The Paul Fritts & Co. Pipe Organ at St. Joseph's Cathedral, RC, Columbus, OH, 2007

Prepared by David P. Dahl

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Dear List Friends (of PIPORG-L),
With the encouragement of several of List members, I begin a four part description of the new Paul Fritts & Co. organ at St. Joseph's Cathedral RC, in Columbus, OH, completed three weeks ago. Each Part will focus on one of the four divisions of the organ. Part I, the Great division, is located in the middle level, center of the "St. Bavo/Haarlem" inspired case.

Pt I: The Great Division (21 independent registers as follows)
Compass: C - a''' (58 notes)

1. Principal 16
2. Qvintadeen 16
3. Octave 8
4. Spielflöte 8
5. Gedackt 8
6. Quinte (5 1/3) 6
7. Octave 4
8. Spitzflöte 4
9. Quint (2 2/3) 3
10. Octave 2
11. Querflöte 2 (Schnitger model; harmonic for entire compass)
12. Terz 1 3/5
13. Cornet V (mounted) Rohrflöte 8 + four open flutes)
14. Rauschpfeife III-IV
15. Mixture VII-VIII
16. Trompet 16
17. Trompet 8
18. Trompet 4
19. Baerpfeife 8 (similar to Hobo at St. Laurents' Kerk, Alkmaar)
20. Trompeta* 8 (modeled after horizontal reeds, Santanyi, Mallorca
21. Trompeta* 4/16 (16 at c#')

On/off Mixture tierce (adds optional tierce rank to Great Mixture)

Wind pressure: 79 mm
All pipe metal cast in the Fritts shop; all pipes made in shop
Two basic alloys are used for all pipes as follows:
Principals: 95% tin (plus trace copper, bisimuth, antimony, etc.)
Reed resonators: 95% tin (including the full length 32' Posaune)
Flutes: 98% lead, 2% tin (plus copper, antimony, bisimuth for strength)

The tin facade pipes are hand burnished by placing the body or foot on a smooth mandrel and applying soapy water as a lubricant. Polished steel burnishes are then pushed along the length of the pipe literally rubbing the shine into the surface. (I watched this process and learned that it took about a day to burnish one low octave Principal 16')

Doubled pitch ranks are used in the large mixtures (thus the pitch range is somewhat less than one might suspect from, eg, VIII ranks)

The vertical Trompet registers are in a Schnitger style loosely based on Trumpets found in the Treutman organ in Grauhof, Germany (a rather well preserved central German organ).

The horizontal Trompetas are near copies of horizontal Trompetas found in the Jordi Bosch organ, ca. 1767, in Santanyi, Mallorca, Spain. (I personally experienced this organ and believe it is among the finest historic organs I've heard).

Paul Fritts felt that the "St. Bavo style case" did not warrant exposed horizontal trumpets, so they are mounted inside the pedal towers, with only the bottom octave of the 8' Trompeta vertically. The Trompeta 4/16 is typical of horizontal Trompetas de batalha in Spain.

As the Columbus organ builds to full tutti, the horizontal reeds are the next logical step "up" in power/brilliance without sticking out. The 4/16 Trompeta acts like a "mixture" for the full reed chorus. Of course, the Trompeta 8' and Trompeta 4'/16' played together (with no other stops) is the traditional choice for Spanish batalhas.

A little postcript here for theater organ buffs: one of Paul's employees also plays theater organ, and discovered that the Trompeta 8' makes a great Post Horn! (the large #2 trem. pulled all the way out, of course)

In the mounted Cornet the four open ranks above the 8' Rohrflöte are all of the same scale (compass c' to d''')

The voicing contains virtually no nicking, but does incorporate some filing procedures. Strings are somewhat nicked Cutups are relatively high at nearly 1/3 in Principals, 1/2 for Flutes. (There is a slight "musical roughness" when listening to the pipes up close; Paul, like many historic and current builders have learned that when an organ is heard at some distance, too much refining "kills" color and interest. The result listening in the nave (Columbus) is a greater

sense of "presence". (A different approach, of course, is taken in a smaller, intimate space, with less reverberant acoustics...alas, a situation all too common in America.)

Two tremulants are available affecting the manual divisions, one small and one large, and each is variable for speed and depth (depending on how far out the knob is pulled -- and thus these tremulants are not available in the 600 memory level combination system).The stop action is "Dual", that is, one can pull all registers mechanically (especially if the combination system should fail) or use the mutiple memory SSL system (600 levels). Solenoids move the sliders.

The six stacked bellows may also be foot pumped, either for musical reasons (resulting in no blower turbulence) and/or if the power fails. Fritts has worked it out so the organ can be hand pumped with the power to the combination system left ON. Two bellows are for the pedal; the other four for the three manual divisions. There are no Schwimmers in the organ; the wind is stable without jitters.

Part II: the Positive Division This division is located at the impost above the keydesk (console). (Note: After considering the possibility of a Rückpositiv it was decided to include the Positive in the main case. The gallery area is big enough for a choir of about 30, as well as space for a smaller instrumental ensemble, and the Music Director, Paul Thornock, does make use of choir and instruments on a regular basis. This avoided the challenge of having the Rückpositiv located too far from the main case, as well as having sight line advantages. (The Pacific Lutheran University, Tacoma, WA. Fritts does have the Rückpositiv about two feet behind the player, but the "gallery" is quite limited in space).

Since previously I have assumed everyone realized that this organ is mechanical action (with the dual mechanical and electric stop action), it should be clarified that the action is of the "suspended type" where the key is hinged at the back, and the tracker is pulled down where it is attached at the front of the key (and then on to roller boards). This is the type of tracker action used almost exclusively by Schnitger, and of course by all French Classic builders. With dual pallets (even triple in the bottom six notes in the Great), the force needed to play the lower two octaves is virtually the same as in the treble region, but this does depend upon how many stops are drawn.

The Positive:
1. Principal 8
2. Gedackt 8 (based on Gedackt of Schnitger, A-Kerk, Groningen
3. Salicional 8
4. Unda Maris 8
5. Quintadena 8
6. Octave 4
7. Rohrflöte 4
8. Sesquialtera II
9. Gemshorn 2 (somewhat narrower, to be option in Principal chorus
10. Nasat 1 1/3
11. Mixture V-VI (related to the 8' Principal; not a Scharf)
12. Dulcian 16 (after Schnitger)
13. Trompet 8
14. Trichterregal 8 (after Schnitger)

Regarding the strings, Fritts says that the Salcional 8 and Violdigamba 8 are of identical scale, but voiced differently. The Unda Maris and Voix Celeste are slightly narrower in scale, but voiced a bit stronger than the unison ranks. Both undulating ranks are tuned sharp. The Unda Maris may also be used with the Principal 8 (though its main partner is the Salicional).

The Principal 8 is of slightly smaller scale than the Great 8 (as expected) and voiced with a bit more "speech" than the smoother Great Principal. This gives the Positive Principal Chorus, while subtle, a more incisive effect than the "smoother" Great Chorus (based on Principal 16')

All of the foundation 8 registers create a warm tone (as do those of the Great and Swell) for French symphonic works. (I coupled all 8's together from the entire organ, excepting celestes, and the result is a very grand, rich and singing "fonds.")

The Dulcian 16 has plenty of fundamental tone, as does the Trichterregal 8 (with a sound akin to a Baroque Oboe)
The Trompet 8 has a balance of "edge" with "sweetness," working well either as solo or chorus reed. It is German based, but its sound has been developed by Fritts for his Trumpets over the past several years.
The Positive division alone sounds like a well filled out Great organ.

The temperament is Kellner, now a well known circulating temperament under the "well tempered" category which permits all keys to be played. (It worked well hearing the Franck Chorale in E played in recital, Feb. 18, as it has also for more modern repertoire on the 3/54, 80 ranks Fritts at Pacific Lutheran University. (Kellner, 20th c. -- not the composer Kellner of the next generation after Bach -- worked out this temperament after careful study of the works of Bach. It has become the temperament of choice for the last 25 years by such builders as Brombaugh, Pasi, Fritts, Taylor & Boody, Richards & Fowkes, Noack, Bigelow, and others .)

Part III: The Swell Division

The windchest and swell box of the Swell division is located above the Great in the uppermost position, just under the gothic vaulting of the ceiling, faced by mute Principal pipes. Any apprenhensions that the choir below would not be able to hear the Swell were quickly dispelled. The vaulting reflects the sound down to the gallery as well as into the nave, and the close side walls assist as well. The classic placement and room configuration is critical to how this organ sounds. The mechanically operated Swell has shutters on the front and both side (similar to many organs by Cavaillé-Coll), and operates with minimal effort.

Just below the Swell impost and at the top of the Great are four carved "putti" (cherubs with wings), that interestingly enough from down below invite the eyes to explore the case in a circular/back and forth manner. (It seems to be the wings that do this for the viewer.) All of the pipe shades were designed by Jude Fritts (Paul's youngest sister) and are made from basswood. The shades are partly painted white with gold leaf applied in selective places. The main body of the caswework, painted dark red, is of poplar wood. Maple is used for the immediate area around the keydesk. Stop knobs are of lathe turned ebony. Key coverings are bone.

Swell Division (all registers independent)

1. Bourdon 16 (tin; second time to do so)
2. Principal 8
3. Rorhflöte 8
4. Violdigamba 8
5. Voix celeste 8
6. Octave 4
7. Koppelflöte 4
8. Nasat (2 2/3) 3
9. Octave 2
10. Blockflöte 2

11. Terz	1 3/5
12. Mixture	V-VI
13. Fagot	16 (half length, conical; Schnitger shallots, loosely based on a Basson 16, AEolian-Skinner 1953 (formerly in Tacoma); The A-S Basson is capped with holes; Columbus is open at the top.
14. Trompet	8
15. Hautbois	8 (Cavaillé-Coll model)
16. Vox humana	8 (modeled after the Gabler Vox Humana in the great organ in Weingarten, Germany

Part IV: The Pedal Division

Located in towers at each side of the case, the pedal is divided in the traditional C left side, C# right side manner (proceeding in whole tones). As was mentioned before, the Pedal is winded by two of the six wedge-shaped bellows stacked behind the organ case. The pedal is on the same wind pressure as the rest of the organ (79 mm.) except the low eight pipes of the Subbass 32', which are on static pressure. These eight pipes stand on separate tubular pneumatic chests at the back of the organ.

Note that all registers are "straight" with two exceptions; the Subbass 32', Subbass 16' and Gedackt 8' are unified from one rank. Also, the Trompet 4' is made available at 2' (here called Cornet, its traditional name, coming from the early Baroque instrument, Cornetto). In the 17th century it was common practice to combine the Nachthorn 2 with the Cornet 2 in order to play "soprano" cantus firmi solos in the pedal (eg, see the chorale works by Samuel Scheidt).

One reason for independence for most pedal registers (esp. Posaune 16, Trumpet 8', or Principal 16' Octave 8') is when the pedal is asked to play octave leaps, or double pedal in octaves. As most of us know, with unification, one of the pipes you would get an octave higher is already playing, hence only one new pipe can play.) Also, and especially with reed registers, the builder may wish to scale/voice each register slightly differently (eg, Posaune 16 from Trumpet 8). These are sometimes difficult decisions to make when cost and space allotment may indeed require unification. In that the Subbass 32 is used somewhat seldom, and it requires an enormous amount of wood to make, unification is a useful solution.

The Pedal:

1. Subbass 32' (made from poplar; scaled after the Subbass 32 in the AEolian-Skinner organ, National Cathedral, Episcopal, Wash. D.C.)
2. Principal 16 (low 10 pipes in common with Principal 16 of Great)
3. Subbass 16
4. Violone 16 (poplar)
5. Octave 8
6. Gedackt 8
7. Octave 4
8. Nachthorn 2
9. Rauschpfeife III (2 2/3, 2, 1 1/3)
10. Mixture VII-VIII (from 2 2/3 through 1/3, with 4/5 Tierce)
11. Posaune 32 (tin, not mitered, along inside back of case)
12. Posaune 16 (all reed resonators, 95% tin)
13. Trompet 8
14. Trompet 4
15. Cornet 2

Note: the order of the manuals is Great, bottom, then Positive, Swell; this was done to facilitate French symphonic music where most often one finds the keyboard order (in 3 manuals) as Grand Orgue, Positif, Recit. French composers generally count on these positions for manual changes. For the German repertoire (and other), this not a critical issue.

Couplers: Standard unison couplers (one might be hard pressed to imagine a need for super and sub couplers with the disposition of this organ).

The Violone 16' I found to be of special value (it was a common pedal register in Central Germany at the time of Bach). It speaks quickly all the way done, and with the Gedackt 8' makes an ideal bass registration for trio sonatas. The clarity of pitch and the slight "bowed sound" of the speech is quite effective. This stop, as you might imagine, becomes very useful for such repertoire as the Bach *Orgelbüchlein*. (I realize that Violones are not uncommon in all sorts of American organs). This one was developed through input from John Brombaugh and the C.B. Fisk Co.

In summary, it is always good to discover a new organ that has both strong color and personality in each register, and which also holds together in a cohesive blend. As I listened to Paul Thornock (Dir. of Music) play the

fugue from Max Reger's *Hallelujah, Gott zu loben*, a fine blend continued from all but two Swell stops to the full organ, including final addition of the horizontal reeds, and with triple notes in the pedal on the last chord! (This was also a test of the wind, and it passed with flying colors!)

Does it have flaws? Probably does. Are all the voicing balances "just right"? Probably not. Is there a perfect organ? Does the builder of this organ think he can do better? He says he will continue to try to do so with every subsequent instrument, as do all of us as either performers or builders.

This brings up one last item, which could profit by further discussion.. Many of our favorite historic organs have been "tweaked" over the years, mostly through wise suggestions from knowledgeable organists and organ builders (but of course, some tweaking may also have been unwise). It is hard to "hit the bulls eye" on every single stop (scaling, voicing, balance with other registers in the division, between divisions, etc.). Although it would add extra cost, I should like to think that it would be valuable to review an organ one year after its installation. Reviewed after a variety of repertoire and usage had taken place, it is then possible for the organ builder to make some subtle changes that enhance the organ.and realize even more beautifully the potential of the instrument. (This did occur between mself and John Brombaugh with his Opus 22, II/26, in Tacoma, to the mutual delight and satisfaction of both parties). Controversial suggestion? Perhaps.

Further Information about pipes in the the Columbus organ:

Addendum: from Paul Fritts, commenting on voicing procedures:

Cutups: generally 1/3 for principals and open flutes, a bit less for bass pipes and more for high pitched pipes. The high-pitched open flutes are much lower,.about the same height as principal pipes of the same pitch. Stopped flutes are closer to 1/2 cut up and strings are slightly lower than for the principals. We use charts that relate the cutups to pitch rather than height to width ratios but these guidelines work.

Nicking is only used in the strings and is shallow but many close together. Occasionally nicks are added to a few principal and flute pipes to smooth out problems but only two or three shallow ones. The flues are filed

with a grooved piece of brass as an alternative to nicking. In addition the pipes are made with vertical lower lips, low, relatively thin languids and no overbite, that is, the upper lip is in alignment with the lower lip. Languid angles are low for large pipes and steeper (70°) for smaller pipes.

The metal is either high lead (98%) or high tin (95%) with added impurities the most important being copper for added strength. The tin alloy has .15% (very small percentage) and the lead has .08%. Antimony, Bismuth, Arsenic and Indium are also added for strength.

All reeds are made of the high tin alloy. In addition, the facade, all principal 8' ranks, the strings and the Bourdon 16' and the Qvintadeen 16' are of tin. All other metal pipes are of lead.

Further information re: wind system

Paul Fritts, commenting on the six bellows:

The bellows are fitted with one way valves, a set that allows wind in as the bellows are being raised, and a set that lets wind out to the organ. This last set prevents pressurized air from escaping the organ as the bellows is being raised, and the first set prevents wind from escaping when the bellows are feeding into the organ. These valves into the organ also help make the wind more stable when the bellows are acting as reservoirs (when the blower is on) by only allowing wind to escape thus preventing bouncing or back-flow.

End of Report,
Respectfully submitted,
David P. Dahl, with thanks to Paul Fritts for supplying special technical information and for assistance in editing.