

## Pierre Boulez Saal Opens in Berlin

By Daniel Beckmann

After a 3-1/2 year construction period and a 1-1/2 year period for design, the Pierre Boulez Saal opened to international acclaim with a gala concert on March 4, 2017.

As we reported in November 2015, Nagata Acoustics was invited by Frank Gehry to design the acoustics for the hall he was designing for his friend Daniel Barenboim. The comparably short gestation time for this project, roughly five years, was enabled by the fact that the project is fundamentally the reuse of an existing building. More than being a renovation of an existing large space, which hints at already being prepared for music, such as the Cremona Chamber Hall (October 2013), this new hall was created by dismantling a substantial portion of the existing internal structure, which was formerly a scenery warehouse for the Berlin State Opera next door.

Having the state opera, the “Staatsoper Unter den Linden” one of the most important opera houses in Germany, next door would hint at the centrality this new venue is expected to occupy in the physical and cultural landscape in Berlin. With an address of Französische Strasse 33D, the hall occupies a prime location in the Mitte (Center) district in Berlin, and together with the Staatsoper serves as an end point to a new sort of musical axis in the city. The other end of the axis is formed by the Berlin Philharmonie, with its main hall and the Kammermusiksaal, and along that axis sits the Schauspielhaus and the Komische Oper.

The hall has been eagerly anticipated in Berlin, as it fulfills a need for a medium-sized performance space in Berlin. This is the first purpose-built hall for chamber music with between 500 to 700 seats in central Berlin. The nearby Kammermusiksaal at the Berlin Philharmonie already has a large capacity of 1,180 seats, and the main hall at the Philharmonie is very large with 2,250. Even in the Schauspielhaus, less than 400m away, offers 1,600



Figure 1: Exterior of Boulez Saal  
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Figure 2: Pierre-Boulez-Saal prepared for Piano performance

seats and the next door Staatsoper seats 1,800 persons.

### Architectural & Acoustical Design

During the first meeting between Frank Gehry and Daniel Barenboim, already the idea for the hall had taken root – Mr. Gehry had drawn the proverbial “napkin sketch” of the oval hall. However, the first design by Gehry took a more conventional approach, with the performers at one end of the room, and the audience facing only them directly. But, soon thereafter, when the design was presented, Barenboim’s response was “Frank, I want the oval, please, please!” The sketched oval now occupies a prominent role in the hall, providing the cover art for the season brochure and the opening week’s program book.

By moving to the oval form with the stage in the center, surrounded by seating on retractable wagons, a version of Boulez’s “Salle modulable” could be achieved. The oval form serves to foster a strong sense of community within the audience, by reducing the distance for all audience to the minimum possible. Loose seats on the stage, placed flexibly for each performance depending on the musicians layout, and comprising up to 100 of the 630 total seats, further enhance the sense of connection within the audience, and also with the musicians. Even in other chamber music halls with smaller stages, this degree of closeness is not often encountered, where one can sit close enough to read every note of music on the stands. Occasionally, in larger concert halls such as the Berlin Philharmonie or Carnegie Hall, chairs are placed on the stage for concerts where the entire stage area is not used by an ensemble.

As shown in the plan and section at right, the seating layout for both the balcony and main floor are oval shaped. The two oval plans are rotated slightly against each other. The balcony appears to float above the audience of the main floor, as it is supported only at the points where it touches the outer walls, and without any columns below. Further enhancing the dynamism of the balcony, the floor of the balcony is not level, rather, it gently rises and falls by one meter in height as the ring is traversed. Acoustically, the balcony is designed to be as minimally intrusive as possible, by using thin pipe railings, and by the innovative overall structure of the balcony: the vertical surfaces of the balcony are all covered by an acoustically transparent mesh, and the concrete structure behind the mesh is more like a truss, with large holes measuring 54cm wide

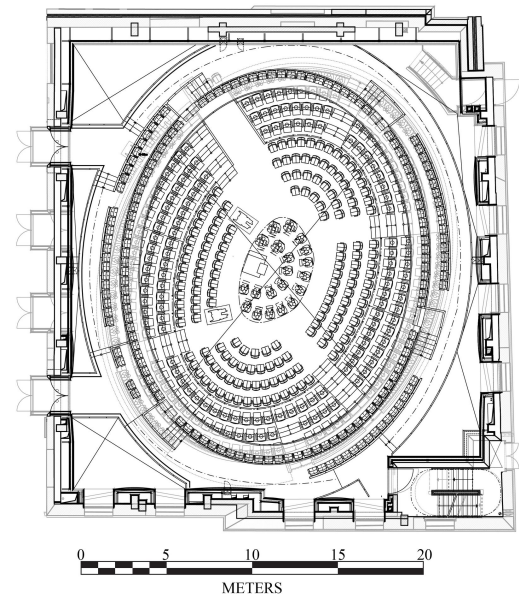


Figure 3: Plan

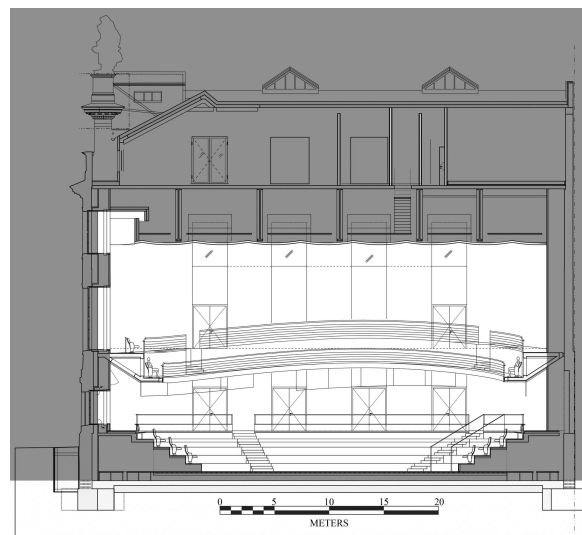


Figure 4: Section

and 107cm tall, allowing sound to pass through and reverberate in the open corner volume behind the balcony. The reverberation time was measured at 1.9 seconds (unoccupied, at 500Hz), an unusually long reverberation time for a room with only 630 seats.

One of the most unique acoustical features of this small hall is the glass “fins” which are suspended from the underside of the balcony. These fins serve a similar purpose as the side balconies in a classical shoebox hall. Many astute readers will probably notice that the hall has a strong concave shape, which is generally not considered acoustically advisable. However in this case, the difficulty is managed by the minimizing of reflective surfaces which are oval in plan, and dividing any remaining concave surfaces into multiple segments which are then made highly diffusive. Between these elements and those described in the previous article of November 2015, the resulting acoustical environment is quite superior, with a unique blend of clarity enabled by the room shape, together with a satisfying reverberance.

### Opening

The opening program of the hall was well chosen to highlight the unique acoustical features of the room, and especially the hall’s namesake Pierre Boulez; two of his compositions served as the opening and closing works on the program. Multiple performance opportunities were presented by the hall, as displayed in the first piece “Initiale” by Pierre Boulez, written for seven brass instruments. The musicians were divided into two groups, and placed on opposite sides of the balcony from one another, and Daniel Barenboim conducted from yet another point on the balcony. Following this brief opening of the hall, the focus returned to the stage center, where first a Schubert song “The Shepard on the Rock” for soprano, clarinet, and piano then a Mozart Piano quartet were performed. Larger pieces which seldom receive live performance also featured prominently on the program, such as Alban Berg’s Chamber Concerto for Violin, Piano and 13 wind instruments, a landmark work of modern music. Finally, the program closed Jörg Widmann’s “Fantasie for Solo Clarinet” also performed from the balcony, and with Boulez’s “sur Incises”, a landmark work of contemporary music scored for three pianos, three harps and three percussionists. This final work on the program successfully highlighted the acoustics of the room, and with its purposeful play with harmonics and overtones, provided an example of work which must be experienced in concert.

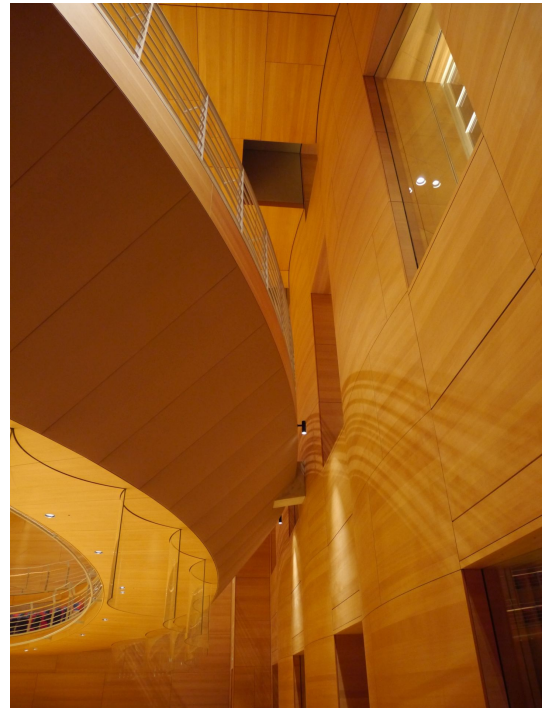


Figure 5: Glass fins and floating balcony