A Concert Organ for the Béla Bartók Hall in Budapest

Burkhard Goethe, translated by Constanze Geiss

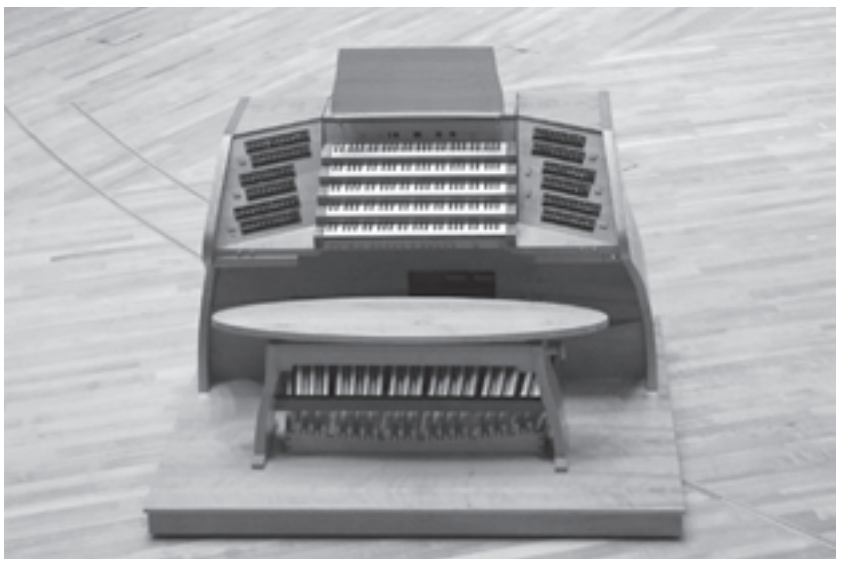
In 2003 the Arcadom company requested 13 European companies to design an instrument for the new Béla Bartók National Concert Hall in Budapest, Hungary. Six companies then were looked at more closely; three of them were from Germany. After a series of journeys in order to gain as much knowledge about the companies as possible, the committee (five concert organists) decided to ask the joint venture of the Mühleisen company (Germany) and the organ manufacturer Pécs (Hungary) to build the organ. The two companies were known to each other because of various projects they had encountered with the Fraunhofer Institute, Stuttgart. Prof. Judith Angster, a descendant of the organ-builder family Angster in Hungary, is an acknowledged specialist on physical questions related to the technical parts of organs. She strongly supported the joint venture and was a big help in organizational matters.

The concert hall itself was designed by Gabór Zoboki and was finished in 2005. The fascinating oval building has the dimensions of a large cathedral: it is 25 meters tall and 52 meters long. The building's interior is covered with wooden panels, creating a warm atmosphere. In order to guarantee an outstanding acoustic, the internationally known American advisor Russell Johnson worked on the design. The principal element is a huge detailed platform in the center of the room that can be lowered completely or in parts, which helps to create a suitable acoustic for special solo concerts. Along the sides of the room, 84 large chambers provide the reverberation needed for organ concerts. Since they can be evenly adjusted, the conditions for the organ builders were ideal.

Finding a musically suitable concept turned out to be more difficult. Two organ advisors with opposing ideas, István Baroti and László Fassang, were a challenge for the organ builders. On the one side, there was the idea of a large Hungarian organ in the style of the 1950s *Orgelbewegung*; on the other side there was the idea of a modern symphonic concert instrument. More journeys and concerts on various instruments and long discussions were necessary to finally agree on the disposition of a concert instrument.

During the years 2004–2006 the instrument was built by both companies, Pécs in Hungary and Mühleisen in Germany. The case, chests, wind system, frames and structural parts were made in Hungary, as well as all of the wooden and some of the metal pipes. All the design work, construction of coupler systems and details, electric and mechanical stop action, keydesk, reeds, and complete scaling was done in Germany. The Mühleisen Company also was in charge of the entire voicing process, working closely with both advisors. Since the concert hall was heavily used during the daytime, most of the installation and the voicing had to be done after 11 pm.

Pécs/Mühleisen organ, Béla Bartók Hall, Budapest (Archive Mühleisen)



Console, Pécs/Mühleisen organ, Béla Bartók Hall, Budapest (Archive Mühleisen)

Façade

As seems to be typical during the last decades, the façade essentially was designed by the architect of the concert hall. Gábor Zoboki at first offered a post-Art-Nouveau-style façade, which would have worked well in the room and also resembled downtown Budapest with its Art Deco style. Unfortunately, the buyers were not convinced and had the Mühleisen company work on an idea of an open façade. The divisions in the back are of course all contained in their cases made of solid wood. The biggest façade pipes are the Majorbass 32′ (starting at E) and the Principalbass 16′ and Montre 16′, both starting from bottom C, all made of a high tin alloy. On the top (slightly shifted to the back), the Octavbass 8′ and the Solo Principale 8′ can be seen. The lower middle part (above the mechanical console) contains the horizontal reeds (Chamade 16′–4′). Therefore, the organ builders need not fear that the organ will be covered with curtains as is the case in various concert halls nowadays. The organ stays visible at all times.

The case is made of solid cherry and, in order to break with the strong vertical lines of the whole façade, the pipes of the inside corners of the main groups are slightly tilted towards the center of the organ. This subtle feature is often only seen with a second look.

Technical design

Twelve meters above the orchestra stage, the organ is installed on a large balcony. Its overall height is 15.6 meters, width 13 meters, and depth 4.4 meters. Inside the instrument, a good "infrastructure" made up of large stairs and wide walkboards guarantees good access to every part of the chests and pipes for maintenance. Every detail was planned; no big surprises were left for the people who worked on site.

Chests

The 18 mechanical slider windchests and some 29 single and support chests are positioned on top of large wooden construction beams, along the action lines. Behind the façade of the first story, one can find the Grande orgue. Separated by a large walkboard, the Récit expressif is positioned directly behind it. The Solo and the Positif expressif are located symmetrically on the second story. This whole complex is lined by the Pedal stops on the left and right sides, whereas the largest pipes of the 32′ needed to be lowered into the "basement" of the organ.

Wind system

The wind system is divided into two divisions. The Grande orgue, Récit expressif, and Pedal are supplied by two large blowers and six large parallel double wedge bellows, which are built into the base of the instrument. Another blower and bellows on top of the swell box of the Récit provide the wind for the Positif expressif and Solo divisions. A high-pressure blower for the Tuba Mirabilis 8′ with 450mm wind pressure is also located there. In all manuals, the wind pressure varies from the bass to the treble. The three 32′ stops have their own extra wind supply. The whole system consists of four blowers and about 105 meters of wind trunks made of solid wood.

Action

The new organ in the Béla Bartók Hall has two different action systems. The main (attached) console with its ten couplers is played mechanically. The only exceptions are the Chamades and the 32′ stops. The key action is balanced and is supported inside the chests with little pivot-rail bellows. They are also suspended. The fourteen octave couplers and the five Chamade couplers work electrically; the ten mechanical couplers can also be switched to electric usage. The second, detached concert console is exclusively electric; so is all the stop action. Solenoids work the sliders; the preset combination system and the couplers are run by a BUS system.

When the organ was shown to the press, the detached console was not available to be seen. Therefore the author could only feel and play the action of the main console. It is easy and light and allows good articulation on all four manuals. Even when using all mechanical couplers and playing *tutti,* the pluck stays elegant and precise, due to good coupler construction and well-adjusted balancier support.

Consoles

The main console combines the neat, clean look of a well-designed keydesk with ergonomic standards. The 139 stop knobs are designed as pull knobs. The detached console is a work of art in itself. It is made of solid cherry and shows many round, Art Nouveau-like lines. The pluck of the keys is simulated electrically in order to provide the best articulation possible.

Swell boxes

All walls and the shutters of the swell boxes are made of a special five-layered wall system approximately six cm thick. This was especially developed by the Stuttgarter Fraunhofer Institute. Both swell boxes work remarkably well.

"Hanging" façade pipes

Organ builders are often confronted with the following problem: large pipes are stressed by their own weight, especially around the mouth opening. Therefore inlays, hooks and supports are soldered to hold everything in place. Nevertheless, they often have the tendency to bend or collapse. The ideas of the creative Swabians help to prevent those matters. Already their large instrument in Stuttgart (Stiftskirche 2004 IV/84) was protected by a large contraption to take weight off the foot of the pipe. In three places the pipe is hooked to the top of the room, where it is held by counterweights. That lowers the static weight of the pipe, preventing collapse, and also enables one single person to lift the pipe in its rack.

Tonal design

It is always difficult to describe the sound of an organ. One simply has to hear it. What one can say about this particular instrument is that the tonal design works very well in the given acoustic, which has a tendency to swallow bass frequency pitches and therefore needs good foundation stops. During the voicing process, the scale of various stops had to be enlarged to meet these needs.

The principals, which account for 26% of the whole instrument (with its eight mixtures), are formidable and can fill the hall, but can also show their vocal mild sides. The Montre 16′ shows itself very subtly without losing its tonal force. An outstanding stop is the Principale 8′ of the Solo manual with its changing scale. It works very nicely in combination with the Voce humana. The separate wind supply of the 32′ and 16′ Pedal stops gives them remarkable speech in the room.

The 23 reed stops of the organ account for 25% of the stoplist. Not only trumpets and clairons belong to that group, but also five almost lyrical voices and the Chamades and the high pressure Tuba. Producing a highly differentiated and distinct sound is taken very seriously in the Mühleisen company. Many trumpet ensembles and various solo stops such as the Cromorne, Voix humaine, Clarinette and Basson-Hautbois make it a challenge for any organist to exhaust all the color

possibilities. The Chamaden division with its Chamades 16′–4′ resembles an "ultima ratio" to the tutti. The Tuba mirabilis seems in the British manner, darker and softer but still strong enough to add to the fortissimo of all other divisions. Another outstanding sound of a different kind is created by the Cor anglais of the Solo division. Its silken clarity reminds one of Ernest Skinner's Orchestral Oboe. It is hard to understand why those fine stops are built so rarely nowadays.

The instrument also includes 13 string stops; two of them are celestes. This is a moderate number (14% of the overall stops), but nevertheless they are very characteristic in sound and can be used in many combinations. The Gamba of the Grande orgue is strong and precise, the Salicional of the Positif expressif soft, the Violon 16′, Geigenprincipal 8′, Gamba 8′, Aeoline 8′, Voix céleste and Violine 4′ of the Récit expressif are all very distinct in sound. In the Pedal, the Contrebasse, Violon and Cello make a good ensemble. The presence of the Violon is impressive, its sound very clear.

Flutes make up 18.5% of the stoplist. Those 17 different colors are open, stopped or over-blowing pipes that have a progression in their scaling, following the French tradition to be used as solo voices. Some are built in the German tradition in order to blend and add color. In combination with string stops (for example, the Salicional and the Fl. traversière on the Positif expressif or the Gamba and the Flûte octaviante of the Récit expressif) they sound remarkably good.

The great number of mutations allows building a "Cornet décomposé" in all divisions except the Grande orgue, which has its own large Cornet. Taking a close look inside the Pedal division, one is strongly reminded of Oskar Walcker's "Grand Bourdon." The Großquinte (10⅔′), Tercsept II (6⅖′) and the Zinck III (5⅓′) are able to underline the 32′ and 16′ sounds and have a great presence in the room.

An interesting steel-like, synthetic sounding voice is the Septnon of the Positif expressif, combined with Piccolo 1′ and Tierce. The Solo division again follows Cavaillé-Coll's idea of the "Clavier Bombarde" because its mutations (the Septième 2⅐′ included) are based on the 16′ range. The large room handles all of this easily.

It would take ages in order to try and find all different kinds of registrations. To listen, the best seats are located on the opposite side of the room, in the balcony. It is even possible to hear calm noises or whispering from the console! Bravo to the great acoustics.

Successful joint venture

A great compliment must be given to both companies that have worked to create this wonderful instrument: the Organmanufactura Pécs Ltd. of Hungary and the organ building company Mühleisen of Leonberg, Germany. Both contributed their best creativity and skills. The outstanding quality of the Hungarian craftsmanship, creativity and motivated work attitude strongly supported the design work, organization and the voicing process by the Germans. It is quite probable that in the future, large organ projects will be given to companies that are willing to cooperate. Good communication and well-balanced work attitudes and standards are needed for these kinds of projects. It is of great importance to make agreements and also to draw close lines that each group has to stick to, in order to make things a "snug fit." Too much back and forth, communicating about the same things all over again, would be too time-consuming. Prevoiced test pipes are hard to e-mail throughout Europe.

Coda

The new instrument of the Béla Bartók Hall in Budapest is definitely worth seeing and hearing. As a "Swabian from the Danube" with its French lifestyle, the instrument suits the great architecture. The inaugural concert featured four organists: Zsuzana Elekes, István Baróti, László Fassang, and Xavér Varnus on May 22, 2006. In June 2006, many internationally known concert organists played many concerts on the organ. Most of them used the detached, electrical console on the stage. Obviously, the possibility of playing in front of the audience is of more importance than the sensitive touch of the mechanical main console. But this also happens in other places, due to the fact that organists like to listen directly to their registrations in advance.

This is one sad aspect about designing and creating an instrument in two ways: having to face the fact that all the extra work and preparations are not honored. One could question the reason for the double construction. Shouldn't one build symphonic organs completely electrically in the future, since there have been so many inventions lately that provide an almost mechanical touch? This thought obviously would not be the taste of many organ advisors.

Undoubtedly, the mechanical slider chest is a very good solution for smaller and middle-sized instruments. Luckily for recent German organ building, Cavaillé-Coll consequently built these chests during his work life. The primary wish at many times had been symphonic instruments by all means (with Barker levers or electric couplers that are rarely talked about). In the meantime, we can see that there are quite a few good German symphonic instruments from the late 19th and early 20th centuries. There are great instruments with cone chests, membrane chests or various electropneumatic inventions that are not mechanical slider chest systems.

However, many large organ projects are requested to have slider chests (single-lever keys preferred), Romantic, symphonic layouts and everything that goes with it. This creates many problems for the organ builder who often also must deal with poor acoustics. Not all mechanical chests have been of outstanding quality throughout the decades. Why do they appear to be the one and only solution? There are many ways to get to Rome, also many detours probably.

In Budapest, they definitely found the right path! And, stranger, if you go and visit this great instrument and get the chance to play, try the main console. Even if your footwork cannot seen by the audience, it is worth it! ■

Burkhart Goethe, church music director and organ-architect in Schwäbisch Hall (South Germany), was born in 1948. After an apprenticeship for six years (carpenter and organbuilder) with Alfred Führer, Wilhelmshaven, he traveled in Europe working on the restoration of North German instruments. Since 1982 he has been organ advisor of the Protestant church of Württemberg and teacher at the Freiburg National Academy of Music. He is the architect of more than 80 organ cases since 1978.

Constanze Geiss is a journeyman organbuilder for Mühleisen Orgelbau in Leonberg, Germany, where she works both in management of the business and in organbuilding areas. She studied at the organbuilding college in Ludwigsburg and completed her apprenticeship with Mühleisen. She worked at the Brombaugh shop in Eugene, Oregon during 1999–2000. Ms. Geiss was assisted in editing the translation by David Petty, organbuilder in Eugene, Oregon. He and Ms. Geiss were colleagues at the Brombaugh shop during her time in the U.S.

Five manuals and pedal, 92 registers

I. Grande orgue
16′ Montre
8′ Principal
8′ Flûte harmonique
8′ Bourdon
8′ Gamba
4′ Praestant
4′ Rohrflöte
2⅔′ Quinte
2′ Superoctave
8′ Cornet II–V
2⅔′ Mixtur V–VII
1⅓′ Cimbel IV–V
16′ Trompete
8′ Trompete
4′ Trompete

II. Positif expressif
16′ Quintatön
8′ Principal
8′ Fl. traversière
8′ Cor de nuit
8′ Salicional
8′ Unda maris
4′ Praestant
4′ Flûte conique
2⅔′ Quinte
2′ Doublette
1⅗′ Tierce
1⅓′ Larigot
1′ Piccolo
1⅐′ Septnon II
2′ Mixtur IV–VI
16′ Basson
16′ Dulzian
8′ Trompette
8′ Cromorne
8′ Clarinette
Tremolo

III. Récit expressif
16′ Violon
16′ Gedeckt
8′ Geigenprincipal
8′ Flûte harmonique
8′ Bourdon à cheminée
8′ Gamba
8′ Aeoline
8′ Voix céleste
4′ Violine
4′ Flûte octaviante
2⅔′ Nazard
2′ Octavin
1⅗′ Tierce
2′ Progressio II–IV
⅔′ Cymbale IV
16′ Bombarde
8′ Trompette harm.
8′ Basson-Hautbois
8′ Voix humaine
4′ Clairon harm.
Tremolo

IV. Solo
16′ Rohrbourdon
8′ Principale
8′ Konzertflöte
8′ Voce humana
5⅓′ Nazard
4′ Octave
3⅕′ Tierce
2⅐′ Septième
2⅔′ Sesquialtera II
2′ Flûte
2⅔′ Plein jeu III–V
8′ Cor anglais
8′ Tuba mirabilis

V. Chamaden
16′ Chamade
8′ Chamade
4′ Chamade

Pedal
32′ Majorbass
32′ Soubasse
16′ Principalbass
16′ Contrebasse
16′ Soubasse
16′ Violon
10⅔′ Großquinte
8′ Octavbass
8′ Gedackt
8′ Cello
4′ Octave
4′ Tibia
6⅖′ Tercsept II
5⅓′ Zinck III
2⅔′ Mixtur IV
2⅔′ Compensum VII
32′ Bombarde
16′ Bombarde
16′ Basson
8′ Trompete
4′ Clairon

Mechanical couplers (also electrically activated):
I+II, I+III, I+IV, II+III, II+IV, III+IV,
P+I, P+II, P+III, P+IV.

Electric couplers:
I+V, II+V, III+V, IV+V, P+V,
I+II 4′, I+II 16′, I+III 4′, I+III 16′, I+IV 4′, I+IV 16′, II+III 4′, II+III 16′, III+III 4′, III+III 16′, IV+IV 4′, IV+IV 16′, P+III 4′, P+IV 4′

Manuals I–IV and pedal: mechanical action.
Manual V, the 32′ stops and 16′ stops in the façade: electric action.
Manual chests are divided bass/treble for different wind pressures.
Mechanical attached keydesk.
Second electric console on the stage.
Programmable crescendo pedal.
Pleno, Tutti, and reeds are selectable/programmable.
Reeds, mixtures, and couplers available on roller crescendo pedal.
Swell shutter coordination available on crescendo pedal.
Priority switching between crescendo pedals on both consoles when being played simultaneously.
Cancel button for every division.
Selectable dividing point in pedal division of second console.
Sostenuto in all divisions.
Combination action with 5000 possible combinations; memory stick connectivity.
Playback and recording possibilities on both keydesks.