

## The Violin Museum and Chamber Hall are Completed in Cremona

By Daniel Beckmann

Cremona is a small city located on the banks of the Po River in northern Italy, about an hour's drive southeast of Milan, and is known historically as the foremost locale of violinmaking. The baroque violin, which evolved with some small modifications into the violin we know today, was probably perfected here in the mid-1500's by the luthier Andrea Amati. His children, grandchildren and their apprentices brought that art and craft to its pinnacle about two hundred years later with the work of Antonio Stradivari and Guiseppe Guarneri (del Gesù). The city retains its dominance in the art of violinmaking to this day with over one hundred violinmakers in the city, a major school of violinmaking, two important instrument collections and a tri-annual violinmaking competition.

The generosity of local entrepreneur Giovanni Arvedi, has provided the city with a new home for the violin collections and a chamber hall with approximately 475 seats. The new hall is intended to host concerts on the historical instruments as well as the instrument auditions for the violinmaking competition. The Stradivarian Museum is planned to move into the new museum.

### Existing Historic Building Renovated for New Violin Museum

The new Museo del Violino is being inserted into the Palazzo dell'Arte, designed in the late 1930's by the Italian Rationalist architect Carlo Cocchia, and was constructed in the 1940's.

The 6500 m<sup>2</sup> building stands out in the city for several reasons, first of all for its strikingly textural use of terra cotta and brick for all exterior elevations (See Figure-1 "Exterior of the Violin Museum"). The building sits at the far end of the Piazza Marconi, one of the larger urban spaces in the historic city, and dominates the square in a manner unlike any other building in Cremona. The two large, cubic forms of the building fronting the piazza enclose a small courtyard, the far end of which is defined by the new chamber hall. The new chamber hall once served as a Gymnasium for a local girl's school. The entirety of the museum renovation is designed by architects from the local firm of ArkPaBi, formed by the partnership of Giorgio Palú and Michele Bianchi. Nagata Acoustics has joined ArkPaBi as the acoustical consultant for the Chamber Hall.



Figure 1: Existing Historic Building Renovated for New Violin Museum



Figure 2: Original Space for Chamber Hall



Figure 3: Chamber Hall Under Construction

### Acoustical design of the Chamber Hall

The dimensions of the original gymnasium at approximately 36m long, 14m wide and 10m tall, seemed acoustically suited to conversion into a shoebox-style hall, even though the ceiling height was too low. (See Figure-2 “Original Space for Chamber Hall”) This led the design team to investigate possibilities for increasing the ceiling height, since this was the critical limiting factor in achieving a good acoustical outcome. The decision was made to excavate below the existing floor of the room to increase the ceiling height by an additional 4m. Finally, a ceiling height of 14m above the stage floor was achieved. (See Figure-3 “Chamber Hall Under Construction”)

The chamber hall has approximately 475 seats configured in an arena-style layout centered on an 85 m<sup>2</sup> stage. The expectation that the hall is only to be used for solo and chamber works allowed the use of such a small stage, which in turn gave substantial flexibility in the placement of the stage in the hall. We decided to place the stage almost in the center of the hall and create an arena-style layout, in order to have more than one potential sightline for the seating. Thus, there are seats on all sides of the oval stage, giving a large variety of views to the stage and also to other audience members.

Since the majority of the hall’s design was restricted by the existing walls and ceiling, the major focus of the acoustical design effort was to insert a seating layout into the room which would lead to a pleasing acoustical environment. An iterative design process led to the resulting unique audience layout, which enhances the intimacy between performers and audience by minimizing the distance between the audience and performers, both physically and psychologically. The audience is further brought together by an arrangement that allows sightlines between different audience sections. The seating layout was designed by placing the stage at the lowest point of the hall, and then in section arranging the seating areas at different elevations to give a highly three-dimensional layout.

The seating layout is composed of a large audience section facing the stage directly, which is divided into three sections and rises very steeply to meet the ceiling at the back of the room. The subdivision of this large audience area into sections of five to seven rows each serves to provide reflecting surfaces very close to each audience member, each with a carefully designed inclination and orientation, in order to facilitate the critical very early reflections. Facing the main large audience from behind the stage is another medium-sized block of audience seats,

divided into two sections. This area can alternately be used as choir or audience seating, as programming requires. (See Figure-4 “Interior View of the Chamber Hall”)

### Measuring the Characteristics and Listening to Rehearsals

As the building nears completion, in early July we visited the site to take acoustical measurements. We measured a reverberation time of approximately 1.5s (at 500Hz, unoccupied) with a satisfyingly flat frequency response. During that time, we also had the opportunity to listen to several ensembles and soloists, including violin, cello, piano, male & female voice solos, and a string quartet, woodwind octet, and various sizes of choral ensembles, from the region rehearse to try out the new space, with very positive results for both the performers and the listeners. We encouraged the musicians not only to rehearse and play for their enjoyment



Figure 4: Interior View of the Chamber Hall

in the space, but also to take the opportunity to listen from the empty audience areas. Their resulting acoustical impression, both from the stage and the audience, was very positive, in that the sound was quite rich with bass energy, and all details were clearly heard for each instrument and ensemble. The musicians were also pleased with the ease with which they could hear their own sounds, and differentiate them with the sound produced by their colleagues, making it easy to maintain a good ensemble quality. After this, the violin museum portion of the building will be completed for its opening in March of 2013, while rehearsals continuously take place in the Chamber Hall.