

Signature sound

Found spaces can offer excellent acoustics in the right hands, but care must be taken to preserve the venue's character

The performing arts world is currently debating and re-evaluating whether more standard auditoria should be built. Most cities now seem to have a 'white cube' art gallery, a proscenium or thrust type theater; and if they have an opera house, more often than not it will be an interpretation of the Italian horseshoe form. As for new concert halls, the question of form has been reduced down to a choice between shoebox and vineyard. For many artists, particularly in the younger generation, typical auditoria have become uninteresting, and they are looking for novel spaces to stage their performances: the possibilities and freedom of artistic expression offered by these 'found spaces' provide a much more enticing alternative.

Found spaces

Everything from a church to a warehouse, from a multistory car parking structure to a street corner can be called a found space. Each will lend its unique character, both visual and acoustical, to the performance. Sometimes the raw acoustics of a space do not fit entirely with the envisaged use; nevertheless, the quality strived for by artists and musicians is typically just as high as in purpose-built venues.

Kahle Acoustics has been asked to help optimize the acoustics of several found spaces, for one-off events, festivals and for permanent use as a music venue.

The key to working with found spaces is first to understand the inherent acoustical nature of the space, teasing out what is good (there are always good aspects) for the envisaged performance, finding ways to inspire the performers to use the most beneficial aspects



of the acoustics, and learning how to subtly adjust the acoustics to solve problematic features. This last point becomes particularly important in protected buildings where the building fabric cannot be disturbed. With careful placement of acoustical elements, it is possible to achieve quite astonishing changes with very subtle interventions.

Preserving the uniqueness

The Musikinsel (Island of Music) in Rheinau, Switzerland, is a former Benedictine monastery located in a meander of the river Rhine. Kahle Acoustics advised on the conversion of the monastery complex into a music school and rehearsal venue. Because the building is protected, it was critical to establish the optimum locations for acoustical interventions in each space, and to primarily work with acoustically active furniture.

Working with the artist Beat Zoderer and architects Bembé Dellinger, custom fabrics were developed for the acoustic panels, which drew inspiration from the building and its history. Some of the acoustic panels are mobile and on wheels, while in other areas, by ensuring sufficient distinction from the historic architecture, panels could be fixed directly to the walls.

Divine intervention

The Benedictine Basilica in Vézelay, France, which was completed in 1104 and added to the UNESCO World Heritage Sites list in 1979, provides a venue for music performance throughout the year, culminating in an annual summer chamber music and choral festival. While the cathedral-like sound of the basilica is beautiful for historical choral works, for more contemporary choral music and instrumental performances, it suffers from the typical problems of a large church. Poor projection of the sound to the audience and a lack of acoustical clarity result in unsatisfactory involvement and engagement for the audience. Kahle Acoustics' challenge was to greatly improve the music acoustics for the summer festival without touching the fabric of the building.

Acoustic panels in the Musikinsel Rheinau, Switzerland. The embroidered fabric covering the acoustic panels was designed by the artist Beat Zoderer. Additional sound absorption is provided by translucent curtains developed by the textile designer Annette Douglas. Also visible are mobile acoustic panels, which can be placed where needed to optimize sound



Above: Mock-up testing of mobile reflector panels in the Basilica of Vézelay, France. In this arrangement, the panels are used to enhance sound projection from the stage to the audience

Below: The Chapelle Corneille auditorium, with the mirrored side of the chandelier facing downward. It is rotated for performances so that the acoustical reflector and stage lighting face downward

By listening carefully to the natural character of the basilica, acoustical improvements could be achieved for chamber music ensembles and choral groups. The musicians and audience were moved within the space to take advantage of existing positive features of the acoustics. Following this, a number of floor-standing solutions were developed to enhance musical clarity and projection. By adding relatively small areas of sound-absorbing fabric, primarily behind the musicians, the clarity-reducing reverberation of the Gothic transept and side aisles were calmed. Additional reflector panels

enabled the sound to be steered from the musicians to the audience.

The improvements to the acoustics, demonstrated with mock-ups and listening tests carried out over three days of rehearsals in August 2017, convinced the festival organizers to invest in properly fabricated mobile reflectors and absorbers for future years.

Baroque beauty

The Chapelle Corneille in Rouen, France, a 17th century Baroque chapel protected as a historic monument under French law since 1910, had been used occasionally for classical music and its acoustics had developed a good reputation.

Based on this, the region of Normandy decided to reinforce the chapel's role in the cultural life of the area by formally designating the chapel as a concert venue. King Kong architects and Kahle Acoustics were asked to renovate and transform the chapel, with the crucial limitation that no visible fixed connections to the architecture were allowed.

Key to the success of the project was once again to understand the inherent positive acoustical traits of the space. Listening tests indicated that a central stage, surrounded on all sides by the audience, would provide the best balance of acoustics and rapport between musicians and audience.

The focal point of the transformation is the chandelier: a rotating sphere suspended above



the stage and anchored to new roof structure through an existing hole in the stone ceiling. In one orientation, the chandelier provides stage lighting and an optimized sound reflector to spread sound to all musicians on stage, as well as to the entire audience. In the other orientation, a mirrored surface provides a unique perspective on the historic chapel.

In addition to the chandelier, custom reflectors integrated into the last rows of seats hold the sound within the audience area, while custom rolling absorption banners soak up excess reverberation where it is not desired. The acoustic intervention proved successful: not only is musical clarity and engagement excellent, but by adjusting the settings of the acoustic furniture, the acoustics can be tuned to different ensemble sizes and musical repertoire.

Sensitively done

In all these projects, through careful listening and observation, the positive aspects of the acoustics have been retained, and regardless of the setting of the acoustical furniture, the historic nature and strong character of the spaces, both



Above: To respect the protected architecture of Musikinsel Rheinau, acoustics have been improved through the use of carpet, curtains and radiator cladding, in addition to mobile and fixed panels

from an architectural and an acoustical perspective, are present and alive. These projects demonstrate how found spaces can exceed expectations: excellent acoustics can be achieved while preserving the uniqueness of the space. ■

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FINE ACOUSTICS IS NOT THERE TO BE SEEN BUT TO BE BLENDED INTO THE ARCHITECTURE

KahleAcoustics

www.kahle.be Avenue Molière 188 B-1050 Brussels Belgium +32 2345 1010 info@kahle.be