

The Use of Amplification Equipment in Classical Music Concerts

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Is there anyone who has not thought, while listening to a concert, that that instrument, that singer, or even that whole choir would have been much improved by a little ... amplification?

In my work, which consists of preparing master audio recordings for the production of CDs, the problem is easily solved: all it needs is an extra microphone to balance the sound made by the performer, which is lacking in volume when heard through headphones, with the rest of the musicians ...

To solve the same problem during a live performance in public is, technically speaking, a little more complicated, owing first to the need to use loudspeakers in the concert hall and for monitoring if this is required, and secondly to the visual and psychological impact of this equipment which we are not used to, whereas we are familiar with the equipment normally used for recording, since this is routinely used by many amateur groups and by almost all professional ensembles.

If we accept – as we must – that live music, be it sacred monodies, polyphony by Palestrina, or a Mozart Mass, was conceived to be performed without the aid of amplification, we must at the same time remember that the use, consolidated over decades, of ever more high-performance equipment produces recordings in which every part (at least in good-quality recordings) is carefully detailed. And if we expect the same perfection of sound in a live event it follows that

performance technique, and a part of the interpretative choices shown during a concert, must aim primarily at making intelligible to the audience every part of the musical score.



From my own experience in recording concerts, I can certainly say that this ideal situation rarely occurs, which means that I often have to add one or more accent microphones (microphones on single sections or single instruments or singers) to the main array (the panoramic microphones). This is because the main array does not pick up a clear signal from all the sections of performers. We need to remember that the main array occupies a privileged position compared with the seats in a concert hall, and this means that what the array cannot “hear”, the audience – even the people in the front row – will hear even less.

Quite often, someone from the audience will come up to me during the interval and ask to listen to something, only to remark afterwards that “it sounds better in the recording than it did live”. It would certainly improve my business prospects if I could tell them that this is all down to my expertise,

but the truth is that sometimes the recording engineer has to intervene in order to make up for the insufficient volume of an instrument or a section in relation to the rest of the orchestra, in some part of the performance or even, at times, throughout the performance.

Where professional performers are concerned, there are usually two causes of the problem.

1) When touring, music ensembles tend to take up a standard position on stage, keeping the same spaces between performers whatever the venue.

2) At times the concert venue obliges the performers to adopt an ad hoc positioning.

In both instances the equilibrium found in the practice room or the recording studio is lost in the concert performance: in the first instance because one rarely has the good fortune to perform in a place similar in acoustics and structure to the place where the equilibrium in question was reached; and in the second instance because, as should be obvious, changing position in a space unable to accommodate even standard positioning increases the risk of overshadowing some parts of the group and/or accentuating others.

Of course, there are ensembles who are able to reorganise their positioning effectively in the concert hall, but even the most expert can do nothing about it when they find themselves in a space too small for the number of performers.

3) Another highly inauspicious situation is a venue with excessive reverb. Here too, not even the most careful positioning of the performers on the stage will be sufficient to contrast a sound which lingers so long that it forms clusters, even when the programme does not include late twentieth-century classics ...

In the last article I published in *Choraliter* I discussed the

choice of location in producing recordings destined for the record industry. Personally, I feel that concert organisers should give the same thought and care to the choice of concert venue; but all too often parameters such as the acoustics of the hall and its size in relation to the number of performers engaged are merely secondary considerations, far behind such important considerations as the historic and artistic relevance of the chosen location, or of its availability in relation to more acoustically suitable venues.

A further problem, in addition to points 1, 2, and 3 above, is having to approach a piece of music without having the necessary complement of musicians to perform it – a problem which tends mainly to affect amateur ensembles.

Today we have technology which could improve these situations, in the form of amplification systems proportioned to the context we are dealing with and giving excellent sound quality. I say “could” because in concert seasons featuring only professional musicians it is unlikely that the use of electromechanical instrumentation to improve sound in the concert hall would be deemed acceptable. The statistics drawn from my work so far lead me to deduce that in this context, amateur groups are more open to compromise than professionals.

In the concert hall, when a section, a single instrument, or a soloist cannot be heard properly owing to the problems referred to above, discreet use of microphones and careful positioning of loudspeakers can very often solve the problem. Now let us examine some examples.

One of the most frequent difficulties arises when a soloist sings from inside a section of the choir or chorus rather than in front of it, and can consequently not be heard well by the audience; a dynamic microphone, such as the classic Shure SM58 positioned in front of the singer, minimises feedback and makes the voice more manageable. In my view there are two

possible solutions for positioning the loudspeakers. The first, which has a lesser visual impact, is to place a good-quality small or medium-sized speaker at the singer's feet, facing the audience; if you regulate the volume carefully, you could almost think the voice was not amplified at all. The second option involves placing two microphones on supports in a stereophonic position relative to the audience – usually at the sides of the ensemble and outside it; in this case the solo voice will be very effective, if a little less natural.

If the soloist has to move about on stage, the latter solution is the only solution feasible; and if there is a sound engineer to operate sound panning, it becomes possible to make the sound follow the singer's movements. In this case a Lavalier (or clip-on) radio microphone is the only option possible, even though a good-quality one is much more expensive than the above-mentioned SM58.

The same difficulty with volume can affect a whole section of a choir or chorus when this section is numerically smaller than the others, and the problem can be solved in a similar way; the amplifier must be placed close to the section in need – otherwise you run the risk of making things worse, not better! The type of microphones used are those described above.

In the case of a choir or chorus standing behind the orchestra and covered by it, the amplification system must necessarily be stereophonic and placed at the sides of the choir, but unless you use a close microphone system (usually one condenser microphone with a half-inch diaphragm for every four singers, two in front and two behind, keeping to the division between sections and/or parts; or one for every two singers if the choir is standing in a single semicircle) you run a high risk of getting the dreaded "Larsen effect" (the high-pitched squealing noise sometimes produced by amplification systems). Because the type of microphone system described above is normally used only by providers of large-scale recording

services, consequently increasing the cost of hiring the concert hall, often the organisers will fall back on the alternative of using panoramic microphones for each section of the choir or chorus, placing the amplifiers next to the orchestra, but while this does guarantee that the words being sung are intelligible, the audience will often get the impression that the singers are sitting on the orchestra players' laps!

Surroundings with too much reverb require a close microphone system for the choir or chorus, for the orchestra if there is one, and for the soloists, in order to pick up as much of the direct sound as possible, instead of the reflected sound which would otherwise be amplified. The amplification system has to be positioned with care, using paired medium/small stereo speakers, as many as are needed in relation to the size of the hall and its reverberation time (it is up to the sound engineer to calculate this), positioned at regular intervals, beginning with the front row of the stalls, if necessary. (Sometimes the front few rows are not as affected by excessive reverberation as are the other rows). The volume should be regulated at medium/low: the principle is the same as that applied in churches when loudspeakers are used to allow the congregation to follow the liturgy even when the acoustics are poor.

Outdoor performances may have the opposite problem: the sound is excessively "dry", and at times the volume may be insufficient.

Out of doors there are fewer sound reflections because there are no walls and/or ceilings (here I'm making a generalisation; in a cloister, for instance, there's no ceiling but the walls are there! And even a small square may cause the same complications) This means fewer problems in positioning the microphones relative to the amplifying equipment (which can be large-scale if venue and audience size allow) and the question of "dryness" of the sound can be

addressed by using artificial reverberation.

It had better be clearly noted here that where audio amplification, or audio recording, is concerned, the “do it yourself” solution is definitely not recommended, even in the (unlikely) case that the musical ensemble in question actually has the necessary equipment to deal with every eventuality. These tasks require the presence of a competent sound engineer who is used to working with the type of music being performed. An untrained or absent sound engineer – for instance, a chorister who sets up the necessary equipment and then takes his position in the choir, leaving the equipment to take care of itself throughout the entire performance (you might find it hard to believe, but I’ve seen it done ...) – can ruin a performance.

As I have already said, at a professional level you often come across musicians, conductors, and organisers who are very reluctant to make use of an amplification system. The most frequent excuses are that it spoils the visual effect, risks creating imbalance in volume (but as we have already seen, imbalance in volume can be resolved by using good equipment), and even fear of adverse reviews in specialised publications. My personal opinion is that the worst thing that can happen to a member of the audience is to be unable to follow what is happening on stage; it is impossible to appreciate even the greatest interpretation if it cannot be heard properly.

On the contrary, where school concerts are concerned, or performances involving both music and acting, whether pre-recorded music or live music supplied by orchestras of either large or small instruments, no qualms are shown and I find myself called on to help; the technology I can supply is welcomed with open arms by head teachers and conductors, not to mention producers and young performers. When the sound engineer is free to act without worrying about “purity” of performance, both music and the spoken word resound loud and clear in the theatre or auditorium hosting the event.

I have been working as a sound engineer for ten years, and for part of that time I have also dealt with classical music, and I have often obtained the best results in circumstances like these. The younger generation of musicians seems to be much more open to the use of electro-acoustic supports, so we may hope that in years to come every prejudice towards this particular branch of electro-acoustic technology will disappear, so that live music can be appreciated to the full at every performance.

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