of restoration and may be unplayable.

The ravages of both World Wars took their toll on organs throughout Europe. Not only were organs lost in churches that were bombed or ransacked, but the metal from the lead and tin pipes was often melted down for use in artillery. Some organs were saved

through the efforts of the local citizens who refused to forfeit their instruments for the war effort, but many were not so fortunate. It is extremely rare to find an historic instrument in Germany with its original façade pipes, the easiest pipes to access for the war effort and, because of their exposed position, the most susceptible to damage. Several of the organs described here lost their façade pipes this way; they were later recreated according to historic models or what is known of the originals.

Of great import to the removal and alteration of nineteenth- and early twentieth-century organs was the Orgelbewegung (Organ Revival), a movement that stimulated the Neo-Baroque aesthetic in America. Revivalists sought to replace the symphonic aesthetic of nineteenth-century organs with the clearer and brighter sound of North German Baroque organs. They claimed that this aesthetic was more suited to leading congregational singing. The movements were inspired by the presence of high mixtures and reeds in the North German and Dutch instruments of the early Baroque, but the Organ Reforms of both Europe and the US did not recreate the timbres of historical instruments so much as react against the low, thick sounds of late-Romantic organs.[5] This unfortunately led to the alteration and demolition of many nineteenth-century Germanic instruments, organs that would have given valuable insight into the style and sound aesthetic of that time.

In addition to this organological approach, I pursue an historiographical study, assessing modern scholarship about these instruments and its role in creating

---

[5] Peter Williams, *A New History of the Organ: From the Greeks to the Present Day,* (Bloomington, IN: Indiana University, 1980), 192-207.

contemporary perceptions of the transition organ. I will emphasize those organs and builders of relevance to Anglo/American culture to make this information more accessible.[6] The study of the instruments of the Southern and Central German provinces, especially those of Thuringia, Bavaria, Saxony, and Baden-Württemberg, is important for several reasons. First, the development of organ building in these regions provides a nearly unbroken link between the instruments of the late Baroque and early Romantic periods. Second, these organs possessed unique characteristics, different from their counterparts in Northern Germany and the Netherlands, that in some cases enabled a more symphonic sound to be easily developed and that in other cases were passed on relatively unchanged to their descendants in the nineteenth century. Finally, most of the organ builders in the Germanic lands during the early nineteenth century and even well into the Romantic Period were located in what is now Central and Southern Germany. In addition to E. F. Walcker and Friedrich Ladegast, examples include the Schulze family, Andreas Laukhuff, Carl Gottlob Weigele, Carl August Buchholz, and Adolf Reubke. Two theorists and composers important in the development of the Romantic organ building style are also from this region: Abbott Georg Vogler from Würzburg and Johann Gottlob Töpfer from Weimar.

Many of these transitional instruments in these areas are overlooked by modern scholarship for several reasons. The most obvious is the lack of surviving repertoire for them. Much of the music from this period is composed in the Rococo style, often

---

[6] Wolfgang Metzler, *Romantischer Orgelbau in Deutschland* (Ludwigsburg, Germany: E. F. Walcker and Cie., 1965), 12-18.

pianistic and simple in form, typical for its time. However, this music is often ill-suited for the organ, which is more effective at presenting contrapuntal textures without gradual changes in timbre and dynamics. In addition, little was being composed or commissioned for the organ during this time because of the economic crisis wrought by the French Revolution and Napoleonic Wars. Church music in the South German provinces, a heavily Catholic area, often centered around improvisation, which had a large impact on the organ building, but left no tangible records with which to recreate the music.

A second reason these organs are often ignored is that they are generally small, lacking the power and brilliance of their northern neighbors. However, many of the same design factors that led to their diminutive size and gentle sound became important in the development of the symphonic sound of the Romantic organs, some of which reached monstrously large size and presented rich thundering sounds on full organ. The larger of the transitional instruments are in some cases well-known but often not well-understood within their historical and regional contexts. Even these large instruments present a relatively gentle sound on full organ.

A study of these organs and their connection with early nineteenth-century instruments leads to a more nuanced view of the German Romantic style. Even into the late nineteenth century, the German instruments retained a capacity for quiet and gentle registrations often using registers closely modeled after similar registers in South and Central German instruments, especially the string stops and undulating ranks. The Romantic builders retained many construction techniques and even aspects of the tonal design of the Central and South German instruments. Too often, these genres are

presented as totally separate, an unfortunate result of efforts to understand history in terms of boxes artificially created around time periods and regions. The reality is far more nuanced, and connections between these seemingly distinct temporal periods become more apparent under closer examination. Unfortunately, modern performers often place the German Romantic organs in the same category as their French contemporaries built by Aristide Cavaillé-Coll.

The German instruments are overshadowed in scholarship as well by their French counterparts; when they are discussed, the organs of Cavaillé-Coll are often used for comparison. One instance can be found in Michał Szostak's article for *The Organ* "Romantic Tendencies in 19th-Century Organ Building in Europe," in which he quotes Cavaillé-Coll's somewhat negative assessment of Walcker's organ for the Paulskirche in Frankfurt:

> It is worth quoting the conclusions of Cavaillé-Coll from the inspection of Walcker's organ in Paulskirche, which he made on October 10, 1844: "This morning I watched the famous organ of St. Paul. It is very beautiful, but like Germany, it is also cool. The principal stops are majestic, but the reeds are narrow, the stops are weak and the plenum somewhat timid. Bellows have lack of strength, which makes the instrument sound boring and warm…" Similar conclusions about good principals and mixtures, but weak reed stops in German Romantic organs, were noted by Guilmant.[7]

Szostak gives no reasons for why Cavaillé-Coll may have said what he did, and there are several, but instead uses this assessment within his description of the German Romantic

[7] Michał Szostak, "Romantic Tendencies in 19th-century Organ Building in Europe." *The Organ* 97, no. 385 (2018): 16.

organ.[8] Assessing the German organs independently of Cavaillé-Coll, on the other hand, shows that the German Romantic organs offer a rich variety of approaches to the Romantic musical aesthetic as it relates to organ music. Viewing them as an individual type of instrument within their own tradition shows a technically and tonally well-developed instrument type strongly grounded in a well-established and revered musical tradition that is also progressive and inventive.

There is a vital international significance in better understanding the German Romantic organ. Many nineteenth-century American composers and performers, including John Knowles Paine, George Whitefield Chadwick, Dudley Buck, and Horatio Parker, received much of their education in organ from German masters and would have studied, at least in part, on German Romantic instruments.[9] A more comprehensive view of these organs contributes greatly to understanding American music. The German Romantic style also contributed to nineteenth-century approaches in English organ building, notably inspired by Edmund Schulze from the Schulze family of organ builders in Paulinzella near Jena, Thuringia.[10]

---

[8] This particular quote by Cavaillé-Coll will also be discussed in full in Chapter 2, where I will explain what this assessment meant in the context of French versus German approaches to the Romantic organ and in connection with Cavaillé-Coll's competition with E. F. Walcker.

[9] Orpha Ochse, *The History of the Organ in the United States,* (Bloomington, IN: Indiana University 1988), 199.

[10] Brian Hughes, *The Schulze Dynasty: Organ Builders 1688-1880,* (East Sussex, UK: Musical Opinion, Ltd., 2006), 29-39.

Before discussing the transitional South and Central German organs, I will provide information on the mature style of the German Romantic organ. It is important to understand both what preceded and succeeded the transitional instruments of the late eighteenth and early nineteenth centuries. Plenty of information is available about eighteenth-century German Baroque organ building, a style well understood by most organists worldwide, but the mature German Romantic aesthetic to which the transitional organs led needs further clarification.

CHAPTER 2

OVERVIEW OF THE GERMAN ROMANTIC ORGAN

Variation in style between the German Romantic builders makes it difficult to define what constitutes a German Romantic instrument. By contrast, the essentials of French Romantic style are easy to determine since most of these instruments were designed and built by one person, Aristide Cavaillé-Coll (1811-1899). This led to a codified school of organ building. On the other hand, until the German Revolutions of 1848-1850, there was no unified German state, and organ building differed greatly between territories in the German lands. Even after that point there was still strong independence between regions until 1871.[11] In addition, the adoption of various technological improvements, or the decision not to adopt them, varied between builders.

However, some defining characteristics unite German Romantic organs. First, these instruments had more stable wind systems and generally higher pressure than their predecessors. Second, they had a largely symphonic design, evoking the sounds of the nineteenth-century orchestra, both in direct imitation of the instruments themselves and in imitating the structural makeup of the orchestra. Third, the German Romantic organs could create rapid and smooth changes of dynamics and color.

The wind supply of the early Romantic instruments was the ubiquitous wedge bellows used by nearly every organ up to that point. Wedge bellows always came in groups of two or more per organ, since there had to be a bellows to take over while one

---

[11] Mary Fulbrook, *A Concise History of Germany,* 2nd ed., (Cambridge, UK: Cambridge University, 2004), 116-128.

was being inflated by the calcant. The wedge bellows both pump air into the organ and regulate the pressure with weights placed on top of them. Wedge bellows create the characteristic flexible wind of pre-Romantic instruments, an effect which allows subtle crescendos and decrescendos affected by the touch of the player. They can also result in "gulping," an effect where a large demand for air caused by playing full chords on full organ makes the bellows rapidly deflate until they catch up to the stored air in the system, causing a shock wave to rebound through the wind trunks. This shock wave reaches the windchests and temporarily disturbs the pressure, causing a gulping sound or shaky effect.[12]

Generally, Romantic builders developed systems to stabilize the wind pressure to avoid this effect, which would inevitably occur whenever thick chords were played in the bass, register, especially in rapid repetition, or if a large number of stops at low pitch were employed. One simple solution was to raise the wind pressure; higher pressures create more stability in the wind system.[13] The early organs of Ladegast simply relied on higher pressures and more bellows to steady the wind. Other builders sought more inventive solutions.

---

[12] Andersen, 100. A guide for examining organs attributed to Gottfried Silbermann is included in Wolff, 149-153. This guide address wind instability and proper bellows construction. The shaking effect is also discussed by J. S. Bach in his examination of an organ in Halle in 1716, included in Wolff, 143.

[13] Edwards, 135. Edwards refers to both Andreas Werckmeister and J. S. Bach's recommendations that sufficient wind pressure will remedy shakiness in the sound and prevent the instrument from sounding, in Werckmeister's words, "sleepy and lazy."

E. F. Walcker employed on many organs the Kastenbalg, or box bellows, a device consisting of a weighted box fitted snugly within another box that pressed the air in an even manner, avoiding the uneven distribution of pressure in the wedge bellows system. Wedge bellows open from one side only and fold out along a single hinge, creating a wedge shape when opened. This means the end farthest from the wind trunk moves quicker and further than the end of the bellows closer to the wind trunk, creating an uneven distribution of pressure. Box bellows solved this issue, but the tight fit required by the boxes, along with their wooden construction, made them very susceptible to changes in humidity and temperature and somewhat unreliable as a result.[14] Cavaillé-Coll adopted a system of parallel-rise bellows as a reservoir, which solved both problems and created a stable wind system. Both the box bellows and parallel-rise bellows functioned as reservoirs that were fed by the traditional wedge bellows.[15] The wedge bellows were pumped to inflate the reservoirs, which regulated and stabilized the pressure. (See Figure 2.1 for details of the bellows types.) By the time of Wilhelm Sauer's late nineteenth-century instruments, the parallel-rise bellows reservoir had become commonplace, and electric motors were being introduced to supply the wind.

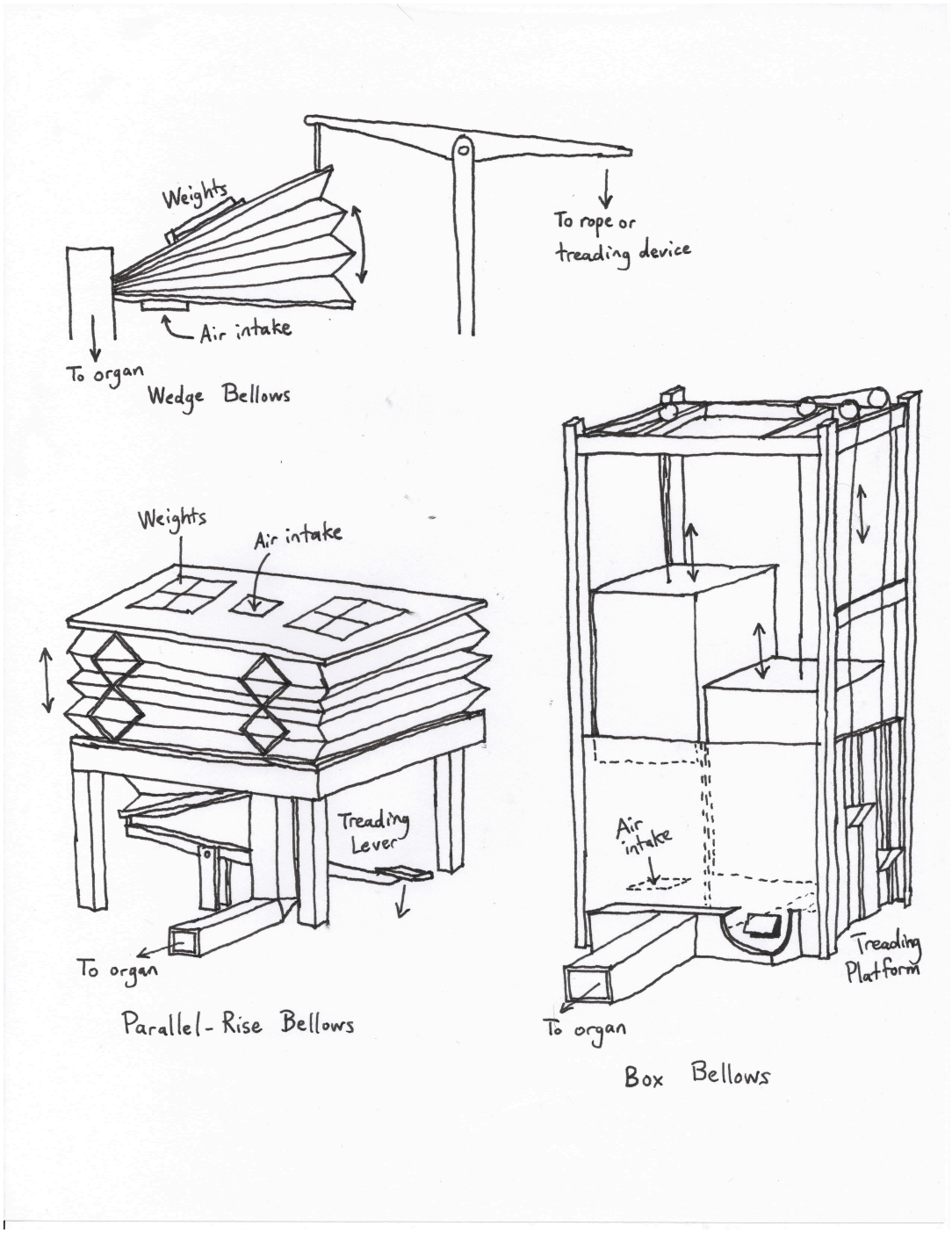
---

[14] Scot L. Huntington, "Boston's Great(est) Organ." *The Tracker - Journal of the Organ Historical Society* 50, no. 3-4 (2006): 75, accessed August 25, 2019, http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/198905335?accountid=4485.

[15] Hermann J. Busch and Matthias Geuting, eds. *Lexikon der Orgel,* (Laaber, Germany: Laaber-Verlag, 2007), 76. The parallel-rise bellows is first ascribed to Englishman Alexander Cumming in 1762. The Danish builder Jürgen Marcussen developed the box bellows in 1819.

Figure 2.1

Types of Bellows Used in Nineteenth-Century Organs[16]



[16] Hand drawing by the author.

More stability in the wind allowed the organs to develop a more effective symphonic design. In the Baroque Period, most organs still retained a non-imitative principal chorus as their core sound, a core supplemented by imitative stops to provide color. Romantic instruments, on the other hand, included more stops to imitate the sounds of the orchestra, such as the transverse flute, cello, ophicleide, clarinet, bassoon, oboe, and serpent. In addition, the organ functioned more like an orchestra than it ever had before. The Romantic organ contained a large number of flue stops at 8' pitch, including supplemental stops at 16' and 4' pitch, reflecting the string foundation of the orchestra. The woodwinds were represented by several specialized reed stops and flute stops, many of which were included in the uppermost manual, a division sometimes enclosed in a swell box to allow a wider range of dynamics. Select reed stops, augmented by tierce-containing mixtures and cornets added the brilliance of the brass section to the full ensemble.

Like an orchestra, the German Romantic organ relied on its "string" section for its foundation. In the organ, this was represented by the plethora of flue principle, flute, and string registers including undulating stops, overblowing stops, and stops of both wood and metal. There are relatively few reed ranks in comparison to the flue ranks, especially when compared with Cavaillé-Coll's instruments, and the reeds are much less forceful and bright; they often lend color as in the woodwind section rather than power as in the

brass section. French reeds, based on the models of the French Classical organs, are by contrast much more fiery and powerful.[17]

This difference offers an explanation for why Cavaillé-Coll assessed Walcker's reeds in the Frankfurt instrument as thin and the wind supply as weak. In a private letter to his father—also an organ builder—after visiting Walcker's organ in Frankfurt's Paulskirche in 1844, he wrote of "leanness in the reeds" and that "the lungs lack strength."[18] Cavaillé-Coll also used divided windchests and parallel-rise bellows, both of which increased wind stability. This also enabled him to have a higher wind pressure in the treble than in the bass.[19] The French Romantic instruments were thus more able to emphasize melodic lines than the German instruments, in which the sound of the bass and tenor registers was more prominent.

---

[17] Williams, 107.

[18] Paul Peeters, "Walcker and Cavaillé-Coll: A Franco-German Competition," in Kerala J. Snyder, ed., *The Organ as a Mirror of Its Time: North European Reflections: 1610-2000,* (New York: Oxford University, 2002), 250. The entire quote from Cavaillé-Coll's letter as given in Peeter:

"This morning I saw the famous organ of St. Paul's Church. It is very beautiful, but it is always cold, like a German. There is majesty in its foundation stops, leanness in the reeds, softness in the solo stops, a bit of hesitation in the ensemble; the lungs lack strength: it is because of this that the musical effects of the instrument are so indifferent and lukewarm.

75 stops, three manuals, two pedal keyboards; all this impresses by its number. But, in the same way that a French soldier is equal in value to five soldiers of other nations, an organ with 15 stops at different pressures offers more power and more nuances in the sound effects than this immense instrument. Nevertheless, there are good things, but the lungs are weak; it is like a fine man suffering from tuberculosis."

[19] Hans Klotz and Kurt Lueders, "Cavaillé-Coll, Aristide," *Grove Music Online,* 2001, accessed October 2, 2019, https://www-oxfordmusiconline-com.ezproxy1.lib.asu.edu/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000005199.

However, Cavaillé-Coll clearly admired Walcker's organs and incorporated some features of the German Romantic instruments into his own, including the German *volles Werk* (full organ) style of registration, combining reeds and mixtures together in the plenum. Until Cavaillé-Coll's separation of the windchest into Anches and Fonds divisions, the French Classical windchests were unable to effectively supply wind to allow stable tuning of the mixtures with the cornet and reeds. This led to the separate Plein Jeu (principal chorus with added 16' and 8' stopped flutes) and Grand Jeu (reed chorus topped by cornet) registration schemes in French Classical organ literature. Cavaillé-Coll's admiration for Walcker, certainly a competitive spirit, may have propelled him to build exactly one hundred stops on his organ at Saint-Sulpice in Paris, the construction of which began the year after Walcker completed his one-hundred-stop instrument for Ulm Cathedral.[20]

German Romantic instruments were often larger in number of stops and pipes than comparable organs of the French Romantic tradition. One can easily see this in a comparison of two proposals—one by Walcker and one by Cavaillé-Coll—for a new instrument in the Cathedral of Antwerp. Cavaillé-Coll's proposal contained seventy-five stops while Walcker's contained one hundred, a number which the committee in Antwerp deemed too high.[21] The German Romantic instruments had a larger number and variety of colors, especially in the flue ranks, many of which were made from wood instead of

---

[20] Peeters, 248. There are only ninety-eight stops on the Walcker instrument if one leaves out the two stops on Manual III that do not control any ranks of pipes.

[21] Ibid., 254-255.

metal.[22] These organs, enabled by the large number of stops of different colors, could create smooth crescendos from barely audible to thundering and back again seamlessly. French Romantic organs instead achieved a crescendo in more distinct stages, engaging ventils to add and take off the reeds and upperwork (les Anches) from each division. The German Romantic organs enabled a smooth change in dynamics and often had built-in crescendo mechanisms.

In traditional organ building, there is no way to control the dynamics of individual pipes without shading the pipes within some sort of enclosure. The swell box with shutters controlled by a balanced shoe, referred to in Germany as the Jalousie-Schweller, was not common on early Romantic instruments, but it became commonplace in the late nineteenth century. However, in contrast to the now standard way of constructing expression shoes, the swell shoes on many of these later instruments operate in the opposite direction so that the shoe tilts down to open the box and the shoe tilts upward to close the box.[23] One way to enable expression with individual ranks of pipes without the use of a swell box is the free reed.

Free reeds were commonly used on German Romantic instruments and had the benefit of dynamic control, allowing expression enabled by either pushing the keys themselves down further to achieve a louder sound or by moving an expression pedal that admitted more air to the rank of free reeds. In some cases these free reeds had resonators

---

[22] Hughes, 18-19. Johann Friedrich Schulze, in particular, was known for his skill in voicing wood pipes.

[23] One example of this type of swell shoe is found on the Sauer organ of the Michaeliskirche in Leipzig, which I visited in June 2018.

and functioned similarly to standard reed pipes, but in some cases they did not. One peculiar invention, the Physharmonika, was a set of free reeds with no resonators enclosed in a box much like the small single-rank harmonium-like instrument of the same name.[24] Free reeds have two attributes which made them especially useful in adding expression to the organ. They do not change pitch with changes in air pressure like traditional beating reeds do, so increases in wind pressure create an increase in volume while still allowing the reeds to be playable with other ranks. In addition, the tone of a free reed is gentle, and in some cases, can be mistaken for a string tone, as in the case of the Aeoline, a stop that some builders later in the nineteenth century and early twentieth century would build using string pipes instead of using a free reed.[25] In some cases, the string version would be harmonic, overblowing to the octave. Harmoniums are a fine example of free reed tone with which most modern musicians are familiar (See Figure 2.2 for a comparison of beating reed versus free reed pipes).

The Romantic aesthetic in virtuosic organ playing, predominantly established by organists such as Liszt, Merkel, and Ritter, demanded organs which enabled the organist to make quick changes in registration. Organ builders in nineteenth-century Germany employed several different systems of crescendo devices and combination action in order to assist in creating these sudden registration changes, giving the organist more control over the registration of the instrument and making him or her less reliant on assistants. A

---

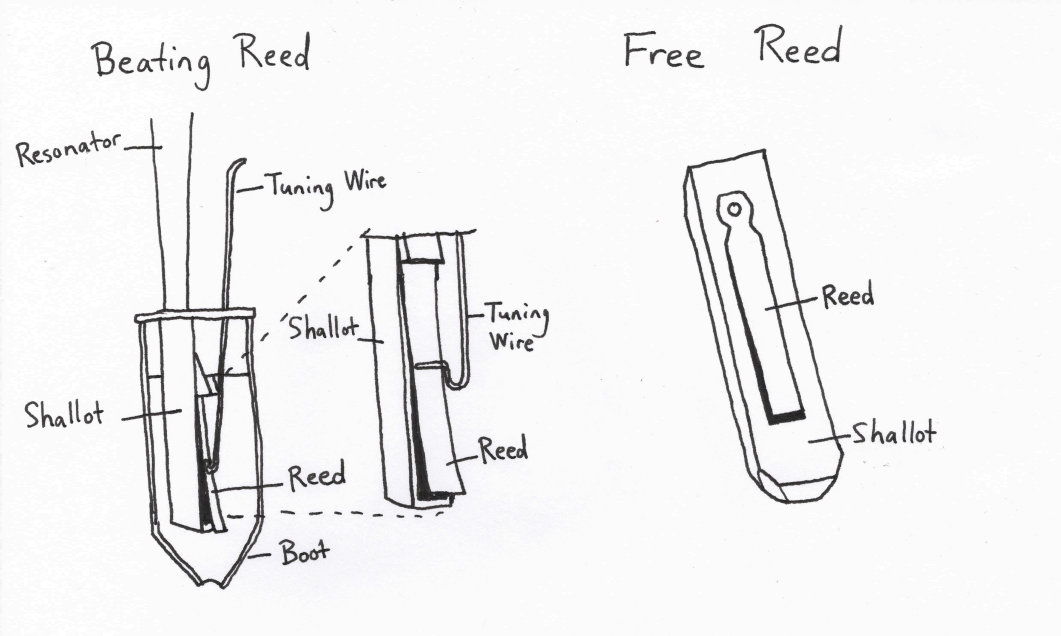
[24] George Ashdown Audsley, *Organ-stops and their Artistic Registration: Names, Forms, Construction, Tonalities, and Offices in Scientific Combination,* Vol. 2, (New York: H. W. Gray, 1921), 617-618.

[25] Ibid., 552.

thorough survey of the soft, expressive capabilities of these instruments, their unique approaches to solving problems of wind stability and rapid shifts in registration, and their defining tonal characteristics would be too vast to include here. Even so, I will examine a few organs here to point out important features regarding several of the most important organs in this style.

Figure 2.2

Beating Reed and Free Reed Differences[26]



Johann Friedrich Schulze Organ in Lübeck

In 1851, Hans Jimmerthal, the organist of the Marienkirche in Lübeck, signed a contract with Johann Friedrich Schulze (1793-1858) of Paulinzella to replace the aging Scherer organ (1560) which contained pipes from as far back as 1518. The old instrument

[26] Hand drawing by the author.

had been rebuilt several times, and, according to Jimmerthal, its condition in 1847 was so bad that "it cannot be claimed that even a single pipe is in thoroughly good condition."[27] One must consider though that this was Dieterich Buxtehude's organ, and replacing it would take ample justification. Jimmerthal wanted a new instrument that would be capable of handling the latest trends in music and which was capable of playing concert repertoire. Jimmerthal had studied with Felix Mendelssohn in Düsseldorf during the summer of 1834, an experience which became strongly influential in his musical career. For the dedication of the Schulze organ in 1854, he played transcriptions of both piano and orchestra pieces by Mozart and Beethoven, and he had organ, piano, and orchestra pieces of J. S. Bach, Haydn, Rinck, Hesse, and Mendelssohn in his concert repertoire.[28]

Several features of this organ stand out. First, the different divisions are each set to different wind pressures. These pressures, ranging from 68mm water column to 88mm water column are relatively low; they are comparable to large Baroque instruments and lower than a typical Aeolian-Skinner organ with which most Americans would be familiar (typically around 120 mm water column).[29] The low pressure of the organ would have likely allowed some flexibility with the wind and would have given a gentle

---

[27] Joachim Walter, *"This Heaving Ocean of Tones:" Nineteenth-Century Organ Registration Practice at St Marien, Lübeck,* (Göteborg, Sweden: Göteborg University, 2000), 33.

[28] Ibid., 78-79.

[29] A general survey of organ specifications from Aeolian-Skinner organs gives pressures on average between 4.5 and 6.5 inches water column, which translates to a range of between approximately 114mm and 150mm water column. These organs have lower pressure than the symphonic organs built by Ernest Skinner at the beginning of the twentieth century.

character to the softer stops. The third manual of the instrument had the lowest wind pressure (68mm), and the wind pressure was further restricted for the two reeds of that division, both free reeds at 8' pitch.

Several ranks of pipes in this organ were constructed in creative ways. The 4' Flageolett on Manual III was bored from cylindrical pieces of beech wood instead of using four pieces of wood to create a rectangular pipe, which is the standard practice. The 8' Jubalflöte on the same manual had mouths on both the front and back of the pipes, and the mouths had a high cut-up. In general, this organ had a large number of wooden stops when compared to metal ones. Several reed stops have free reeds instead of beating reeds, including not only reeds one might expect to be expressive like the Physharmonica and Aeoline, but the 16' Tuba on the Hauptwerk and both the 32' and 16' Posaune ranks on the Forte Pedal division. The organ also had two pedal divisions controlled by a single pedalboard. A ventil operated by a pedal lever activated the Forte Pedal division, though the foot lever was positioned in such a way that an assistant had to operate it. Manual IV was enclosed in a swell box, but the mechanism was controlled by a hitch-down pedal which gave limited control over the opening and closure of the box. There was also a pneumatic device labeled "Expression," which seems to have been an alternate method of operating the swell box, though this method would have prevented the organist from having any control whatsoever over the opening and closing of the shutters.[30]

[30] Walter, 61.

This new organ in the Marienkirche garnered praise from the public on its inauguration and continued to serve Lübeck for nearly a century.[31] The instrument was massive, so large that not all the pipes fit within the main case; several of the pedal pipes were exposed at the sides of the instrument. This lack of space also explains why several stops have common basses, where the pipes of the bass octaves are shared. In addition, the façade, which retained its appearance from the Scherer organ, did not show where the divisions were located within the instrument as it had in the Scherer organ. The façade pipes were non-functioning "dummy" pipes, allowing Schulze to be more economic and creative with his placement of the different divisions of the organ while retaining the look of the Renaissance-era casework. While photos and even some film footage of the organ exist, no recordings were made. Unfortunately, the Schulze organ was destroyed by the bombs of World War II on March 28, 1942.

E. F. Walcker Organs in Ulm and Boston

Like the Schulze organ, Walcker's organ for Ulm Münster no longer exists. However, when it was first built, it was the largest instrument in Europe, the first organ to reach one hundred stops, if one includes the two stop knobs on Manual III that do not actually engage pipe ranks. Only three of the four manuals have their own dedicated registers; the fourth manual has only the reed registers borrowed from the other divisions, creating a sort of solo manual. As a result, each manual has an impressively large number of stops. A strong emphasis on the bass sounds of the instrument is obvious. Manual I has

[31] Ibid., 49.

five registers at 16’ pitch, a 32’ flue register, and a 10-2/3’ Cornett mixture supporting the 32’ fundamental. In addition, the main pedal division has three mutation stops at 10-2/3’, 5-1/3’, and 6-2/5’ pitches, so when combined with 8’ and 4’ registers, a 32’ tone results from these mutations when they are all drawn together. This is in addition to already having three 32’ registers in the pedal.

Incredibly, Walcker’s organ for Ulm Münster had two pedal boards, one positioned in front of the other and tilted upward to make it physically playable. The secondary tilted pedal board controlled the soft pedal division, enabling the organist to switch easily between soft and loud registrations by simply shifting manuals and being able to keep the pedals engaged without a break. This method of supplying two different pedal dynamic levels was replaced on future instruments by simply using a ventil operated by a foot lever to add or subtract the loud pedal division. The secondary pedal division contained no principal ranks, only flutes, a 16’ string, and two soft reeds.

Like the Schulze organ, the façade of Ulm’s organ belied the interior layout of the pipes. The façade was Gothic revival in style with two main towers housing 32’ pipes surrounded by delicate Gothic tracery. The placement of the pipes did not reflect the interior layout by dividing into sections in the Werkprincip style of the Scherer organ in Lübeck; instead the placement of the pipes was due to purely aesthetic choice. The imposing façade reflected the enormous Gothic interior of Ulm Münster, one of the most iconic cathedrals in Germany. A sketch of the façade is included in the Walcker Organ

Company's book *Orgelwissenschaft und Orgelpraxis*.[32] Unfortunately, there are no photographs of the incredible façade as it existed in the cathedral.

Another important instrument built by Walcker is the Boston Music Hall organ. Even though an organ built for Boston may seem odd to include in a discussion about German organs, it is one of the most well-researched of the German Romantic instruments, and it is still extant and playable. It is also familiar to American organists and played a vital role in the training of many late nineteenth- and early twentieth-century composers for the organ, particularly those who studied in Boston. The committee which chose Walcker to build the organ was led by Dr. Jabez Upham, who went on a tour of various organs in Europe to find a builder suitable to create an organ "of the first magnitude."[33] He chose Walcker after visiting his organ at Ulm Münster in 1856.[34] The Boston organ would become one of the most easily recognizable instruments in America with its solid walnut casework and imposing façade including a bust of J. S. Bach, pipe mouths with faces painted on them, and larger-than-life statues holding up the speaking 32' façade pipes.

This organ, like the Schulze organ in Lübeck, includes many free reed stops, including the unusual 32' Bombardon. The vox humana on the solo division included two ranks of beating reed pipes, one made out of wood and the other metal. The organ, like

---

[32] Hans Heinrich Eggebrecht, ed., *Orgelwissenschaft und Orgelpraxis: Festschrift zum zweihundertjährigen Bestehen des Hauses Walcker,* (Tübingen, Germany: Laupp und Göbel, 1980), 214.

[33] Ochse, 200.

[34] Huntington, 73.

the Walcker organ in Ulm Münster, uses low mutations, and it contains tierce ranks in the mixture of Manual I. The pedal has a 32' stop created entirely from pitches of the harmonic series, creating a similar effect to pulling on the low mutations in the pedal at Ulm. The composition of this 32' Grand-Bourdon V is 10-2/3', 8', 6-2/5', and 4', along with the 16' Sub-Bass. It creates a 32' resultant without a real 32' pipe, though there are three other registers in the pedal and one in Manual I that are true 32' registers.

Like the organs in Ulm and Lübeck, the Boston organ includes forte and piano pedal divisions to assist with quick shifts in dynamics, though unlike the instrument in Ulm, there is only one pedalboard, and the forte pedal division is activated by an assist pedal. Without that pedal engaged, none of the registers in the forte pedal division will sound. In addition to having multiple other pedals to assist with registration changes, including couplers, forte and piano presets for Manual I, and a Volles Werk (full organ) pedal, the instrument included a crescendo lever. The crescendo lever added on stops gradually as it was slid to the side.[35] The level reached by the crescendo lever was indicated by a gauge on the console, a feature that several later builders such as Wilhelm Sauer retained for their own crescendo devices.

Besides its variety of colorful registers and large size, the Boston organ is notable for another reason: it is one of the earliest examples of a concert hall organ. During the nineteenth century, organs, once associated nearly exclusively with sacred spaces, began coming into the concert hall. This organ was meant to serve as a concert instrument and

---

[35] Ochse, 204.

to be played along with the orchestra. It was meant to impress. However, the organ encountered several problems. The cone-valve windchests meant to lighten the action often came out of adjustment because of extreme changes in humidity and temperature caused by both the climate of Boston itself and the irregular steam heating of the concert hall several days of the week.[36] This also took a toll on its box bellows, causing the mechanism to jam and malfunction.[37] The cone-valve chests also created a perceived sluggish response from the instrument, so much so that organist B. J. Lang reportedly remarked that "when he was to play the Boston Music Hall organ, he always felt he should arrive half an hour early if the pipes were to speak in time for the audience to hear them."[38] The mechanism was too complicated and difficult to reach for someone to be constantly adjusting it back in place.

When the Boston Symphony Orchestra was founded in 1881, the Boston Music Hall was becoming too small a venue, so a new larger concert hall was built to replace it. That also meant the removal and sale of the organ. After several transfers of ownership, the organ moved to a newly built hall in Methuen, Massachusetts where it remains today.

E. F. Walcker's organ in Boston was the main example of the German Romantic style familiar to American organists for well over a century. Unfortunately, many alterations and rebuilds over the years have left it in a vastly different state than its original. Today, there are few examples of organ building in the German Romantic style

---

[36] Huntington, 74-75.

[37] Ibid.

[38] Ochse, 201.

in the United States. Aside from Walcker's organ in Boston, there is one other large instrument in the United States built in the German Romantic Style, the newly-built Klais organ at the University of Iowa, which was modeled on the Ladegast organ in Schwerin.[39] E. F. Walcker built other instruments for the Americas, but only a few in South America exist in their original state or location. There is a large Walcker organ in the Catedral Metropolitana de Buenos Aires, Argentina, completed the year before Walcker's death, which is in close-to-original condition.[40]

Friedrich Ladegast Organ in Schwerin

The Schwerin organ is one of the best extant examples of the mature Romantic style of Ladegast, built in 1871 and still in nearly completely original condition. The variety of repertoire that can be effectively performed at Schwerin shows the versatility of the German Romantic instruments. The clarity of the plenum in each division of the organ provides clarity for each voice in counterpoint of composers like Bach, while the abundance of 8' stops and various colors enables the performance of symphonic transcriptions along with French, German, and English repertoire of the nineteenth and early twentieth centuries. The mechanical action in the instrument allows the player to experience the expressive capability of the free reeds, giving an almost piano-like level of

---

[39] Mikael Mulugeta, "The Klais organ: the journey to find the music building's biggest instrument," University of Iowa, October 18, 2016, accessed October 2, 2019, https://now.uiowa.edu/2016/10/klais-organ.

[40] Ezequiel Martin Menendez, "Historic pipe organs in Argentina: A hidden treasure," (DMA diss., Boston University, 2006), 45, accessed September 15, 2019, http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/305364277?accountid=4485.

dynamic control. Like the organs in Boston and Lübeck, the Schwerin organ contains a high proportion of free reeds, though not quite as many for its size as Schulze's organ in Lübeck. (See Table 2.1 for comparison.)

There are several stops on this instrument that show the German propensity for including unusual mutation stops to provide color and reinforce the bass. The pedal has several low mutations, including a tierce rank reinforcing the 64' fundamental pitch, a Nassard with an unusual label, 10-1/6' instead of 10-2/3'. It is unclear whether this is a

Table 2.1

Free Reeds in German Romantic Organs

Instrument Builder, Location	Free Reed	Beating Reed	Free Reed as % of Total Reed Stops
Ladegast, Schwerin 1871	5	6	45%
Schulze, Lübeck 1854	6	6	50%
Walcker, Boston 1863	6	16	27%

mistake on the stop knob (it is on the original Ladegast stop label) or if this stop plays a pitch other than the true quint. Manual I features a low septième rank added to the Terzflöte, which reinforces that stop in the tenor and treble ranges. A septième is based on the seventh harmonic, which plays a two octaves and a minor seventh above the fundamental. There is also a septiéme in the pedal Cornett IV.

The organ at Schwerin has a variety of assists to aid in quick registration changes. Ladegast employed a system of ventils similar to the *pédales des combinaisons* of Cavaillé-Coll. The pedal division and Manuals I and II are all divided into two *Abteilungen* (divisions), each of which must be activated by a ventil controlled by a pedal

lever. These ventils are quite easy to operate, since they lock in place when pushed down and release when the organist presses a knob above the ventil lever. Unlike the *pédales des combinaisons* of Cavaillé-Coll, the divisions of the windchests are not organized based on Fonds and Anches. Instead, the divisions each contain a complete ensemble, generally one founded on a louder principal-based specification and the other based on flutes and lower-pitched reeds and softer stops. For example, Abteilung 1 of Manual III contains only one reed at 8' pitch, all the mixtures and upperwork of the division, and two flutes in addition to the principal chorus, whereas Abteilung 2 has a 16' reed and only flutes and strings at 16', 8', and 4' pitch with no principals. Similarly, Abteilung 1 of Manual I includes the principal chorus, upperwork, and 8' reed of that manual, while Abteilung 2 features a 32' Bordun missing its lowest octave, no stops above 4', a low quint flute at 5-1/3' pitch, a 16' reed, and no principals.

In addition to ventils, the organ has an automated crescendo mechanism. This operates by turning a barrel-like device inside the organ which then pulls on stops in stages using pegs to push the stops out as it turns in one direction or to pull them in as it turns in the other direction. The direction and movement of the barrel is controlled by two pedals, one that moves the barrel in one direction to create the crescendo, the other in the opposite direction for a decrescendo. However, the crescendo mechanism moves at its own speed set by the wind pressure of the organ, so there is no way to speed up or slow down the crescendo as there is with a Walze or modern crescendo pedal. There are seven stages of crescendo, each indicated by Roman numerals on a brass bar that descends from the top of the attached console. The couplers are not connected to this mechanism, so the

organist is able to pull them in or out as desired, effectively creating more levels of crescendo, depending on whether or not the manual couplers are engaged.

In my experience playing the Schwerin organ, the crescendo device is not as quick, smooth, or easy to control as the Walze, or Rollschweller later used by builders such as Sauer, but it is effective and innovative, showing not only a desire to be able to change registrations quickly but the effectiveness of the voicing and registration scheme in creating smooth crescendos and decrescendos through registration change alone. However, as Jan Ernst, the organist at Schwerin, pointed out to me, this device is only useful for improvisation, not repertoire, since its imprecise speed and lack of relative reliability create problems when used with concert repertoire. It is not possible for the organist to remove stops by hand if the crescendo pedal has brought them on; the decrescendo pedal must be used to enable the stops to be pushed back in. In addition, there are frequent mechanical issues with the crescendo mechanism, a problem no doubt related to being a prototype.[41]

A more common crescendo mechanism included on later instruments is the Walze. This device is a metal or wooden barrel, usually placed to the left of swell shoes, when swell shoes are present, in which the foot pulls the roller forward to pull on stops and pushes it away to take them off. The Walze does not operate in stages, unlike Ladegast's automated crescendo device; it allows the organist almost complete control

---

[41] The information in this paragraph comes from both my personal experience with the Schwerin instrument and from discussion with Jan Ernst, cantor at Schwerin and professor at the Musikhochschule in Hamburg.

over the introduction of each stop to the ensemble. Ladegast eventually adopted this device on his late instruments near the turn of the twentieth century.

Organs of Wilhelm Sauer

Wilhelm Sauer (1831-1916) represents the later end of the German Romantic organ building style. His organs are particularly suited to the works of late Romantic composers such as Max Reger.[42] They often use pneumatic action instead of direct mechanical action, lightening the touch but removing any control the organist has over the way air is admitted to the pipes. Sauer's organs incorporated English and French elements in addition to German ones.[43] His instruments have reeds that lean toward the French style, and the timbre of his instruments is more penetrating than that of Ladegast or Walcker. Sauer, like Ladegast, spent time studying with Cavaillé-Coll in France and adopted some of his timbres, including harmonic flutes. He also adopted English settable combination action, which he called "freie Kombinationen," in addition to preset combinations.

There are usually six preset combinations available as thumb pistons, each labeled by dynamic level: *pp*, *p*, *mf*, *f*, *ff*, and *Tutti*.[44] These may be replicated on foot levers for implementation when the organist's hands are not free to use the thumb pistons. The

---

[42] Williams, 179.

[43] Felix Friedrich, "Sauer, Wilhelm," *Grove Music Online,* 2001, accessed November 11, 2019, https://www-oxfordmusiconline-com.ezproxy1.lib.asu.edu/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000053089.

[44] I was able to visit several organs in June 2018—built by Sauer and others—with these thumb pistons, and these settings are relatively standard on late German Romantic organs.

existence of the preset combinations allows modern musicians to see what sort of ensemble sounds the builder envisioned for the instrument. Like at Schwerin, the reeds do not come on until relatively late, generally at *forte*, and the full organ is only engaged with the *Tutti* combination.

The German Romantic organs certainly differ between builders, but it is still possible to find commonalities that enable a useful description of the style. They have more wind stability than the instruments of the early nineteenth centuries and earlier due to increased wind pressure and wind stabilization techniques. Being from the middle of the industrial revolution, they took advantage of experiments with technology which enabled quicker changes in registration and larger overall size. They more closely reflected the timbres and structure of the orchestra than did their predecessors, abounding in stops of 8' pitch, especially string and flute stops, and registers imitative of orchestral instruments, partcularly those in the woodwind family. Like orchestral instruments, they possessed great expressiveness with their soft 8' stops, gradual crescendo mechanisms, and dynamically variable free reeds. They also often included proportionally high numbers of wooden pipe ranks compared to metal, giving them a darker, mellower tone than if these ranks were of tin or lead. Though these traits were certainly useful in creating a symphonic character, many of these same traits are also present in the organ building of Southern and Central Germany in the decades leading up to the beginning of the nineteenth century.

CHAPTER 3

THE ORGANS OF TRANSITION

Although sometimes conflated with the instruments of Northern Germany, Southern and Central German organs have their own stylistic traits. Geographically, there are several Christian denominations whose traditions informed these instruments, though the similarities between instruments in churches of different denominations within the same region often outweigh the differences. The southern regions of Germany tended toward Catholicism, and they were in close proximity to Austria and Italy, both havens of the Catholic denomination. However, the Lutheran church also had a strong presence in several of these areas, including Mittelfranken in the northern part of Baden-Württemberg, the areas surrounding Merseburg and Halle, Thuringia, and much of Saxony.

In addition, several smaller groups such as the Pietists and Moravians (Bohemian Brethren) had their own traditions which also influenced local organ building styles. The Pietists were centered in Halle, though their influence spread to many areas throughout Southern and Central Germany.[45] Pietists focused on living a holy, or pious, lifestyle in which they lived out their faith daily in simple ways, often living together in tight-knit communities. By contrast, Lutherans at this time period had become much more focused on cerebral theology than on the practical aspects of living a holy life. One group

---

[45] Koppel S. Pinson, *Pietism As a Factor in the Rise of German Nationalism,* (New York: Columbia University), 1934, 17-18.

influenced by Pietist fervor was the Moravians.[46] The Moravians could trace their heritage back to the followers of Jan Hus, a church reformer who predated Martin Luther.

Though the onset of Pietism was controversial in many areas, it was officially tolerated in the regions of Württemberg and Prussia.[47] The Moravians settled in the valley of Wachau (Wachovia), and sent missionary groups all over the world. It was two Moravian organ builders, Johann Gottlob Klemm (1690-1762) and his student David Tannenberg (1728-1804), both from the area around Dresden, who introduced the Central German style of organ building to what is now the United States.[48] The Pietists and Moravians preferred a lifestyle that emphasized the community over the individual. The music of their churches reflects this focus: instrumental groups and vocal music predominated over solo organ works. Organists were expected to support hymn singing and to accompany instrumental groups, as opposed to playing extended chorale preludes and impressive pieces that could draw attention away from worship to the individual.[49] These denominations therefore preferred gently voiced small organs with few reeds and

---

[46] Ibid. 22.

[47] Fulbrook, 86-87.

[48] Ochse, 15-18.

[49] Lou Carol Fix, "The Organ in Moravian Church Music," in Nola Reed Knouse, ed., *The Music of the Moravian Church in America,* (Rochester, NY: University of Rochester, 2008), 134.

mixtures.[50] The presence of Catholicism in the area and the geographic proximity to Italy also brought many Italian influences into local organ building.

The Catholic liturgy historically had no hymnody, so most of the organ music was improvisational, meant to emphasize the character of certain liturgical points when either movement or meditation was taking place. One spot in the liturgy noteworthy for improvisation was the elevation of the host, a moment characterized by deep solemnity and contemplation on the crucifixion of the Christ. Elevation toccatas were well-represented in Italian organ music, and they are particularly well-suited to the gentle sound of the Italian 8' principals and the unda maris or voce umana.[51] Girolamo Frescobaldi's *Fiori musicali* (Musical Flowers) consists of three settings of the mass, providing good examples of seventeenth-century organ music for the Catholic liturgy. Frescobaldi's student Johann Jakob Froberger helped to spread Italian music throughout the southern regions of Germany, as did the French-born Austrian composer Georg Muffat, who studied with Bernardo Pasquini in Italy.

The organ building styles of Central and Southern Germany have characteristics in common. These organs contain several flue stops at 8' and 4' pitch, in contrast to North German instruments which often have only a couple of flue stops at each pitch level per

---

[50] For a stark example of this contrast, see David Tannenberg's organs for a Lutheran church and a Moravian Church, both included in Appendix A. Each of those examples is the largest organ Tannenberg built for each type of church.

[51] The Italian voce umana is a soft principal stop detuned from the 8' principal in such a way that it creates a soft vibrato. This is not to be confused with the reed stop Vox humana which is supposed to imitate the human voice when paired with various 8' flue stops and a tremulant.

division. The North German organs were designed based on a "vertical" registration scheme, in which the power of the organ is derived from stops that ascend in pitch according to the overtone series. The numerous stops of 8' and 4' pitch in the organs of Southern and Central Germany create a "horizontal" registration scheme, allowing multiple stops of different timbres at the same pitch level to be combined in multiple ways, creating less power and more color.[52] Of course the possibility for vertical registration schemes is still present in the South and Central German instruments, but the plenum sound of these instruments is gentler and less forceful than the plenum of typical North German organs.

One common combination of 8' stops present on these organs is a trio consisting of Principal, Groß Gedeckt, and Viol di Gamba. In many cases these exact stop names are used, or sometimes different stops are substituted, such as using a Quintadena or Salicional instead of a Viol di Gamba, or some other flute for the Groß Gedeckt. The name "Groß Gedeckt" itself is quite common in the instruments from Central and Southern Germany. In most medium and large instruments, and even some of the smaller instruments, more 8' stops are added to this trio, giving many possibilities for registration combinations.

There is also generally a smaller proportion of reed stops on Southern and Central German organs; often in the smaller instruments, reeds are omitted entirely. This reflects

---

[52] Charles Krigbaum, "A Description of the Ochsenhausen Manuscript (1735)," *Bachstunden: Festschrift Helmut Walcha,* edited by Walter Dehnhard and Gottlob Ritter, (Frankfurt am Main: Evangelischer Presseverband in Hessen und Nassau, 1978), 70.

the Italian influence; Italian organs rarely contain any reeds at all. In addition they do not have stops that control multiple ranks to form mixtures; the individual ranks that would normally form a mixture can be drawn as separate registers on most Italian organs. Mixtures are present in Southern and Central German organs, though they are often softer in character than those in the northern areas of Germany and the Netherlands. The mixtures in the Southern and Central German organs often include ranks that sound the fifth overtone, the tierce, so named because it sounds two octaves and a third above the fundamental pitch. However, the mixtures are often smaller and less numerous than in their North German counterparts. The tierce harmonic lends a horn-like quality to the sound and is especially useful for reinforcing the sound of reed ranks.

Many of the ranks of pipes, especially flutes, are made from wood instead of metal. Metal pipes are brighter sounding and have a more incisive attack at the beginning of their speech, whereas wooden pipes create a duller, more resonant sound with less "chiff" when they speak. Wooden pipes were also cheaper to produce, so this may have contributed to their use in smaller parish churches, though in larger organs, it seems the decision to use a higher proportion of wooden pipes was intentional and related to sound, not cost, since no expense was spared in other aspects of the organs' construction.[53]

---

[53] Wolff, 152. Gottfried Silbermann makes reference to the economic advantage of wood over metal in constructing Posaune shallots in his inspection manual, though he prefers the quality of the metal shallots. In addition, as Brian Hughes notes in *The Schulze Dynasty*, wood was plentiful in Thuringia. However, J. F. Schultze specifically chose to use wooden pipes for certain ranks to "obtain a particular type of tone," Hughes, 18.

The pedal divisions of these organs are small, often including only a few stops, most at 16’ or 8’ pitch. Mixtures and reeds are present in the larger instruments, but for medium-size organs, often only a 16’ reed is present. One frequently encounters the combination of a 16’ stopped flute (Gedeckt or Subbass) with either an 8’ principal or 8’ string. A stopped pipe has a speaking length twice its actual measured length because the stopper in the end of the pipe only allows half of the natural harmonics in the pipe to sound, in effect halving the frequency of the pitch. The absence of the even-numbered overtones resulting from this creates a hollow sound. However, the rich harmonics of the full-length string bass fill in the missing harmonics of the stopped 16’ half-length pipe, creating a strongly reinforced bass, instead of the more open sound resulting from two stopped flutes (8’ and 16’) or the brighter sound of two principals. The pedal ranks are often made of wooden pipes, especially for 8’ pitch and lower. This gives a warmer and more resonant sound to the bass.

The small pedal divisions often require a manual to pedal coupler, even in large instruments, and normally only the Hauptwerk can be coupled to the pedal division. The typical pedal coupling system for organs in Central and Southern Germany during this period is the Wind Koppel or double-pallet coupling mechanism. Most mechanical coupling systems in organs have some way of hooking together the actions from multiple divisions to enable one manual or the pedalboard to control another keyboard. However, the double-pallet system bypasses the action of the other divisions. Instead, each of the lower note channels in the windchest has two pallets, one controlled by the pedal and one by the main manual. Each of the pedals then controls two tracker runs; one to the pedal

windchest(s) and the other to the windchest(s) of the main manual. Normally, in this system, the pallets in the manual windchest are positioned so that they receive wind from separate reservoirs, and the wind reservoir admitting air to the pallets controlled by the pedals will have its wind supply shut off when the coupler is not engaged. Therefore, both the pallets in the pedal windchest and the manual windchest open simultaneously, but the pallets in the manual windchest only admit air to the pipes when the coupler knob is drawn, allowing wind to reach the pallets.[54]

In some cases, there are also transmitted stops, which function on both the manual and pedal divisions, such as in the Trost organs of Waltershausen and Altenburg. In these cases, the pipes in the main division can be played separately by the pedal without having to engage the pedal coupler. These organs do, however still have Hauptwerk to Pedal couplers made with the double-pallet mechanism. The transmitted stops in the Trost organs allow the pedal to have a more resonant bass sound while allowing the Hauptwerk and pedal divisions to function independently, giving more possibilities for varying the tone color and registration and also giving the impression of a larger instrument, though the Trost organ in Waltershausen was already the largest organ in Thuringia when it was built.

The double-pallet coupler mechanism has certain features which can function as advantages or drawbacks, depending on how the organist is trying to use them. Unlike couplers that directly engage the action, such as either shove couplers or couplers that

---

[54] During my visits to Germany in June 2018 and May 2019, I was able to see some of these mechanisms in person.

link the trackers from multiple manuals together, the double-pallet coupler allows the coupler to be engaged and disengaged while the organist is actively playing, since the stop knob that engages the coupler is merely admitting wind to the part of the windchest controlled by the pedal trackers. In the other systems, the organist could inadvertently break the trackers or damage the keyboards if s/he attempted to engage the couplers while playing. The couplers used in most modern mechanical action instruments circumvent this problem in a different way, using a moveable pivot bar to engage or disengage the couplers in a way that does not risk damaging the action if the couplers are engaged while keys are depressed. However, in the eighteenth century, the use of the double-pallet coupler gave the registrant or the organist the freedom to add and subtract the manual to pedal coupler at any time instead of having to wait for a break in the music.

This coupler does not engage other manuals that are already coupled to the Hauptwerk, and there is no way to couple the other manuals to the Pedal since the pedal coupler is generally only used with the Hauptwerk. This could be a disadvantage in some circumstances; however, since the technology clearly existed to remedy this issue should any builder chose to employ it—and it seems that none did—having only the Hauptwerk coupled to the pedals appears to have been standard practice on Central and Southern German organs. Further evidence for this intent comes from North German organs wherein the coupling mechanisms acted on the action, automatically coupling all divisions already coupled to the Hauptwerk to the pedal as well.

Though the South German and Central German schools are similar to each other, there are characteristics unique to each. The South German school encompasses the

territories of Swabia, Baden-Württemberg, and Bavaria. This area, which was largely Catholic, was home to several large and wealthy monasteries, especially in the area of Swabia. The Swabian organs reflect the region's geographical location in the vicinity of the Alsace region of France; there is a large amount of influence from the French Classical style, especially in the large instruments. However, the South German organs retained their "Germanic" character with various tone colors of 8' pitch not available on French organs, including an abundance of sweetly-voiced string registers. Two prominent and well-preserved examples of large instruments from this style come from the workshop of Joseph Gabler (1700-1771).

Joseph Gabler

Joseph Gabler was born in Ochsenhausen. He built his first organ as an independent builder in the Abbey Church of St. George in Ochsenhausen during the years 1728-1734. This would become a revolutionary instrument for many reasons. For one, its size at forty-nine stops over four manuals was large for organs in that region. In addition, it had an enormous variety of colorful stops; nineteen of its stops are at 8' pitch, and five were at 16' pitch. The Solo manual, the bottom manual, has no mixtures, and the majority of its stops are at 8' pitch. This division has an undulating stop, an Italian unda maris, two strings at 8' pitch and one at 4' pitch, and a doubled flute, the Piffaro, at 4' pitch. The pedal division is small, but the majority of the stops, all but two, are at 16' pitch. The only 8' is an Octav Bass, and the Mixture at 5-1/3' supports the 16' harmonic series.

Gabler's organ at Ochsenhausen was so different in size and variety of sounds from contemporary organs in the region that the organist of the church created a

manuscript to guide future organists in registering the organ and how to take full advantage of its resources. The Ochsenhausen Manuscript offers a one-of-a-kind glimpse into registration practice in Southern Germany in the mid-eighteenth century, and it gives some of the earliest examples of horizontal registration schemes.[55] The manuscript shows hand-drawn color-coded pictures of the console with hands placed on the manuals which are to be played with the corresponding registration marked on the stop jambs. Each registration suggestion is accompanied by a short piece of music, often only roughly sketched out with the rest to be filled in by the player. The date of January 1, 1735, the unfinished nature of the pieces in the manuscript, and the inconsistencies in stop placement on the console highly suggest that the manuscript was drafted during construction of the organ. This may have been in consultation with the builder, or at least in anticipation of the instrument's possible uses during the mass.[56] The manuscript includes forty *pièces à toucher* along with four fugues.

The fugues appear to be only partially filled in, though it was common in Swabia to start writing fugues fully composed and to continue by simply outlining the structure, leaving much room for improvisation, so a similar treatment is likely to be appropriate for these pieces.[57] There are several pieces labeled according to the particular stops the composer wished to demonstrate, such as "Hautbois con Fagotto," "Quintathön con

---

[55] Krigbaum, 57-58, 70; Michael Gerhard Kaufmann, ed. *Ochsenhauser Orgelbuch: Harmonia Organica*. Vol. 1, (Stuttgart: Carus), 2004, 12.

[56] Kaufmann, 11-12.

[57] Berthold Buchele, "Orgelmusik aus Oberschwaben," *Ars Organi* 58, no. 1 (2010): 81.

Tremulant," and "Flautraversier;" often multiple registration suggestions are given for each piece. Overall, the pieces are light and playful, reflecting the Rococo style coming into fashion in Southern Germany and Austria in the 1730s. The manuscript begins, however, with a piece for full organ labeled "Pedale di Pleno Coro" ("Full Organ with Pedal"), a piece with mostly thick block chords that includes a short pedal solo. Instead of following North German practice, where the organist would only draw the stops needed to add volume, excluding the flute stops and registers that double each other on the same pitch, the registration given in this manuscript uses nearly every stop on the instrument, including strings and flutes.[58] Gabler returned in 1753 to make some alterations to the organ and to address some issues with the winding. Certainly, using a registration as that described in the "Pedale di Pleno Coro" would take ample wind.

Another organ for which Gabler is famous is the organ at the Basilica of St. Martin in Weingarten. Prior to selecting Gabler, the basilica received suggestions for instruments from several builders including Georg Friedrich Schmahl, Johann Caspar Homann, and Johann Georg Rohrer. The first proposal came from Andreas Silbermann, the famous French builder in Strasbourg and brother of the equally renowned German builder Gottfried Silbermann, who also submitted a proposal. Andreas' proposal is strictly French Classical with a few German names used instead of the French equivalents:[59]

---

[58] Kaufmann, Vol. 1, 20 and Vol. 2, fascimile, 14v. - 15r.

[59] Friedrich Jakob, *Die Große Orgel der Basilika zu Weingarten: Geschichte und Restaurierung der Gabler-Orgel,* (Männedorf, Switzerland: Verlag Orgelbau Kuhn, 1986), 17.

Hauptwerk	*Rückpositiv*	*Echo*	*Pedal*
16’ Principal	8’ Principal	8’ Kleingedeckt	16’ Subbaß
16’ Großgedackt	8’ Kleingedeckt	4’ Prestant	8’ Octave
8’ Octave	4’ Prestant	2-2/3’ Nazard	4’ Prestant
8’ Coppel	4’ Flûte	2’ Doublette	16’ Bombarde
4’ Prestant	2-2/3’ Nazard	1-3/5’ Tierce	8’ Trompette
3-1/5’ Große Tierce	2’ Doublette	1’ Mixtur III	4’ Clairon
2-2/3’ Nazard	1-3/5’ Tierce	8’ Cromorne	
2’ Quarte de Nazard	1-1/3’ Mixtur III		
2’ Mixtur III	1’ Cymbale II		
1’ Cymbale III	8’ Cromorne		
8’ Grand Cornet V			
8’ Trompette			
8’ Voix humaine			
4’ Clairon			

The proposal from Rohrer is similarly informed by the French Classical tradition, though his specification includes two 32’ flue ranks in the pedal and is ten registers larger in total.[60] This preference for a French Classical style shows the prominence of this style’s influence in the area. Clearly, the musicians at the basilica wished for a large organ capable of filling the space effectively. However, they eventually chose Gabler to build the instrument after learning of his work in Ochsenhausen.

Gabler faced several challenges while constructing the instrument including lack of space and architectural issues. He had to work around the large windows in the west gallery of the nave, so he designed an organ that wrapped around them without blocking the light coming through them. Gabler accommodated the challenging spatial limitations in several ways. To save space, he used a split Rückpositiv for the Brüstungs-positiv division, and put the Brüstungspedal in one side of this split Rückpositiv division. The

[60] Ibid., 18.

main towers of the instrument house the largest pipes and wrap around the columns between the windows. The Echo division is hidden under the large bass pipes in the towers. Between these towers, Gabler created small bridges which house smaller pipes such as the Pedal mixture and the pipes of the thunder-like forty-nine-rank mixture stop, La force, housed in the central bridge. The La force mixture is only available on low C in the pedal. The topmost part of the organ, the small Kronpositiv, houses several ranks of pipes from the Oberwerk.

To reach the windchests of the organ, the tracker runs are extremely long, over sixty feet in some instances. However, through ingenious engineering, Gabler was able to create a responsive action that is still relatively light. The console is turned outward facing the chancel at the other end of the large space. This enables the organist to both see the progress of the liturgy taking place below and, because of the gallery space, to direct instrumentalists from the console. The organ itself contains an abundance of flute and string stops meant to imitate the various sounds of orchestral instruments such as the Violoncello, Flauta douce, Flaut travers, and Hautbois.

There are also three percussion stops (the Carillon stops on the Pedal and Brüstungspositiv divisions), along with four percussion accessories: a Cuckoo, Nightingale (Rosignol), Cymbala, and Tympan. The Brüstungspositiv Carillon is located inside the console, and the Pedal Carillon is located above the console under the bridge containing the Pedal mixture and La force. The bells of the Pedal Carillon are shaped like grapes, a nod to the wine-making heritage of the region of the aptly named city of

Weingarten.[61] The Rosignol effect is created by three small high-pitched pipes which are positioned upside-down facing diagonally into a small bucket of water so that they blow into the water, creating a convincing chirping effect as the water bubbles.[62] One particularly effective imitative register is the Vox humana. It is so eerily good at imitating a (somewhat nasal) human voice, especially in the tenor range, that a legend about the devil giving Gabler the pipes for the stop sprang up around it.[63] Beatrice Weinberger used this stop to great effect in her recording of Krebs' *Fastasia à gusto italiano*.[64]

Gabler claimed the instrument would have 6,666 pipes, though the original total was 6,631, still a large number.[65] Many of the stops on the instrument have multiple ranks, including the Hauptwerk's 8' Piffaro flute stop which has five ranks in the bass and progresses up to seven ranks, the five-to-six rank Piffaro on the Brüstungspositiv, and the 8' Violoncello in the Oberwerk which progresses from one to three ranks. There are also stops with multiple pitches, such as the 4' and 2' paired string ranks on the Oberwerk, the two-rank four-foot flutes on the Echowerk and Brüstungspositiv, and the paired strings at both 32' and 16' and then again at 16' and 8' pitch, each controlled by one stop, in the pedal. Perhaps Gabler chose to group these stops together to enable the organist to

---

[61] Jakob, 56.

[62] A photograph of the Rosignol is given in Jakob, 61.

[63] Ibid., 92.

[64] Beatrice-Maria Weinberger. *Johann Ludwig Krebs: Sämtliche Orgelwerke Vol. 3.* CD. Motette Records, 2004.

[65] Jakob, 90. The pedal compass was extended from the original g° to d' during its restoration in 1983, so today it has 6,890 pipes in total.

improvise more easily by having to pull fewer stops for ranks of pipes normally used together, or perhaps he meant for these ranks to only be used with each other and did not wish to make it possible for the organist to be able to use them separately.

One might suppose that the large size of the instrument, with many stops of multiple ranks would produce an extremely strong and powerful sound. While the organ effectively fills the room, many organists often remark on how surprisingly gentle and warm the instrument is in the large stone church.[66] Instead of merely adding volume to the sound, the doubled ranks create a smooth, warm effect. They make the sound thicker and silkier, results produced in late nineteenth century organs by raising the wind pressure and nicking the pipes. The onset of the speech of each pipe is obscured by all the ranks playing together, and while this does increase the volume somewhat, the result of the combined pipes is a thicker sound rather than a noticeably louder one. Furthermore, if simply increasing volume were Gabler's main goal, it seems odd that the ranks which would be doubled, quadrupled, or even quintupled are often stops such as strings and flutes, registers not normally known for their power. The mixtures also contain high numbers of ranks, but they are voiced in a gentle manner that belies the number of pipes involved. Increasing the thickness and prominence of the flute and string timbres gives the organ a more orchestral function, enabling it to more accurately imitate or blend with instrumental ensembles composed primarily of string and woodwind instruments.

---

[66] Ibid., 72; Williams, 149.

In addition to the sound of the instrument, its overall size reflects the opulence of the abbey churches. The expense incurred by adding so many ranks of pipes, especially at 8' pitch, shows that the abbeys were not hesitant to spend money to impress; the Silbermann organ proposal was for an organ only half the size and would no doubt have cost much less. Each of the abbey churches also had a choir organ in addition to the main organ in the west gallery. The abbey churches, including later examples in nearby Weißenau and in Neresheim, provide excellent examples of South German organ building with essentially unlimited access to funding and resources. A contrasting view of the South German organ school is provided by the smaller church organs of builders such as the Schmahl family.

Georg Friedrich Schmahl

Georg Friedrich Schmahl (1700-1773) came from a large family of organ builders in Heilbronn. His brother Johann Adam Schmahl built one of the earliest organs in Pennsylvania in the US, an organ for St. Michael's Church in Philadelphia dedicated in 1751.[67] G. F. Schmahl was well-known during his time, and he built a three-manual organ for Ulm Münster, which was replaced by E. F. Walcker's hundred-stop organ in 1856. Germane to the present discussions is his instrument for the Ludwigsburg Residence Palace Ordenskapelle (so named for the Catholic function it would later be converted to serve), which I was able to visit in June 2018.

---

[67] Helmut Völkl, *Orgeln in Württemberg*. (Neuhausen-Stuttgart, Germany: Hänssler-Verlag), 1986, 22; Ochse, 18. Völkl incorrectly states that this was the first organ in Pennsylvania, though several organs were both imported to that state and built there prior to 1750, including several by Johann Gottlob Klemm.

The organ was originally located in the front of the space on a gallery overlooking the altar and pulpit. It was tall for the room, and considering how tall it still appears in its new location in the much larger main chapel of the palace, it would have surely been an impressive sight. The case does not reflect the interior layout of the instrument, but follows the South and Central German tradition of obscuring the separations of the different divisions in favor of a more unified case design. The console is turned outward. Unlike the Gabler instruments, this organ is an example of a relatively small instrument built for a Protestant congregation; though it is large for its room, it has only eighteen stops.

Of those eighteen stops, ten are on the main manual. The small second manual division is placed on top of the first, contributing to the organ's height. This was likely done to keep the case shallow and to prevent it from intruding too far into the small chapel. The second manual has an emphasis on 4' pitch, an octave higher than the foundational 8' pitch of the main manual. This is somewhat reminiscent of the earlier Werkprinzip tradition, especially prevalent on North German organs. The relatively high pitches of the second manual's registers reflects South German practice which makes the secondary manual a much lighter foil to the heavier sounding main manual. The main manual has five stops, a full half of the division, at 8' pitch, including the organ's only reed, a vox humana. The pedal division has two stops at 8' pitch, a metal string stop and a principal rank, both of which could effectively fill out the harmonics of the stopped 16' flute.

The specification of this organ suggests an instrument with many choices of timbre for its size. The mixture is a tierce mixture, which would add a reedy sound color on its own, or it could reinforce the vox humana, should the organist choose to color the plenum with the reed. The vox humana would also pair well with any of the four other stops at 8' pitch. The main manual also has a 4' stopped flute. Including a stopped flute at that pitch highly suggests it was done specifically to obtain the color of the stopped flute, since there is no spatial restriction at that small size, and the treble end of a stopped flute is much more difficult to make than if it were open. The flute on the second manual is conical, giving it a hint of string quality in the tone.

These observations are from the specification list only; this organ has been rebuilt several times over the years, so its current sound is not indicative of what Schmahl originally intended. In reality, there are no Schmahl instruments left in original condition. In 1844, Eberhard Friedrich Walcker rebuilt Schmahl's instrument, which he did with only a few minor alterations, largely leaving the instrument intact and in line with Schmahl's original designs. The organ still employs Schmahl's original windchests, and the original pallets are still in place. However, in 1916, the Walcker firm rebuilt the organ substantially in line with current tastes, raising the wind pressure, extending the manual and pedalboard range, upgrading the console's appearance to an early twentieth-century aesthetic, and converting the mechanical action to tubular pneumatic. Fortunately, when they did so, the builders simply bypassed the original pallets by adding tubing to admit air to the pipes without the pallets having to move, meaning that reverting the organ to mechanical action would simply mean removing the tubes and plugging the resulting

holes along with adding trackers and roller boards.[68] The Walcker firm also left the original keyboards installed; they merely added notes onto the right end of the keyboards. It is possible to see where the wood and bone of the keyboards transition from the older eighteenth-century material to the early twentieth-century from the tone and grain pattern of the wood. The additional pipes were placed on small offset chests to the sides of the Schmahl windchests inside the case of the instrument.

As of this writing, the Schmahl organ in the Ludwigsburg Residence Palace is not playable, but is undergoing a thorough restoration, led by Alexander Eckhardt. As Eckhardt related to me, there are so few of Schmahl's instruments left that it is difficult to recreate faithfully the sounds of his instruments from what remains. As a result, the Schmahl organ is being restored to its 1844 state following E. F. Walcker's rebuild of the instrument, since this is the earliest ascertainable state to which the organ can be restored with assured accuracy. This will entail not only reverting the organ to its original mechanical action with slider chests, but installing bellows similar to the originals which will be able to be pumped by hand in addition to an electric blower.[69]

While similar to the Southern organ building tradition in many ways, the organs of Thuringia have some subtle differences that set them apart from those in Baden-Württemberg, especially those in Swabia. Much of the heritage of the Thuringian organ building school descends from builders such as the Bavarian organ builder Eugenio Casparini (1623-1706), whose grandson Adam Gottlob Casparini (1715-1788) studied

---

[68] During my visit in June 2018, I was able to see the inner mechanics of the instrument.

[69] Information received from Alexander Eckhardt during my visit.

with Tobias Heinrich Gottfried Trost. The Casparini family built organs throughout East Prussia and Poland, even in Lithuania. Eugenio Casparini's organ in the Saxon city of Görlitz was apparently gentle and silvery sounding with its weak mixtures and reeds and plentiful foundation sound, lacking the penetration and bite that the Germans in Görlitz were used to. When criticized, Eugenio remarked that one could simply increase the wind pressure but then the "silvery sound would disappear, and the brilliance would become coarse."[70] Eugenio's time in Trento, Italy greatly informed his organ building, though he also sought a strong sense of Gravität (heaviness or full-bodied sound) in his instruments.[71]

The Thuringian organ building practice became well-known overall for its Gravität—a characteristic Johann Sebastian Bach would push for in his own recommendations for organs. Other identifying characteristics are the 16' Violonbass, meant to imitate the cello, and wooden 16' pedal reeds with full but relatively gentle tone. The cases of these organs were often deep, with the various divisions placed one behind the other instead of on top of each other in shallow cases as in the Werkprincip manner of Northern Germany. These organs also generally lacked a Rückpositiv, instead having all divisions within the main case, often with pedal pipes in the back of the instrument.[72] Often Thuringian organs were also equipped with a Glockenspiel percussion stop.

---

[70] Andersen, 191.

[71] Ibid.

[72] Edwards, 135-136.

Several Thuringian and East German instruments also contained Kammerton stops, such as the Johann Friedrich Wender organ in Merseburg Cathedral, which had two Kammerton stops on the Rückpositiv, an 8' stopped flute and 4' principal, and a 16' Posaune and 8' principal available in Kammerton on the pedal. The Kammerton stops were important because they enabled the organist to accompany instrumental groups without having to transpose down a step since many organs were pitched at Chorton, a whole step above the pitch played by the orchestral instruments of the time. They also give insight into what registrations were often used for continuo playing. Some organs even had entire divisions where the keyboard could be slid from side to side, aligning the keys with stickers that operated the trackers. Sliding the keyboard to the left would make each key play the note a step down. There were also mechanisms that allowed this shift without having to move the keyboard. The Engler organ of Grüssau in Silesia (now Krzeszów, Poland) has this mechanism in the Positiv manual in addition to three pedal stops which can also be played in Kammerton. Wender's organ in Merseburg also had a separate keyboard on the front of the Rückpositiv with a second gallery around the Rückpositiv that enabled the player to more easily conduct the ensemble. Friedrich Ladegast retained this feature in his rebuild of the instrument in 1855. Unlike the South German instruments, most Thuringian instruments did not have outward-turned consoles. Prominent examples of Thuringian organ building exist in the organs of Tobias Heinrich Gottfried Trost (1680-1759).

Tobias Heinrich Gottfried Trost

Trost learned the organ building craft from his father, who in turn studied with Christian Förner, who also taught Bernhard Schmidt (Father Smith), the famous English organ builder.[73] The Trost organ in Waltershausen is important to the history of Thuringian organ building for several reasons. First, almost all the pipes and mechanical action are original, including the façade pipes.[74] This is rare in historic instruments; reed ranks are nearly always either partially or completely rebuilt. In addition, many historic instruments had their façade pipes and any lead pipes in the instrument confiscated to be melted down for bullets and ammunition during the World Wars. This gives modern listeners a unique opportunity to hear the instrument in nearly the exact state in which Trost left it.

This organ has one reed on the Oberwerk and Brustwerk and two on the Hauptwerk, showing the relatively small number of reeds that even a large Central or Southern German instrument is likely to have. As I discovered during my visit to Waltershausen, the reeds in this organ are very gently voiced; the 8' Trompetta on the Hauptwerk colors the plenum, interacting with the tierce rank in the Mixtura to create a vibrant, strong sound without drawing attention to itself as a reed. Its tone is also gentle and buzzy compared with what one might normally expect of a stop named "Trumpet." The Hautbois from the Brustwerk actually has a more penetrating and prominent sound than the Trompetta, making it a more effective solo stop.

---

[73] Edwards, 127.

[74] Wolff, 130.

The Trost organ has six 8' flue registers on the Hauptwerk, giving a wide variety of color possibilities. Among them are a string, a flute, two hybrid stops, a principal, and a stand-alone Unda maris. This Unda maris has a unique construction resembling a Doppelflöte, sometimes in later organs called the Jubal Flute or Piffaro.[75] The rank has one pipe per note, but each pipe has two sides with a mouth on each side and a partition running along the middle of the pipe. In effect, each pipe functions as two with each half slightly mistuned from the other, creating an undulating effect without the need for another stop to be drawn along with the Unda maris. There is also a pair of undulating ranks in the Brustwerk division, the 4' Flöte douce II, though these are constructed as two separate ranks of pipes.

Unlike the Hauptwerk and Brustwerk, the Oberwerk has no principal chorus. It contains only two principal ranks, each more suited to horizontal registration than vertical. Even the quint rank is a stopped flute. This division seems to have been constructed as a sort of echo or solo division. The wind trunk leading to the Oberwerk windchest is undersized, so it is impossible to draw several ranks at one time and have steady wind.[76] The 8' Hohl-Flöte is so wide-scaled, requiring so much wind, that simply playing full chords with both hands on that one rank destabilizes the wind supply to the

---

[75] Audsley, Vol. 1, 540.

[76] Tom Anschütz, assistant organist in Waltershausen, allowed me to see the inner mechanics of the organ, including the wind trunks. The single wind trunk leading into the Oberwerk division is small and curves outward from the main trunk—located against the wall behind the organ—and goes directly into the back of the Oberwerk windchest. The wind trunks for the Trost organ fan out from the main wind trunk in a way Anschütz compared to an octopus. He also pointed out the cut-off valves under the pedal chests which help to stabilize the wind.

Oberwerk so that a shaky sound results. Perhaps this indicates that the intention was to use these ranks one or two at a time rather than having multiple 8' ranks sound together. The division's proximity to the ceiling of the room has a bandshell effect, amplifying the volume of these ranks, making them some of the loudest in the organ. In fact, the 4' Lieblich Principal is so strongly present in the room that one can hear it being added even to the combined plena of the two other manuals with pedal.

The Waltershausen organ possesses a strong sense of the Thuringian Gravität. The 32' Posaune with its wooden resonators provides a sturdy but not overpowering grounding effect when combined with the sound of the full organ. There are only six independent pedal stops; the rest are transmitted from the Hauptwerk, giving the sense of a much larger pedal division. The independent stops only consist of registers of 32', 16', and 8' pitch. In addition, the Hauptwerk has three stops at 16' pitch, one of which is transmitted to the pedal. The many low-pitched ranks in the instrument require that the pedal chests be built with cut-off valves that prevent the wind pressure from being affected by the number of stops drawn in the pedals. This stabilization effect allows more stops of 8' and 16' pitch to be drawn together than would normally be possible without the separated windchests.

Another important instrument by Trost is located in the Schloßkirche in the Residence Palace of Altenburg. This organ, unlike the instrument in Waltershausen, is mostly reconstructed, though the organ at Waltershausen greatly informed the

reconstruction, especially of the action.[77] The organ at Altenburg, with only two manuals, is smaller than the organ in Waltershausen, but has many of the same features including an abundance of 8' registers and several stops that can be transmitted between the Hauptwerk and Pedal. It possesses a strong sense of weight, including a 32' Posaune even in the small space where it is located. The Altenburg organ also has a Glockenspiel stop, played from the Hauptwerk manual. Like the Waltershausen organ, the Altenburg organ is gentle and not at all overpowering in the space. Johann Ludwig Krebs was the organist at the Altenburg Schloßkirche, and his teacher J. S. Bach tested the organ in 1739 and gave his approval. It is not known whether Bach played the Waltershausen instrument, but it is likely he did since it was the largest organ in Thuringia and is located in the area in which Bach spent most of his life.

While the Trost organs demonstrate the multitudes of 8' color registers available on Thuringian instruments and their emphasis on full and low tones, the organs of Gottfried Silbermann demonstrate some French Classical influence also present in Thuringian organs. Gottfried Silbermann, brother of Andreas Silbermann, with whom he studied in Strasbourg, contributed greatly to the legacy of Thuringian and Saxon organ building. Unlike Andreas, Gottfried kept a distinctly German character in his organs. However, he did borrow some French Classical registration ideas. Records of Silbermann's registrations for his organs in Fraureuth and Großhartmannsdorf are available, and contain suggestions for Jeu de Tierce, a Nazard Ensemble, and a "Pure

---

[77] Information from Tom Anschütz.

Pleno" in the style of the French Plein Jeu with both the 8' Principal and 8' Rohrflöte in the Hauptwerk ensemble.[78] Silbermann's organs were known for their light action and bright silvery tone.[79]

Zacharias Hildebrandt

Gottfried Silbermann died in 1753 while working on the voicing of his organ for the Catholic Court Chapel in Dresden, and he left the remainder of his work to the Silesian-born Zacharias Hildebrandt (1688-1757), one of his associates.[80] Hildebrandt was a well-known organ builder in his own right. His organ in Naumberg for the Stadtkirche St. Wenzel is still playable, and, though several registers including all the reed registers have been reconstructed, the organ is currently in very close to its original condition.[81] This organ was tested by Johann Sebastian Bach, who gave his approval, and by Gottfried Silbermann himself.

In contrast to Waltershausen, this instrument is in a large Gothic church. The organ is located on the third balcony level in the rear of the room and was built using the case of the previous organ. Like the Trost organ in Waltershausen, the Hildebrandt organ in Naumburg has a smooth and gentle sound, filling the room but not overwhelming it.[82]

---

[78] Andersen, 203-204.

[79] Ibid., 202-203.

[80] Andersen, 200.

[81] Wolff, 76.

[82] During my visit to Naumburg, I was able to hear Hans Christian Martin play a noontime concert on the Hildebrandt organ, in addition to being able to spend two hours after the concert playing the instrument myself.

Originally, Hildebrandt planned to have a 32' Untersatz in addition to the 32' Posaune, but he ran out of room inside the case by Zacharias Thayßner.[83] The stop knob exists but was never installed. Hildebrandt's use of the former organ's case could explain two traits of the organ: the presence of a Rückpositiv, and the missing low C# in the manuals and pedal. At this point, the Rückpositiv had mostly gone out of style in Thuringia and Southern Germany and was only used in rare circumstances.[84] The missing low C# could have been due to a strong temperament, such as those advocated by Gottfried Silbermann, or it could have been a result of lack of space in the previous instrument. Large bass pipes are much more difficult to cram into a tightly crowded case than smaller, higher-pitched pipes.

Like most Thuringian organs, this instrument has a strong emphasis on the bass registers. The Rückpositiv, for example, has only one reed, and it is at 16' pitch. The Hauptwerk has two 16' flue ranks and one 16' reed, and the pedal has three 16' flue ranks, reeds at 16' and 32' pitch, and a planned-for flue rank at 32' pitch. The 32' Posaune has a curious feature: when the stop is drawn, it automatically draws the 16' Subbaß with it. This is important for several reasons. First, it shows that Hildebrandt intended that the 32' Posaune would never sound on its own, only with the 16' Subbaß. This not only shows how this particular instrument was voiced but also has implications for other instruments. Second, it shows that playing multiple stops of low pitch together in the pedal was normal practice, or at least not unusual, in Central Germany as well as in

---

[83] Wolff, 76.

[84] Edwards, 135-136.

Southern Germany. The various stops available in the pedal at 32', 16', and 8' pitch could not only be drawn on their own but with other stops. In North German organs, it is not necessary to double the reeds with flue stops, but here in Thuringia is an example where the builder gives the player no choice. Analogously, the Trost organ in Waltershausen sometimes needs multiple 16' flue ranks in the pedal to balance strong manual registrations effectively.[85] Finally, this reflects Silbermann's practice of building the 8' flute into the manual plenum, adding a flute timbre to a larger chorus ensemble to create a more resonant tone with more prominence of the fundamental.

The Italian influence in Thuringian organ building is also present in the Naumburg organ. The Unda maris of the Oberwerk is paired with the 8' Principal in the same manner used in the organs of Baroque Italy, pairing their narrow-scaled, gently-voiced principals with the Voce humana, a principal rank detuned from the 8' Principal. The close proximity of the Oberwerk to the ceiling results in a fairly loud sound, much as the 4' "Lieblich" Principal in Waltershausen is much louder than the name of the stop would suggest. The Hildebrandt organ also has two Violon ranks, one at 16' and one at 8', in the Pedal. These stops are particularly useful for pieces that imitate the walking bass line of intrumental continuo parts, especially the trio sonatas of J. S. Bach. These Violon ranks could then be paired with any number of different registrations available on the instrument, especially the flute ranks. Like most organs of Central and Southern Germany, Hildebrandt's instrument has a relatively low number of reeds for its size. All

[85] Tom Anschütz, brought this to my attention while I was experimenting with different registrations on the Trost organ in Waltershausen.

of the reeds are reconstructions, however, so the timbres as they exist now are not as useful for discerning the historical sound as the reeds in Waltershausen.[86]

Johann Adam Ehrlich

Johann Adam Ehrlich (1703-1784) represents a hybrid between the Thuringian/ Saxon and South German styles. Though his location in Wachbach (now Bad Mergentheim) puts him in Baden-Württemberg, he trained under Johann Michael Schmahl (1654-1725) of Heilbronn, father of Georg Friedrich Schmahl, who was well-trained in Saxon and Thuringian organ building.[87] As asserted by Christoph Bossert, Ehrlich acts as a connection between the Central and South German building styles.[88] Ehrlich built for both protestant and Catholic churches. His organs are mostly small, such as the one-manual and pedal organ in the small town of Neuenstadt am Kocher.

The Stadtkirche of Neuenstadt am Kocher is a small church, but it possesses two levels of galleries in the rear and three levels of galleries on the liturgical north side; the Ehrlich organ is located in the rear of the church on the second gallery level. Originally, the instrument would have stood on a platform overlooking the pulpit in the chancel area

---

[86] Wolff, 76.

[87] Völkl, 21.

[88] "Er ist als ein wichtiges Bindeglied zwischen der süd- und der mitteldeutschen Klangkultur anzusehen und vermag deshalb mit seinem Orgelklang der Musik des Bach-Kreises sehr nahe zu kommen." Christoph Bossert, "Der Klangstil des Orgelbauers Johann Adam Ehrlich (1703–1784) im Kontext des spätbarocken Orgelbaus in Süd- und Mitteldeutschland," in Günther G., ed., *Musik in Baden-Württemberg,* Stuttgart, Germany, J.B. Metzler, 2003, p. 249.

in the front of the church, but was moved to its present location in 1874.[89] For a small one-manual organ, this instrument has an abundance of 8' voices: the trio of Principal, Viol du Gamb, and Großgedeckt, as well as a Quintade. There is also a 4' Flaut (flute) in addition to the Octav, and a choice between two mixtures: the Cymbal and Mixtur. Normally, a mixture labeled Cymbal would be a very high-pitched mixture with many breaks, making a sparkling bright crown for the plenum when played with the regular Mixture; the Cymbal would not normally be useful by itself contrapuntally because of its many breaks. However, on this instrument, the Cymbal works as well as the Mixtur as a crown for the plenum, creating a lighter alternative to the Mixtur which is lower-pitched and heavier. Alternatively, the Quint can be used on its own with the other principals, creating the possibility of four different plenum registrations, the fourth combining the Mixtur and Cymbal. The pedal division has two independent stops in addition to coupling with the manual. Originally, the pedalboard only reached from C to g˚, and both the manual and pedal were missing the low C#.[90]

As I discovered from talking with David Dehn, the organist in Neuenstadt am Kocher, the organ in its current state has around a third of its original pipes, though the missing pipes were recreated in a historical manner by Richard Rensch during his restoration in 1963. Therefore, it is still possible to get a good idea of the organ's original sound. A Rückpositiv and second manual were added to the organ then, both to enlarge

---

[89] *Kleine Kirchengeschichte von Neuenstadt,* (Neuenstadt am Kocher, Germany: Evangelische Kirchengemeinde Neuenstadt, 2016), 86.

[90] Völkl, 100.

the instrument and to retain stops that had been added to the instrument while returning the Hauptwerk to its original specification.[91] The pedal was extended to a modern compass, and the missing C#'s were added. A second, more recent, renovation in 2005 created a compromise between the old compass of the pedalboard and the modern one, giving a compass of C-d', suitable for Baroque music. [92]

The Stadtkirche of the small historic town of Bad Wimpfen is home to probably the most historically intact of Ehrlich's organs. A majority of the pipes are original, and the reconstruction of a few missing pipes and the addition of one rank of pipes planned by Ehrlich but never installed (the Pedal 16' Posaune) was also carried out by Richard Rensch in 1972.[93] The organ was originally located in a small gallery in the chancel of the church but was moved to the west gallery in the early nineteenth century. The case is short and deep. The Hauptwerk is placed in the front of the case with the Hinterwerk behind it and the pedal division in the far back of the case in the Thuringian manner.

This organ has several stops that are curiously named. The 4' Floete gedackt on the Hinterwerk has a very strong presence of the quint overtone and sounds more like a quintadena than a regular flute. Taking this stop to function as a quintadena gives a wide range of stops at 4' color on the Hinterwerk, which compliments the 8' stops of the Hauptwerk. There is a principal, flute, and quintadena on each manual, with only the Viol

---

[91] Ibid.

[92] *Kleine Kirchengeschichte*, 86.

[93] Völkl, 108. Information also based on documents given to me by Renate Lüdeking-Schreiber, administrator for the Bad Wimpfen Evangelische Stadtkirche regarding Rensch's restoration.

die Gamba not represented at 4' pitch on the Hinterwerk division. The variety of color is also enhanced by the contrast of the stopped Groß Gedackt on the Hauptwerk and the conical 4' Spitzflöte on the Hinterwerk.

The pedal division's 4' Pordon Fleute also has a strong emphasis on the quint overtone. The name of the stop is almost certainly meant to indicate a "Bourdon" in standard spelling, with the letter B being exchanged for a P, a spelling trend common in South German dialects.[94] Including this 4' stop in the pedal when a 4' Octave is already present may seem redundant on an organ of only twenty-three stops, but the register is very useful, both as a bass reinforcement of the flute choruses of the organ along with the gently voiced 8' Octav Baß and the 16' Sub Baß, and as a solo stop accompanied with a soft registration in the manuals.

Another misnomer is present in the mixtures of the organ. Two of the three mixtures contain a tierce-sounding rank. Ironically, the only mixture that does not is the Cornet III on the Hauptwerk. Normally, "cornet" is a name given specifically to mixtures of either flutes or principals indicating that there is a tierce rank present; it is the overtone that contributes to the horn-like quality for which it is named. Instead, this so-called cornet is really more like a Zimbel or Scharff, with the pitches 1', 2/3', and 1/2' in the bass, and octave repetitions in the normal manner as the notes ascend. These oddities in stop names serve as a reminder of how crucial in-person experience can be for assessing

---

[94] In most records of the organ, the stop name is misspelled "Pardon," probably the result of an unfortunate typographical error being perpetuated by subsequent authors relying on a common source. On the console, in the original calligraphy, the word is clearly spelled "Pordon."

historic instruments; often things look different on paper than they are in reality because of inconsistencies in spelling, nomenclature, and assumptions that may arise from differences in local traditions of instrument construction.

The other mixture on the Hauptwerk, the Mixture V-IV, also has unusual features. Instead of being a progressive mixture, wherein the number of ranks increase as the pitch of the notes rises, this mixture seems to be a slightly "regressive" mixture, dropping one of the unison-sounding ranks at c''. Progressive mixtures are used to enhance the volume of the treble notes, reinforcing melody. This mixture, on the other hand, seems to reinforce the bass more. Also unusual is that the tierce rank sounds an octave lower for the top half of the keyboard, giving a pitch of 3-1/5' instead of 1-3/5' starting at c'. The pitches of the ranks in this mixture are in Figure 3.1.

Figure 3.1

Mixture Composition for Hauptwerk Mixtur in Bad Wimpfen

C	1-1/3'	1'	4/5'	2/3'	1/2'
c°	2'	1-3/5'	1-1/3'	1'	1'
c'	4'	3-1/5'	2-2/3'	2'	2'
c''	4'	3-1/5'	2-2/3'	2'	—

In effect, this means the bottom half of the keyboard plays the tierce rank at a pitch that reinforces the 8' fundamental, and the top half of the keyboard reinforces the 16' fundamental. This should be problematic since there is no 16' rank in either of the manuals, but it actually works well in the room for two reasons. First, the pedal division has three 16' ranks — the Posaune was planned by Ehrlich, so I am including it along

with the Sub Baß and Octav Baß. As long as the mixture is playing with the plenum, pedal included, the mixture reinforces the 16' pitch effectively. The second reason this works is the acoustic; even without the pedal, the low tierce in the manual creates a resultant 16' pitch audible in the space, which is made possible by the bass-reinforcing thick stone walls of the Stadtkirche. Because of the horn-like effect of having the tierce overtone reinforced, the manual plenum of this instrument creates a sort of reed-like effect, almost giving the impression that there is a reed stop somewhere in the instrument even where none exists in the manuals. Unlike the organ in Neuenstadt am Kocher, this instrument has an original full pedal compass of twenty-seven notes and a double-pallet coupling system, allowing full use of the pedal division as a separate contrapuntal voice.

Ehrlich's largest instrument in the Catholic Dominikanerkirche in Bad Wimpfen shows a similar building style—there is no real difference between organs he built for Catholic or Lutheran churches—and some anticipation to the coming transition period into the more Romantic aesthetic. Unfortunately, this organ has been altered significantly from its original voicing, and modifications have been made to the pipework, so its original sound has been greatly compromised.[95] However, the original specification still exists, and some details regarding the progression of Ehrlich's style can be gleaned from the specification. The Hauptwerk contains six flue stops at 8' pitch, and the Oberwerk two 8' stops. One of these stops, the Biffara, so named because of its two ranks, is an undulating stop. The two ranks are tuned slightly off from each other to create a gentle

[95] Information from Renate Lüdeking-Schreiber.

undulating effect, similar to a voix célèste or unda maris. This organ only has three reeds, one per division, the 8' Trompete on the Hauptwerk, the 8' Vox humana on the Oberwerk, and the 16' Posaune in the Pedal.

The move toward more 8' tone can also be seen in the specification of an organ built by J. A. Ehrlich's son, Johann Bernhard Ehrlich, for the Evangelische Kirche in Waldenburg, which, for its small size of one manual with ten stops, contains five stops at 8' pitch including an 8' Bifara II stop. The pedal for this instrument was originally permanently coupled to the manual with no independent stops, but in 1790, three stops were added: a wooden 8' Oktavbaß, an 8' Violon, and a 16' Subbaß, and the pedal coupler was made optional so that the pedal could play independently of the manual. The original pipework is still present in the modern instrument, though a new second manual was added in the nineteenth century and retained in the 1973 restoration by Peter Plum.[96]

Though these instruments are only a small sample of the instruments extant from the mid-eighteenth century in Southern and Central Germany, they show a consistent range of characteristics. First, they have a small proportion of reeds to flue work (see Table 3.1 for comparison). They also have an abundance of flue stops at 16', 8', and 4' pitch. These organs have many imitative stops designed to embody the instruments of the late Baroque orchestra, and many instruments have outward-turned consoles (Southern Germany) and Kammerton stops (Thuringia and Saxony) which allow the organist more flexibility and ease when working with the instruments. During the next few decades—

---

[96] Völkl, 166.

Table 3.1

Proportion of Reeds in Mid-Eighteenth Century Instruments

Intrument Builder, Location	Total Stops	Flue Stops	Reed Stops	Reed Stops as % of Total
Ehrlich, Bad Wimpfen 1748	23	22	1	4%
Gabler, Ochsenhausen 1734	49	42	5	10%
Gabler, Weingarten 1750	66	56	8	12%
Hildebrandt, Naumberg 1746	53	45	8	15%
Schmahl, Ludwigsburg 1747	18	17	1	6%
Trost, Waltershausen 1735	52	45	7	13%
Trost, Altenburg 1739	42	36	5	12%

into the early nineteenth century—the organs would undergo a transformation that made them into even more orchestral instruments, eventually becoming one-person orchestras by the mid-nineteenth century.

During the late eighteenth century, much of Europe underwent significant changes. One of the most important was the emergence of the Enlightenment. The Enlightenment was based on a movement away from superstitious belief and toward logic and reason as the main progenitor of ideas. It also encouraged the belief that people were able to govern themselves and should make decisions on their own; it was the age wherein modern democracy was born.[97] Importantly for Europe, this also meant the end of the French monarchy, at least for a few decades. The French Revolution sparked a decades-long period of conflict starting in 1789 which ravaged most of Europe. The

[97] James MacGregor Burns, *Fire and Light: How the Enlightenment Transformed Our World,* (New York: St. Martin's, 2013), 9-38.

Napoleonic Wars that followed further entrenched Europe into a financial crisis and spread Enlightenment secularization ideals across the continent.[98] This led to the secularization of the grand abbeys in Swabia in 1803, including those mentioned in this document.[99] That in part explains why some of these abbeys had different names when they were founded than they do today.[100]

During this period, there was also a flowering of the arts, thanks in large part to Countess Maria Theresa (1717-1780) and the Hapsburg dynasty in Austria and Frederick the Great (1712-1786) in Prussia. Both rulers had a strong affinity for the arts and music, and both cultivated a strong presence of orchestral music and opera in their courts. The first secular concert halls, descendants of the opera houses, were opening during this time, along with some of the first dedicated music conservatories. The Leipzig Gewandhaus opened in 1781, and the first school dedicated to high-level performance training in secular music opened in Paris in 1795, the Conservatoire National de Musique et d'Art Dramatique. This was also a period of growth for orchestras, which increased in

---

[98] Mike Rapport, *The Napoleonic Wars: A Very Short Introduction,* (Oxford: Oxford University, 2013) gives an overview of the history of the Napoleonic Wars and their economic and social consequences in Europe.

[99] Kaufmann, 10; Fulbrook, 97; Jakob, 35.

[100] For instance, the Benedikterabtei in Ochsenhausen became the Pfarrkirche St. Georg after it returned to service in the Catholic Church.

size from a few players located in a ducal court or a church gallery to dozens of players seated on stage in a concert hall.[101]

For the most part, this secular approach to music, and especially the pianistic music of the Rococo style, had little to do with the organ, which up to this time had been a largely sacred instrument indelibly linked to church use. Ironically, it was a Roman Catholic priest, Abbott Georg Vogler (1749-1814), who would bring a new secular perspective to organ music. Abbott Vogler was extraordinarily well-traveled; in addition to his travels across Europe, including Scandinavia, he traveled to Africa and brought back what he claimed were folk songs from the region.[102] Vogler was a controversial figure in many ways: he was a music theorist, organist, composer, and organ building theorist, and in all of these he pushed boundaries, often to excess. Mozart notoriously referred to him as a charlatan.

As a music theorist, Vogler expanded on the ideas of his teacher Francesco Antonio Vallotti, but took them to an extreme, adding more tones to the triad including not only the seventh and ninth, but eleventh in his compositions.[103] He improvised frequently in his performances, and he was especially well-known for his imitations of

---

[101] David Koury, *Orchestral Performance Practices in the Nineteenth Century: Size, Proportions, and Seating,* (1981; repr., Ann Arbor, MI: UMI Research Press, 1986), 163-171.

[102] Floyd K. Grave and Margaret G. Grave, *In Praise of Harmony: The Teachings of Abbé Georg Joseph Vogler,* (Lincoln, NE: University of Nebraska, 1987), 230-233.

[103] Bynum Petty, "Charlatan or Visionary? Abbé Vogler and His Theory of Organ Design," 20; Floyd K. Grave and Margaret G. Grave. *In Praise of Harmony: The Teachings of Abbé Georg Joseph Vogler,* (Lincoln, NE: University of Nebraska Press, 1987), 16, 22-30.

thunderstorms on the organ. When confronted about playing such overtly secular music on the organ in churches—spaces that were supposed to be reserved for the sacred—he countered that he wanted to exploit the full musical potential of the organ; it just happened to be sitting in a church.[104] It is indeed ironic that this remark came from someone who was himself an ordained priest.

Probably one of Vogler's most controversial contributions to music history is his orchestrion, not to be confused with the automated band organ of the same name from the nineteenth century. The orchestrion was constructed based on Vogler's Simplification System, which was in turn based on Giuseppe Tartini's discovery of resultant tones.[105] For instance, if one plays two notes at 16' pitch a fifth apart at the low end of the organ keyboard, it is possible to hear a resultant 32' pitch note created by the interference pattern that the two pitches a fifth apart form when played together. This is further strengthened if more overtones, such as the tierce, are added. To this end, Vogler advocated replacing as many low-pitched ranks as possible in the organ with pipes that sounded the harmonics of a given pitch instead of the fundamental in order to create resultant tones, since that approach needed far less pipe metal or wood than simply building pipes that actually played the fundamental pitches. He also dispensed with mixtures and upperwork other than the upperwork needed to create his resultant tones

---

[104] Grave, 236.

[105] David Britton, "Abbé Georg Joseph Vogler: His Life, and His Theories on Organ Design," DMA diss., University of Rochester, Eastman School of Music, 1973; accessed July 24, 2019, http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/302677176?accountid=4485, 63-66.

because they did not give the orchestral effect he desired. In line with his other accomplishments, he replaced everything he could with resultant tones, even to the point where the sounds were no longer effective. Johann Christian Heinrich Rinck found the instrument to be unplayable.[106] The sonic results must have been horrific, but apparently, the orchestrion was well-received in London, and several organs in Europe were rebuilt according to this principal around the turn of the nineteenth century.

Johann Nepomuk Holzhey

Johann Nepomuk Holzhey (1741-1809) is one of the most important builders in Southern Germany during the late eighteenth century. He trained with Karl Riepp (1710-1775) and followed his school, influences of which can be seen in Riepp's organ in Ottobeuren.[107] Karl Riepp is best known for his French Classical instruments, which he built as a resident in Dijon after moving to France and obtaining French citizenship. However, Riepp built instruments in South Germany in Ottobeuren which seem much more in line with the designs of Joseph Gabler than with Andreas Silbermann. Though his work was greatly limited after the secularization of the abbeys and the onset of Napoleonic Wars, Holzhey remained active as an organ builder and mechanic until his death from an accident in 1809.

There are unfortunately no reed pipes extant in their entirety from any instrument by Holzhey, only parts of a few reed pipes. All the reed ranks present in Holzhey's

---

[106] Petty, 21.

[107] Ulrich Höflacher, *Johann-Nepomuk Holzhey: Ein Oberschwäbische Orgelbauer,* (Ravensburg, Germany: Oberschwäbische Verlaganstalt Drexler & Co.), 1987,

instruments are recreated.[108] Since so few remnants of Holzhey's reeds are left, most of the reconstruction has been from educated guesswork based on the historical records available. Holzhey is known to have used French reeds in his instruments, similar to those found on French Classical organs, so the current reed pipes in his instruments were rebuilt in the style of Cliquot.[109]

Unfortunately, due to the poor economic situation in Southern Germany during the late eighteenth century, Holzhey often used thin metal for his pipes, sometimes resulting in the damage or collapse of some of the pipes.[110] Other cost-saving features are present in his organs as well. Several ranks in his organs have common basses, meaning two different ranks of pipes sometimes share a bass octave. This saves both space and money, since the bass pipes are the largest and, therefore, the most expensive to produce. The effect is normally not noticeable since timbre differences between registers become less pronounced at the low pitches these pipes would play. The ample acoustics of the large stone churches in which these organs are located make up for any slight loss in volume from having one pipe function as two. In addition, several of Holzhey's organs were built in pairs, saving both labor and hours of design work. For instance, his organs for Obermarchtal and Weißenau have nearly identical specifications with only a few differences between them.

---

[108] Ulrich Höflacher, "Johann Nepomuk Holzhey - ein süddeutscher Orgelbauer des Klassizismus: zum 200. Todestag," *Ars Organi* 57, no. 4 (12, 2009): 220.

[109] Information given to me by Ulrich Höflacher during my visit to Weißenau.

[110] Höflacher, "Johann Nepomuk Holzhey - ein süddeutscher Orgelbauer," 220.

Evolution in his style can be seen comparing his first organ to instruments built only a few years later. Holzhey's first instrument is a small organ of seven stops for the choir of the Franciscan Abbey of the Holy Cross in Kempten. Nothing remains of the original instrument now except for the case. However, records for the original contract of the instrument and records of its existence in the nineteenth-century provide enough information to enable an accurate re-creation of the specification and insight into some surprising details of the instrument.[111]

Of the seven stops on the instrument, three were made of wood: the 4' and 2' principals and the 16' Subbaß in the pedal. The pedal was permanently coupled to the manual in the Italian manner, though a later modification to the instrument allowed the pedal to play independently. The organ was tuned in meantone temperament, something already almost completely out of style in most of Europe, though in Italy the practice was still common. Even Gottfried Silbermann was criticized for using an archaic unequal temperament, though his was a modified meantone that allowed the organist to play in all keys.[112] In addition, the Holzhey organ had a short octave in the bass.

One might not expect an organ built in such a conservative style to be built by an organ builder who would later exhibit pre-Romantic tendencies in his organs and who would experiment with new timbres in his instruments. These features are already present less than a decade later in his organ for the Church of Saints Peter and Paul in Obermarchtal and its twin in the Abbey Church of Saints Peter and Paul in Weißenau.

---

[111] Höflacher, *Johann Nepomuk Holzhey*, 15.

[112] Andersen, 202.

Even more progression in a symphonically-minded direction and a more robust emphasis in the bass tones of the organ exist in his organ for the Benedictine Abbey at Neresheim, one of his later instruments.

In June of 2018, I was able to visit the Holzhey organs in Weißenau and Neresheim. These organs have many features in common with the Gabler organs in Weingarten and Ochsenhausen. They both have casework that wraps around the rear windows of the church and does not give a clear visual indication where any particular division is located. Despite long tracker runs, they retain light action, described by Ernst Ludwig Gerber in his 1812 *Lexikon der deutsche Tonkunst*.[113] They also have outward-turned consoles with the stop knobs positioned in terraces along the sides of the keydesk. Originally, Holzhey built French Classical-style pedalboards on these organs with a compass of C-a˚, which have since been replaced by modern pedalboards with extensions up to c', though a replica of the original pedalboard is present in Weißenau and can be switched out for the current pedalboard if the organist so chooses. The French Classical style pedal boards have rectangular knobs that protrude upward through the false floor under the console instead of having the entire length of the pedal lever being visible and usable as a pedal in its entirety. (See Figure 3.2)

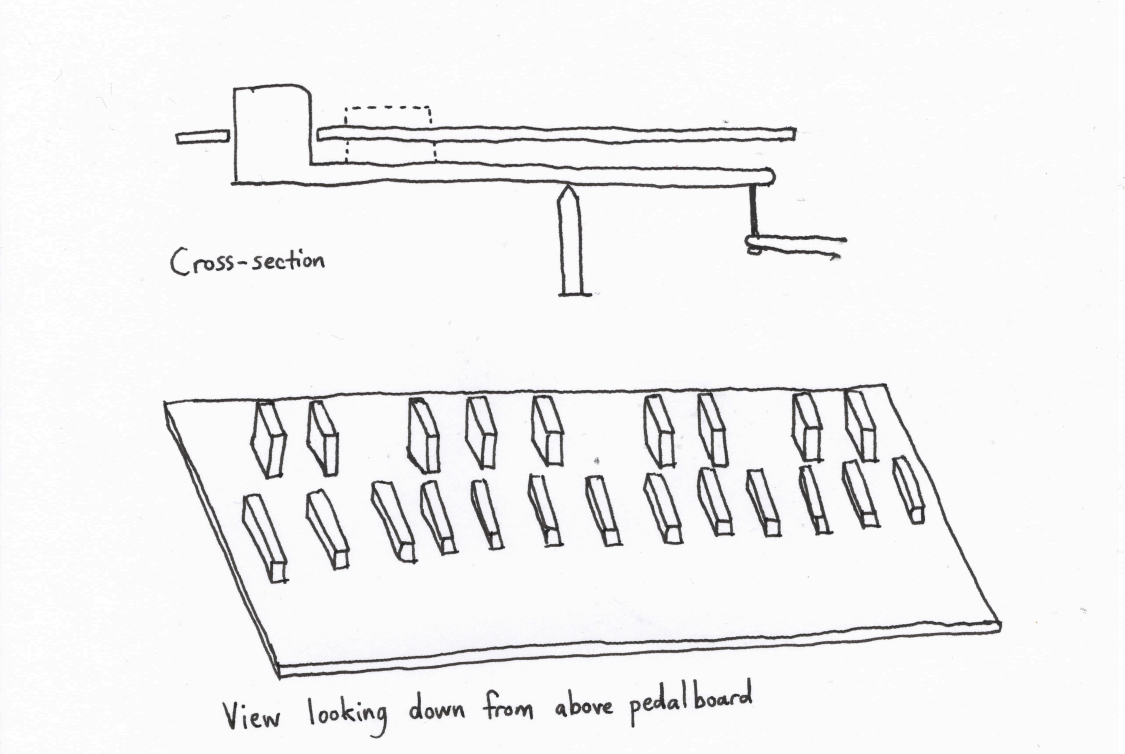
The organ of Weißenau has an abundance of 8' stops of various timbres, including strings, flutes, principals, along with several hybrid stops. The abundance of soft string

[113] Höflacher, "Johann Nepomuk Holzhey - ein süddeutscher Orgelbauer, 220.

stops on this instrument is particularly noteworthy, including the Dulciana of the Echowerk, the Salicional of the Oberwerk, and the Violon in the Pedal. The Viola stop on the Hauptwerk is actually an undulating stop, meant to be paired with the Gamba. The Unda Maris on the Oberwerk is likewise an undulating stop, and it is paired with the Salicional. Therefore, together with the tremulant on the Echowerk, all three manuals have the possibility for some type of vibrato in their flue registers.

Figure 3.2

Holzhey Pedalboard[114]



It is also worth noting that the pedal division has both a principal and string at 8' pitch but no flute. The principal and especially the string are both voiced gently, so they can easily be used to accompany soft stops in the manuals. In addition, the 16' Principal

[114] Hand drawing by the author.

of the Hauptwerk can be used in the Pedal by using the double-pallet coupler. When this coupler is engaged, the 16' Principal's bottom octave, which is normally silent on the Hauptwerk, plays in the Pedal.

The Echowerk and Oberwerk manuals each have a reed stop, and, in the Oberwerk's case, also a string stop, which is divided into bass and treble sections at f#°/ g°, each pulled separately by a different stop knob. This enables either the entire manual to be played using the same registration or for a different registration to be used in the bass and treble sections. This allows the organist to play a melodic solo on one end of the manual and accompany it on the other end of the same manual. During my visit to Weißenau, Ulrich Höflacher, organist at the Abteikirche Weißenau and author of *Johann Nepomuk Holzhey: Ein Oberschwäbische Orgelbauer*, demonstrated for me the usefulness of the divided ranks for improvisation, using the 4' Fugari Bass with the 8' Oboe on the Oberwerk manual, accompanying the solo oboe voice with the string stop on the lowest octave and a half of the same manual. The 4' pitch of the string enables even a solo in the high range of the keyboard to be accompanied at a higher pitch than would normally be present at 8' pitch in the bottom range of the keyboard, giving a much tighter harmonic effect. This could then be reinforced in the pedal. In addition, since the Fugara is divided into treble and bass, the oboe solo would not automatically have the Fugara sounding along with it in the treble range.

There are several compound stops on this instrument which draw more than one rank per stop. These are useful for improvisation, since it is an efficient method to change registration in a way that takes advantage of the tendency for certain registers to be used

together in standard practice. Therefore, the organist only needs to pull one stop, and the full combination of stops needed is immediately engaged. One register that could be particularly useful for improvisation is the Hörnle stop, which in the bass range is simply a 2' flute, but adds a tierce starting at g°, creating a cornet along with whichever 8' and 4' stops the organist has chosen to have already pulled out before adding the Hörnle. This also allows accompaniment of the solo in the bass since the tierce only descends to g°. In addition, the Nasard II on the Hauptwerk and the Quint II on the Oberwerk function in a similar fashion, both containing 2' ranks in addition to the 2-2/3' rank for which they are named.

Like at Weißenau, the organ at Neresheim Abbey has three manuals, the bottom manual functioning as the main manual, the second manual as a secondary manual to the main manual, and an echo division controlled by the third manual. Also like the Weißenau organ, the windchests in the Echo division are divided into bass and treble chromatic windchests, each of which is located in a completely enclosed chamber with doors at the base of the casework. Neresheim's organ was also originally built with a French Classical pedalboard, but that pedalboard has since been replaced with a German-style pedalboard which extends the compass up to f'.[115]

The organ at Neresheim also has distinct differences from Weißenau. Neresheim's organ is larger, with even more focus on the bass registers and 8' stops than at Weißenau. The pedal division at Neresheim has flutes in both 8' and 4' pitch and a principal at 16'

[115] Völkl 194.

pitch but no 8' Octav. Perhaps with the Hauptwerk to Pedal coupler, Holzhey felt the flutes would be more useful than a principal in the pedal. Certainly, if he were following the model of French Classical organs, the flutes in the pedal would be much more typical than principals.[116] In addition, Holzhey seems to be borrowing from the large organs at the end of the French Classical period by adding a 32' Bordon to the Hauptwerk. This stop is also playable in the pedal by using the Hauptwerk to Pedal coupler, but it does not extend to full compass; it only goes down to g˚. It seems this stop may have been intended to function more as a part of the manual Plein Jeu rather than reinforcing the bass in the pedal, though it is certainly effective when used with the coupler.

Like at Weißenau, this instrument has the possibility of a vibrato on every manual, though in this case the tremulant for the Echowerk only functions on the treble windchest. Of course, this is not a problem since most undulating stops are missing their bottom octave, and the tremulant is only noticeable in the treble anyway. However, the Hauptwerk's undulating stop is a Pifarre (spelled Piffaro in modern spelling), a flute that is probably meant to be paired with the Copel, the only other 8' flute on that manual. The Salicet on the Oberwerk is undoubtedly meant to be paired with the Unda maris, since they share the same bass pipes.

The compound stops on this organ are similar to those at Weißenau, though in most cases they contain more ranks of pipes. One particularly interesting example is the

---

[116] See Fenner Douglass, *The Language of the French Classical Organ: A Musical Tradition Before 1800,* (New Haven, CT: Yale University, 1969), 70-92, for a more thorough discussion of typical specifications of French Classical organs.

Sonnet II on the Oberwerk, which shares the bass of its 4' rank with the Feldflöt. Its ranks are pitched at 4' and 1-3/5', with the 2' and 2-2/3' missing. Perhaps these missing pitches are meant to be left out for the sonic effect of a gap registration, or perhaps the missing pitches are meant to be selected from the other stops on that manual to create varied colors of a cornet. This stop seems to be an experiment with the use of overtones; there is only one 2' stop on the same manual and both 2-2/3' stops are already compound stops with multiple ranks, so if Holzhey meant to include other pitches, why would he not simply include them? Together with the 8' Bordon or 8' Flauta travers, the Sonnet stop creates an effective solo registration with a unique timbre.

There is also a "percussion" effect, the Pauken, controlled by two pedals that extend below C on the pedal board. These pedals control pipes tuned to A and d˚ that are sounded in such a way that they imitate the sound of kettle drums tuned to those pitches. It is not a true percussion effect, since the pipes are blown instead of being struck with some sort of striker mechanism, but the resulting sound is effective. The addition of percussion effects on these instruments, like the Glockenspiels of Weingarten and Trost's organ in Altenburg, lend an even more orchestral effect to organs already full of 8' and 4' timbres that imitate orchestral instruments.

Georg Ludwig Mezler

On the opposite end of the size scale, the Mezler organ in Bürg is an example of a small South German organ from the end of the eighteenth century. During my visit to Neuenstadt am Kocher, David Dehn showed me this instrument, which is only about a mile from Ehrlich's organ. Georg Ludwig Mezler, an organ builder from Steinbach, built

several organs in the Mittelfranken region. The case is short and deep. The original location of the instrument was above the altar on the the north side of the church, but was moved to its current position in the gallery at an unknown date. The church itself is a small octagonal structure, and the gallery wraps around most of the inside of the church; the organ is positioned near the pulpit. Instead of an 8' Principal, this instrument has an 8' Solicional (Salicional), a soft string, which when combined with the 8' Großgetäckt (Groß gedeckt), can be satisfactorily substituted for an 8' Principal should the organist desire to do so. This small instrument has two strings at 8' pitch in the manual and the usual pairing of 16' Subbaß (spelled Suppaß in the original specification) and 8' Violonbaß in the pedal. The pedalboard today extends to d', but originally only reached f°, giving only an octave and a half of pedals, suitable for reinforcing the bass of chorales or the accompaniment of vocal or instrumental soloists. However, the manual compass of C-f''' is original, reflecting the extension of the upper keyboard range from the Baroque c''' or d''' to f''' or g''', which was beginning to appear around this time.

The original wind pressure was around 55mm water column, reflecting the tendency toward low and gentle winding in the South German organs, and that low pressure has been retained in the organ's current state.[117] The bellows are located in the church's attic, directly above the organ, similar to the Holzhey organ in Weißenau

[117] Information obtained from David Dehn, organist at Neuenstadt am Kocher.

Abbey.[118] The gentle wind pressure allows for a large amount of flexibility in the wind and a strong response to the player's touch from the keyboard. Even on full organ, this instrument is gentle, filling the room satisfactorily while never being forceful. Each of the manual stops are similar in volume, though the strings are a bit quieter than the rest of the stops. Together, along with the pedal stops, they create a resonant full sound.

Johann Eberhard Walcker

Johann Eberhard Walcker (1756-1843) started the Walcker organ company in Cannstatt in 1780. He studied with Johann Georg Fries, a student of the Schmahl family in Heilbronn.[119] Most of his work consisted of repairs; he only completed seven new organs during his career.[120] His magnum opus, a new organ for the Stadtkirche in Cannstatt was built in 1787 and installed in 1794. This organ consisted of twenty-five stops spread over two manuals and had the following specification:

Hauptmanual	*Positiv*
16' Bordun (wood)	8' Lieblich Gedekt (hardwood)
8' Principal (tin)	4' Principal (tin)
8' Viol di Gamba (tin)	4' Juval-Flöth (hardwood)
8' Salicional (tin)	2' Octav (tin)

---

[118] Information for the location of bellows of both organs mentioned obtained onsite. The Holzhey organ in Weißenau currently has two bellows which are pumped by a machine that mimicks the motion of hand pumping, providing a gentler and more buoyant winding than an electric blower would provide. There is no electric blower fan on the Weißenau organ. Since the bellows of an organ typically deflate one at a time, only two bellows are needed except for the largest instruments. Additional bellows are provided to give the calcant time to ensure the bellows are properly inflated without becoming physically exhausted by pumping them quickly and constantly for a prolonged period. Originally the Holzhey organ had six bellows in the attic.

[119] Eggebrecht, 161; Völkl, 20.

[120] Eggebrecht, 162.

8’ Quintatoena (tin)
8’ Groß-Gedekt (wood)
8’ Flautravers (hardwood)
4’ Octav (tin)
4’ Gemshorn (tin)
4’ Klein-Gedekt (wood)
2-2/3’ Quint (tin)
2’ Wald-Flöth (tin)
2’ Mixtur VI (tin)
2’ Cornet V from c’ (tin)
1’ Cymbel III (tin)
8’ Vox humana (tin)

Pedal
16’ Principal-Baß (wood)
16’ Violon-Baß (wood)
16’ Sub-Baß (wood)
8’ Octav-Baß (wood)
16’ Posaunen-Baß (wood)

Out of twenty-five stops, ten were made from wood. The Hauptmanual had six stops at 8’ pitch, and the entire organ had only two reeds: the 8’ Vox humana in the Positiv and the 16’ Posaunen-Baß in the Pedal division. Four out of five of the Pedal stops were at 16’ pitch, along with one of the Hauptmanual stops. One notices the abundance of both flute and string stops on the instrument. The Positiv seems to function largely as a small echo division to the Hauptmanual with its choice of two flutes and 8’ Vox humana, though it does possess a principal chorus beginning at 4’ pitch. The Juval-Flöth on the Positiv (in modern spelling Jubal Flute) is a double-mouthed flute made of wood similar to the Doppelflöte, and both the Jubal Flute and Doppelflöte would become common registers on many nineteenth-century German instruments.

The Cannstatt organ was featured in one of Abbé Vogler’s concerts in 1807. However, before Vogler played it, it was rebuilt according to his Simplification System.[121] The specifications of the altered organ no longer exist, but to provide an idea

[121] Ibid.

of what Vogler's system entailed, I have included the specification of a similar rebuild from St. Peter's Church in Munich from 1809:[122]

Manual I.
Bass
32' Prinzipal (from FFF)
8' Prinzipal
5-1/3' Klein Nasat
3-1/5' Terz
2' Prinzipal
1-1/3' Quint
Treble
32' Prinzipal
8' Prinzipal
5-1/3' Klein Nasat
3-1/5' Terz
2' Principal
1-1/3' Quint

Manual II.
Bass
16' Prinzipal (from f')
10-2/3' Gross Nasat
3-1/5' Terz
4' Prinzipal
2-2/3', 1-3/5' Carillon
1' Prinzipal
Treble
16' Prinzipal
10-2/3' Gross Nasat
6-2/5' Terz
4' Prinzipal
2-2/3', 1-3/5' Carillon
1' Prinzipal

Manual III.
Bass
32' Posaune (from FFF)
16' Contrafagott
8' Crumhorn
4' Trompet
Treble
32' Fagotto
16' Vox humana
8' Oboe
4' Clarino and Zink

Pedal (from Manual III.)
32' Bombarde
16' Serpent
8' Bassethorn
8' Fagotto
4' Dulzian
4' Clarinet
2' Englischhorn
1' Cornetto

Manual IV.
Bass
16' Theorbe (from FFF)
8 Viola da Gamba
Treble
16' Alto Viola
8' Flagiolett

Pedal (from Manual II.)
16' Prinzipal
10-2/3' Gross Nasat
4' Prinzipal
2-2/3' Quint

Manual V.
Bass
8' Basso del Flauto
4' Gemshorn
Treble
8' Flauto traverso
4' Flauto piccolo

Pedal (from Man. V.)
8' Flautone
4' Flûte à bec
2' Flauto dolce
1' Spitzflöte

Pedal (from Man. IV)
16' Violonbass
8' Violoncello
4' Gambetta
2' Violino

[122] Petty, 22.

In addition to the obvious number of mutations, Vogler's design treated each of the manuals as a different section in the orchestra.[123] This particular aspect of his design did not transfer into Romantic organs in which some of his influences were applied. However, Vogler used two features in his orchestrion that would become commonplace in the Romantic tradition; he enclosed the entire organ in a swell box, and he used free reeds in his instruments, one of the first organ builders to do so.[124]

In another break with tradition, Vogler used chromatic windchests for his instruments.[125] In most instruments up to this point, the layout of the windchests was based on either a system of major seconds or major thirds, resulting in a symmetrical design. This was necessary because most façade pipes in these instruments were functional, and they needed to be located near their corresponding toeholes in the windchests in order to remain responsive. Non-chromatic windchests also allowed the weight of the heavy bass pipes to be distributed across both ends of the windchest instead of being concentrated in one place. A final benefit of the non-chromatic system is the tuning; large metal bass pipes are less likely to fight with each other's tuning when they are located far apart from each other spatially. In this system, however, many of the

---

[123] Britton, 80-84.

[124] Douglas E. Bush and Richard Kassel, eds., *The Organ: An Encyclopedia,* (Abingdon, UK: Taylor and Francis, 2006), 210. The free reed design had already been around for years, but the first person to design one for an organ was German physicist Christian Gottlieb Kratzenstein in 1781, which he did to help the Czech organ builder Franz Kirschnik. Vogler discovered this invention when he encountered an organ built by Kirschnik, and he incorporated the device into his orchestrion.

[125] Britton, 60.

lowest bass pipes were tubed off from the main windchest, which, while not problematic or even noticeable, may result in a slight delay in the speech of the lowest pipes.

Vogler's adoption of chromatic chests, on the other hand, offers several advantages. The simplest advantage is that the chromatic chests make identifying which pipes play which notes a simple task, and octave transmissions of stops becomes a simple matter of either tubing off the pipes or boring a repetitive pattern of channels in the toeboards. More important for the development of the Romantic organs, though, is the effect chromatic chests have on bass pipes. Chromatic chests can be easily turned so that the smallest pipes are in the front and the largest are in the back. This allows the heavy bass pipes to be near more structural support, such as an exterior wall of a church, and it allows them to sit directly on top of the toe holes that provide them with wind, giving them prompt speech and copious air supply.[126] Chromatic chests are also easily divided, so that the large bass pipes, which take more wind, can sit on a separate chest from the smaller pipes, creating more stable wind. Placing the smaller pipes in front and the larger pipes in the rear also allows for better balance in volume, since the larger pipes are naturally louder than the higher-pitched small pipes.

E. F. Walcker and Friedrich Ladegast often implemented chromatic chests in their organs. The Ladegast organ in Schwerin is a fine example. Most of the pipes included in the Schwerin instrument are on chromatic chests, leading to a deep case with most of the pipes in the lower level of the instrument. The pipes of Manual III and the soft pedal

---

[126] Ibid.

division are located on the top level of the instrument, reflecting Ladegast's intention for these divisions to complement each other, and both divisions employ chromatic chests with the smallest pipes in front and the largest pipes in the rear. Walcker's instruments in the Paulskirche in Frankfurt, Ulm Münster, and Boston also employed chromatic chests which did not have any relation to where the façade pipes were placed. This reflected the already common practice of designing casework that did not necessarily reflect the interior layout of the instrument, but in Vogler's case, he eliminated the need for working façades completely; his orchestrion had no façade of pipes at all. Vogler was not the first to use chromatic chests; Holzhey used chromatic chests in the Echo divisions of his instruments.[127]

Eberhard Friedrich Walcker

The rebuild of Walcker's organ in Cannstatt left a strong impression on J. E. Walcker's thirteen-year-old son Eberhard Friedrich. Eberhard Friedrich Walcker learned the Symplification System from Vogler himself and later applied some of the elements he learned to his organs.[128] In his memoirs, written at the end of his life, Walcker recounts his early love of organ building in the following quote:

> I inherited the love of organ building from my father, who was at the time in Cannstatt, himself a gifted organ builder. My mother was against this choice of profession, because it paid too poorly. During the time of my youth, she was not completely wrong about that. The wartimes were not kind to the art; the congregations, for their part, did not have the church-centered mindset to spend much money on the worship services. As regards the organs themselves, many

[127] One could also go back much further than that, since all medieval portative organs, and most trunk organs, often called "continuo" organs, also have chromatic windchests.

[128] Eggebrecht, 163.

> limited themselves to repair work. Nevertheless, I remained steadfast in my decision to devote myself to this art, and that it was not in error. I lived in the hope of raising it above its prominent defects and of bringing the instrument to a level of cultivation that it would fit its primary task, which is to take its prized role in the worship service. Throughout my life a precious thought continually remained with me, that I being not ashamed of the gospel, could at least even if indirectly, do my part through my profession to serve the Christian Church.[129]

Eberhard Friedrich Walcker's first organ was constructed for the Evangelische Kirche in Kochersteinsfeld, a mere seven kilometers from Neuenstadt am Kocher. This organ was restored by the Walcker firm and moved to the Residence Palace of Ludwigsburg in 1980 to celebrate the 200th anniversary of the beginning of the Walcker organ building dynasty with Johann Eberhard Walcker in 1780.[130] It now stands in the room which originally housed G. F. Schmahl's organ from 1747, though the Walcker

---

[129] Quoted in Ralf-Tomas Lindner, "Die Orgelbauwerkstätten Eberhard Friedrich Walcker und Wilhelm Sauer." *Thüringer Orgel Journal,* (Arnstadt: Verein Thüringer Orgelsommer, 1997), 93-100, as follows: "Ich habe (…) die Liebe zum Orgelbau von meinem Vater, damals in Cannstatt, der selbst ein geschickter Orgelbauer war, geerbt. Die Mutter war gegen die Wahl dieses Berufes, weil er gar zu schlecht lohne. Daran hatte sie zu Zeit meiner Jugend nicht so ganz unrecht. Die Kriegszeiten waren der Kunst nicht günstig; die Gemeinden hatten ihrerseits viel zu wenig kirchlichen Sinn, um viel Geld an den Gottesdienst zu wenden; in Betreff der Orgeln beschränke man sich meistens auf Reparaturen. Gleichwohl ließ ich mich in meinem Entschlusse, mich dieser Kunst zu widmen, nicht irre machen. Ich lebte der Hoffnung, dieselbe über anklebende Mängel erheben und das Instrument auf eine Stufe der Ausbildung bringen zu können, daß er seiner Hauptaufgabe, würdigen Antheil am Gottesdienst zu nehmen, entspräche und es war und blieb mir, der ich mich des Evangeliums nicht schäme, zeitlebens ein lieber Gedanke, durch meinen Beruf auch meinerseits der christlichen Kirche wenigstens indirect zu dienen." English translation by the author.

[130] Völkl, 188.

organ is in a different location in the room from where the Schmahl organ would have stood.[131] One of the most striking features of the organ is its small size.

With only nine stops, the Walcker's Opus 1 has a surprisingly large variety of registration possibilities, as I discovered while playing several pieces on the instrument during my visit to Ludwigsburg. Instead of an 8' Principal, it has an 8' Quintaton (quintadena) alongside the 8' Gros Gedeckt and the 8' Viol di gamb. The Quintaton can be combined with the 8' Gros Gedeckt to create a convincing substitute for the missing principal tone. In the Walcker Organ Company's own publication, *Orgelwissenschaft und Orgelpraxis*, this stop is instead called 8' Salicional, though the register in its current state in the organ sounds much more like a quintadena, a flute with a strong quint overtone, than the thin string normally described by the word "salicional."[132] In the nineteenth century, the original 2' Waldflöte was replaced with an 8' Principal, but the organ has since had that change reversed.

In addition to three stops at 8' pitch, the nine-stop instrument includes a principal-based plenum achievable with the 8' Gros Gedeckt, either by itself or with the 8' Quintaton, 4' Principal, and Mixture, a full flute chorus at 8', 4', and 2' pitches, and a pedal division with two independent stops. Unfortunately, the original 8' Violon in the pedal has been replaced with a 4' Choralbass, giving the possibility of playing a tenor cantus on the octave-and-a-half pedalboard but removing the string that would normally have filled in the harmonics missing from the stopped 16' Subbaß. However, even

---

[131] Ibid., 106, 188.

[132] Eggebrecht, p. 207.

without the string stop, the pedal still provides a solid bass foundation for the full organ when coupled to the manual via the double-pallet coupler.

One might at initially think that the first instrument of the revolutionary E. F. Walcker would show more of the adventurous experimental style for which he later became famous, but the only major difference between this organ and the organs of Mezler and even Ehrlich is the case design. The case is much simpler than the Baroque and Classical organs, with one central tower and two sets of flats on either side, each of which gently slope upward toward the center. The console is turned outward, and the manual is covered with a wooden lid which, when lifted, doubles as the music rack. The pedalboard is short compass, only extending to g˚, like J. A. Ehrlich's organ in nearby Neuenstadt am Kocher, though in this case no pitches are missing. The action is shallow and somewhat heavy for an instrument its size, similar to the Mezler organ in Bürg, whose action feels almost identical. Unfortunately, the modern wind supply mechanism for the Walcker organ creates a completely stable wind pressure, which has a slightly forceful effect when blown through the pipes, an effect I discussed with Alexander Eckhardt. As, I saw during my visit, the current air reservoir is turned on its side to fit into the back of the case, and the pressure is controlled by a spring mechanism, unlike the original wedge bellows, which would undoubtedly have allowed a gentler and more flexible winding for the instrument.

During the construction of Walcker's Opus 1, the German builder Andreas Laukhuff was serving as an apprentice to the Walckers. He inscribed his name on the inside of Opus 1:

> Andreas Laukhuff, organ builder's apprentice, a native of Brezfeld, hereby inscribes his name as a helper to this work for the memory of his name.
>
> Cannstatt, February 28th, 1820.[133]

This further shows the connections even the early builders of the Romantic Period had to the organs of the transitional period. Likewise, when Carl August Buchholz, an early Romantic builder in Berlin, built his organ in Greifswald (whose specification can be found in Appendix A), he chose a similar registration scheme to what one might find on one of the organs of Holzhey or Johann Eberhard Walcker. The traditions of few reeds and mixtures and many stops at 8' pitch continued. (See Table 3.2) The tierce mixtures of Thuringia and Mittelfranken would also appear as features in many of the early Romantic instruments. Vogler's Simplification System provided a way to reinforce the bass registers: resultant tones. In addition, his free reeds provided opportunity for more expression in instruments otherwise limited to dynamic changes through registration only.

Table 3.2

Proportion of Reeds in Transitional Organs

Instrument Builder, Location, Year	Total Stops	Flue Stops	Reed Stops	Reed Stops as % of Total
Ehrlich, Waldenburg 1779	13	13	0	0%
Hildebrandt, Hamburg 1768	64	53	11	17%
Holzhey, Weißenau* 1785	41	33	8	20%
Holzhey, Neresheim* 1797	49	39	9	18%

[133] E. F. Walcker and Cie, *E. F. Walcker and Cie., Organ Builders*. (Ludwigsburg, Germany: E. F. Walcker and Cie.), 1960, 1.

Instrument Builder, Location, Year	Total Stops	Flue Stops	Reed Stops	Reed Stops as % of Total
Mezler, Bürg 1797	10	10	0	0%
J E Walcker, Cannstatt 1794	25	23	2	8%
E F Walcker, Kochersteinsfeld 1821	9	9	0	0%

* Each set of stops divided treble/bass are considered one stop here for the sake of comparison, since, when drawn together, they act as one stop.

The early nineteenth century provided further changes to European society that pushed the organ into its new symphonic sound world. Technology was developing faster and faster thanks to the advent of the Industrial Revolution. Standardization was also becoming commonplace. A mathematical system of construction that increased efficiency and cost was the natural next step for organ building, and it appeared both in elements of Vogler's Simplification System and in the organ building treatises of Georg Andreas Sorge (1703-1778).

Though he was a contemporary and friend of J. S. Bach, Sorge's idea of a logarithmic system of pipe scaling was appealing to late eighteenth- and early nineteenth-century theorists like Vogler and eventually Johann Gottlob Töpfer, who would write one of the most important organ building treatises of the nineteenth century, the *Lehrbuch der Orgelbaukunst* (the Art of Organbuilding), in 1855. Sorge's treatise was nearly lost to history, since he only provided copies to those who asked for it. Fortunately, either Johann Gottlob Klemm or David Tannenberg in Lititz, PA asked for two copies, and they are now the only two known preserved copies of this treatise and the only source for

information on Sorge's ideas.[134] Töpfer's *Lehrbuch der Orgelbaukunst* advocated for a standardization of pipe scaling similar to Sorge's—both were based on mathematical models—which he called the Normalmensur. Töpfer gave ten scales for pipes in his treatise, which Friedrich Ladegast adopted soon after the book was published.[135] However, similarly to Dom Bédos de Celles' *L'Art du facteur d'Orgue* before him, his organ building treatise was more descriptive than proscriptive: it codified things already taking place instead of suggesting new principals. Töpfer's system of Normalmensur also meant that pipes could be produced quickly and efficiently, therefore cheaply, instead of starting from scratch at the beginning of each instrument as was the previous practice.

In addition to the industrial aspects of organ building, the orchestra kept growing. New instruments such as the clarinet and ophicleide were becoming more commonplace, contrabasses were now standard, and the overall sound kept growing thicker. The woodwind section especially was growing. Brass instruments now had valves that enabled them to play in any key, allowing more adventurous experiments in harmonic language.[136] Similarly, equal temperament was becoming more and more standard in organs, encouraging a similar result in organ music. The strong emphasis on the bass in

---

[134] Carl Otto Bleyle, "Georg Andreas Sorge's Influence On David Tannenberg And Organ Building In America During The Eighteenth Century," PhD diss., University of Minnesota, 1969, accessed November 10, 2019, http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/302393218?accountid=4485, I-37, I-48. The copies of this treatise are now kept in the Archives of the Moravian Church in Bethlehem, PA and the Moravian Music Foundation in Winston-Salem, NC.

[135] Kochel, 93.

[136] Koury, 163-171.

the orchestra was also reflected in the new mathematical principles in pipe scaling. Töpfer's Normalmensur emphasized the bass and treble over the melody.[137] Organs began appearing in places they had never been before, such as concert halls and synagogues. It was in 1810 that the first organs appeared in Jewish synagogues in Germany, a result of the Reform movement within European Judaism.[138] The organ builders also began casting off antiquated terminology and adopting more utilitarian names for the divisions of the instruments. Instead of naming the divisions for their placement within the case, such as Hauptwerk (main division), Oberwerk (upper division), Brustwerk (middle, or chest, division) and so on, the manuals were named in order of descending dynamics. Manual I was the loudest, followed by Manual II, and then Manuals III and IV. Except for the top manual, which sometimes acted as a Farbenwerk (color division, similar to the Echo division concept), the divisions of the organ all had access to similar timbres; only the dynamic range was different.

One example of this trait is the organ often cited as the instrument that gave birth to the style of German Romantic organ building: the Walcker organ for the Paulskirche in Frankfurt-am-Main. This organ was innovative in two ways. First, the façade was plain and flat, giving no indication of the divisions inside the instrument. The case was

---

[137] James Dale Holloway, "Performance convention and registrational practice in the Weimar organ works of Franz Liszt," DMA diss., University of Washington, 1998, accessed August 25, 2019, http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/304461251?accountid=4485., 78-81.

[138] Tina Frühauf, *The Organ and Its Music in German-Jewish Culture,* (New York, Oxford University, 2009), 28.

rectangular, and the pipes were positioned as a wall across the front.[139] Second, Walcker planned to include an innovative bass register in the organ: no doubt wanting to impress and outperform possible competitors, Walcker promised an open metal 32' rank on the first manual which would speak clearly and promptly. Though metal 32' pipes certainly existed at this point, none had ever been made that could speak quickly and sharply enough for its onset to be heard and to come with the rest of the ensemble. Fortunately, a chimney fire in Walcker's shop solved the problem. The workers were throwing spare wood into the fire, and some of the dust explosively combusted causing the chimney to belch at the pitch of a low 64' A. Walcker heard the noise and decided to measure the chimney to figure out the secret to the clear low pitch and discovered increasing the thickness of the pipe wall was the answer. He wrapped a 32' low C in an extra sheet of metal as a demonstration pipe and blew it for the skeptical committee chair at the Paulskirche, who was duly amazed.[140] For this instrument, Walcker's ingenuity was greatly praised.

This organ had two pedal divisions, each playable on a separate pedalboard, like Walcker's later instrument in Ulm Münster. This was likely a first attempt to create a

---

[139] Eggebrecht, 208. An earlier example of an organ with an unorthodox façade is the organ of the Michaëliskirche in Hamburg built by Johann Gottfried Hildebrandt, son of Zacharias Hildebrandt, in 1768. This organ had no clear distinction in the façade as to where the divisions were located. Peter Williams describes the case as heavy, massive, very much like many of the nineteenth century," Williams, 153. The instrument is also mentioned in Metzler, 19, as a precursor to the nineteenth century instruments. A photograph of the case can be found in Andersen, Fig. 78 at the end of his book (no page number present in the end matter), and its specification is included in Appendix A of this document. The organ was destroyed in a fire in 1906.

[140] E. F. Walcker and Cie., 3.

pedal division where the organist had even more dynamic control than simply switching a Hauptwerk to Pedal coupler on or off could provide. It would also give a registrant or the organist the opportunity to set a new registration on one division while the organist was using the other. The first division was the powerful and loud pedal division meant to be played with fuller registrations, and the second was the softer pedal division with only flutes and strings plus a soft 16' reed. Other organs, such as those in Ulm and Boston, would have a soft reed at 16' or 8' pitch as well, often a free reed, in a similar fashion to the Kammerton pedal division of the Wender organ in Merseburg.

The influence of Vogler's Simplification System, or at least the parts that worked, is apparent in the individual mutations in the first pedal division supporting the 32' harmonic series and in the low mutations in the first two manuals, including a tierce from the 16' harmonic series. This low tierce is also found on large French Classical instruments, and in those instruments it is used as a special color for solo lines accompanied on a different manual.[141] Here, considering the presence of a low Cornet supporting the 32' harmonic series, it could also be used to support the 16' harmonic series. Though the realizations of Vogler's Simplification System often led to undesirable results, his system of using resultant tones to reinforce the bass and creation of an organ meant to function in an orchestral manner contributed to the design of what would become the German Romantic organ. Walcker's genius was not in taking Vogler's approach wholesale, which he clearly did not, but in being able to discern which parts

[141] Douglass, 111.

worked effectively and finding applications for them in the aesthetic he was pursuing with his own instruments. In other words, he found the kernels of good ideas within a flawed system and used them to best advantage.

While many features of this instrument were new, such as the façade, the promptly-speaking 32' metal pipes, the gargantuan size, the two pedalboards, and the extensive use of low-pitched mutations, several features were based on the organ building tradition into which Walcker was born. The organ has a large number of stops at 16', 8', and 4' pitch, many string and flute ranks, and a small proportion of reeds to flue ranks. The mixtures likely contained tierce ranks, since Walcker was known to favor tierce mixtures; the Boston Music Hall organ had mostly tierce and octave ranks in its mixtures because of the abundance of quints already in the specification.[142] This abundance of tierce mixtures recalls the Thuringian practice and the Mittelfranken organ building tradition of Ehrlich.

The cone-valve chest for which Walcker became famous had not yet been invented. The first organ to use the cone-valve chest was Walcker's organ for St. Petersburg in 1840. Even then, Walcker did not completely invent the cone-valve chest on his own; a similar version of that type of windchest can be found in at least three of the organs Johann Sigmund Haußdörffer built during the 1740s and 1750s, among other

[142] Ochse, 203.

examples.[143] It is not known where exactly Walcker got the idea for the cone-valve chest, but it is based on the design of the spring chests occasionally used in early Baroque German organs, where the wind is admitted to channels under the individual registers, and each pipe played by a single note has its own dedicated valve.

An example of a smaller Walcker instrument which used the cone-valve chest is the still-extant organ in the town of Neuhausen an der Filder near Ludwigsburg and Stuttgart. This instrument is a small-to-medium sized instrument for Walcker's output, and it is important because it is fully playable, and it has been restored to Walcker's original specification. This instrument only has one mixture on the upper manual, a cornet, and a single reed per division. Out of thirty-two stops, it has six stops at 16' pitch, and thirteen at 8' pitch. The instrument has a large dynamic range, from the barely audible 8' Harmonika, a gently voiced wooden flute, to the full organ which is full but not overwhelming. The cornet mixture reinforces the three reeds on the instrument in a way that provides color but is not overwhelming. As Jeanette Fishell, head of the Organ Department at Indiana University states in her video recording of this instrument, "German organs from this period are like no other Romantic organ… even when it's full organ in this beautiful room, it's never too loud. It's very forceful without being loud."[144]

---

[143] Hermann Busch, "Zwischen Tradition und Fortschritt - Zu Orgelbau, Orgelspiel und Orgelkomposition in Deutschland im 19. Jahrhundert," in *Mundus Organorum: Festschrift Walter Supper,* edited by Alfred Reichling, (Berlin: Verlag Merseburger, 1978), 64-66.

[144] Jeanette Fishell Jeanette, "Prof. Jeanette Fishell Plays Schumann and Dudley Buck at the Walcker Organ in Neuhausen" (live video recording), posted December 7, 2015 by Helmut Thomas Eisele, accessed August 1, 2019, https://www.youtube.com/watch?v=oA8FnyAqE0A.

Even at this late date, the organ only has a Manual I to Pedal coupler and no coupler from Manual II to the Pedal division. This organ was built the year before the inauguration of the Thuringian builder Friedrich Ladegast's landmark organ in Merseburg Cathedral.

Friedrich Ladegast

Friedrich Ladegast studied organ building with his older brother Christlieb Ladegast. Like Johann Eberhard Walcker during the Napoleonic Wars, Ladegast was unable to find much work building new organs at the beginning of his career due to the political unrest in the years from 1847 to 1849 and spent his time doing mostly repair work.[145] He was strongly influenced by the Thuringian tradition of organ building, especially the work of Gottfried Silbermann. Ladegast stated that no one had ever studied the work of Gottfried Silbermann so well as he had.[146] In addition to the work of Silbermann, Ladegast was also familiar with the organs of Trost and Hildebrandt, and during his career, he would rebuilt the Trost organ in Altenburg and the Hildebrandt organ in Naumberg. Both organs have since been returned to their original historical condition, though much more is original in the Hildebrandt organ than in the Trost organ.

Ladegast was a relatively more conservative builder than his southern counterpart Walcker. He retained several traits of the older Baroque organs of Thuringia, even in his later instruments. For instance, he continued to use strictly unassisted mechanical action with slider chests in his instruments. Though he was well-acquainted with Cavaillé-Coll and the Barker lever assist, he did not employ the technology on his own instruments

---

[145] Kochel, 42.

[146] Ibid., 33.

until his organ for the Nikolaikirche in Leipzig, built in 1862.[147] Even then, and on his later instruments, such as Schwerin, built in 1871, he only employed the Barker assist on the main manual.

Schwerin's organ does use the cone-valve chest for some offset pipes, but it is primarily, even at this late date, still slider chest action. Schwerin was actually the first organ in which Ladegast used cone-valve chests.[148] Ladegast preferred slider chests over cone-valve chests because slider chests were easier to construct and repair, and Ladegast felt they were superior in design and gave more control to the player.[149] In this he agreed with Cavaillé-Coll, who also rejected Walcker's cone-valve chests in favor of the Barker lever. Cavaillé-Coll preferred slider chests because the slider chests allowed a more precise staccato, and the tuning of reeds was negatively affected by how the wind was admitted to the pipes in cone-valve chests.[150] Ladegast also retained the double-pallet coupler for the Manual I to Pedal coupler, the only coupler from any manual division to the pedals present on the instrument. Like its earlier counterparts in Thuringia and Southern Germany, there is no possibility of coupling any other division to the pedal.

The first large instrument built by Ladegast was the monumental eighty-stop organ at Merseburg Cathedral. I was able to visit this organ by joining a study trip the

---

[147] Walter Ladegast, ed., *Friedrich Ladegast: Der Orgelbauer von Weißenfels,* (Stockach am Bodensee, Germany: Weidling), 1998, 66.

[148] Kochel, 61, 71.

[149] Ibid., 71-73.

[150] Carl Franz, "Einige Beobachtungen über den Orgelbau und die musikalischen Zustände in Paris," *Die Orgelbauzeitung* 19 (07, 1880): 146.

students of Carole Terry at the University of Washington were undertaking in June of 2018. Carole Terry made one of the most well-known recordings of the Ladegast organ at Schwerin, which I had visited a few days prior to meeting with her and her students in Merseburg. Merseburg Cathedral is not large, but with its thick medieval stone walls, it has a strongly resonant space with a live and reverberant acoustic. The organ along the back wall seems to take over the space visually, covering the entire back wall from the second gallery level upward, with multiple towers and flats of pipes in an imposing design in the Baroque case built by Zacharias Thayßner.[151] Despite the relatively small size of the space when compared with the giant organ, the instrument at its loudest is not overpowering. It fills the room warmly and richly with sound, but does not overwhelm the listener with volume or power.

Ladegast was originally contracted by Hermann David Engel, the Domorganist of Merseburg, to make repairs to the previous instrument, largely the work of Johann Friedrich Wender from 1716. However, the organ had never functioned satisfactorily and had been rebuilt several times since, including some repair work by Zacharias Hildebrandt in 1734/1735. Ladegast ultimately rebuilt the instrument completely, retaining twenty-seven ranks of pipes from Wender's organ, though he returned in 1866 and replaced them with all-new pipework.[152] He retained the separate console on the front of the Rückpositiv as well as the Stahlspiel, a variant on the Glockenspiel stops of other Thuringian instruments.

---

[151] Wolff, 121.

[152] Ibid., 122.

Though Ladegast later began using magazine bellows, a variant of the parallel-rise bellows, the Merseburg organ retained the wedge bellows winding system, giving the wind some flexibility which can be manipulated due to the direct mechanical action. The windchests of the Ladegast organ consist entirely of slider chests, the traditional and by far the most used form of windchest construction up to this point in the history of the organ. With the increased size of the organ and higher wind pressures, the resulting action is notably heavy, with more springiness and weight than earlier instruments such as those by Trost and Silbermann. While not handicapping in any way, the added weight does inform how the works of Liszt and Reubke most likely would have been played on the organ: at a relatively slower tempo than often taken in modern performances, which would also allow clarity in the abundant acoustics present in Merseburg Cathedral. The heavy action makes playing with coupled manuals difficult if more than two manuals are coupled, though coupling three together is still manageable. This is not a setback in creating a full strong sound, since the fourth manual adds nearly nothing when coupled into the bottom three manuals. Instead, it simply drains air and actually takes away from the power in the other manuals as a result.

One of the most remarkable features of this organ is its abundance of soft colorful tones. It has an undulating Unda maris in the Brustwerk along with a delicate 4’ Zartflöte. There is an 8’ Flauto amabile on the Oberwerk, and the Brustwerk also contains a free reed at 16’ pitch, the Aeoline. The pedal has both soft and loud strings at 16’ pitch and soft and loud reeds at 16’ pitch, as if the two pedal divisions of Walcker had been combined into one. The pedal division also contains the full set of harmonics of the 32’

series, including a 32' Untersatz and a 32' Posaune. The fourth manual is also enclosed in a swell box operable by a hitch-down pedal to the right of the console. The registrational possibilities of the organ are virtually endless, and the organ's capabilities truly shine when the registrations are manipulated to create crescendos and decrescendos. A new type of organist would be needed to figure out how to best bring out the strengths of this exceptionally large instrument.

The nineteenth century saw the rise of virtuoso performers, and two of the most important for the Merseburg organ are Franz Liszt and Julius Reubke. Franz Liszt had connections with both Ladegast and Töpfer. Liszt's student Alexander Winterberger also studied with Töpfer in Weimar and was a personal friend of Ladegast. For the inauguration of the organ, Liszt wrote his Fantasia and Fugue on B-A-C-H, though he failed to finish it in time, so Winterberger instead performed Liszt's *Fantasia and Fugue on Ad nos ad salutarem undam,* a piece based on a melody from Giacomo Meyerbeer's opera *Le prophète*.[153] Two years later, Liszt's student Julius Reubke premiered the only major organ piece he lived long enough to write, the *Sonata on the Ninety-fourth Psalm*, on the Merseburg organ.

This piece is truly a landmark work for the organ with its frequent changes of registration and expressivity. The harmonic language and figurations in the piece are unmistakeably influenced by Franz Liszt, though the complex pedal parts show Reubke's

---

[153] Daniel Walter Chorzempa, "Julius Reubke: Life and Works," (Phd. diss., University of Minnesota, 1971), 102.

advanced training on the organ.[154] Liszt, like Felix Mendelssohn, was primarily a pianist. The registration indications given by Reubke are intended for the Merseburg instrument, and the piece takes advantage of a remarkable range of colors from the Lieblichgedeckt ranks on the fourth manual, the soft flutes and gentle strings on all the divisions, and especially the beautiful 16' free reed Aeoline on the fourth manual, to the full thunder of the instrument on full organ. The organ has no registration aids, however, such as ventils or combination pedals. Any performer on the instrument (even Reubke!) would have needed registrants to change the registrations during performances. With such a large instrument to control, acting as a registrant for this behemoth instrument would have been a demanding job.

The success of the Merseburg instrument curried much favor from Liszt. When consulted by an anonymous member of the organ committee for Boston Music Hall, likely Dr. Upham himself, Liszt wrote the following letter in response:

[LC No. 113; French, 3pp. Heinemann Collection. To an unidentified recipient.]

> Dear Sir,
>
> Although I am suffering somewhat and am obliged to stay in my room, I regret nonetheless having been deprived of the advantage of getting to know you personally when you passed through Weimar. It would have been nice for me to give you more details on the abilities of M. Ladegast, whose work in Merseburg has placed him in the top rank of organ builders in Germany. Besides, since from what Mr. Engel has written to me you have examined the Merseburg organ carefully, you have been able best to convince yourself of the care brought to its construction and the admirable result of the diverse and well-harmonized sonorities of that instrument, which fully deserves the numerous praises that have already been made of it and which will increase even more provided that all its resources are used.

---

[154] Chorzempa, 16-20.

> Quite recently in Pest, having been called upon to advise upon the selection of an organ builder (for a new church), I proposed M. Ladegast without hesitation, convinced as I am that he fulfils [sic] perfectly all the conditions and demands of his art, so that I would wish that he is given the opportunity to furnish the greatest possible proofs.
>
> I beg you, Sir, to accept the most sincere respects of
>
> your most devoted
> servant
> F. Liszt
>
> Weimar, January 17, 1857[155]

Friedrich Ladegast would go on to build organs across Germany and Eastern Europe, including organs for the Collegiate Church in Poznań, Poland, the Schloßkirche in Wittenberg, Germany, the burial site of Martin Luther, and the Petrikirche in Chemnitz near Leipzig, an organ Max Reger would eventually use as a teaching instrument.

The organs of the early Romantic are in some ways themselves transitional instruments. They still retain the mixtures and soft, colorful reeds of their predecessors in the late eighteenth century, giving them some contrapuntal clarity. The ideas of Vogler eventually disappeared in the organs of Sauer and later symphonic instruments. The early Romantic instruments also continued to have small numbers of reeds, large numbers of flute and string stops and retained hybrid stops such as the quintadena or quintatön, a unique sound characteristic of German instruments. (See Table 3.3 for a comparison of reeds to flue work in the early Romantic instruments.) They used cornets in addition to

Table 3.3

---

[155] Ed Sampson, "A Pictorial History of the Boston Music Hall and the Great Organ," *Methuen Memorial Music Hall,* 2018), https://mmmh.org/wp-content/uploads/2019/03 A_Pictorial_History_of_the_Boston_ Music_Hall_and_the_ Great_Organ.pdf (retrieved Jul. 24, 2019).

Proportion of Reeds in Early Romantic Organs

Instrument Builder, Location, Date	Total Stops	Flue Stops	Reed Stops	Reed Stops as % of Total
Ladegast, Merseburg 1855	80	70	9	11%
Ladegast, Schwerin 1871	84	72	11	13%
Schulze, Lübeck 1854	78	66	12	15%
Walcker, Frankfurt 1833	74	63	11	15%
Walcker, Neuhausen an der Filder 1854	32	29	3	9%
Walcker, Ulm 1856	98	75	23	23%

mixtures to crown the plenum, and often the mixtures contained tierce ranks. Both Walcker and Ladegast continued to use the Hauptwerk to Pedal coupler only in many of their instruments, though some of their organs included pedal couplers for the other manuals as well. The organ had finally moved from having certain orchestral qualities to becoming a one-person orchestra, equally at home in sacred and secular spaces.

CHAPTER 4

CONCLUSION

Though at first the organs of nineteenth-century Germany seem radically different than what came before, the gentle and often small organs of Southern and Central Germany have many traits in common with their nineteenth-century descendants. The sweet sounds of the 8’ timbres present in late Baroque organs in Southern Germany and the tierce mixtures and gravity of the Thuringian organs remain prominent characteristics of the great Romantic instruments. A growing orchestra, increasing emphasis on secular use, and a fondness for dramatic shifts in registration pushed organ building in Germany to build upon the foundations already present in the eighteenth-century instruments of the southern and central regions.

A comparison of several of the instruments explored in this document shows just how many traits can be found in seemingly different organs across the span of just over a hundred years. Table 4.1 shows the presence of several of these characteristics in the Late Baroque, early Romantic, and transitional periods. The pedal division functioned to reinforce the bass tones of the instruments, providing an easily removable coupler to change quickly from loud to soft registrations. The Romantic instruments often had divided pedal divisions, like the Gabler organ in Weingarten, with the soft divisions based on a structure suitable for playing continuo. The low mutations encouraged by Abbott Vogler and adopted by Walcker and Ladegast brought new gravitas to bass registers, reinforcing the depth and heaviness of the sound of the organs built in the Thuringian

tradition. The tierce mixtures of Thuringia and Baden-Württemberg colored the principal choruses of the Romantic organs. Undulating stops, a result of Italian influence, brought a level of tenderness and expressivity to these instruments, and even the largest Romantic instruments retained the ability to speak at barely a whisper.

Table 4.1

Comparison Chart of Organs 1734-1863

Instrument Builder, Location, Date	HW/Ped Coupler Only	Flexible Wind	Undulating Stops	Low Mutations	Tierce in Mixtures
Gabler, Ochsenhausen 1734	Yes	Yes	Yes	Yes	No*
Holzhey, Neresheim 1797	Yes	Yes	Yes	No	No*
Ladegast, Merseburg 1855	No	Yes	Yes	Yes	Yes
Schmahl, Ludwigsburg 1747	Yes	Yes	No	No	Yes
Trost, Waltershausen 1735	Yes	Yes	Yes	No	Yes
Walcker, Frankfurt 1833	Yes	? (Unlikely)	Yes	Yes	? (Likely)
Walcker, Boston 1863	No	No	Yes	Yes	Yes

* Though tierce ranks are not present in the mixtures themselves, tierce ranks are available elsewhere in these organs and may be effectively combined into the ensemble sound.

Not only are there traceable lineages in the organ building through these organs built a century apart, but the repertoire intended for instruments on each end of the spectrum can be played effectively on instruments from the other. The preludes and fugues of J. S. Bach work wonderfully on the organs of Merseburg and Schwerin. In the same way, the works of Rheinberger and Reger can be effectively performed on late

Baroque instruments such as the Trost organ in Waltershausen and the Hildebrandt organ in Naumberg. This melding of traits is noted by Wolfgang Metzler: "To be sure, there is no clear delineation for the appearance of Romantic peculiarities in organ building; some of them were already active in the time before Bach's death…"[156] This becomes even clearer looking at the transitional instruments in the late eighteenth and early nineteenth centuries. The lines between the different categories of organ building blur as organ builders experimented and pushed boundaries, pursuing the potentials of the orchestral sound, power, and expressivity in these instruments.

There are many areas of potential further research regarding the transitional instruments. The grand late-eighteenth-century organs of the abbeys in Swabia are well-represented in German scholarship, but studies of the choir organs in those same abbeys and the organs in the smaller parish churches require further research and documentation. A better understanding of the financial and political environments in which the transitional instruments were constructed could illuminate why so few organs were built in the early nineteenth century and why Southern and Central German building traditions came through the tumult relatively unscathed. The effects of the different denominations in the religiously diverse regions of these German lands is also a ripe area for scholarship; there are studies of the Moravian church in America and its relationship to

---

[156] Metzler, 9. "Freilich ist damit keine scharfe Grenze für das Auftreten romantischer Eigentümlichkeiten im Orgelbau gezogen; teils schon in der Zeit vor Bachs Tod…" Translation mine.

organ building,[157] but similar research on organs in Germany, especially those of Pietist-leaning congregations, seems to be lacking. A better understanding of Southern and Central German organ building during the late eighteenth century could also lend new perspectives to organ building in America during that time, especially considering the prominence of organ builders in America who immigrated from Germany, particularly those in Pennsylvania and in the Midwest.

In *A New History of the Organ*, Peter Williams writes of the nineteenth century: "Although in detail the whole century is only now gradually being adequately documented and understood…"[158] Certainly there is still much to be documented and understood about the nineteenth-century instruments and their precursors. The lack of repertoire and the understated quality of many of the organs explains the current lacuna in scholarship. Perhaps this study will inspire additional research regarding the gentle transitional instruments that led to the giant organs of German Romanticism.

---

[157] See Brunner, Raymond J, *That Ingenious Business: Pennsylvania German Organ Builders,* (Birdsboro, PA: The Pennsylvania German Society, 1990), and Nola Reed Knouse, ed., *The Music of the Moravian Church in America,* (Rochester, NY: University of Rochester, 2008) for further reading on this subject.

[158] Williams, 159.

REFERENCES

Primary Sources (Organs)

Ehrlich, Johann Adam. Evangelische Stadtkirche, Bad Wimpfen, 1747-1748.

——— Evangelische Stadtkirche, Neuenstadt am Kocher, 1741.

Hildebrandt, Zacharias. Stadtkirche St. Wenzel, Naumberg, 1743-1746.

Holzhey, Johann Nepomuk. Abbey of Saints Peter and Paul, Weissenau, 1787.

——— Benedictine Abbey of the Holy Cross, Neresheim, 1798.

Ladegast, Friedrich. Merseburg Cathedral, Merseburg, 1855.

——— Schwerin Cathedral, Schwerin, 1871.

Mezler, Georg Ludwig. Evangelische Kirche, Bürg, 1797.

Schmahl, Georg Friedrich. Ordenskappelle of the Residenzschloß, Ludwigsburg, 1747.

Trost, Tobias Heinrich Gottfried. Stadtkirche "zur Gotteshilfe," Waltershausen, 1722-1735, 1754.

Walcker, Eberhard Friedrich. Evangelische Stadtkirche, Kochersteinsfeld, 1820-1821.

Secondary Sources

Andersen, Poul-Gerhard. *Organ Building and Design*. Translated by Joanne Curnutt. New York: Oxford University, 1969.

Audsley, George Ashdown. *Organ-stops and their Artistic Registration: Names, Forms, Construction, Tonalities, and Offices in Scientific Combination.* Vol. 1/2. New York: H. W. Gray, 1921.

Blanton, Joseph Edwin. *The Organ in Church Design*. Albany, TX: Venture, 1957.

Bleyle, Carl Otto. "Georg Andreas Sorge's Influence On David Tannenberg And Organ Building In America During The Eighteenth Century." PhD diss., University of Minnesota, 1969. Accessed November 10, 2019. http://login.ezproxy1.lib.asu.edu/

login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/302393218?accountid=4485.

Bomberger, Elam Douglas. “The German Musical Training of American Students, 1850-1900.” PhD diss., University of Maryland, College Park, 1991. Accessed October 1, 2019. http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/303945446?accountid=4485.

Bossert, Christoph. “Der Klangstil des Orgelbauers Johann Adam Ehrlich (1703–1784) im Kontext des spätbarocken Orgelbaus in Süd- und Mitteldeutschland.” *Musik in Baden-Württemberg*. Edited by G. Günther. Stuttgart, Germany: J.B. Metzler, 2003.

Brenninger, Georg. *Orgeln in Schwaben*. Munich: Bruckmann, 1986.

Britton, David. “Abbé Georg Joseph Vogler: His Life, and His Theories on Organ Design.” DMA diss., University of Rochester, Eastman School of Music, 1973. Accessed July 24, 2019. http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/302677176?accountid=4485.

Brülls, Holger. *Ladegast Orgeln in Sachsen-Anhalt*. Petersberg, Germany: Michael Imhof, 2005.

Brunner, Raymond J. *That Ingenious Business: Pennsylvania German Organ Builders*. Birdsboro, PA: The Pennsylvania German Society, 1990.

Buchele, Berthold. “Orgelmusik aus Oberschwaben.” *Ars Organi* 58, no. 1 (2010): 78-83.

Burns, James MacGregor. *Fire and Light: How the Enlightenment Transformed Our World.* New York: St. Martin’s, 2013.

Busch, Hermann J. “Friedrich Ladegast — ‘Meister der alten Schule:’ Zum 100. Todestag am 30. Juni 2005.” *Ars Organi* 53, no. 3 (2005): 144-153.

Busch, Hermann J. and Matthias Geuting, eds. *Lexikon der Orgel.* Laaber, Germany: Laaber-Verlag, 2007.

Bush, Douglas E. and Richard Kassel, eds. *The Organ: An Encyclopedia*. Abingdon, UK: Taylor and Francis, 2006.

Bynum, Petty. “The Liszt Organ of Merseburg Cathedral.” *The Tracker* 55, no. 4 (2011): 14-19. Accessed August 15, 2019. http://login.ezproxy1.lib.asu.edu/login?

url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/906923764?accountid=4485.

Chapin, Keith. “Sublime Experience and Ironic Action: E. T. A. Hoffmann and the Use of Music for Life.” *Musical Meaning and Human Values.* Lawrence Kramer and Keith Chapin. New York: Fordham University, 2009.

Chorzempa, Daniel Walter. “Julius Reubke: Life and Works.” PhD diss., University of Minnesota, 1971.

Cramer, Craig. *Johann Adam Ehrlich-Orgel 1748.* CD. Organum Classics, 2014.

Crowell, Gregory Fitzgerald. “Friedrich Wilhelm Marpurg (1718-1795) and French Registration Practices in Central Germany in the Middle of the Eighteenth Century.” DMA diss., University of Cincinnati, 1993. Accessed October 1, 2019. http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/304037231?accountid=4485.

Dimmock, Jonathan. *Mendelssohn Organ Sonatas: Holzhey Organ (1787) Abbey church of Weißenau*. CD. Loft Recordings, 2009.

Douglass, Fenner. *The Language of the French Classical Organ: A Musical Tradition Before 1800.* New Haven, CT: Yale University, 1969.

E. F. Walcker and Cie. *E. F. Walcker and Cie., Organ Builders*. Ludwigsburg, Germany: E. F. Walcker and Cie., 1960.

Edwards, Lynn. “The Thuringian Organ 1702-1720: ein wohlgerathenes gravitätisches Werk.” *The Organ Yearbook* 22 (1991): 119-150.

Eggebrecht, Hans Heinrich, ed. *Orgelwissenschaft und Orgelpraxis: Festschrift zum zweihundertjährigen Bestehen des Hauses Walcker*. Tübingen, Germany: Laupp und Göbel, 1980.

Fischer, Hermann and Theodor Wohnhaas. *Lexicon süddeutscher Orgelbauer.* Richard Schaal, ed. Wilhelmshaven, Germany: Florian Noetzel, 1994.

——— *Orgeldenkmale in Mittelfranken*. Lauffen, Germany: Ulrike Schneider Rensch Orgelbau Verlag, 2001.

Fishell, Jeanette. “Prof. Jeanette Fishell Plays Schumann and Dudley Buck at the Walcker Organ in Neuhausen” (video recording). Posted December 7, 2015 by Helmut

Thomas Eisele. Accessed August 1, 2019. https://www.youtube.com/watch?v=oA8FnyAqE0A.

Fock, Gustav. *Hamburg's Role in Northern European Organ Building*. Translated by Lynn Edwards and Edward C. Pepe. Easthampton, MA: Westfield Center, 1997.

Franz, Carl. "Einige Beobachtungen über den Orgelbau und die musikalischen Zustände in Paris." *Die Orgelbauzeitung* 19 (07, 1880): 145-148.

Friedrich, Felix. "Friedrich Ladegasts Verhältnis zum Orgelbau des 18. Jahrhunderts, dargestellt am Beispiel der Orgeln von Friderici und Trost." *Ars Organi* 60, no. 5 (2012): 139-145.

——— "Sauer, Wilhelm." *Grove Music Online*. 2001; Accessed November 10, 2019. https://www-oxfordmusiconline-com.ezproxy1.lib.asu.edu/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000053089.

Friedrich, Felix and Eberhard Kneipel. *Orgeln in Thüringen - Ein Reiseführer.* Altenburg, Germany: Kamprad, 2010.

Friedrich, Felix and Vitus Froesch. *Orgeln in Sachsen-Anhalt - Ein Reiseführer.* Altenburg, Germany: Kamprad, 2014.

Frühauf, Tina. *The Organ and Its Music in German-Jewish Culture*. New York: Oxford University, 2009.

Fulbrook, Mary. *A Concise History of Germany*. 2nd Ed. Cambridge, UK: Cambridge University, 2004.

Gerber, James. "Ernest M. Skinner and the American Symphonic Organ." DMA diss., Arizona State University, 2012. Accessed October 1, 2019. http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/1012117942?accountid=4485.

Grave, Floyd K. and Margaret G. Grave. *In Praise of Harmony: The Teachings of Abbé Georg Joseph Vogler*. Lincoln, NE: University of Nebraska, 1987.

Haupt, Hartmut. "Thüringen — Ein Orgellandschaft." *Thüringer Orgel Journal.* Arnstadt, Germany: Verein Thüringer Orgelsommer, 2004. pp. 61-65.

Höflacher, Ulrich. *Johann-Nepomuk Holzhey: Ein Oberschwäbische Orgelbauer*. Ravensburg, Germany: Oberschwäbische Verlaganstalt Drexler & Co., 1987.

Holloway, James Dale. “Performance convention and registrational practice in the Weimar organ works of Franz Liszt.” DMA diss., University of Washington, 1998. Accessed August 25, 2019. http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/304461251?accountid=4485.

——— “Johann Nepomuk Holzhey - ein süddeutscher Orgelbauer des Klassizismus: zum 200. Todestag.” *Ars Organi* 57, no. 4 (12, 2009): 219-225.

Hughes, Brian. *The Schulze Dynasty: Organ Builders 1688-1880*. East Sussex, UK: Musical Opinion, Ltd., 2006.

Huntington, Scot L. “Boston's Great(est) Organ.” *The Tracker - Journal of the Organ Historical Society* 50, no. 3-4 (2006): 72-95. Accessed August 25, 2019. http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/198905335?accountid=4485.

Jakob, Friedrich. *Die Große Orgel der Basilika zu Weingarten: Geschichte und Restaurierung der Gabler-Orgel*. Männedorf, Switzerland: Verlag Orgelbau Kuhn, 1986.

Kaufmann, Michael Gerhard. “‘... und welche guten Effect macht …’: Zum Verlust der Barocken Orgelkultur in Süddeutschland.” *Musik und Kirche* 73, no. 5 (09, 2003): 322-328.

Kaufmann, Michael Gerhard, ed. *Ochsenhauser Orgelbuch: Harmonia Organica*. Vol. 1/2. Stuttgart: Carus, 2004.

Kelling, Hans-Wilhelm. *Deutsche Kulturgeschichte*. Corte Madera, CA: Holt, Rinehart and Winston, Foreign Language Department, 1974.

Kleemann, Gotthilf. *Die Orgelmacher und ihr Schaffen im ehemaligen Herzogtum Württemberg.* Stuttgart: Musikwissenschaftliche Verlags-Gesellschaft, 1969.

Kleine Kirchengeschichte von Neuenstadt. Neuenstadt am Kocher, Germany: Evangelische Kirchengemeinde Neuenstadt, 2016.

Klotz, Hans and Kurt Lueders. “Cavaillé-Coll, Aristide.” *Grove Music Online*. 2001. Accessed October 2, 2019. https://www-oxfordmusiconline-com.ezproxy1.lib.asu.edu/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000005199.

Knouse, Nola Reed, ed. *The Music of the Moravian Church in America*. Rochester, NY: University of Rochester, 2008.

Kochel, Alexander. *Im Wandel der Zeit: die Ladegasts und ihre Orgeln*. Weißenfels, Germany: Fagott, 2004.

Koury, Daniel J. *Orchestral Performance Practices in the Nineteenth Century: Size, Proportions, and Seating*. Ann Arbor, MI: University of Michigan, 1986.

Krigbaum, Charles. "A Description of the Ochsenhausen Manuscript (1735)." *Bachstunden: Festschrift Helmut Walcha*. Edited by Walter Dehnhard and Gottlob Ritter. Frankfurt am Main: Evangelischer Presseverband in Hessen und Nassau, 1978. pp. 55-74.

Ladegast, Walter, ed. *Friedrich Ladegast: Der Orgelbauer von Weißenfels*. Stockach am Bodensee, Germany: Weidling, 1998.

Ladenburger, Michael, ed. *Beiträge zu Orgelbau und Orgelmusik in Oberschwaben im 18. Jahrhundert.* Tutzing, Germany: Hans Schneider, 1991.

Lindner, Ralf-Thomas. "Die Orgelbauwerkstätten Eberhard Friedrich Walcker und Wilhelm Sauer." *Thüringer Orgel Journal.* Arnstadt, Germany: Verein Thüringer Orgelsommer, 1997. pp. 93-100.

Little, William A. *Mendelssohn and the Organ*. New York: Oxford University, 2010.

Menendez, Ezequiel Martin. "Historic pipe organs in Argentina: A hidden treasure." DMA diss., Boston University, 2006. Accessed September 15, 2019. http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/305364277?accountid=4485.

Metzler, Wolfgang. *Romantischer Orgelbau in Deutschland*. Ludwigsburg, Germany: E. F. Walcker and Cie., 1965.

Miltsczitzky, Josef. "Karl Joseph Riepp und Rupert Riepp." *Ars Organi - Zeitschrift Für Das Orgelwesen* 58, no. 2 (06, 2010): 73-77.

Mulugeta, Mikael. "The Klais organ: the journey to find the music building's biggest instrument." University of Iowa. Last modified October 18, 2016. Accessed October 2, 2019. https://now.uiowa.edu/2016/10/klais-organ.

Ochse, Orpha. *The History of the Organ in the United States*. Bloomington, IN: Indiana University, 1988.

Owen, Barbara, Peter Williams, and Stephen Bicknell. "Organ." *Grove Music Online*. 2001. Accessed 10 Nov. 2019. https://www-oxfordmusiconline-com.ezproxy1.lib.asu.edu/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000044010.

Pappin, Gay Gladden. "The Organ Works of George Whitefield Chadwick (Massachusetts)." DMA diss., Louisiana State University and Agricultural & Mechanical College, 1985. Accessed October 1, 2019. http://login.ezproxy1.lib.asu.edu/login?url=https://search-proquest-com.ezproxy1.lib.asu.edu/docview/303354799?accountid=4485.

Pinson, Koppel S. *Pietism As a Factor in the Rise of German Nationalism*. New York: Columbia University, 1934.

Rapport, Mike. *1848: Year of Revolution*. Philadelphia: Perseus, 2008.

——— *The Napoleonic Wars: A Very Short Introduction.* Oxford: Oxford University, 2013.

Reichling, Alfred, ed. *Mundus Organorum: Festschrift Walter Supper*. Berlin: Verlag Merseburger, 1978.

Sampson, Ed. "A Pictorial History of the Boston Music Hall and the Great Organ." *Methuen Memorial Music Hall.* 2018. Accessed July 24, 2019. https://mmmh.org/wp-content/uploads/2019/03/A_Pictorial_History_of_the_Boston_Music_Hall_and_the_Great_ Organ.pdf

Schneider, Hans. *German Radical Pietism*. Translated by Gerald T. MacDonald. Plymouth, UK: Scarecrow, 2007.

Snyder, Kerala J., ed. *The Organ as a Mirror of Its Time: North European Reflections: 1610-2000.* New York: Oxford University, 2002.

Stade, Joachim. "Die Rekonstruktion der Windanlage für die Trostorgel zu Waltershausen." *Thüringer Orgel Journal.* Arnstadt, Germany: Verein Thüringer Orgelsommer, 1996. pp. 107-113.

Stoeffler, F. Ernest. *German Pietism During the Eighteenth Century*. Leiden, Netherlands: E. J. Brill, 1973.

Szostak, Michał. “Romantic Tendencies in 19th-century Organ Building in Europe.” *The Organ* 97, no. 385 (2018): 10-27.

Terry, Carole. *Carole Terry in Schwerin: 19th Century German Masterpieces Performed on the Ladegast Organ*. CD. Seattle, WA: Ambassador, 1998.

——— “The Ladegast Organ at Schwerin Dom and its Complexities.” *Organists' Review* 91, no. 2 (05, 2005): 164-165, 167-168, 170.

Traupman-Carr, Carol A., ed. *“Pleasing for Our Use” David Tannenberg and the Organs of the Moravians*. Bethlehem, PA: Lehigh University Press, 2000.

Tronshaug, Hans Jacob Høyem. *“With Rare Diligence and Accuracy” — The Organ Building of Peter Adolph Albrechtsen in the Context of Nineteenth-Century Danish/Norwegian Organ Culture*. Göteborg, Sweden: Göteborg University, 2001.

Töpfer, Johann Gottlob. *Lehrbuch der Orgelbaukunst: für den Gebrauch des Orgelbauers, Orgelrevisors, Organisten und Architekten*. Weimar, Germany: Voigt, 1855.

Völkl, Helmut. *Orgeln in Württemberg*. Neuhausen-Stuttgart, Germany: Hänssler-Verlag, 1986.

Walter, Joachim. *“This Heaving Ocean of Tones:” Nineteenth-Century Organ Registration Practice at St Marien, Lübeck*. Göteborg, Sweden: Göteborg University, 2000.

Weinberger, Beatrice-Maria. *Johann Ludwig Krebs: Sämtliche Orgelwerke Vol. 3.* CD. Motette Records, 2004.

Williams, Peter. *A New History of the Organ: From the Greeks to the Present Day*. Bloomington, IN: Indiana University, 1980.

Wolff, Christoff and Markus Zepf. *The Organs of J. S. Bach: A Handbook*. Translated by Lynn Edwards Butler. 2006. Chicago: University of Illinois, 2012.

Ziolkowski, Theodore. *German Romanticism and Its Institutions.* Princeton, NJ: Princeton University, 1990.

“Zur Klanggestalt der Joh. - Adam - Ehrlich-Orgel in der Evang. Stadtkirche zu Bad Wimpfen.” Hand-typed document from Bad Wimpfen Evangelische Stadtkirche.

APPENDIX A

ORGAN SPECIFICATIONS

The information below reflects the original specifications. In cases where particular details are not certain, clarifications are provided. Multiple ranks controlled by a single stop are denoted by Roman numerals, and keyboard compasses are given in standard notation where C denotes the C two ledger lines below bass clef, c˚ is the C an octave above that, c' is middle C, and c''' is two ledger lines above the treble clef. Octaves are named from C to B, so the note names on the bottom of a standard piano range would be AAA, BBB, CC, DD, etc. Stop names are given in original spelling where available since the process of standardizing the spelling can be misleading if done incorrectly. For instance, Pordon Fleute, as spelled on the console of Ehrlich's organ in Bad Wimpfen, is misspelled as Pardon Fleute in Völkl, but is probably supposed to be Bourdon in standard spelling, considering the South German tendency to trade the letters "B" and "P". Pipe lengths have been standardized, however, so 6' and 3' have been converted to 5-1/3' and 2-2/3' respectively. Since there is no actual difference in pipe length between the old and modern numberings regardless of the label, there is no reason to retain the antiquated usage. For each division, flue (labial) ranks are given first and reed ranks last in the division's specification. Organs are ordered first in alphabetical order of the builder's last name, then in chronological order of construction.

Carl August Buchholz, 1832[159]
Greifswald, Dom St. Nicholai

I. Unter-Manual C-f'''	*II. Haupt-Manual* C-f'''	*III. Ober-Manual* (encl.) C-f'''
8' Prestant	16' Principal	16' Bourdon
8' Gedact	8' Principal	8' Principal
8' Salizional	8' Gemshorn	8' Flauto dolcis
4' Gemshorn	8' Rohrflöte	8' Viola di Gamba
4' Fugara	8' Viola da Gamba	4' Rohrflöte
2' Flagiolet	4' Octava	4' Octava
2-2/3' Nasard	4' Spitzflöte	2' Waldflöte
8' Vox angelica	2' Super Octava	2-2/3' Nasard
	5-1/3' Nasard	Mixtur III
Pedal	2-2/3' Quinta	8' Fagott (Baß)
32' Principal	Progressio harmonica II-V	8' Hautbois (Discant)
16' Principal	Trompete 8'	
16' Subbaß		
16' Violone		
8' Bourdon		
8' Cello		

[159] "Disposition der Buchholz-Orgel von 1832," Dom St. Nicholai Greifswald, accessed October 3, 2019, https://www.dom-greifswald.de/st-nikolai/domorgel.html.

4’ Octava
2’ Choralflöte
10-2/3’ Nasard
5-1/3’ Nasard
32’ Contra Posaune
16’ Posaune
8’ Fagott
4’ Clairon

Johann Adam Ehrlich, 1741[160]
Neuenstadt am Kocher, Evangelische Stadtkirche

I. Hauptwerk C, D-c’’’	*Pedal* C, D-g°
8’ Principal	16’ Subbaß
8’ Quintade	8’ Octavbaß
8’ Großgedeckt	
8’ Viol du Gamb	
4’ Octav	
4’ Flaut	
2’ Octav	
2-2/3 Quint	
1’ Mixtur IV	
1/2’ Cymbal III	

Coupler: I/P
Slider chests

Johann Adam Ehrlich, 1747-1748[161]
Bad Wimpfen, Evangelische Stadtkirche

I. Hinterwerk C-c’’’	*II. Hauptwerk* C-c’’’	*Pedal* C-c’
8’ Mus. Still Gedackt	8’ Principal	16’ Principal Baß
4’ Principal	8’ Groß Gedackt	16’ Sub Baß
4’ Spitzflöte	8’ Quintade	8’ Octav Baß
4’ Floete gedackt	8’ Viol die Gamba	4’ Octav
2’ Octav	4’ Octav	4’ Pordon Fleute
1-1/3’ Quint	4’ Klein Gedackt	16’ Posaunen Baß**

---

[160] Völkl, 100.

[161] Ibid., 108; information supplemented by materials received from Evangelische Stadtkirche, Bad Wimpfen.

1’ Mixtur III	2-2/3’ Quint
	2’ Octav
	1-1/3’ Mixtur V-IV*
	1’ Cornet III

Couplers: I/II, I/P
*Tierce rank repeats from c’ at 3-1/5’
**Originally planned by Ehrlich, but never installed by him. The rank currently in place was built by Rensch Orgelbau in 1972 during their restoration of the instrument.
Slider chests

Johann Adam Ehrlich, 1752[162]
Bad Wimpfen, Pfarrkirche zum Heiligen Kreuz (formerly Dominikanerkirche)

Hauptwerk C-c’’’	*Oberwerk* C-c’’’	*Pedalwerk* C-d’
8’ Principal	8’ Salicional	16’ Principalbaß
8’ Gemshorn	8’ Biffara (from c’)	16’ Violonbaß
8’ Viola da Gamba	8’ Gedackt	16’ Subbaß
8’ Groß Gedeckt	4’ Principal	8’ Violonbaß
8’ Bourdon	4’ Traversflöte	8’ Octavbaß
8’ Quintatön	4’ Spitzflöte	4’ Flötbaß
4’ Octav	2’ Octav	2’ Nachthorn
4’ Kleingedackt	2’ Flachflöte	16’ Posaunenbaß
2-2/3’ Quint	1-1/3’ Quint	
2’ Superoctav	Mixtur IV	
2’ Flageolet		
1-1/3’ Mixtur V		
Cornett IV		
Sesquialter III		
8’ Trompete		

Slider chests

[162] Völkl, 120.

Johann Bernhardt Ehrlich, 1779[163]
Waldenburg, Evangelische Kirche

Manual	C-c'''	*Pedal*	C-c' (added in 1790)
8' Principal		16' Subbaß	
8' Viol di Gamba		8' Oktavbaß	
8' Bifara II		(8'?) Violon	
8' Gedeckt			
8' Quintatön			
4' Oktave			
4' Flöte			
2-2/3 Quinte			
2' Oktave			
2' Mixtur IV (with tierce)			

Coupler: I/P
Slider chests

Michael Engler, 1732-1737[164]
Krzeszów, Poland (Grüssau, Silesia), Kościół Wniebowzięcia (Church of the Assumption)

I. Positiv	C, D-c'''	*II. Hauptwerk*	C, D-c'''	*III. Oberwerk*	C, D-c'''
8' Principal		16' Burdon Flaut		8' Principal	
8' Flaut amabile		16' Quintadena		8' Rohrflaut	
8' Flaut allemande		16' Viola di Gamba		8' Salicet	
8' Quintadena		8' Principal		4' Octava	
4' Octava		8' Flaut major		4' Flaut minor	
2-2/3' Quinta		8' Gemshorn		2-2/3' Quinta	
2' Superoctava		8' Flaut traveur		2' Superoctava	
1' Sedecima		8' Unda maris		1-1/3' Quinta	
Mixtura III		4' Octava		1' Sedecima	
8' Hautbois		4' Nachthorn		Mixtura IV	
		2-2/3' Gemshorn Quinta		8' Trompet	
Pedal	C, D-c'	2' Superoctava		8' Vox humana	
32' Major Bass		Mixtura VI			

---

[163] Ibid., 166.

[164] Bush, 182; Wojciech Kamiński, "Organs in Poland," *Politechnika Warszawska*, last modified December 1, 2000, accessed October 1, 2019, http://staff.elka.pw.edu.pl/~wkaminsk/index.html.

16’ Principal
16’ Violon Bass
16’ Sub Bass*
16’ Salicet Bass*
16’ Quintaden Bass*
8’ Octave Bass*
8’ Flaut Bass
5-1/3’ Gemshorn Quinta
4’ Super Octava
Mixtura VI
32’ Posaunen Bass
16’ Posaunen Bass
8’ Trompet Bass

Cimbel II

Couplers: III/II, I/II, I/P
Slider chests
Sperrventil for each division
Transposition coupler to Kammerton for Positiv
*playable in Kammerton

Josef Gabler, 1728-1734, rebuilt by Gabler in 1753 (1753 specification given)[165]
Ochsenhausen, Abteikirche St. Georg

I. Solo C-c’’’
16’ Borduen
8’ Principal
8’ Coppel
8’ Solicional
8’ Violoncel
8’ Quinta Tön
8’ Unda. Ma.
4’ Flute: Trev
4’ Rohr: fla
4’ Fugari
4’ Piffaro II
8’ Trompet

II. Hauptmanual C-c’’’
8’ Principal
8’ Flauten

III. Brustpositiv C-c’’’
8’ Coppel Fl.
8’ Quinta Tön
4’ Principal
4’ Flaut Do
4’ Piffaro II
2’ Flageolet
2’ Cornet III-IV
1’ Mixtur III
8’ Vox huma
4’ Hautbois
Cuculus

IV. Echo
8’ Principal
8’ Rohr. Fla
8. Quinta Tön

Pedal C-d’
16’ Praestant
16’ Sub: B.
16’ Violon B. II
8’ Octav. B.
5-1/3’ Mixtur. B. IV
16’ Posaun B.

[165] Völkl, 73-74.

8’ Viola
5-1/3’ Quint
4’ Octav
3’ Sexq: Alt III-IV
2’ Cornet 3
2’ Sup: Oct. 2’
2’ Mixtur VII-VI
Carillon (from c)

8’ Dolcian (from c’)
4’ Octav
4’ Flöte
4’ Violoncel
2’ Super: Oct
2’ Cymbala III
8’ Hautbois

Couplers: IV/III, III/II, II/I, I/P
Tremulants on Brustpositiv and Echo
Wind supply: 5 bellows
Slider chests

Josef Gabler, 1737-1750[166]
Weingarten, Klosterkirche St. Martin

I. Hauptwerk C-c’"'
16’ Praestant
8’ Principal
8’ Rohrflöte
8’ Piffaro V-VII
4’ Octave I-II
2’+1’ Superoctav II
2’ Hohlflöte
2’ Mixtur IX-X
1’ Cimbalum XII
1-1/2 Sesquialter VIII-IX
8’ Trombetten

II. Oberwerk C-c’’’
16’ Bourdon I-III
8’ Principal Tutti
8’ Violoncello I-III
8’ Coppel
8’ Hohlflöte
8’ Unda maris
8’ Salicional
4’ Octav douce*
4’+2’ Viola II*

III. Echowerk C-c’’’
16’ Bourdon
8’ Principal
8’ Flöten
8’ Quintatön
8’ Viola douce
4’ Octav
4’ Hohlflöte II
4’ Piffaro doux
2’ Superoctav
2’ Mixtur V-VI
1’ Cornet V-VI
8’ Hautbois

IV. Brüstungspositiv C-c’’’
8’ Principal doux
8’ Flaut douce
8’ Quintatön
8’ Violoncello
4’ Rohrflöte
4’ Querflöte
4’ Flaut travers II
4’ Piffaro V-VI

Hauptpedal C-g°
32’+16’ Contrabass II
16’ Subbaß
16’+8’ Violonbaß II
8’ Octavbaß
8’ Mixturbaß V-VI
16’ Posaunenbaß
16’ Bombardbaß
2’ La force XLIX (C only)
2’ Carillon ped.

Brüstungspedal C-g°
16’ Quintatönbaß
8’ Superoctavbaß
8’ Flaut douce baß
8’ Violoncellbaß
4’ Hohlflötbass
4’ Cornetbaß X-XIII
3’ Sesquialter VI-VII
8’ Trompetbaß
8’ Fagottbaß

[166] Völkl, 110; Jakob, 132-138.

2’ Nasat *	2’ Flageolet
4’ Mixtur IX-XII	2’ Cornet
2’+1’ Cimbalum II*	8’ Vox humana
	4’ Hautbois
	2’ Carillon (from f˝)
	Tremulant

Couplers: II/I, III/II, IV/III, IV/I, I/P, II/P, IV/P
Kronpositiv-Copplung, Brustpedal-Copplung (Kronpositiv playable on II, Brustpedal on the Pedalboard)
Percussion accessories: Cuculus, Rossignol, Cymbala, Tympan
*pipes located in Kronpositiv
Slider chests

Johann Gottfried Hildebrandt, 1762-1768[167]
Hamburg, St. Michaeliskirche

Hauptwerk	*Brustwerk*
16’ Großprinzipal	16’ Rohrflöte
16’ Quintadena	8’ Prinzipal No. 1
8’ Oktav No.1	8’ Prinzipal No. 2
8’ Oktav No. 2	8’ Rohrflöte
8’ Gedackt	8’ Kleingedeckt
8’ Gemshorn	8’ Flauto traverso
8’ Viola da Gamba	4’ Oktave
5-1/3’ Quinte	4’ Rohrflöte
4’ Oktave	2-2/3’ Nasat
4’ Gemshorn	2’ Superoktave
2-2/3’ Nasat	1-3/5’ Terz
2’ Superoktave	1-1/3’ Quinte
Sesquialtera II	1’ Sifflet
2’ Mixtur VIII	Rauschpfeiffe II-III
1-1/3’ Scharf V	Zimbel V
Kornett V, disc.	Schalmei 8’
16’ Trompete	
8’ Trompete	*Pedal*
Tremulant	32’ Großprinzipal
	32’+16’ Subbaß
Oberwerk	16’ Prinzipal
16’ Bordun	16’ Subbaß

[167] Metzler, 19.

8’ Prinzipal No. 1
8’ Prinzipal No. 2
8’ Spitzflöte
8’ Quintatön
8’ Unda maris
4’ Oktave
4’ Spitzflöte
2-2/3’ Quinte
2’ Superoktave
Rauschpfeife II
1-1/3 Zimbel V
Echokornett V, disc.
8’ Trompete No. 1
8’ Trompete No. 2, disc.
8’ Vox humana
Schwebung

10-2/3 Rohrquinte
8’ Oktave
5-1/3’ Quinte
4’ Oktave
2-2/3’ Mixtur X
32’ Großposaune
16’ Posaune
16’ Fagott
8’ Trompete
4’ Klarine

Couplers: unknown manual couplers, HW/Ped.
Percussion: Glockenspiel and Zimbelstern
Sperrventil for each division
Slider chests

Zacharias Hildebrandt, 1743-1746[168]
Naumburg, Stadtkirche St. Wenzel

I. Rückpositiv C, D-c’’’
8’ Principal
8’ Quintadehn
8’ Rohr Floete
8’ Viol di Gamba
4’ Praestanta
4’ Vagara
4’ Rohrflött
2-2/3’ Nassat
2’ Octava
Rausch Pfeiffe II
Mixtur V
16’ Fagott

III. Oberwerk C, D-c’’’
16’ Bordun
8’ Principal
8’ Hollflött
8’ Unda maris
4’ Prestant
4’ Gemshorn
2-2/3’ Quinta
2’ Octav
1-3/5 Tertia
2’ Waldflöt
1-1/3’ Quinta
1’ Sif-Floete
Scharff V

[168] Wolff, 76.

II. Hauptwerk C, D-c’’’
16’ Principal
16’ Quintathen
8’ Octava
8’ Spitzflöte
8’ Gedackt
4’ Octav
4’ Spitzflöte
Sesquialtera II
2-2/3’ Quinta
2’ Weit Pfeiffe
2’ Octav
Cornett IV
Mixtur VIII
16’ Bombart
8’ Trompet
8’ Vox humana

Pedal C, D-d’
16’ Principal
16’ Violon
16’ Subbaß
8’ Octav
8’ Violon
4’ Octav
2’ Octav
Mixtur VII
32’ Posaune (draws 16’ Subbaß stop as well)
16’ Posaune
8’ Trompet-Bass
4’ Clarin-Bass

Couplers: I/II, III/II, I/P
Tremulant, separate tremulant for Vox humana
Slider chests
Wind supply: 7 bellows
Wind pressure: 36˚ manual, 40˚ pedal (after restoration in 2000: 74 mm and 78 mm)

A stopknob exists for Pedal 32’ Untersatz, but it was never built because of lack of space in the Thayßner case from the previous instrument.

Johann Nepomuk Holzhey, 1770[169]
Kempten, Franziskaner-Klosterkirche Heligkreuz (Choir organ)

I. Werk C-c’’’, short octave bass
8’ Copel Baß/Diskant (tin)
4’ Principal (wood)
4’ Flöte Baß/Diskant (tin)
2’ Octav (wood)
1-1/3’ Quinte (tin)
1’ Mixtur III (tin)

Pedal C-a˚, short octave bass
16’ Subbaß (wood)

Pedal permanently coupled to the manual

[169] Höflacher, *Johann Nepomuk Holzhey*, 25. Stoplist reconstructed by Ulrich Höflacher from the 1900 specification of the organ, which is similar to the original specification in the builder’s contract, alongside a description of the organ from 1830.

Slider chests
Wind supply: 2 bellows
Johann Nepomuk Holzhey, 1778-1779[170]
Obermarchtal, Katholiche Pfarrkirche St. Peter und St. Paul

I. Hauptwerk C-f'''
16' Praestant
8' Principal
8' Koppel
8' Viola
8' Gamba
8' Quintatön
4' Oktav
4' Flöte
2-2/3' Nasat
2-2/3' Sesquialter II
2-2/3' Cornett III (from g°)
2' Superoktav
2' Mixtur V
8' Trompete
4' Trompete

II. Hinterwerk C-f'''
8' Principal
8' Rohrflöte
8' Salicional
8' Flaut travers
8' Unda maris
4' Oktav
4' Flöte gedackt
2-2/3' Quinte
2' Sifflöte
2' Hörnle II (2', 1-3/5')
2' Zimbel V
8' Oboe/Fagott*

III. Cornettwerk C-f'''
8' Gedeckt
8' Dulciana
4' Spitzflöte
2' Flageolett
4' Cornett IV
8' Cromorne/Schalmei*
8' Vox humana*
Tremulant

Pedal C-a°
16' Subbaß
8' Oktavbaß
8' Violon
4' Cornettbaß IV
16' Posaune
8' Trompete
4' Trompete

Couplers: II/I, III/I, I/P
*Divided Bass/Treble at f#°/g°. The first rank is in the bass, the second in the treble.
Slider chests

[170] Völkl, 176; Höflacher, *Johann Nepomuk Holzhey*, 47-48.

Johann Nepomuk Holzhey, 1784-1785[171]
Weißenau, Abteikirche St. Peter und St. Paul

I. Hauptwerk C-f'''
16' Praestant*
8' Principal
8' Quintadina
8' Copel
8' Viola
8' Gamba
4' Octav
4' Flöt
2-2/3' Sexquialtera III-IV
2' Nasard II
2' Superoctav
2' Mixtur VI
2-2/3' Cornet III (from g°)
8' Trompet
4' Claron

II. Oberwerk C-f'''
8' Principal
8' Rohrflöt
8' Flautravers (C-f#° in common with Rohrflöt)
8' Salicional
8' Unda maris (from g°)
4' Octav
4' Hohlflöt
4' Fugari Bass (C-f#°)
4' Fugari Diskant (g°-f''')
2-2/3' Quint II
2' Hörnle II (1-3/5' starts at g°)
2' Cÿmbel V
8' Fagott/Oboe**

III. Echowerk C-f''' (divided into Bass/Treble windchests)
8' Nachthorn
8' Dulciana (C-f#° in common with Nachthorn)
4' Spitzflöte
2' Flageolet
4' Cornet IV (from g°)
8' Cromorne/Schalmei**
8' Vox humana
Tremulant

Pedal C-a°
16' Subbaß
8' Octavbaß
8' Violon
4' Cornetbass IV
16' Bombart
8' Trompet
4' Claron

Couplers: II/I, III/I, I/P
*Bass octave only available by using I/P coupler, then the bass octave plays in the pedal.
**Divided Bass/Treble at f#°/g°. The first rank is in the bass, the second in the treble.
Slider chests
Wind supply: 6 bellows

---

[171] Völkl, 178; Höflacher, *Johann Nepomuk Holzhey*, 52-58.

Johann Nepomuk Holzhey, 1794-1797[172]
Neresheim, Benediktinerabteikirche Heilig Kreuz

I. Hauptwerk C-f'''
32' Bordon (from g°)
16' Principal
8' Octav
8' Copel
8' Violoncell
8' Pifarre
8' Quintadena
4' Octav
4' Flöt
2-2/3' Quint
2' Octav
2-2/3' Cimbal V
2' Mixtur VII
8' Cornet V (from g°)
8' Trompet
8' Cromorne
4' Claron

II. Oberwerk C-f'''
8' Principal
8' Bordon
8' Flauta travers (C-f#° in common with Bordon)
8' Gamba
8' Salicet
8' Unda maris (C-f#° in common with Salicet)
4' Feldflöt
4'+1-3/5' Sonnet II (C-f#° in common with Feldflöt)
4' Holflöt
4' Waldflöt
2' Flageolet
2-2/3' Nazard V
2-2/3' Sesquialter III
Douce Clarinet 8'
Hoboe 8'

III. Echowerk C-f''' (divided into Bass/Treble windchests)
8' Nachthorn
8' Dulciana (C-f#° in common with Nachthorn)
4' Fugari Bass (C-f#°)
4' Fugari Diskant (g°-f''')
2' Spitzflöt
2' Syflöt
2-2/3' Hörnle III
4' Cornet IV (from g°)
8' Vox humana Bass (C-f#°)
8' Vox humana Diskant (g°-f''')
Tremulant Diskant

Pedal C-a°
16' Prestant
16' Bordon
8' Flauten
8' Violonbass
4' Flötenbass
16' Bombart
8' Trompet
4' Claron
16' Pauken (A and d°, played on two pedals on the left end of the pedalboard)

[172] Völkl, 194; Höflacher, *Johann Nepomuk Holzhey*, 66-76.

Couplers: II/I, III/I, I/P
*Divided Bass/Treble at f#°/g°. The first rank is in the bass, the second in the treble.
Slider chests

Friedrich Ladegast, 1855[173]
Merseburg, Dom

I. Rückpositiv C-g'''
16' Bordun
8' Principal
8' Flauto traverso
8' Fugara
8' Quintatön
4' Octave
4' Gedeckt
2' Octave
Mixtur IV
Cornet II-V
8' Oboe

Pedal C-f'
32' Untersatz
16' Principal
16' Salicetbass
16' Violonbass
16' Subbass
10-2/3' Großnassat
8' Principal
8' Violoncello
8' Bassflöte
6-2/5' Terz
5-1/3' Rohrquint
4' Oktave
4' Flöte
4' Scharfflöte
Mixtur IV
Cornett IV
32' Posaune
16' Posaune
16' Dulcian

II. Hauptwerk C-g'''
32' Bordun (from c°)
16' Principal
16' Bordun
8' Principal
8' Hohlflöte
8' Doppelflöte
8' Gemshorn
8' Gambe
5-1/3' Quinte
4' Oktave
4' Spitzflöte
4' Gedackt
4'+2' Doublette
2-2/3' Quinte
2' Oktave
Mixtur IV
Scharff IV
Cornett III-IV
16' Fagott
8' Trompete

III. Oberwerk C-g'''
16' Quintatön
8' Principal
8' Rohrflöte
8' Gambe
8' Flauto amabile
8' Gedeckt
4' Oktave
4' Spitzflöte
4' Rohrflöte
2-2/3' Quinte
2' Waldflöte
1-3/5' Terz
1' Sifflöte
Mixtur IV
8' Schalmei
Stahlspiel

IV. Brustwerk (encl.) C-g'''
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
Progressiveharmonica II-IV
16' Aeoline

[173] Information taken from the instrument by the author.

8’ Trompete

Couplers: III/II, I/II, IV/II, I/P, II/P, III/P
Slider chest

The Rückpositiv can be controlled separately by a secondary console on the front bottom of the division. This was retained from the previous organ.

Some reeds, such as the 16’ Aeoline are free reeds.

Friedrich Ladegast, 1871[174]
Schwerin, Dom

III. Manual (bottom keyboard) C-f’’’
16’ Gedackt
8’ Geigenprincipal
8’ Doppelflöte
8’ Flauto traverso
8’ Salicional
4’ Gedackt
4’ Fugara
4’ Piffero
2-2/3’ Nassat
2’ Piccolo
2’ Progressiv-Harmonica II-IV
8’ Clarinette (free reed)
Glockenspiel (c#’-c’’’)

II. Manual (third keyboard) C-f’’’
Abteilung 1
16’ Principal
8’ Principal
8’ Piffero
4’ Octave
4’ Flautino
4’ Quintatön
2-2/3’ Quinte
2’ Octave
Cornett III (2-2/3’, 2’, 1-3/5’)
2’ Progressiv-Harmonica III-IV

I. Manual (second keyboard) C-f’’’
Abteilung 1
16’ Principal
8’ Principal
4’ Octave
4’ Spitzflöte
3-1/5 Terzflöte (plus 2-2/7’ from c˚)
2’ Octave
4’ Cornett IV
Cornett
2-2/3’ Mixture IV
2’ Cymbel III
8’ Trompete
Abteilung 2
32’ Bordun (from c˚)
16’ Bordun
8’ Doppelgedackt
8’ Flauto major
8’ Gambe
8’ Gemshorn
5-1/3’ Rohrquinte
4’ Rohrflöte
16’ Trombone

IV. Manual (fourth keyboard) C-f’’’
16’ Viola
8’ Zartflöte

[174] Information taken from the instrument by the author.

Scharff IV
8’ Oboe (free reed)
Abteilung 2
16’ Quintatön
8’ Quintatön
8’ Rohrflöte
8’ Bordunalflöte
8’ Fugara
4’ Flöte
16’ Fagott (free reed)

8’ Lieblich Gedackt
8’ Viola d’amore
8’ Unda maris II (from g°)
4’ Flauto dolce
4’ Salicional
2’ Flöte
2’ Waldflöte (prepared)
2’ Violine (prepared)
2’ Harmonica aetherea III
16’ Aeoline (free reed)

Pedal C-f’
Piano
16’ Subbaß
16’ Salicetbaß
8’ Baßflöte
8’ Cello (wood)
16’ Dulcian (free reed)
Forte
32’ Untersatz
32’ Violon
16’ Principalbaß
16’ Octavbaß
16’ Violon
12-4/5’ Terz
10-1/6’ Nassard*
8’ Principalbaß
8’ Cello (tin)
5-1/3’ Nassard
Cornett IV (2-2/3’, 2’, 1-3/5’, 1-1/7’)
32’ Posaune
16’ Posaune
8’ Trompete
4’ Trompete

Couplers: II. Man./I. Man., III. Man./I. Man., IV. Man./I. Man., I. Man/Ped.
Tremulant for II and III together
Crescendo/Decrescendo stops and foot levers
Ventils and couplers on both stops and foot levers
*Should probably read 10-2/3’ instead. 10-1/6’ is the label present on the original Ladegast stop knob.

Slider chests except in II. Manual 8’ Principal, 4’ Octave and Scharff are on cone-valve chests, and in the Pedal, the 32’ stops, the 16’ Octavbaß, the 16’ Violon, and the 16’ Principalbaß are on offset chests with no sliders

Pneumatisches Werk - Barker lever assist: The player uses the bottom manual (III. Manual), to which is automatically coupled the I. Manual and any other manuals coupled to I. Manual.

Fußhebel (foot lever assists):
1. I. Manual Abteilung 1
2. I. Manual Abteilung 2
3. I. Manual Combination
4. Ventil zum III. Manual
5. III. Manual Combination
6. Pedal Combination
7. Pedal Forte
8. Crescendo
9. Descrescendo
10. IV. Manual Schweller
11. IV. Manual Combination
12. Ventil zum IV. Manual
13. II. Manual Combination
14. II. Manual Abteilung 1
15. II. Manual Abteilung 2

The Swell shutters on IV. Manual are only either open or closed. There is no balanced swell shutter mechanism.

Georg Ludwig Mezler, 1797[175]
Bürg, Evangelische Kirche

Manual C-f”’	*Pedal* C-f’
8’ Großgetäckt	16’ Suppaß
8’ VioldaGamb	8’ Violonbaß
8’ Solicional	
4’ Principal	
4’ FlautTravers	
2-2/3’ Quind	
2’ Octave	
1’ Mixtur III	

Couplers: I/P
Slider chests
Wind supply: 2 bellows

[175] Information taken from the instrument by the author and from documents received from David Dehn, organist at the Evangelische Stadtkirche in Neuenstadt am Kocher.

Riepp, Karl Josef, 1754-1766[176]
Ottobeuren, Benediktinerabteikirche

I. Positiv
8’ Princip D
8’ Flauta B/D
8’ Copel B/D
4’ Octav
4’ Flet
4’ Gamba B/D
2-2/3’ Nazard B/D
2’ Quart B/D
1-3/5’ Tertz B/D
1-1/3’ Quint B/D
1’ Fornit V-VI B/D
8’ Trompet B/D
8’ Cromor B
8’ Voxho B/D
4’ Clairon B/D

Pedal
16’ Princip
16’ Copel
8’ Octav
8’ Gamba
5-1/3’ Quint
4’ Flet
[2-?] 2/3’ Mixtur III
16’ Bomba
8’ Trompet
4’ Clairon

II. Hauptwerk
16’ Copel
8’ Princip
8’ Salicet
8’ Gamba
8’ Flauta
8’ Copel
4’ Prestant
4’ Flet
3-1/5’ Tertz
2-2/3’ Quint
2’ Waldflet
1-3/5’ Tertz
2-2/3’ Mixtur IV
1’ Cimbal IV-VI
Cornet V
8’ Trompet
4’ Clairon

III. Recit (Bass)
8’ Copel
4’ Flet
2-2/3’ Quint
2’ Quarte
1-3/5’ Tertz
8’ Hoboi

III. Recit (Diskant)
Cornet Resi V

IV. Echo (Bass)
8’ Copel
4’ Flet
2-2/3’ Quint
2’ Quarte
1-3/5’ Tertz
8’ Hoboi

V. Echo (Diskant)
8’ Copel
4’ Flet
2-2/3’+2’ Larigot II
1-3/5’+1’ Tertz II
8’ Hoboi

[176] Josef Miltsczitzky, “Karl Joseph Riepp und Rupert Riepp,” *Ars Organi - Zeitschrift Für Das Orgelwesen* 58, no. 2 (06, 2010): 76.

Georg Friedrich Schmahl, 1747[177]
Ludwigsburg, Residenzschloß Ordenskapelle (now located in the Schloßkapelle)

I. Hauptwerk C-c'''
8' Principal
8' Großgedekt in Holz
8' Gembshorn
8' Viola di Gamba
4' Octava
4' Flöthen gedekt
2-2/3' Quinta
2' Superoctava
1' Mixtura IV (c, e, g, c)
8' Vox humana

II. Oberwerk C-c'''
8' Lieblich gedekt
4' Principal
4' Spitzflöthen
2' Octava
Scharff II

Pedal C-c'
16' Subbaß gedekt
8' Octavbaß
8' Violoncello, von Metall

Couplers: II/I, I/P
Tremulant
Slider chests

Johann Friedrich Schulze, 1854[178]
Lübeck, Marienkirche

I. Hauptwerk C-f'''
32' Untersatz (from c°) wood
16' Principal C-b° wood, from c' tin
16' Bordun C-b° wood, from c' tin
16' Viola major C-B from 16' Princ. c°-b° wood, from c' tin
8' Principal C-B wood, from c° tin
8' Gedact C-B wood, from c° tin
8' Hohlflöte C-B from 8' Gedact, from c° wood
8' Gemshorn tin
8' Viola di Gamba C-B from 8' Princ., from c° tin
5-1/3' Quinte C-B wood, stopped, wide-scale
4' Octave tin
4' Spitzflöte tin
4' Violino tin
2-2/3' Nassat tin, tapered like a Spitzflöte

II. Manual C-f'''
16' Principal C-B from 16' Bordun, wood
16' Bordun C-b° wood, from c' tin
8' Principal C-B wood
8' Gedact C-B wood
8' Portunalflöte wood, C-B stopped 8' Spitzflöte tin
8' Salicional C-B from 8' Princ., from c° tin
4' Octave tin
4' Rohrflöte tin, with tuning caps
4' Gemshorn tin
2-2/3' Quinte open, cylindrical
2' Octave
2' Mixtur V

---

[177] Völkl, 106.

[178] Walter, 49-51.

Rauschquinte II tin (stopped 2-2/3’ + open 2’)
Cornett IV wide-scale
2’ Mixtur V
2’ Cimbel III (narrower than Mixtur)
16’ Tuba resonators and boots zinc, free reed
8’ Trompete tin, beating reed
4’ Clarino, beating reed

III. Manual C-f’’’
16’ Lieblich Gedact C-b’ wood, from c’’ tin
8’ Geigen Principal C-B wood, from c° tin
8’ Lieblich Gedact C-b° wood, from c’ tin
8’ Jubalflöte wood, wide-scale gedact with double mouths
8’ Flauto traverso C-g#° from 8’ Lieb. Ged., from a° tin, from a’ harmonic
8’ Terpodion C-B from 8’ Geig. Princ., from c° tin
4’ Geigen Principal tin
4’ Zartflöte C-B from 4’ Flageolett, wood
4’ Flageolett C-G# stopped, from A open, from a° harmonic, round bore, beech wood

2-2/3’ Spitzquinte tin
2’ Waldflöte tin, tapered
2’ Progressio harmonica III-V
8’ Aeoline zinc, free reed, reduced wind supply
8’ Oboe tin, beating reed, reduced wind supply
2’ Scharff III (narrower than Mixtur)
16’ Physharmonica zinc resonators, free reed
8’ Trompete C-B zinc, from c° tin, beating reed

IV. Manual C-f’’’
16’ Tibia major C-b’ wood, from c’’ tin, narrow scale with high cut-up
8’ Principal C-B wood, from c° tin
8’ Fugara C-B from 8’ Princ.
8’ Flauto dolce C-B from 8’ Flaut amab., wood, open
8’ Flaut amabile C-b wood, from c’ tin, stopped, extremely soft
4’ Viola d’amour tin/lead 50% alloy, reduced wind supply
4’ Octave tin
2’ Progressio harmonica III-VI
8’ Clarinette beating reed

Pedal C-d’
Forte
32’ Groß-Principal wood, wide-scale
16’ Basso majore wood, very wide-scale
16’ Principalbaß wood
16’ Violon
10-2/3’ Major-Quinte wood, stopped, wide scale
8’ Basso minore wood, open, wide principal scale like 16’ Basso majore
8’ Violoncello wood
6-2/5’ Terz wood, stopped, wide scale
5-1/3 Quinte
4’ Octave tin, powerful
4’ Cornett V tin 4’ rank stopped, rest open (4’, 2’, 1-1/3’, 1’, 4/5’)

32’ Contra Posaune zinc boots and resonators, half length, free reeds
16’ Posaune built same as 32’ Contra Posaune
8’ Trompete tin, beating reeds
4’ Schalmei tin, beating reeds
Piano
16’ Doppelflötenbaß wood, stopped, double mouths, wide scale
8’ Gedactbaß wood
8’ Violoncello wood, soft
16’ Fagotto zinc resonator and boots, softly voiced free reed

Wind pressures:	Hauptwerk - 83 mm	Forte Pedal - 88 mm
	II. Manual - 83 mm	Piano Pedal - 83 mm
	III. Manual - 68 mm	
	IV. Manual - 78 mm	

David Tannenberg, 1790[179]
Philadelphia, PA, Zion Lutheran Church

Haupt Manual	*Oberwerk*	*Echo*	*Pedal*
16’ Quinta dena	8’ Principal dulcis	8’ Flöt Traver	16’ Principal Baß
8’ Principal	8’ Gedackt	8’ Rohr Flöt	16’ Subbaß
8’ Gedackt	8’ Flöte Amabile	8’ Dulcian	8’ Octav Baß
8’ Gambe	8’ Quinta dena	8’ Echo Baß	5-1/3 Quinta
8’ Gemshorn	4’ Salicet	4’ Nachthorn	4’ Octave
4’ Octave	4’ Nachthorn	4’ Fistula Octave	16’ Posaune
4’ Flöte	2-2/3 Fistel quint	8’ Hautbois	
2-2/3’ Quinte	2’ Hohlflöte		
2’ Octave	Cimbel IV		
Mixtur IV-VI	8’ Vox humana		
8’ Trumpete			

[179] Philip T. D. Cooper, “Zion Lutheran Church - Philadelphia, PA: 1790,” *David Tannenberg: Master Organ-Builder from Early Pennsylvania,* last modified September 7, 2013, accessed October 2, 2019, http://davidtannenberg.com/TannenbergZionPhila.htm.

David Tannenberg, 1800[180]
Winston-Salem, NC, Home Moravian Church

Hauptwerk C-f'''	*Hinterwerk* C-f'''	*Pedal* C-c'
8' Principal	8' Flauta Amabile	16' Sub Bass
8' Gross Gedact	8' Viola di gamba	8' Violon Bass
8' Quintadena	4' Flauta douce	
4' Principal	4' Salicet	
4' Flauta		
2-2/3' Quinte		
2' Sub octave		

Couplers: II/I, I/P
Wind supply: 3 bellows
Slider chests

Tobias Heinrich Gottfried Trost, 1722-1735, 1754*[181]
Waltershausen, Stadtkirche "zur Gotteshilfe"

I. Brustwerk C-c'''	*II. Hauptwerk* C-c'''	*III. Oberwerk* C-c'''
8' Gedackt	16' Portun Untersatz	8' Flöte Dupla
8' Nachthorn	16' Groß Quintadena	8' Flöte travers
4' Principal	8' Principal	8' Hohl-Flöte
4' Flöte douce II	8' Gemshorn	4' Vagarr
4' Nachthorn	8' Viol d'Gambe	4' Geigen-Principal
4' Gemshorn	8' Portun	4' Lib. Principal
2-2/3' Nassad-Quinta	8' Quintadena	4' Spitz-Flöte
2-2/3' Spitz-Quinta	8' Unda maris	2-2/3' Gedackt Quinta
2' Octava	4' Octava	2' Wald-Flöte
Sesquialtera II	4' Salicional	8' Vox humana
2' Mixtura IV	4' Röhr-flöta	
8' Hautbois	2-2/3' Celinder Quinta	*Pedal* C-c'
	2' Super-Octava	16' Groß Prinicpal
	Sesquialtera II	16' Sub-Bass
	2' Mixtura VI-VIII	16' Violon-Bass
	16' Fagott	16' Quintadenen-Bass (HW)
	8' Trompetta	8' Octaven-Bass (HW)

[180] Information taken from the instrument by the author.

[181] Wolff, 130; supplemented with further information from the instrument taken by the author.

8’ Viol d’Gambenbass (HW)
8’ Portun-Bass (HW)
8’ Super-Octava (HW)
4’ Röhr-Flötenbass (HW)
2’ Mixtur-Bass (HW)
32’ Posaunen-Bass
16’ Posaunen-Bass
8’ Trompeten-Bass

Couplers: I/II, III/II, II/P, III/P
Wind supply: 4 bellows, cut-off valves separate pedal wind from manuals adding stability
Slider chests
Tremblant doux for all manual divisions
Two Cymbelsterns
*enlarged in 1754 by Ruppert who added stops already built by Trost that had not yet been installed

Tobias Heinrich Gottfried Trost, 1733-1739[182]
Altenburg, Schloßkirche

I. Hauptwerk C-c’’’	*II. Oberwerk* C-c’’’	*Pedal* C-c’
16’ Groß-Quintadena	8’ Geigenprincipal	16’ Principalbaß
16’ Flaute traverse	8’ Lieblich Gedackt	16’ Groß-Quintadena (HW)
8’ Principal	8’ Vugara	16’ Flaute traverse (HW)
8’ Bordun	8’ Quintadena	16’ Violonbaß
8’ Spitzflöte	8’ Hohlflöte	16’ Subbaß
8’ Viol di Gamba	4’ Gemshorn	8’ Octavenbaß
8’ Rohrflöte	4’ Flauto dolce II	8’ Bordun (HW)
4’ Octava	2-2/3’ Nasat	4’ Octava (HW)
4’ Kleingedackt	2’ Octave	Mixtur VI-IX (HW)
2-2/3’ Quinte	2’ Waldflöte	32’ Posaune
2’ Superoctava	1’ Superoctava	16’ Posaune
2’ Blockflöte	Cornet V (from g˚)	8’ Trompete
Sesquialtera II	Mixtur IV-V	
Mixtur VI-IX	8’ Vox humana	
8’ Trompete		
Glockenspiel c’-c’’’		

Couplers: II/I, I/P
Slider chests

[182] Wolff, 6.

Wind supply: 4 bellows for manuals, 6 large bellows for pedal
Wind pressure: manuals: 30˚, pedals: 29˚ (after restoration in 1998: 70mm and 68 mm)

Eberhard Friedrich Walcker, 1821[183]
Kochersteinsfeld, Evangelische Kirche (now located in Ludwigsburg Residenzschloß Ordenskapelle)

Hauptwerk C-f'''	*Pedal* C-g˚
8' Gros Gedeckt	16' Subbaß
8' Quintaton*	8' Viola Baß
8' Viol di gamb	
4' Principal	
4' Flöte	
2' Waldflöte	
1-1/3' Mixtur IV	

Coupler: I/P
Slider chests
*denoted as Salicional 8' in Eggebrecht's *Orgelwissenschaft und Orgelpraxis*

Eberhard Friedrich Walcker, 1829-1833[184]
Frankfurt-am-Main, Paulskirche

I. Manual C-f'''	*II. Manual* C-f'''	*III. Manual* C-f'''
32' Manual-Untersatz	16' Bourdon (wood)	16' Quintatön
16' Principal	8' Principal (English tin)	8' Principal
16' Flauto major	8' Salicional	8' Lieblich Gedeckt
16' Viola major	8' Dolce	8' Hohlflöte
8' Gross-Octav	8' Gedeckt	8' Bifra (tin)
8' Gemshorn	8' Quintatön	8' Harmonica
8' Jubalflöte (open)	4' Octav	4' Dolcissimo
8' Viola di Gamba	4' Flauto travers	4' Spitzflöte
4' Octav	4' Rohrflöte	4' Flûte d'amour
4' Fugara	2' Octav	4' Klein-Gedeckt
4' Hohlflöte	5-1/3' Quintflöte (open)	2' Flautino
2' Octav (repeating)	2-2/3' Gemshorn-Quint	2-2/3' Nassard
2' Waldflöte	2' Mixtur V	8' Hautbois

[183] E. F. Walcker & Cie.; 1, Völkl, 188; further information taken from the instrument by the author.

[184] Eggebrecht, 209.

1’ Super-Octav
2-2/3’ Quint
5-1/3’ Quint
10-2/3’ Cornet V
3-1/5’ Terz
1-3/5’ Terz (disc.)
1’ Scharff IV
2’ Mixtur V
16’ Tuba fagott (tin)
8’ Trompete (tin)
8’ Posaune
8’ Vox humana

I. Pedal C-d’
32’ Subbass (open)
32’ Contrabass (open)
16’ Gross-Octav (open)
16’ Principal
16’ Violon (open)
8’ Octav
8’ Violoncello
4’ Octav
10-2/3’ Quint
6-2/5’ Terz (open)
5-1/3’ Quint (open)
16’ Posaune
8’ Trompete
4’ Clairon
2’ Cornetino
8’ Physharmonica

II. Pedal C-d’
16’ Gedeckt
16’ Violon
8’ Flötenbass
8’ Principal
4’ Flöte
2’ Waldflöte
16’ Fagott

Couplers: II. Man./III. Man., III. Man./II. Man., I. Man./I. Ped., II. Man./II. Ped.
Wind Supply: 12 bellows
Slider chests
Sperrventil for each division

Eberhard Friedrich Walcker, 1854[185]
Neuhausen an der Filder, St. Peter und St. Paulus Kirche

I. Manual C-f’’’
16’ Principal
8’ Principal
8’ Viola di Gamba
8’ Gedeckt
8’ Flöte
8’ Salicional
5-1/3’ Quintflöte
4’ Octav

II. Manual C-f’’’
16’ Bourdon
8’ Principal
8’ Dolce
8’ Gedeckt
8’ Harmonika
4’ Octav
4’ Rohrflöte
4’ Flöte

[185] Markus Grohmann and Helmut Thomas Eisele, “E. F. Walcker Orgel: Specification 1854,” *Orgelförderkreis Neuhausen a.d.F.* last updated January 6, 2019, accessed October 1, 2019, https://walcker-orgel-neuhausen.walcker-orgel-neuhausen-filder.de/English_/Specification_1854/specification_1854.html.

4’ Gemshorn
4’ Traversflöte
2-2/3’ Quint
2’ Octav
Mixtur V
Scharff III
8’ Trompete

2’ Octav
2-2/3’ Cornett III-IV
8’ Fagott-Clarinette

Pedal C-d’
16’ Principalbass
16’ Subbass
16’ Violonbass
8’ Octavbass
8’ Violoncello
16’ Posaunenbass

Couplers: II/I, I/P
Cone-valve windchests

Eberhard Friedrich Walcker, 1856[186]
Ulm, Münster

I. Manual C-f’’’
32’ Man. Untersatz
16’ Principal
16’ Tibia major
16’ Viola di Gamba
8’ Octava
8’ Gemshorn
8’ Viola di Gamba
8’ Gedeckt
8’ Salicional
8’ Flöte
4’ Octava
4’ Flöte
4’ Rohrflöte
4’ Fugara
2’ Octava
2’ Waldflöte
5-1/3’ Quint
3-1/5’ Terz
10-2/3’ Cornett VIII.
8’ Mixtur V
4’ Mixtur V

III. Manual C-f’’’
16’ Bourdon
8’ Principal
8’ Gedeckt
8’+4’ Piffaro II
8’ Harmonica
8’ Spitzflöte
4’ Octava
4’ Gemshorn
4’ Dolce
2’ Octav
2’ Flautino
2-2/3’ Nasard
4’ Mixtur V
8’ Physharmonica
8’ Vox humana
Cop. z. Physharm.
Trem. z. Vox hum.

IV. Manual C-f’’’
Zungenstimmen*

[186] Eggebrecht, 215.

2’ Scharff V
4’ Sexquialtera II
1’ Super Oktav
16’ Contra Fagott
16’ Second Fagott
8’ Posaune
8’ Trompete
4’ Clarino
2’ Clarinetto

II. Manual C-f’’’
16’ Gedeckt
16’ Salicional
8’ Principal
8’ + 2’ Piffaro II
8’ Quintatön
8’ Dolce
8’ Gedeckt
4’ Spitzflöte
4’ Viola
4’ Octav
4’ Kleingedeckt
4’ Traversflöte
2’ Piccolo
2’ Octav
8’ Mixtur VIII
5-1/3’ Quint
1’ Cymbal III
8’ Trompete
8’ Posaune
8’ Fagott
8’ Clarinett
4’ Corno

I. Pedal C-d’
32’ Principalbass
32’ Grand Bourdon
16’ Subbass
16’ Octavbass
16’ Principalbass
16’ Violon
16’ Bourdon
8’ Viola
8’ Violoncell
8’ Flöte
8’ Octava
4’ Octava
10-2/3’ Quint
5-1/3’ Quint
6-2/5’ Terz
4’ Cornett V
32’ Bombard
16’ Posaunenbass
16’ Fagottbass
8’ Posaune
8’ Trompete
4’ Clarine
4’ Corno Basso
2’ Cornettino

II. Pedal C-d’
16’ Gedeckt
16’ Violon
8’ Flöte
4’ Flöte
2’ Hohlflöte
16’ Serpent
8’ Bassethorn

Couplers: Copula II. z. IV. Clavier
Copula I. z. II. Clavier
Copula II. z. III. Clavier
Copula IV. Man. z. I. Man.
Cop. II. Ped. z. II. Man.
Cop. I. Ped. z. II. Ped.

Copula I. Ped. z. I. Man.[187]

Cone-valve windchests
*Reed registers (Zungenstimmen) are located on separate windchests so they can be played on the fourth manual by themselves.

Eberhard Friedrich Walcker, 1863[188]
Boston, Boston Music Hall

I. Manual C-a'''	*II. Man., Schwellorgel* (encl.) C-a'''	*III. Manual* C-a'''
16' Principal	16' Bourdon	16' Gedeckt
16' Tibia-Major	8' Principal	8' Flöten-Principal
16' Viola-Major	8' Salicional	8' Spitzflöte
8' Diapason	8' Dolce	8'+4' Biffra II
8' Flöte	8' Quintatön	8' Gedeckt
8' Gemshorn	8' Gedeckt	8' Viola
8' Viola di Gamba	4' Octav	4' Hohlpfeife
8' Gedeckt	4' Rohrflöte	4' Principal-Flöte
4' Octave (Regal)*	4' Traversflöte	4' Dolce
4' Fugara	5-1/3' Quintflöte	2' Flautino
4' Hohlflöte	2-2/3' Nasard	2-2/3' Sexquialt.
4' Flûte d'amour	2' Octav	2' Super Octave
2' Waldflöte	2' Mixtur V	8' Clarino
2' Octave	8' Trompete†	8' Physharmonica
5-1/3' Quint	8' Basson†**	4' Clarino
3-1/5' Terz	4' Trompete†	

---

[187] Information for the couplers is taken from Eggebrecht, *Orgelwissenschaft und Orgelpraxis,* 215. The particular designations of the couplers are given *exactly* as they appear in the book since, in German Romantic organs, the number of the manual does not always correspond to the position of the keyboard (Clavier), as is the case in the Ladegast organ at Schwerin; the way these couplers are listed without giving a list of the manual order is confusing. It also appears that the divisions coupled are listed backwards: in other words the first coupler probably should be given as IV z[um]. II instead of II z. IV. It is highly unusual to couple a large manual to a smaller one, though it is sometimes done. However, it is much more unusual to couple the pedal division to the manuals; generally the manuals are coupled to the pedal. Unfortunately, since the Ulm Münster organ is no longer extant, there is no way to verify this information.

[188] Eggebrecht, 217; Ochse, 201-203; "E. F. Walcker and Cie. Opus 200 (1863)," *The OHS Pipe Organ Database*, last modified June 8, 2009, accessed October 2, 2019, https://pipeorgandatabase.org/OrganDetails.php?OrganID=41277.

2-2/3’ Quint
1-3/5’ Terz (disc.)§
5-1/3’ Cornett V
2-2/3’Mixtur VI
1-1/3’ Scharff IV
16’ Basson **
8’ Ophycleide **
8’ Trombone
4’ Trompete
4’ Clairon

4’ Hautbois**
4’ Cornettino

IV. Manual C-a’’’
16’ Bourdon
8’ Geigen-Principal
8’ Concertflöte
4’ Gemshorn
4’+2’ Piffaro II
2-2/3’ Quint
2’ Piccolo
8’ Corno Bassetto
8’ Aeoline
8’ Vox humana II
4’ Vox angelica**

Pedal C-f’
Forte-Abtheilung
32’ Principal-Bass
32’ Grand-Bourdon V§
16’ Octave-Bass
16’ Sub-Bass
16’ Contra-Violin
8’ Octave-Bass
8’ Holflöte B.
8’ Violoncell
4’ Octav
32’ Bombardon**
16’ Trombone
8’ Trompete
4’ Corno Basso
2’ Cornettino
Piano-Abtheilung
16’ Bourdon
8’ Flöte
8’ Viola
4’ Flöte
2’ Waldflöte
16’ Basson**

Pedal and Manual Assists: (including couplers)

1. Zungenwerke
2. Fortissimo in the I. Man.
3. Forte in I. Man.
4. Piano in I. Man.
5. for Solo purposes in IV. Man.
6. Volles Werk. 89 Register
7. I. Man./Ped.
8. II. Man./Ped.
9. III. Man./Ped.
10. IV. Man./Ped.
11. All Man./Ped.
12. Fortepedal On/Off
13. I. Man. Pneumatic assist
14. II. Man. to I. Man.
15. III. Man. to I. Man.
16. IV. Man. to I. Man.
17. Swell for Vox humana
18. Swell for Physharmonica
19. Swell for II. Man. and Piano Pedal
20. Vox humana tremulo
21. Biffra tremulo (III. Man.)
22. Crescendo and Descrescendo for the entire organ

Cone chests
Optional pneumatic assist (Barker lever) for I. Man. and any manuals coupled to it.
Wind supply: 12 box bellows

The 16’ Tibia-Major on I. Manual begins on c˚.
*Perhaps this indicates a reed stop voiced to imitate a principal?
**Free reeds
†The 8’ stops are given as bass and the 4’ stops as treble in the stoplist from Edward J. Hopkins (1870), provided by the Organ Historical Society (OHS), but are not given these designations in Eggebrecht’s *Orgelwissenschaft und Orgelpraxis*. In addition, the Trompete 8’ and 4’ are labeled as Trombone 8’ and 4’ in Hopkins.
§The 1-3/5’ Terz is labeled as a treble only stop in the OHS’s list from 1870, but not in Eggebrecht or Ochse.

Johann Friedrich Wender, 1714-1716 (expansion and rebuild of earlier instrument by anonymous builder)[189]
Merseburg, Dom

I. Brustwerk
8’ Gelinde Gedackt (maple)
4’ Principal (t)
4’ Salicional (t)
2-2/3’ Nassat (t)
2’ Oktava (t)
2’ Flachflöte (maple)
1’ Superoctava (t)
Mixtur IV (t)

IV. Oberwerk
16’ Bordun (w)
8’ Rohrflöte (m)
8’ Viola di Gamba (t)
4’ Principal (t)
4’ Spitzflöte (m)
2-2/3’ Gedacktflöte (m)
2’ Octava (m)
2’ Rohrflöte (m)
2’ [1-3/5’] Tertia (m)
Plein seu V-VII (t)
8’ Sordino (wB)
4’ Schallmay (xB)
Stahlspiel (4’)

II. Rückpositiv
8’ Quinta dena
8’ Großgedackt (maple)
8’ Gedackt (K) (maple)
4’ Principal (t)
4’ Octava (K) (t)
4’ Flauto dulce (maple)
2-2/3’Quinta offen (m)
2’ Spielflöte (m)
2’ Octava (m)
2’ [1-3/5’] Tertia (m)
Mixtur IV (t)
16’ Fagott (wB)

Pedal
16’ Principalbaß (t)
16’ Subbaß (w)
8’ Oktavenbaß (m)
5-1/3’ Quintenbaß (m)
4’ Oktavenbaß (m)
1’ Waldflöte (t)
Mixturbaß VI (t)
32’ Posaunenbaß (wB) (lowest 12, w)
2’ Cornettin (wB)

III. Großmanual
16’ Rohrflöte (7 lowest w, rest m)
16’ Quinta dena
8’ Principal (t)
8’ Gemshorn (m)
8’ Großgedackt (m)
5-1/3’ Quinta (m)
4’ Octave (m)
4’ Kleingedeckt (m)
Ses qui altera II (m)
2’ Octava (m)
Mixtur VI (t)
Cymbel III (t)
16’ Bombard (wB)
Bombard pedaliter
8’ Trompet (xB)

Hinterwerk to Pedal
32’ Untersatz (w)
16’ Violonbaß (w)
8’ Fleute douce (maple)
4’ Nachthornbaß (m)
1’ [2’?] Scharfe Flöte (t)
1’ Rohrflöte (t)

[189] Wolff, 122-124.

Kammerton Pedal
16’ Posaunenbaß
8’ Oktavenbaß
8’ Trommetenbaß (wB)
4’ Schallmeyenbaß (wB)

Bombard pedaliter: “a stop to be played in the Pedal, with bells, a cut-off valve, and 2 windchests.”[190]
Sordino 8’: “resonators of tin-plated sheet metal with small tin caps, [a stop] that can imitate the *Vocem humanam*.”[191]

Couplers: IV/III, II/III, III/P (only to Pedal, does not include Hinterwerk to Pedal)
Wind Supply: 6 large bellows (three to manuals and three to pedal)
Materials: (m) = metal, (t) = tin, (w) = wood, (wB) = tin-plated sheet metal
Cymbelstern (Großmanual)
Oberwerk Tremulant
Cut-off valve (Sperrventil) for each division

The Rückpositiv can be controlled separately by a secondary console on the front bottom of the division.

[190] Ibid., 124.

[191] Ibid.