

USC Brain and Creativity Institute Building Opens

By Motoo Komoda

The University of Southern California (“USC”) opened in 1880 as the first private university on land along the Pacific coastline of the United States. The school is located in Los Angeles and in 2012 had the largest enrollment of foreign students of any university in the United States. USC has numerous architects, movie directors and other highly accomplished artistic talents among its graduates, such as Frank Gehry and George Lucas. The school’s medical and communication sciences schools also rank prestigiously high. Before the 1998 establishment of the Internet Corporation for Assigned Names and Numbers, USC served as the primary administrative body assigning IP addresses. On a more local level and of interest to classical music fans, the classical music station KUSC that serves Los Angeles and nearby cities is a broadcast service of USC.



Figure 1: View of the Hall interior from the audience seating

About BCI, Its New Building and The Hall

Dr. Antonio Damasio and his wife, Dr. Hanna Damasio, established the USC Brain and Creativity Institute, known as BCI, in 2006. As this research institute’s name implies, BCI studies how the human brain works and the institute conducts research to uncover the relationship between our brains and creativity. In their laboratories, Dr. Damasio use equipment such as MRI and brain wave measuring devices -perhaps originally intended for patient diagnoses- as tools to help them study the nature of human creativity.

BCI has gathered some of today’s best and most capable minds to pursue the institute’s research goals. Now, the new building provides an appropriate home for these scientists and their important work. The institute’s new building project includes an adjacent hall -a concrete realization of the institute’s pursuit of understanding the connection between neuroscience and the arts.

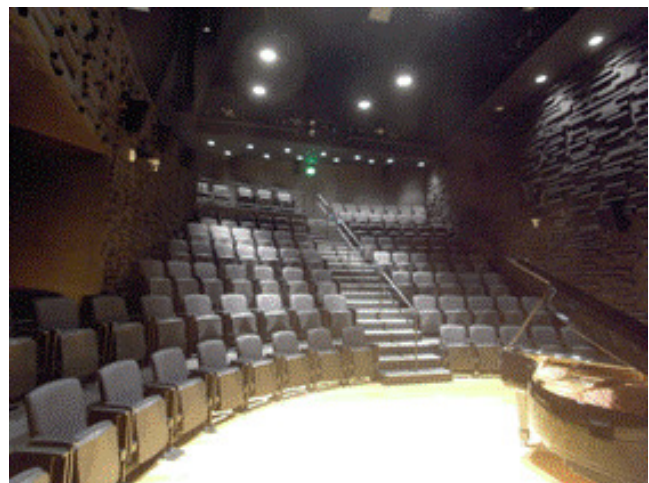


Figure 2: View of the Hall interior from the stage

The new BCI's building has a scale of approx. 1,850 m² (20,000 sq. ft) and an initial budget of \$9 million. Architect Michael Maltzan created the building's conceptual design and the firm of Perkins+Will served as architect-of-record. Nagata Acoustics participated on the project as Acoustical Consultant, with responsibility for both room acoustics and sound isolation.

Acoustical Room Design of the Hall

Named the Joyce J. Cammilleri Hall, BCI's new hall seats 100 people and is designed for both classical music performances and as a venue for lectures and presentations. From the hall's lobby, audience access to the hall follows a gently spiral-shaped path. Upon entering the hall, the black color scheme might at first give the impression of an experimental theatre space. Then, as your eyes adjust to the space and you see the slightly curved and protruding, horizontal sound diffusing wall elements of the side walls, the steeply stepped audience seating, the additional seating on the stage side of the hall and the stage that is at the same height as the first row of seats, the hall's sense of intimacy and its sense of tranquility draw you into the room and pervade the hall's space.

To determine some key measurements for the hall's room acoustical design, we posited use of the hall for a chamber music concert and set the height of the hall's ceiling at 13.5 m. (44 ft) when measured from the center of the stage. The physical volume of the hall measures 1,100m³ (39,000 cu. ft).

For the stage floor, in order to ensure the appropriate acoustics, we created a layer of air below the surface and used an entirely wood-framed substructure. In addition, we gave special consideration to the exact shape of this basically horseshoe configuration to prevent focusing echoes from occurring and we promoted sound diffusion by specifying detailed uneven surface treatments throughout the hall, including around the stage area. As a result of these design efforts, the hall is 100% echo free.

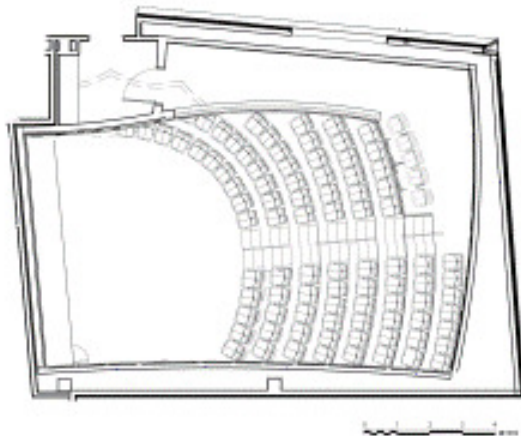


Figure 3: Hall plan view

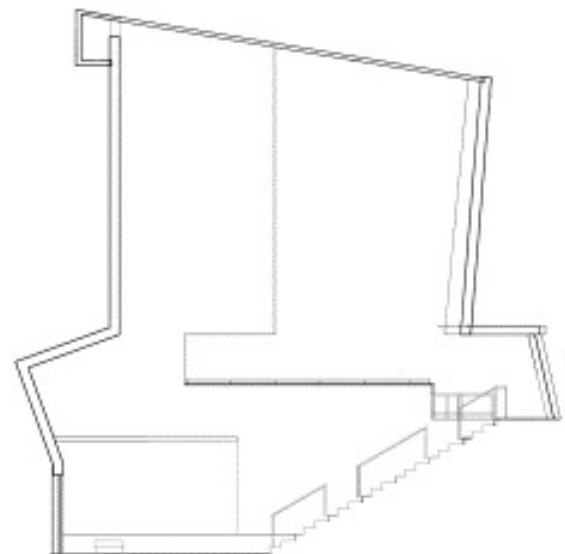


Figure 4: Hall cross-sectional view

Because the hall will be used both as a concert hall and as a venue for lectures and other speaking engagements, we provided two means to control the liveliness of the hall for these kinds of uses. Behind the stage we installed a manually operated curtain and on the upper wall we installed an electrically operated sound absorbing curtain that can be adjusted to cover virtually the entire upper wall. We calculated that the hall's reverberation time measures 1.1 seconds, at 500 Hz, with the hall fully occupied. This level of reverberations provides rich sound for chamber music and similar performances. When the upper wall's sound absorbing curtain is set to fully cover the wall, the reverberation time measures 0.8 seconds under the same conditions as mentioned above. This is a significant difference that can be clearly discerned by the human ear. The configurable sound absorbing curtain achieves the desired dampening of the sound reverberations for speaking engagements.



Figure 5: Sound absorbing curtain

Performances in the Hall

On May 2, 2012, after construction completed, I had the pleasure of hearing violinist Midori Goto perform briefly in the hall. Midori, who holds the Jascha Heifetz Chair at USC's Thornton School of Music, played fabulously and her skill was palpable at the close range of this hall's seats. It was at this moment that I was able to feel truly confident that we achieved our desired acoustical goals in this hall. Midori has been teaching at USC since 2004.

On November 6, 2012, BCI held the building's official opening, including the *de rigueur* tape cut. After the tape cut, attendees enjoyed a brief performance of two works in the hall. First, Martin Leung performed Liszt's Tarantella for piano. Mr. Leung performed this energetic work with large sound. Perhaps because of the hall's high ceiling, the sound did not overwhelm the hall. Instead, the performance delivered a delightful sound in the hall.

For the second piece, Ralph Kirshbaum performed the Sarabande from Bach's Cello Suite No. 5. Mr. Kirshbaum gave a wonderfully serene performance which was a pleasure to hear. Both performers gave excellent performances to the obvious satisfaction of everyone in attendance.

From this unique research institute, we may one day learn of a tremendous breakthrough in our understanding of the human brain and creativity. I am full of hope that this little concert hall will somehow be a catalyst or in some way contribute to that future stupendous scientific breakthrough.

On March 25, 2013, Midori will give a concert in the hall.

Among the media reports of the new building's opening, these two provide excellent summaries and links:

<https://dornsife.usc.edu/bci/>

<http://news.usc.edu/#!/article/43562/usc-to-unveil-new-home-for-neuroscience/>