FEW LISTENERS will ever forget the experience of hearing a performance of the Symphony No. 3 in C Minor by Saint-Saëns for the first time. Having secured a place in the organ-orchestra repertoire, this piece, affectionately known as the “Organ Symphony,” is but one of numerous orchestral works that include the organ as an important member of the ensemble and a major contributor to the tonal palette of the work.

Late in the 19th century and early in the 20th, composers such as Ottorino Respighi, Richard Strauss, and Gustav Mahler often built without an organ or that electronic substitutes were used for performances. Then, as a concert on December 18, 1926, to inaugurate the Casavant brothers’ tenure. In 1924, Orchestra Hall in Detroit, Michigan, became the home of a four-manual instrument of 64 stops. Claver Casavant, who directed tonal finishing on site, prepared the specification. Marcel Dupré dedicated the organ on March 17, 1924. In addition to the Organ Symphony by Saint-Saëns, played with the Detroit Symphony Orchestra, conducted by Ossip Gabrilowitsch, Dupré played solo works: Bothi (Maurice) (Organ Symphony); Bourdon, Carillon; Dupré, Variations sur un Noël; and Schumann, Canon, as an encore.

Two years following the inauguration of the organ, a Tuba Organ of 18 stops was added. Charles Courboin, organist at St. Patrick’s Cathedral in New York, who played a concert on December 18, 1926, to inaugurate this addition, prepared the specification. One of the most important benefactors of the Detroit Orchestra Hall, William H. Murphy, president of the Pacific Lumber Company, donated the organ.

In recent years, numerous new concert halls have been built and, in many, the pipe organ has found a prominent place even to the point of having an important architect present at a concert. As in the Orchestra Hall, the original Lyon & Healy facade had disappeared with the 1981 installation. We researched various archives for photographs of the 1904 organ in its place. The Casavants have received a number of commissions to build organs for concert halls. It is interesting to
identify the common elements and particularities of these installations, each of which is designed to work within a specific architectural context and address the requirements of an organ in a concert hall, from solo recitals to use with orchestra in concerto and symphonic repertoire. Without losing sight of these lessons, a new instrument was created by the world-renowned organists and in the lunchtime concert series, "Organ à la Carte," which has been tremendously popular and successful. The installation of the organ and subsequent enthusiastic acceptance by the public became the impetus for the creation of the Calgary International Organ Festival held every four years since 1987.

The Calgary and Chicago halls are similar to the degree that both function primarily as venues for orchestral performances. Both organs are located directly behind the orchestra so that the performers and conductor can hear balances between the organ and orchestra. Most of these larger organs are installed above the orchestra high in the hall, they are able to speak directly and freely into the auditorium.

In concert halls where there is need to have fly space for dramatic and operatic performances, placing the organ behind the orchestra cancels many of these advantages. Provision is made for such an arrangement. The Casavant installations in Naples, Florida, and Green Bay, Wisconsin, followed somewhat different solutions in these halls that were built for multipurpose use.

To build an organ capable of being a member of the performing forces of an orchestra requires an approach quite different from building instruments for use in the church. All of these instruments are provided with very complete tonal synthesis, as well as powerful solo stops. Each design is based upon a Great division with a 16' and 8' plenum on the other manual divisions of the Pedal, the flues of the division were cleaned; consequently, their sound was dim and colorless. Over the years, conductors and orchestra members often complained that the organ was never in tune. In fairness to the original builder, this was understandable considering that the space allocated to housing the organ, which divided it into three cramped locations across the back of the stage, also contained electrical and mechanical systems for the hall. In addition, the pitches of some of the compound stops had a strong tendency to draw with each other and did not blend when played with other stops.

We evaluated the pipework very carefully to decide what could be re-employed without compromising the desired tonal result. We provided the new instrument with a greater variety of foundation stops voiced more boldly, and with mixtures designed along symphonic lines (the choir and swell mixtures are progressions harmoniques in the French symphonic tradition). The Great was fitted with a new Diapason Chorus and a Pomposa 8'. The new Viola di Syracusana, a robust and assertive Trumpet 8' was added to the revoiced Double Trumpet 16'. The Great and Choir were voiced on six inches of wind pressure, the swell on six inches except for the three chorus reeds, which were voiced on ten inches. A new Tubale, 25 inches of wind pressure, was added to the choir, extended full-length to 16', and made available in 16', 8', and 4' pitches on the Great. A new Viola Pomposa 8' and Viola Celeste 8' were installed on the choir, and the existing Salicional 8' and Voix Celeste 8' were reworked to make them more stringy. A new and assertive Contrebasse 16' of huge scale was added to the Pedal, the flues of the division were voiced on six inches and its reeds on ten inches. Such wind pressures were necessary in order to make the organ powerful enough to fill this huge acoustic space of more than one million cubic feet.

At its dedication performance, this fund soon grew to almost $400,000. With support from this fund, the electric organ was finally replaced in the summer of 1981 by a brand-new instrument, the creation of M.P. Moller Inc. Besides providing for its purchase, the new organ was repeatedly referred to by Casavant Freres, in Quebec, where it was overhauled, expanded, and utterly transformed.

The organ's dramatic reinstallation was the focal point of construction activity in Orchestra Hall during the summer of 1998. On February 18, 1999, a rededication performance—featuring organist David Schrader—marked the successful conclusion of the Symphony Center project, one year after the official opening of Symphony Center. David Schrader and the new organ will be featured in the Chicago Symphony Orchestra's subscription concerts of March 10–14, 2000.

It is crucial to a major symphony orchestra and a major concert hall to have at its disposal an organ of world-class quality. There are significant pieces in the symphonic repertoire that require an organ, and if the quality of that instrument does not match the rest of the performing forces, an important element is missing. The better the orchestra and the hall, the more glaring the shortcoming is when the organ lacks the richness and power of a great instrument. The Chicago Symphony is thrilled with its new instrument, which, while it used the previous organ as a foundation, has become something much greater in its transformation. The Chicago Symphony Orchestra is forever grateful to Bill and Solange Brown and to Mrs. Harold C. Smith and her family, who for years generously contributed to the Organ Fund. Their dedication and effort made it possible for the Chicago Symphony Orchestra to acquire a superb instrument. This world-class orchestra deserves—and once again has—a truly world-class organ.
From the Organist

Some years back, I was asked to assist Jeff Weiler in his capacity of consultant for the construction of the new organ in Orchestra Hall at Symphony Center in Chicago. We were delighted with the selection of Casavant Frères, and we knew that the needs of the Chicago Symphony Orchestra would be met with satisfaction. The Chicago Symphony Orchestra is among the most precise and powerful orchestras in the world, and therefore the selection of an organ that could both support the orchestra and be its articulate equal would be crucial to our efforts. I am delighted to say that the organ, to my ears, will provide some splendid listening in the years to come.

The Chicago Symphony Orchestra is an ensemble composed of highly skilled players who collaborate to create an orchestra of immense flexibility—dynamic ranges of which the orchestra is capable vary from a practically inaudible whisper to a brilliant, resplendent fortissimo. The reputation of the brass section is well deserved—this I know from the experience of sitting in the midst of them during the recording sessions for The Planets with James Levine! The richness of the string section demonstrates the superb quality of so many fine old instruments on the stage. (I have often imagined with awe the amount of money allotted to insurance premiums while the strings are on stage!) Casavant Opus 3765 is a worthy and capable partner for the orchestra. The foundation registers are rich and generous both in scale and in wind pressure. The Plein Jeu is brilliant without shrillness and the reeds are telling and warm. While the organ is designed chiefly with the great orchestral repertoire in mind, concerted music and solo repertoire can be admirably performed. Last season, Lou Harrison’s Concerto for Organ and Percussion was heard to great effect with the orchestra. The organ is a visceral event rising well above orchestra and chorus.

The conditions of insufficient bass response and reverberation were facing the organist in symphonic repertoire and performance, lending visual communication between conductor and performer. The organ is seeing wide and popular service, with some 18 performances scheduled in the 1999–2000 season. This is indeed a great time for the organ in the concert hall.

JEF WEILER
Organ Consultant and Organ Curator
Chicago Symphony Orchestra

From the Consultant

While every organ project presents its own unique challenge, the new organ for Orchestra Hall has been further distinguished by being an integral component of one of the most fascinating architectural renovations of recent time. Stepping into the auditorium, the hall appears much as it always has—the Daniel Burnham architecture seemingly intact. But upon closer inspection, it becomes clear that the entire facility has been thoroughly and thoughtfully renewed and expanded. There is more space on stage for musicians, a permanent relation close to the stage. There are also excellent support facilities where none had existed previously, and a carefully designed organ loft that houses the new Casavant organ.

First meetings considered nothing more than a reconceptualization and reallotation of the orchestra’s existing pipe organ, built in 1981. However, the design team and orchestra soon became convinced of a much greater opportunity.

It was decided that the appearance of the organ’s Lyceum & Healy facades better suited the architecture and gave greater visual definition to the organ. This simple concept paved the way for sweeping changes. A new climate-controlled organ loft and blower room were designed. Outside air is super-cooled to 40°F, then reheated and humidified to ensure that a consistent and carefully controlled environment surrounds not just the organ but every member of the orchestra and audience. The new organ loft spans the full width of the hall and extends approximately 30 feet into the attic space of the building—all part of the active acoustic. The entire organ loft is topped by a large concrete reflector and, although unseen by the audience, its effect is unmistakable; acoustically coupling both organ and orchestra to the greatly expanded audience chamber.

Organ hall organs have an extraordinary job. To be musically effective, they must have strong and colorful unison pitch lines, kaleidoscopic effects, and heroic bass. The organ’s placement must allow the performer to hear easily and control these resources. But also, the acoustics of the hall are ample. Although only of moderate size, the organ has abundant unison and sub unison energy. There is a wide range of piano and mezzo registrations available for accompaniment and orchestra underpinning, but full organ is a visceral event rising well above orchestra and chorus.

Many of the organ’s most interesting tonal details are inspired by Casavant organs of the 1920s and 1930s. The instrument contains a very large Contrabass 16’ (open wood), a Tubal Mingbils 8’ on 25 inches of wind pressure, and a chambered Cappadocia Clarinet, much like those produced under Stephen Stoot’s tonal directorship. Portions of the wind system would likewise seem familiar to one acquainted with earlier Casavant instruments.

The swell and choir divisions are fed from the room, not allowing the fundamental impact to the sound that reached people in the first balcony and in the gallery (the second balcony). However, there were acoustic problems with the room that prompted a number of renovations of the hall beginning the year after the building opened. This resulted in a unique link between the audience and the stage, especially for those seated in the ring of boxes and the lower rows of the first balcony. The shape of the ceiling over the audience directed sound into the upper seating area, creating an intense impact to the sound that reached people in the first balcony and in the gallery (the second balcony). There were further problems with the organ’s reed stops which were not designed for a reverberant room. Subsequent renovations to increase the depth of the stage, which had always been among the shallowest of concert hall stages, but was limited finally by the structural rear wall of the building. A major renovation in the 1960s reconstructed the ceiling of the hall to reduce focusing conditions at the stage and main floor seating area. At this time, work was also done in an attempt to increase the very short reverberation time within the room by partially opening the ceiling over the audience to expose the trussed attic area between ceiling and roof. Unfortunately, the audience seating within the auditorium was also upholstered for the first time during this renovation and the overall effect that had been hoped for was not realized.

It was at this time that the Symphony decided to renovate the building to modify these and other acoustic problems they were facing. In addition to low reverberation time and communication problems on stage, the hall was particularly lacking in bass response. The physical construction of the hall was the factor most limiting for sustaining low-frequency energy. The structure of the building was solid twelve-inch-thick brick-bearing walls, but the finish within the room was one-inch-thick plaster framed off the masonry. The thin plaster surface within the room and high air gap between the finished masonry stripped low-frequency energy from the room, not allowing the fundamental tones of the music to remain.

The conditions of insufficient bass response and reverberation were limiting for the organist. For many years, the organ was particularity affecting the sound of the organ, an instrument for which music was written with rich, reverberant rooms in mind. In addition to the lightweight construction of the hall, the construction around the organ was also insufficient. The organ was separated into three separate chambers segregated from the stage. Each chamber was built of lightweight construction that added to the new organ's seeing wide and popular service, with some 18 performances scheduled in the 1999–2000 season. This is indeed a great time for the organ in the concert hall.

DAVID SCHRADE
Organist, Chicago Symphony Orchestra

From the Acoustician

When Orchestra Hall in Chicago, Illinois, opened in 1904, the design successfully arranged an audience of approximately 2,650 people in an intimate setting, placing the organist close to the audience. This resulted in a unique link between the audience and the stage, especially for those seated in the ring of boxes and the lower rows of the first balcony. The shape of the ceiling over the audience directed sound into the upper seating area, creating an intense impact to the sound that reached people in the first balcony and in the gallery (the second balcony). However, there were acoustic problems with the room that prompted a number of renovations of the hall beginning the year after the building opened.

The original design of the stage, which had been an open mesh between plaster ribs to create architecturally the look of a conservatory structure. However, musicians were having trouble hearing each other on stage, so the mesh between the ribs was replaced with panels within the stage. But subsequent renovations to increase the depth of the stage, which had always been among the shallowest of concert hall stages, but this was limited finally by the structural rear wall of the building. A major renovation in the 1960s reconstructed the ceiling of the hall to reduce focusing conditions at the stage and main floor seating area. At this time, work was also done in an attempt to increase the very short reverberation time within the room by partially opening the ceiling over the audience to expose the trussed attic area between ceiling and roof. Unfortunately, the audience seating within the auditorium was also upholstered for the first time during this renovation, and the overall effect that had been hoped for was not realized.

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The renovation of Orchestra Hall focused on many major areas, including isolation of noise from mechanical systems and the exterior and the addition of needed breathing room for the symphony, but the primary changes centered around increasing reverberation time in the hall, providing good bass response, providing a good listening environment for musicians, and improving overall sound for patrons, particularly on the main floor.

Communication on stage and improvement of sound to the main floor were provided by increased stage depth, a new canopy over the stage, and the addition of orchestra risers on the stage. The increased stage depth allows musicians more freedom of arrangement on stage, particularly for works requiring large percussion ensembles. The canopy provides reflections with a proper time delay to promote good communication on stage and good support of sound to the main floor. The canopy has helped also to block focused echo reflections off the prosenium arch. Orchestra risers on the stage allow musicians and the main floor listeners to see each musician and hear the direct sound of each instrument.

To increase reverberation time, the original roof was removed and a new, higher ceiling was installed above the acoustically transparent visual ceiling within the hall. This increase was most significant over the stage, where the new acoustic ceiling height was increased by roughly 25 feet.

In conjunction with the increase in overall volume in the hall, the ceiling over the stage was changed from solid to acoustically transparent to allow an easy flow of sound energy from the stage into the new, expanded attic space. This change also benefited the organ by allowing the instrument to be located within the upstage area without being separated into individual chambers. The organ now speaks directly into the room, both to the stage and audience, from the attic, into the upper volume, to fill the room with sound in a way that was not possible in the previous configuration.

Bass response was improved by opening sections of the visual walls and exposing the solid brick construction behind. New walls exposed within the expanded attic were constructed of solid block as well, with walls behind the stage and organ constructed of a minimum of 16-inch-thick masonry. New plaster walls within the room were increased to no less than four inches of thickness with many walls on the main floor and front of the stage being twelve to 20 inches thick. The ceiling, where not acoustically transparent, was also increased to an average thickness of two inches, with some sections up to four inches thick.

While the inner walls of the organ chamber are now twelve to 16 inches thick masonry to provide full frequency reflection, the enclosure walls of the organ swell chambers were also increased in mass to properly retain sound when the swell shutters are closed and provide full expression for the instrument.

Dawn Schuetze
Kirkegaard & Associates

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**ORCHESTRA HALL**

**CHICAGO, ILLINOIS**

**CASAVANT FRERES**

**ST-HYACINTHE, QUEBEC, CANADA**

**GREAT (II)**

16\* Diapason
16\* Bourdon (from Pedal Bourdon and Great Chimney Flute)
8\* Open Diapason
8\* Chimney Flute
8\* Harmonic Flute
8\* Spitz Flute
4\* Octave
4\* Open Flute
2\* Fifteenth
1\* Fourniture IV-VI
16\* Double Trumpet
8\* Trumpet
16\* Major Tuba (ext.)
8\* Tuba Mirabilis (Ch.)
4\* Tuba Clarion (ext.)

**SWELL (III) (expressive)**

16\* Bourdon (ext.)
8\* Diapason
8\* Major Flute
8\* Salicional
8\* Voix Celeste (from CC)
8\* Flutes Celestes II
4\* Octave
4\* Spindle Flute
2\* Nazard
2\* Piccolo
1\* Tierce
2\* Plein Jeu III-V
16\* Posane
8\* Trumpet
8\* Oboe
4\* Clarion

**Tremulant**

**CHORUS (expressive)**

16\* Gemschorn
8\* Viola Pomposa
8\* Viola Celeste (from CC)
8\* Bourdon (stopped wood)
8\* Gemschorn (ext.)
4\* Principal
4\* Spillflute
2\* Flute
1\* Mixture II-IV
16\* Fagott
8\* Trumpet
8\* Clarinet

**Tremulant**

8\* Tuba Mirabilis

**PEDAL**

32\* Diapason (digital)
32\* Contra Bourdon
16\* Contrabass (open wood)
16\* Diapason (Gt.)
16\* Bourdon (ext.)
16\* Gemschorn (Ch.)
16\* Echo Bourdon (Sw.)
8\* Open Flute (ext. Contrabass)
8\* Octave
8\* Chimey Flute (Gt.)
8\* Gemschorn (Ch.)
8\* Still Gedeckt (Sw.)
4\* Super Octave
4\* Chimey Flute (Gt.)

10\* Therob III (derived from 16' Bourdon and 16' Diapason)
2\* Mixture IV
32\* Bombard (digital)
32\* Ophicleide
16\* Major Tuba (Ch.)
16\* Ophicleide (ext.)
16\* Double Trumpet (Gt.)
16\* Posane (Sw.)
16\* Fagott (Ch.)
8\* Tuba Mirabilis (Ch.)
8\* Trumpet (ext.)
4\* Tuba Clarion (Ch.)
4\* Clarion (ext.)

*From previous organ

**DESIGN DETAILS**

Electropneumatic action
Movable terraced drawknob console, with black lacquered exterior and interior
Electronic combination system—64 levels with programmable crescendo and list system
Facade replicating original 1904 Lyon & Healy organ
Wind pressures:
Great: 4 inches
Swell: 6 inches and 10 inches (reed chorus)
Choir: 6 inches and 25 inches (Tuba Mirabilis)
Pedal: 6 inches (flues) and 10 inches (reeds)
Opus 3765

Photographs by Michael Perrault

FEBRUARY 2000