Grace & Holy Trinity Church

an Episcopal parish on Monroe Park

Adult Formation Sunday Series:

The Sounds of the Pipe Organ

Dr. Elizabeth Melcher Davis, *Choirmaster & Organist*
Stanley M. Baker, *Assistant Choirmaster & Organist*

Sunday, October 15, 2023

9:30 AM

(Church)

The Sounds of the Pipe Organ

History and development of pipe organ, a musical instrument that produces sound when pressurized air or wind is driven through a series of pipes.

I. Origins of Organ

A. Origins traced back to ancient Greece in the third century B.C.

1. One of the oldest instruments still used in European classical music
2. Word organ derived from the Latin "organum," an instrument similar to a portative organ used in ancient Roman circus games
3. The earliest organ was the hydraulis which delivered a wind supply maintained through water pressure to a set of pipes
4. Hydraulis played in arenas of the Roman Empire

B. Pumps and water regulators of hydraulis were replaced by inflated leather bags in the second century A.D. True bellows appeared in the sixth or seventh century A.D.

C. Portable organs were invented in the Middle Ages

1. Portability made it useful for the accompaniment of sacred and secular music in different settings

D. The first permanent organ installation was in 1361 in Halberstadt, Germany

E. Most organs had no stop controls until the mid-fifteenth century

1. Around 1450 controls were designed that allowed ranks (sets of pipes) to be played individually

II. Renaissance & Baroque Periods

A. Tonal colors were more varied

B. Stops imitated various instruments, such as the krumhorn and gamba

C. The Baroque period was organ building's "golden age"

1. Instruments displayed beautiful craftsmanship and beautiful sound
2. Baroque organ builders were Arp Schnitger, Jasper Johannsen, and Gottfried Silbermann

3. All organs had well-balanced mechanical or tracker key action

    a) Keys and windchests are physically connected through a series of rods called trackers

    b) When the organist depresses a key, the corresponding tracker moves allowing wind to enter the pipe

    c) Consoles of mechanical or tracker action organs cannot be moved because it would result in breaking the trackers

III. Romantic Period

A. Organs became more symphonic, capable of creating gradual crescendos

B. New technologies and the work of organ builders such as Aristide Cavaille-Coll and Henry Willis made it possible to build larger organs with more stops, more variation in sound, and more divisions

C. Enclosed divisions became common

D. Organs had a warmer, richer sound than was common in the eighteenth century

E. Organs began to be built in concert halls

F. Composers such as Camille Saint-Saens and Gustav Mahler used the organ in orchestral works

IV. Modern Development

A. The development of electro-pneumatic action in the late nineteenth century made it possible to locate the console independently of the pipes, greatly expanding the possibilities in organ design

1. Electric current operates action indirectly through air pressure valves

2. Since only electrical wiring is necessary to connect the console to the windchest, electric actions allow the console to be separated from the rest of the organ

3. Moveable organ consoles are very popular and a standard part of organ design

    a) Useful for organ concerts and other special programs featuring organ

    b) Help the organ to be more accessible and organ music more meaningful for the audience

c) Organ becomes visible like other instruments and singers

d) Grace & Holy Trinity's organ console was made moveable in 2008 by a generous gift from Graham Rollings in memory of his wife, Freda

4. The existing console was placed on a dolly with modifications to the electrical and computer systems

V. Stops

A. Each organ stop controls one rank or set of pipes

B. Categories of stops

1. Principal or Diapason-basic foundation stop of organ, non-imitative, does not imitate a particular instrument

2. Flute – imitates flute-class woodwind instrument (Bourdon)

3. String – imitates stringed instruments (Gamba)

4. Reed – imitates brass or reed instruments (Trumpet, Oboe, Clarinet, Krummhorn, Schalmei)

5. Chimes

6. Zimbelstern (Wind Chimes)

C. Exist at different pitch levels

1. A stop that sounds at unison pitch when a key is depressed is at an 8' pitch

a) Refers to the lowest-sounding pipe in that rank, which is eight feet long

2. A stop that sounds an octave higher is at a 4' pitch

3. A stop that sounds two octaves higher is at 2' pitch

4. A stop that sounds an octave lower is at a 16' pitch

5. A stop that sounds two octaves lower is at a 32' pitch

VI. Console

A. All controls available to the organist are accessed from the console

1. Keyboards, pedalboards, expression pedals, stops, and registration aids

VII. Keyboards

A. Grace & Holy Trinity's organ has 4 manuals that are named for a particular division (group of ranks)-Solo/Antiphonal, Swell, Great, and Positiv

VIII. Couplers

A. Couplers allow stops of one division to be played from the keyboard of another division

1. For example, "Swell to Great" allows stops drawn in the Swell division to be played on the Great manual

IX. Enclosure and Expression Pedals

A. Enclosure refers to a system that allows for control of volume without requiring addition or subtraction of stops

1. Pipes of an enclosed division are placed in a chamber called a swell box

a) One side of the box is constructed from horizontal swell shades (like Venetian blinds)

b) When shades are open, the sound is louder and when shades are closed sound is softer

c) Grace & Holy Trinity's organ has 1 enclosed division-Swell

2. Expression pedal controls the movement of swell shades

X. Combination Action

A. Stops of organs can be combined in different ways

B. The specific combination of stops is called a registration

1. Combination action is used to switch instantly from one registration to another quickly

2. Pistons are buttons that can be pressed by the organist to change the registration

C. Grace & Holy Trinity's organ has a sophisticated Peterson solid state combination action which was installed in 2004

1. A computerized system allows organists to program registrations
2. 256 memory levels
3. Organists create their own folders
4. Record performances on MIDI and play them back (recorder system)
5. 63 ranks and 3,470 pipes

XI. Organ Works to Demonstrate Sounds

A. **"Adagio (for the Glass Harmonica)**" by Wolfgang Amadeus Mozart (1756-1791)
Performed by Stanley M. Baker, *Assistant Choirmaster & Organist*

1. demonstrating the flute stops

B. **"Prelude on Nicaea"** by Healey Willan (1880-1968)
Performed by Stanley M. Baker, *Assistant Choirmaster & Organist*

1. demonstrating the string stops

C. **"A Trumpet Minuet"** by Alfred Hollins (1865-1942)
Performed by Dr. Elizabeth Melcher Davis, *Choirmaster & Organist*

1. demonstrating the Antiphonal Trompette en Chamade, Solo Bombarde, and Festival Trumpet

D. **"Sine Nomine"** by Dr. John Weaver (1937-2021)
Performed by Dr. Elizabeth Melcher Davis, *Choirmaster & Organist*

1. demonstrating flutes, strings, principals, and reeds

The Grace & Holy Trinity Church Organ

Austin Organ #2638, 1979

The Holy Trinity building, completed in about 1894, contained a mechanical-action Hook & Hastings organ. When Holy Trinity and Grace Churches merged in 1924, Hook & Hastings enlarged the organ, using their new electro-pneumatic action to operate the existing windchests. The original Holy Trinity console was attached on the left side – the new console was detached on the right side. The organ had an abundance of unison tones. Perhaps the most unusual thing about the organ was that the very rare Hook & Hastings orchestral flute stop existed in both the main organ and in the Echo division. These pipes were made without traditional mouths, a tube conveyed wind from the toe to the hole in the side of the pipe, so they could be blown just like an orchestral flute.

Evidently, the original windchests had problems, so by the time of World War II, the organ needed to be rebuilt. The Tellers firm of Erie, Pennsylvania was very active in Richmond at this time, having rebuilt the organ in the Roman Catholic Cathedral so they were given the contract to rebuild and enlarge the organ. The console shell was retained, most of the pipes were replaced with the Tellers ventil windchests, and more stops were added, mainly unison and solo stops.

By the 1970s, the ventil chests and the console were installed. The Hook & Hastings was sold, except for a few stops that were retained, such as the Pedal 16' Open Wood, the Antiphonal Gedeckt, Viole, Octave, Pedal Bourdon, and Diapason.

After the initial installation, additions were made through the years, such as the Trompette en Chamade in the back. This Gallery Trumpet (installed in 1996) was made possible by a gift in memory of Richard Caswell Cooke, Sallie Lewis Broaddus, and Gray Massie Broaddus. Additional stops were derived from existing resources in the main organ.

At some point, the console was also converted from electro-mechanical combination action to solid-state. However, the work was entrusted to different firms at different times, each using the type of action they preferred. The result was a confusing array of devices that sometimes were not fully compatible. In addition, there was metal fatigue in the largest reed pipes of the organ, the 32' Bombarde.

Lewis & Hitchcock recommended converging the organ to one system of operation so that everything would be compatible. In 2004 the console was removed to their factory, where it was fitted with a new system designed by the Peterson Electro-Musical Company of Chicago, Illinois. This system was recommended because of the simplicity of operation, reliability of the components, as well as support available from the company. A matching system was installed in the organ chamber. All the information is sent from the console over an Ethernet cable. This data stream can be manipulated by a Transposer or recorded by a Sequencer. Each organist has a data bank available to keep combinations that may be locked. Crescendos and Full Organ settings may be revised to suit the music. As the system is software-based, it can be updated.

In 2008, a gift in memory of Freda Hatcher Rollings was made for a moveable organ console. The moveable console enhances the music ministry and our concert series at Grace & Holy Trinity by making our wonderful organ more accessible, and the organ music more meaningful to the congregation and community.

Register

Great: Stops	**Pipes & Details**
1. 16' Geigen	61 pipes, 13-24 in façade
2. 8' Principal	61 pipes, 1-12 in façade
8' Geigen	12 pipes & #1
3. 8' Bourdon	61 pipes
4. 4' Octave	61 pipes
5. 4' Nachthorn	61 pipes
6. 2' Super Octave	61 pipes
7. 1 ⅓' Fourniture IV	244 pipes
8. ½' Cymbal III	183 pipes
9. 16' Fagot	61 pipes, L/2 throughout
10. 8' Trumpet	61 pipes, copper resonators from #46, top octave repeats
4' Clarion	
16' Swell to Great	
8' Swell to Great	
4' Swell to Great	
8' Positiv to Great	
16' Antiphonal to Great	
8' Antiphonal to Great	
4' Antiphonal to Great	
8' Great Unison Off	
8' Trompette en Chamade Chimes	from #38, 25 tubes, 1 & 2 missing, plays on Solo keys

Swell: Stops	**Pipes & Details**
11. 16’ Gedeckt bass	61 pipes, 1-12 inverted outside box, speaking in
8’ Rohr Gedeckt	12 pipes & #11
12. 8’ Viola Pomposa	61 pipes
13. 8’ Viola Celeste tc	49 pipes
14. 8’ Flauto Dolce	61 pipes
15. 8’ Flute Celeste tc	49 pipes
16. 4’ Principal	61 pipes
17. 4’ Wald Flute	61 pipes, open wood
18. 2’ Block Flute	61 pipes
19. 2 ⅔’ Sesquialtera II tc	98 pipes
20. 2’ Plein Jeu IV	244 pipes
21. 16’ Basson	61 pipes
22. 8’ Trompette	61 pipes
8’ Oboe	from #21, blank after G4
23. 8’ Vox Humana	61 pipes, suspended from ceiling above right chest
24. 4’ Clarion	61 pipes
Tremolo	2 fas, one for each side
16’ Swell to Swell	
8’ Swell Unison Off	
4’ Swell to Swell	
8’ Positiv to Swell	

Positiv: Stops	**Pipes & Details**
16’ Geigen	from #1
8’ Geigen	from #1
25. 8’ Holz Gedeckt	61 pipes, stopped wood
26. 4’ Principal	61 pipes
27. 4’ Koppel Flute	61 pipes
28. 2’ Octave Principal	61 pipes
29. 1 ⅓’ Quint Principal	61 pipes
30. 1’ Sifflute	61 pipes
31. ⅓’ Zimbel III	183 pipes
32. 8’ Rohr Schalmei	61 pipes from #38
8’ Trompette en Chamade Blank	
8’ Positiv Unison Off	
8’ Great to Positiv	
8’ Swell to Positiv	
8’ Antiphonal to Positiv	

Antiphonal: Stops (In former Echo chamber in gallery, shades removed, visible)	**Pipes & Details**
8’ Diapason	from #40 (1-12) & #35 (13-56)
33. 8’ Gedeckt	56 pipes, H&H Cor de Nuit
34. 8’ Viole	56 pipes, H&H/Tellers mix, tapered Gemshorn/Spitzflute
35. 4’ Octave	56 pipes, H&H Octave
36. 1 ⅓’ Mixture III	168 pipes
16’ Antiphonal to Antiphonal	
4’ Antiphonal to Antiphonal	
8’ Great	
8’ Swell	
8’ Positiv	

Solo: Stops	**Pipes & Details**
8’ Vox Humana	from #23
37. 8’ Festival Trumpet	61 pipes, high pressure
8’ Bombarde	from #46
16’ Trompette en Chamade tc	from #38
38. 8’ Trompette en Chamade	61 pipes, brass, flared, rear gallery
4’ Trompette en Chamade	from #38, no top octave

Pedal: Stops	**Pipes & Details**
39. 16’ Bourdon Antiphonal	32 pipes, H&H, in Antiphonal Chamber
40. 8’ Diapason Antiphonal	32 pipes, Tellers, in Antiphonal Chamber
Bells F	New Century Glockenstern, with wind chimes on it, in Swell
Bells P	8 bells, homemade on record player, in Swell
Blank	Says Trompette en Chamade 8’, not connected
Blank	
32’ Resultant	from #41
41. 16’ Open Diapason	32 pipes, wood, H&H
42. 16’ Principal	32 pipes, 13024 in façade
43. 16’ Subbass	32 pipes, basses hung upside down from chest
16’ Geigen	from #1
16’ Gedeckt Bass	from #11
10 ⅔’ Geigen Quint	from #1
8’ Octave	12 pipes & #42
8’ Geigen	from #1
8’ Gedeckt	from #11
44. 4’ Choral Bass	32 pipes
4’ Nachthorn	from #5
45. 2 ⅔’ Mixture IV	128 pipes
46. 32’ Contra Bombarde	32 pipes
16’ Bombarde	12 pipes & #46
16’ Basson	from #21
8’ Bombarde	12 pipes & #46
8’ Basson	from #21
4’ Bombarde Clarion	from #9
4’ Basson	
4’ Fagot	
8’ Great to Pedal	
4’ Swell to Pedal	
8’ Positiv to Pedal	
4’ Positiv to Pedal	
8’ Antiphonal to Pedal	

Pistons: Nameplate | Crescendo Bargraph | Tutti Select 1-4, Antiphonal Blower on/off

Under Antiphonal: Tutti, Antiphonal/Solo 1-4

Under Swell: General 1-5, Sw/Ped, Sw 1-8, General 11-12

Under Great: General 6-10, Gt/Ped, Gt 1-8, 32' Res, 32' Bomb

Under Choir: Pos/Ped, Pos 1-8, General Cancel

Left side: Chime Volume, MSP, Memory Lock (not connected)

Right Side: Piston Sequencer (not connected)

Toe Movements:

Left: 32' R, 32' B | General 1-5 | General 6-10

Center: Sw/Cresc | Shoes

Right: Sw/P, Z, Tutti | Gt/Ped, Pedal 1-4 | Pos/Ped, Pedal 5-8

The organ is in a chamber to the left of the chancel, with the console opposite. The Hook & Hastings 16' Open Wood is on the Tellers chest at the rear left facing the organ chamber from the console, and the rest is all new Austin. The former Echo chamber in the right corner of the gallery now contains a selection of ranks from the H&H and Tellers, rebuilt by L&H in 1979. The main chest is new, with electric action, and the offsets are Tellers.

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Calendar of Upcoming Music Ministry

October 29, 2023 | **4:00 p.m.**
Children & Youth Sunday,
Grace & Holy-ween, & Parish Picnic
(Roslyn)

December 3, 2023 | **4:30 p.m.**
Caroling in Monroe Park & Christmas Market
(Monroe Park)

December 24, 2023 | **5:00 p.m.**
Festival of Christmas Lessons & Carols
(During Worship | *Church)*

January 21, 2024 | **10:30 a.m.**
Greater Richmond Children's Choir
(During Worship | *Church)*

January 27, 2024 | **3:00 p.m.**
The Three Sopranos in Concert
(Church)

February 11, 2024 | **10:30 a.m.**
Jazz Service
(During Worship | *Church)*

March 10, 2024 | **10:30 a.m.**
Requiem by Gabriel Fauré
(During Worship | *Church)*

April 13, 2024 | **3:00 p.m.**
The Wren Masters Baroque Quartet
(Parish Hall)

May 5, 2024 | **10:30 a.m.**
Children & Youth Sunday
(During Worship | *Church)*

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Clergy

The Rev. Gregory Bezilla, *Priest Locum Tenens*
The Rev. Paul Evans, *Associate Rector for Formation & Communications*

Music Staff

Dr. Elizabeth Melcher Davis, *Choirmaster & Organist*
Stanley M. Baker, *Assistant Choirmaster & Organist*
Abigail Stinnett, *Children's Choir Director*

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