

# LETTERS

## Why Stereophonic or Binaural Reproduction?

Sir:

The most sought-after characteristic of music reproducing systems today is realism, which means the congruence of reproduced music with the original in all of its ramifications, some of which are loudness, frequency response, and spatial distribution. There is the assumption that such a congruence is both desirable and necessary. Why?

The purpose of any musical device is to produce sounds which are pleasing. It so happens that violins, pianos, clarinets, etc., when competently manipulated by composer and artist can be made to produce pleasant effects which we call music. There is nothing sacred about these instruments—they are merely the means to an end. They are generally unwieldy means, requiring infinite patience and practice to achieve pleasant results. They are tolerated only because the music can be obtained in no better way. There are many inflexible individuals who ascribe a certain sanctity to things as they are; unable to understand real or potential changes for the better. Witness the complaints that the harpsichord should not be amplified because it is essentially a weak instrument, and things-as-they-are would lose their intrinsic balance. Since there is no immediately obvious way of making it louder of itself, then it must be forbidden to do so electronically. Also can be cited the question of opera in English; because the librettist wrote for an Italian or French audience, it has been anathema to translate freely into the language which can be understood. At the same time, there is no need to go overboard for change just for the sake of change. We want to change only if there is an advantage in doing so.

The fact that musical instruments must be of finite size to produce their sounds makes it imperative that an assemblage of instruments occupy a space in proportion to their number. As a result of this "accident," any number of methods have been devised to group the members of the aggregation in a compact and aurally balanced manner. The louder percussion instruments are to the rear; the weaker instruments are usually to the front; the arrangement is often amphitheater style. "Chamber" groups are not spread out on a stage, even if it is available. They cluster together, often facing one another, and just far enough apart not to interfere with each other's movements. Desirable auditoriums are those in which reflective but non-selective reinforcement occurs—the sound floods over the audience from the walls and ceiling.

A disagreement of long standing has been that of mike placement—close-to or remote. The argument for remote placement is that a mike in the hall would "hear" the music the same way as a listener in the same location—as though it were necessary to hear the music like a live attendee. If the acoustics were ideal, he might hear the music in a fairly satisfying manner. With several mikes scattered throughout the orchestra, and with balance then maintained electronically, the most annoying consequences of instrument size are obviated. The instruments no longer have to be spread out. The result can be ideal in that each instrument would effectively be right under the baton, and its loudness would effectively be the proper loudness. Another advantage is that instruments previously discarded because of their weakness could be reinstated. The harpsichord and the recorder—to mention two which gave way to the piano and flute despite the very rich tones of the originals—are not very appropriate instruments for "live" performances. The ratio of listeners to "canned" music to those of live music being as large as it is (and even larger when the incredible number of dilettantes are weeded from the latter) makes it apparent that the needs of the home listener should come first. Fortunately, some of the recording companies are recognizing this need.

Spatial (binaural and stereophonic) reproduction must come in for some questioning if these views are accepted. Theater organs are enormous structures, and have to be split up, parts on opposite ends of the stage. Because of this, must the home listener be subjected to the same kind of disparity? It is true that spatial systems will increase the realism by recreating, to some extent, the original spatial distribution of the source. Does this aspect of realism enhance the enjoyment of music? To accomplish this with the advocated stereophonic devices there must be a symmetrical room with fairly complete damping all around. The listener has little freedom of movement of sitting position and speaker placement is rather critical. Echoes and reverberation will destroy the effect. Only the echoes of the original room are desired. For some reason the echoes which occur in the home are dirty and much to be avoided. They reduce what remains of spatial effect after concert hall reverberation has done its work.

It is admitted that stereophonic or binaural systems are ingenious. But because a system is ingenious, represents creative achievement, and works well is not sufficient reason for its adop-

tion. We all know high-fidelity people who play all kinds of peculiar sound effects and bizarre music but who never, by their behavior, indicate any interest in music.

We know, too, of the frustration occasioned by the perplexed layman who is just unable to be impressed with the differences between his console and our super-four-way corner monoliths.

Much is to be said for a spatial system, however, in the case of radio drama. One of the great superiorities of TV plays over those on radio is the localization information of the former. Realism is desired and can be achieved by reintroducing the spatial dimension. Footsteps move across the room, a car pulls up at the left, a door opens on the right, and so on. However, there is little market for canned drama, and the likelihood of two-channel radio networks is slim.

There are numerous "reasons" for coaxial mounting of woofers and tweeters—the foremost being the desire to avoid a split source and interference. Despite the fact that ordinary homes are so live that the effect of standing waves at least equals these unwanted effects from the speaker, these are fairly important considerations. Few people are brave enough to mount woofer at one end of the room and tweeter at the other in an attempt to achieve a certain degree of spatiality. But when we put two speakers in the room, each fed from a different channel, where do all our worries about disparate sources and interference go? It cannot be claimed that the two speakers do not interfere because they are emitting something different. This would be much more true for the woofer-tweeter combination than for the spatial system. The truth is that localization is accomplished because of subtle intensity and phase differences at the ears, and unless the over-all system (including reverberation) is arranged so these special conditions are maintained, the results will either be of separated sources, or of an essentially diffuse and undifferentiable source.

The diffuse source approximates more closely the concert hall which has good acoustics than does the point source, and perhaps more so than does the two-channel system. The diffuse system—one which employs two or more speakers on one channel—is obviously simpler, cheaper, and not limited in program material as is the spatial system which relies on two complete and independent systems, special tape and tape playback mechanisms, or special discs and tone arms. Is it uncomfortable to recall the reluctant realization that music so often sounds better in other parts of the house (despite all the concern about tweeter beam-width) than in the same room with the speaker?

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*(Even with a few parts eliminated to fit it in this space, this letter is long. However, the thinking seems to be worth passing along to all of Æ's readers. Ed.)*

#### Other Reactions

Sir:

While I have not seen the following idea mentioned previously, it may only be that it is too obvious to some.

Are we not trying to achieve a goal which is just about at the end of the rainbow? The job a hi-fi system is asked to do—i.e., to make the listener feel that either the original sound source is in his living room or that he is actually at the location of the original sound source—is just about psychologically impossible. Try-



ing to make a listener believe something he knows is not so is difficult, whereas if he believes that what he is going to hear is real, a very poor reproducing system is all that is necessary to uphold the illusion. For example, vocalists with the best dance orchestras nearly always use relatively poor p.a. systems, yet it never dawns on a high percentage of the listeners at the dance that they do not hear the real live vocalist at all. The original source is nearly always completely masked by the reproducing system. I am convinced that if an audience were assembled in an auditorium in which high-fidelity speakers were placed along the front of the stage and an orchestra placed behind an opaque but acoustically transparent screen to produce the music unknown to the audience, a high percentage of this audience would report that the high-fidelity system is good but still does not quite sound real.

I do not mean to imply that we should stop trying to improve high-fi systems, but merely make the suggestion that perhaps we should re-evaluate the state of the art in this light. Maybe some who are becoming neurotic trying to make their systems sound real will be somewhat consoled. Most of the present-day systems sound fairly good to me, but no matter how good they sound, I cannot sit in my living room, close my eyes and be transferred by magic carpet to the symphony auditorium, nor does the magic carpet take me back to my living room when I see a vocalist but hear only a relatively inferior public address system.

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