

# DESIGNING FOR LIVE PERFORMANCE IN A CHANGING WORLD

*With a simple box of the right size, you can create a superb performance space.*

## **The challenge**

Nearly all performance spaces wind up being used for a wide variety of performance types, even if not originally intended or designed to be used this manner. Educational performance spaces, particularly for K-12, almost always serve multiple performance types. These spaces often serve as the performing arts center for their community as well.

Performance spaces connect performers and their audience via two major senses:

- Sight (theatrical)
- Sound (acoustics)

They also have other requirements including: back-stage support, comfort, pleasing appearance, and the myriad practical requirements that all buildings must meet.

This piece focuses on the theatrical and acoustic aspects.

## **Two approaches**

Generally speaking, there are two basic approaches to creating a multi-use performance space:

1. Start with a **theatre** (including stage house, rigging, proscenium and separate audience), and add elements to support music (such as a stage shell, “clouds,” even electronic enhancement): the classic “Multi-purpose Auditorium.”
2. Start with a music space (**concert hall**), and add elements that will support theatre. Let’s call this “The Performance Box.”

Each of these approaches has its costs and benefits; the choice should be driven by program. Unfortunately, the second option, the Performance Box, is much less widely known than the first. Yet, it is often (though not always) a better choice.



**Mercersburg Academy. Architect: Polsheck Partnership Architects, now Ennead Architects**

### *The Multi-purpose Auditorium*

The Multi-purpose Auditorium is the common default. We have worked on many successful projects following this model.

However, the Multi-purpose Auditorium is difficult and expensive to do well.

All too often, music is short changed due to cost limitations. Despite the fact that there are some excellent examples, the Multi-purpose Auditorium does not have a very good reputation.

### *The Performance Box*

The second option, the Performance Box, is far less common. It has strong advantages:

- For comparable quality this approach can be much less expensive. This is because requirements for music (those that differ from theatre) tend to be large and massive (e.g. stage shells), and thus expensive to implement as movable elements. Requirements for theatre, on the other hand, are primarily visual, and thus relatively inexpensive to implement in a movable form (e.g. as curtains).
- This approach creates a stronger connection between audience and performers by locating both in the same room. This is crucial for music, but also has benefits for theatre. Furthermore, the trend in theatre is away from the traditional proscenium, and towards breaking the “fourth wall” in order to create a more intimate connection with the audience.

## Cultural change

Live performance faces enormous competition for time and attention, particularly from electronic and on-line media. Why should anyone leave his house to attend a live performance when so much is available at the click of a mouse? The old model of an artificial world seen through a rectangular proscenium simply cannot compete with the cornucopia available in nearly every home.

In response to this challenge, performing artists are valiantly experimenting. Many are abandoning the “fourth wall” of the proscenium; even leaving dedicated performance spaces altogether for found spaces in an attempt to connect with their audience.



Dancer, Pamela Veil, Photo by Craig Harris

***Awakened Ruins* by Tori Lawrence, music by Christopher Brooks, created for and performed in the unused third floor of Girard College’s Founder’s Hall, Philadelphia, Pennsylvania**

In live performance we can experience something that is not possible through screens and loudspeakers; to share creation in the moment with living, breathing performers and with other members of the audience.

These cultural shifts tend to favor option 2, the Performance Box, which may sacrifice some of the visual flexibility of the traditional Multi-purpose Theatre in order to create a more intimate connection between audience and performers

## Technology

Theatre, lighting and audio technology can be used to enhance live performance—if they are used to *support* (rather than supplant) live performers, who can easily be overwhelmed by video or audio effects. Technology has its uses, but it is **no substitute** for the magical connection between live performers and live audience. An excellent room can make that connection.

Technological wizardry has become mundane. It is the human element that remains precious.

**What does this imply for the design of performance spaces that will sustain and promote thriving live performance?**

**Requirements for speech vs. music**

To answer this question, it is useful to clarify the differing requirements for speech vs. music. Below is a table with architectural elements required for each. Some elements benefit both speech and music. These are shown across the two columns. Some are required by one and irrelevant for the other. Some directly conflict and therefore must be made adjustable for a successful multi-purpose space.

In this table, these requirements are stated in fundamental and general terms to open up the widest range of possibilities for actual implementation. Note that a relatively small footprint, with audience relatively close to the performers makes it easier to compromise and balance these requirements in order to create a successful multi-purpose space.

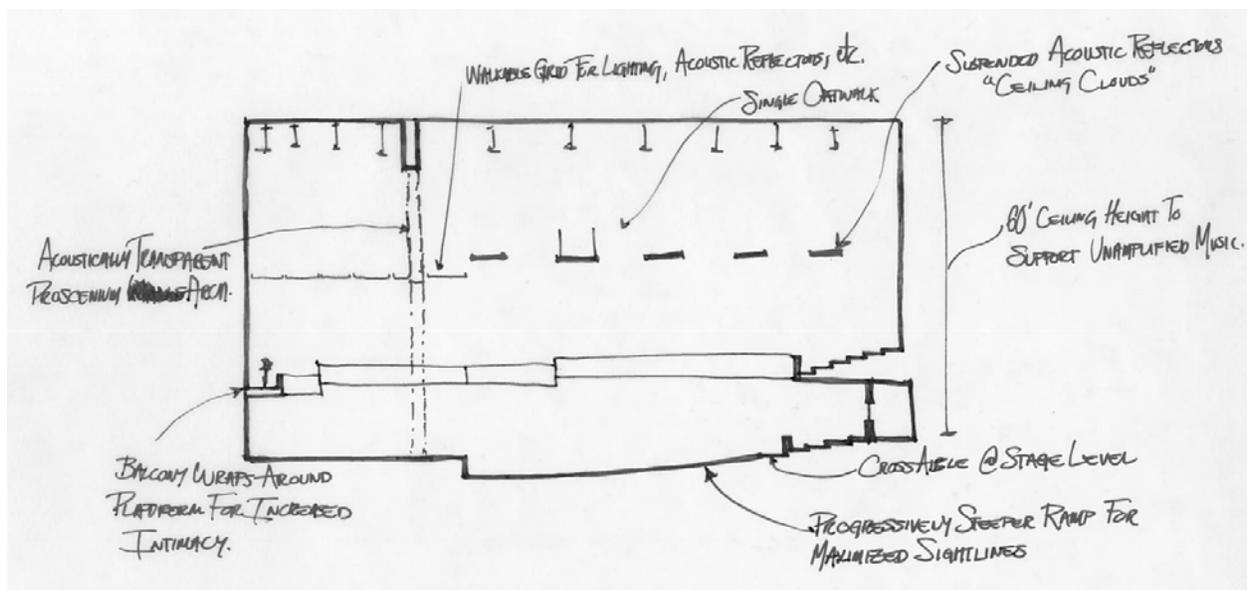
| <b>Music (concert/recital hall)</b>  | <b>Speech (and theater)</b>   |
|--|---|
| <p>Performers must share the same acoustic volume as audience, so that the audience will be bathed in sound, rather than hearing the performers “over there” in a separate space.</p> <p>Student musicians, in particular, need support for their sound and a feeling of connection with their audience.</p>   | <p>It is helpful for performers to share the same space because it provides a sense of intimacy. Note that this is not the case in a traditional proscenium theater, which separates audience and performers into separate rooms for maximum control over what the audience sees.</p> |
| <p>Performers generally require a hard, sound-reflective performance environment to develop their sound.</p> <p>Adjustable curtains are helpful for very loud or amplified musicians or to mimic the additional sound-absorption from the audience during rehearsal.</p>   | <p>Curtains are visually useful and no detriment to acoustics—as long as performers project and face their audience. Adjustable curtains can be used to reduce reverberation, improving speech intelligibility.</p>   |
| <p>To develop a rich, reverberant sound, and to deal with high sound levels, height above the audience is required. This creates a “hard volume” where sound can reverberate and develop.</p> <p>60 to 65 feet high would be ideal for a music space.</p> <p>The height of the performance and audience spaces must be the same, with a continuous ceiling, to avoid creating two separate spaces.</p> | <p>Room height is irrelevant to theatre—as long as it doesn’t result in excessive reverberation.</p>  |

|   |  |
|---|--|
| <p>Because audiences are very effective sound absorbers, steeply raked audience seating eats up performers' sound. This is frustrating for musicians, who need to hear their sound coming back to them, and can result in a thin, "dead," sound for the audience.</p> <p>To avoid this, musicians should be elevated above the audience plane.</p> <p>It may be tempting to provide a steep rake in student auditoriums so their parents can see them. However, students have a strong need for the support from sound reflecting back to them from the audience.</p> | <p>Excellent sight lines are crucial for theater, particularly when performers are not amplified (always the preferred approach). This is achieved via a sufficiently steep seating rake, and/or multiple seating levels (balconies).</p> <p>Note that this is a direct conflict between requirements for music and theatre that must be appropriately resolved for each unique program.</p> |
| <p>A more visually intimate space is desirable, but less critical than for theater. In a pure music space, sound takes precedence.</p>  | <p>Distance from the performers should be as close as possible for the audience to see the expressions on performers' faces and to understand speech.</p>  |
| <p>No wing space is required. Performers "waiting in the wings" can wait in the corridor, or even in the seats. In many pure music spaces, performers enter through a door to the performance platform.</p>   | <p>Performers (and scenery) need to be able to disappear and reappear easily, so visual masking and space to disappear into is required.</p>   |
| <p>Lighting is required to light the music and to be able to see the performers without blinding them. Lighting requirements for music are usually utilitarian.</p>   | <p>Extensive, flexible, lighting is essential for theater. Lighting offers possibilities for manipulating the visual without affecting sound at all, so this can be a useful element for multi-purpose spaces.</p>   |
| <p>Very low background noise from HVAC, electrical systems and exterior (e.g. adjacent spaces, rain), is essential for both speech intelligibility and for music. Very low noise (near or at the threshold of hearing)—so rare in modern life—can help create magic in a performance space</p>  |  |
| <p>High sound isolation from other occupied spaces in the building, and from outside is necessary for the same reasons.</p>   |  |
| <p>Sound reflecting surfaces properly located and oriented to provide early sound reflections for clarity and ease of ensemble. Music requires both clarity and reverberance. Clarity can be provided by additional surfaces (e.g."clouds," shelves) designed to reflect sound. Such additional elements may not be necessary for a pure theatre or speech space, if it is small enough.</p>  |  |
| <p>Avoid discrete echoes from distant surfaces in the audience chamber and flutter echo.</p>  |  |

In addition to the requirements above, to be viable, a space must be buildable within the budget, provide storage that is easily accessible to both stage and rehearsal space, and visually appealing in all configurations.

**General guidelines for the Performance Box**

Here is outlined a general approach that can be realized in any number of ways, depending on taste, budget, and other specifics, such as program or the environment.



### A conceptual drawing of one possible realization of the Performance Box

Every project is unique, but here are a few guidelines:

- Scale is the fundamental attribute of any performance space. The room must be intimate, with sufficient volume to support the sound of larger ensembles. There are enormous advantages, in both cost and the audience experience, to planning for multiple performances in a more intimate space, rather than sizing the space for the largest conceivable audience.
- Massive construction is essential for sound quality and sound isolation.
- The overall form required for a superb music space is relatively simple. There are important refinements, but start with a simple, high, rectangular box.
- The audience and performers must occupy the same acoustic space. For music this is essential; for theatre, highly desirable.
- Provide means for visual masking (necessary for theatre) that will not absorb sound, or isolate performers into a separate stage house.
- Seating rake has a profound effect on the acoustics of a performance space. Consider the program carefully when deciding the seating layout and slope. Elements such as balconies and side terraces can allow more people in the audience while avoiding undue sound absorption, and retaining intimacy.

### Examples

The old architectural trick of flipping spaces opens up new possibilities for the design of performance spaces. Starting from the requirements for acoustic music (primarily a simple box), and adding the visual requirements for theatre is a better approach to creating a simple, transparent, and cost-effective, performance space: from the Multipurpose Auditorium to the Performance Box.

This concept can be realized in myriad specific forms, depending on the requirements, tastes, and budgets of the client. There isn't a rigid line between these two approaches. In practice they may converge. The difference is in the starting point.

### The Black Box

The simplest approach is the venerable Black Box (see the example below). A Black Box is a rectangular box, often with a wrap-around balcony or technical gallery. It may have a loose seating. It may have a walkable grid, which offers total flexibility for lighting and other theatrical devices and.

With adjustable curtains to control reverberation and sufficient height, these make excellent intimate music spaces as well (note the piano in the photo).

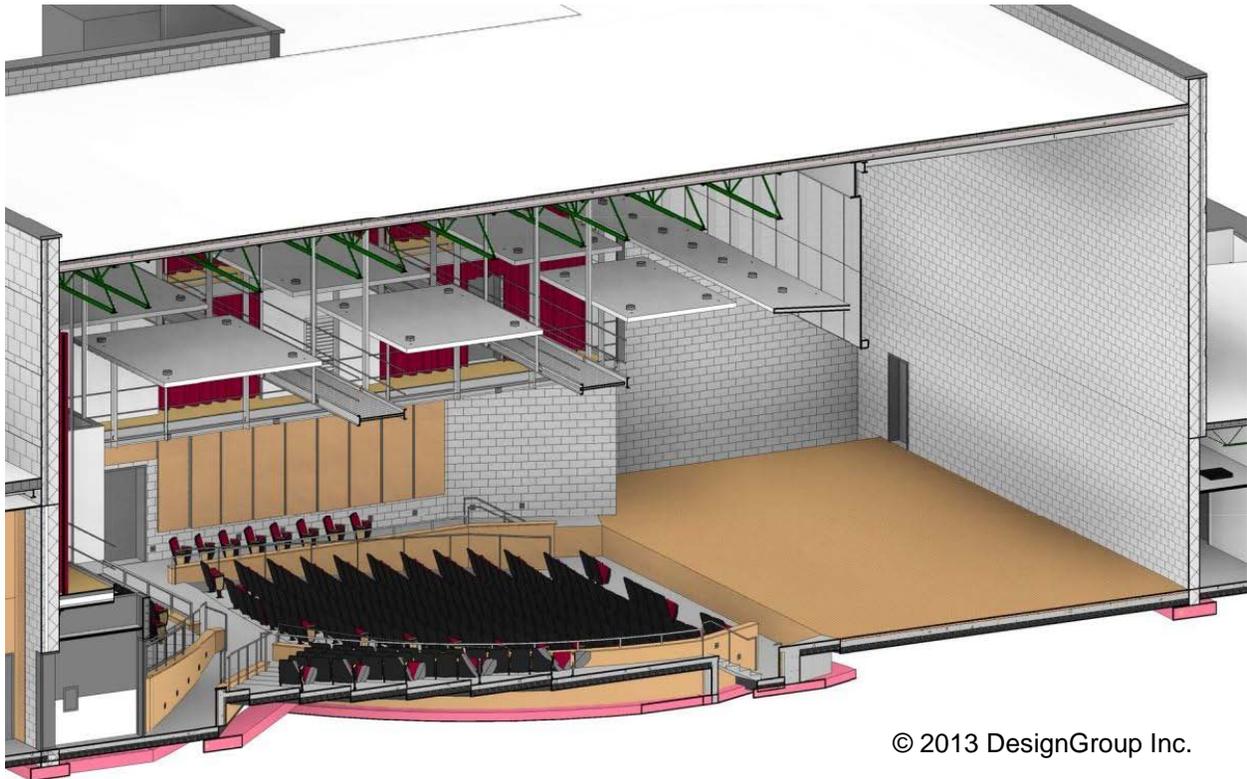


© Robert Benson Photography

'62 Center for the Arts Black Box Theatre, Williams College. Architect: William Rawn

## Columbus School for Girls

The Agnes Jeffrey Shedd Theater, Columbus School for Girls, in Bexley, Ohio (architect, DesignGroup), appears to be a traditional Multi-purpose Auditorium. But a closer look reveals that it is, in fact, a Performance Box.

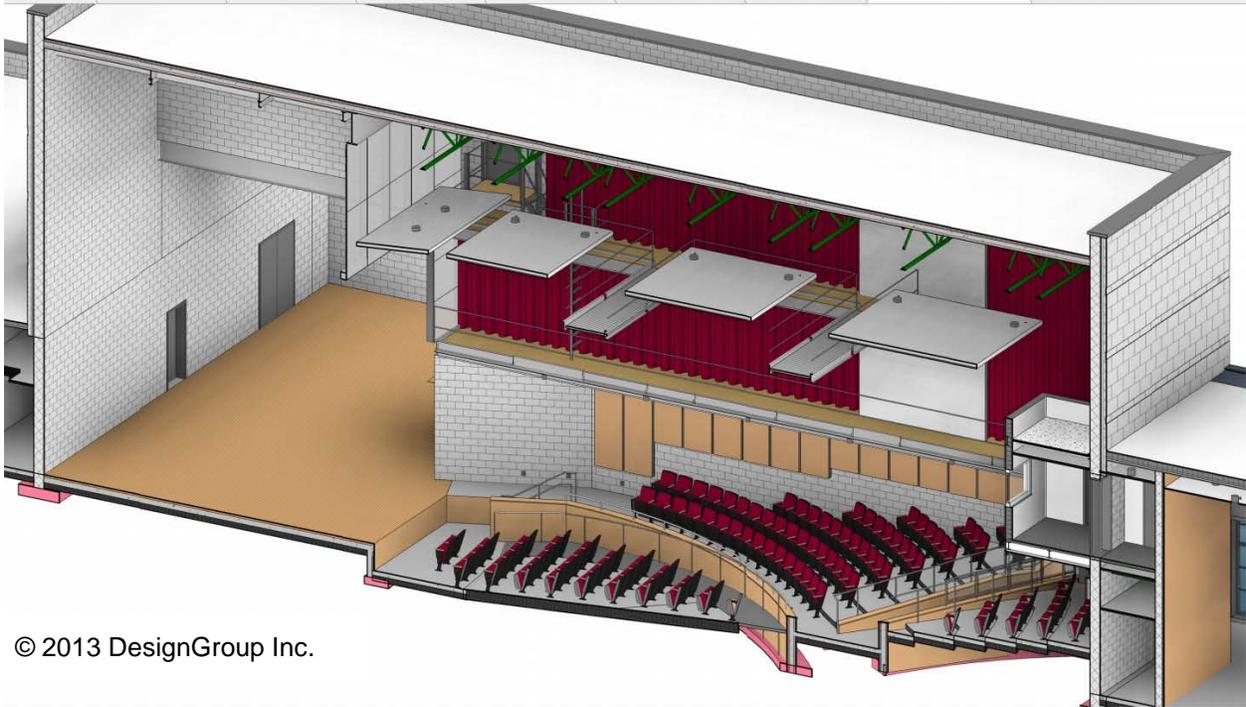


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### 3-D Section towards stage right

The 3D section clearly shows the Performance Box approach, with audience and performers sharing a single volume. To provide backstage area for theatre, the stage is considerably wider than the audience chamber on either side.

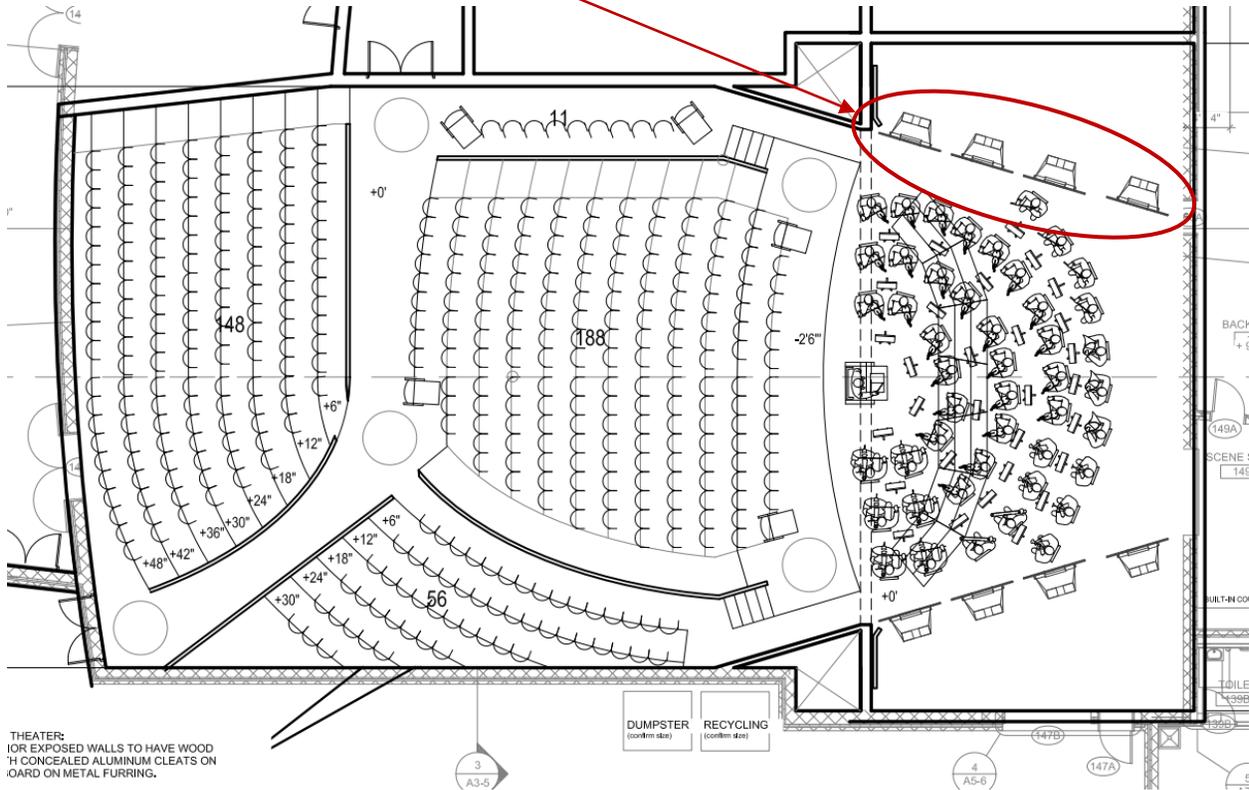
This is clearer in the view towards stage left, below.



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### 3-D Section towards stage left

For musical performances, movable towers continue the line of the audience wall, bringing the performers and audience into the same acoustic volume.



### Plan

The upper proscenium wall is constructed of expanded metal mesh to obstruct sight and visually frame the proscenium, but allow sound to pass unimpeded.

An interesting aspect of the design of this room is the asymmetrical seating plan, a response to the asymmetrical locations of the adjacent lobby spaces, which resulted in asymmetrical loading of the audience chamber.

This room was originally intended to be a traditional Multi-purpose Theatre. By going with the Performance Box approach, the budget for the project was reduced from \$6.7 million down to \$5.5 million.

### **Final Word**

The Performance Box is a fruitful concept that can engender a wide spectrum of multi-use performance spaces, from the most utilitarian to the most elegant.

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