

Why Can't We Hear the Choir?

By Dale Alexander

This is the question that is at the top of the list when we talk to Pastors and Music Ministers. For a church with an active choir ministry this can be one of the most volatile challenges they have to deal with. The solution to the problem is usually not a simple one. In many evangelical churches, the choir is still an extremely important element of the worship service although the musical styles have evolved from simple piano accompaniment to a rhythm section or even a full-blown orchestra.

If you can't hear the choir during the worship service, it usually has to do with the acoustic signature of the platform area. There are typically many factors that contribute to the problem. The root problem is usually a product of one or both of the following factors. (1) The architecture of the worship center and the church's acoustic requirements at the time the building was constructed are not in concert. (2) The building design team did not put a priority on the acoustic signature/performance of the new worship center. All too often the way the room "looks" drives the design, thus function follows form. In a perfect world (acoustically speaking) we would always have the form follow the function. This exposes the age-old conflict between Architects and Acousticians. When I was in college taking acoustics classes we had a text book titled "Deaf Architects and Blind Acousticians" by Robert E. Apfel. This title over-simplifies the problem a little but is really an accurate model of many design teams working on new church worship centers today.

For many decades, the worship service in almost all evangelical churches was choir based, with a piano and sometimes an organ accompaniment. In these churches we found it interesting that many were actually designed with an Acoustician on the design team. The choir was typically large enough to balance with the piano and organ and didn't need a lot of reinforcement. The choir was usually in an open area at the rear of the platform with no side walls or ceiling. Many times the rear (upstage) wall and/or the ceiling would be angled to thrust or reflect the choir sound into the main area of the worship center. The platforms were typically constructed of hard woods or other sound reflective materials to amplify the sound from the platform via early reflections. Many of these church buildings would have very high reflective ceilings and sound reflective surfaces on the walls. This would increase the reverberation time in the room making the sound of the organ and choir swim around in the room giving the musical piece a sense of majesty. A choir and/or organ concert performed in such a space can be a truly exhilarating experience that you won't soon forget.

In more recent years, since the early 1980s, there have been many new worship centers designed and built to look like the older style worship centers because "that is what a church is suppose to look like". The problem with this type of thinking and construction is that the church's musical requirements have changed drastically over the last 20 years. The church has moved from the choir with piano and/or organ to a much more contemporary worship style incorporating percussion, amplified instruments and brass sections. The sheer volume from these instruments is almost impossible for a church choir to overcome. Add to these instruments strings and woodwinds, and the choir doesn't stand a chance of being heard. There are a few churches that have been able to make this work to some degree but not without at least some acoustic modifications to the platform area.

In many metropolitan areas there are wonderful performing arts centers that have the acoustic properties to support a choir program with full orchestra accompaniment. Many of us ask the question, if they can do that in the symphony hall why can't we do it in our church? The answer is we can, if we have a strong director and a professional choir and orchestra. Some churches do pay the musicians in their Sunday worship services and some of these musicians are truly professionals. But, in the majority of the churches in this country the musicians and the choir are volunteers that are cheerfully giving of their time and talent to be of service to the King of Kings and Lord of Lords. Being volunteers they do not have the disciplines that the professional musicians have and sometimes forget that "FF" is a relative term. Also, the Music Ministers do not have the authority that a professional conductor has to control the orchestra and choir.

Remember, he is a Pastor.

Now that we have identified the problem, what can be done to correct it? Again, this is not a simple question to answer. When trying to figure out what needs to be done, the first question we usually ask is "How important is the choir to the worship service"? The reason for this question is to help the church realize what their priorities are concerning worship. If the choir and rhythm section or orchestra are deemed to be of high priority, then the church will do all it can to solve the problems. If however, the choir is not a high priority, very little will be done to correct the problem.

When the choir can't be heard because of the addition of the band and/or orchestra the first thought most churches have is "Let's mic the choir". This usually does nothing but exacerbate the problem because the mics are picking up more of the sound that is masking the choir. This happens because the choir and the band are in the same acoustic space. Another challenge is the placement of the organ speakers. In many older churches the organ speakers or pipes are located behind the choir, thus firing straight into the choir mics. In order to make the choir mics effective we need to separate and somewhat isolate the choir from the band (including the organ). How do we do this in such a limited space as the platform? There are only 2 possibilities, horizontal or vertical separation.

To horizontally separate the choir from the band means that we have the choir on one side of the platform and the band on the other side. There is typically some sort of dividing wall between the two spaces which will separate and somewhat isolate the choir from the band. The dividing wall is typically mostly glass to promote visual communication between the choir and the band. This type of platform layout is called an "Asymmetrical Platform Layout". This type of layout is not done very often, as it doesn't "look" like a typical church. However, it can be very effective. One of the more notable churches where this type of configuration is done is The Potter's House in Dallas, TX. The band is to the stage right side of the choir. The band has about 1/3 of the upstage platform area and the choir takes up about 2/3. The choir mics are very effective in this situation and the choir is acoustically and electronically balanced with the band.

Another type of horizontal separation that has been done for years in many churches is to place the choir at the opposite end of the worship center from the main platform. In essence you have two platforms. Often these choirs are elevated in a choir loft. The choir can be heard very well in these types of churches but the sound is coming from behind the congregation and often feels disconnected from the front platform. The larger the building becomes, the more noticeable the disconnection. Because of the disconnection this layout doesn't work well for contemporary worship styles.

To vertically separate the choir from the band we have to either raise the choir or lower the band or a combination of the two. In most church construction over the last few decades the first row of the choir were placed at the same elevation as the piano and organist, which is where the band/orchestra is today. This worked well for the type of worship done at that time but it doesn't work very well with a contemporary worship style. The more you can separate the choir from the band, the more effective the choir mics will be. One church that understood this and followed the acoustician's recommendations regarding this issue is Harvest Church in Watauga, TX (north suburb of Ft. Worth). The first row of the choir is seven (7) feet above the platform and the band. There is also a 3' modesty wall in front of the choir, which allows for a 10' sound-absorbing wall between the band and the choir. The choir is an extremely important part of the worship and is very effective.

Many churches have a difficult time achieving proper separation because of the existing architecture of the worship center and platform. In many churches there is a baptismal and/or organ speakers that inhibit the vertical movement of the choir. This can be overcome if the choir is a high enough priority to the church, as it will require a major renovation of the entire platform area.

On a typical contemporary worship platform with a choir there are many differing acoustic requirements for optimum performance of each element of the worship service. The choir has one set of requirements, while the rhythm section has specific needs as does the brass section, the string section and woodwinds. In the proper acoustic space a 40-voice choir can be as loud or louder than an 80-voice choir in open

space. How do we achieve this? We place the choir in a space with reflective surfaces all around them. We put reflective walls in close proximity to the choir, we place a ceiling over the choir and we finish the floor with tile, wood or finished concrete. We try to make the choir space as reverberant and lively as possible.

To minimize the effects of the band on the choir mics we need to control the loudness of the band. This means that we need to strategically layout the band/orchestra with respect to instrument loudness and place as much absorption as possible around the rhythm section. The items that must be located as far away from the choir as possible and acoustically controlled are the drums, percussion, brass section and amplified instruments. Also, the organ speakers or pipes must be located outside the choir space. We typically recommend that the entire band/orchestra area of the platform be treated with as much acoustic absorption as possible. This means all wall surfaces near the platform be covered with acoustic absorption panels and the platform floor be covered with carpeting. Under the instruments that require reflection such as strings and woodwinds we recommend that finished sheets of plywood be placed on the platform in the areas of the strings and woodwinds. To help mitigate the sound from the brass, percussion & amplified instruments into the string & woodwind we recommend that gobos (portable acoustic barriers) be installed to contain the sound. In order to control the loudness of electronic/amplified instruments it is often necessary to remove all amplifiers from the platform area and give the musicians personal monitors utilizing ear buds or headphones. It is best to give the musicians some control over their monitor mixes with either a matrix type monitor system or a more-of-me monitor system.

As I have hopefully illustrated, solving the challenges of being able to hear the choir is not a simple task. There are many variables to be considered and decisions that have to be made, based on the church's requirements, architecture and budget. The best decision a church can make concerning this issue is to obtain the help of an acoustics consultant who understands the science of acoustics and knows how to help the church discover their needs and desires concerning worship.

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