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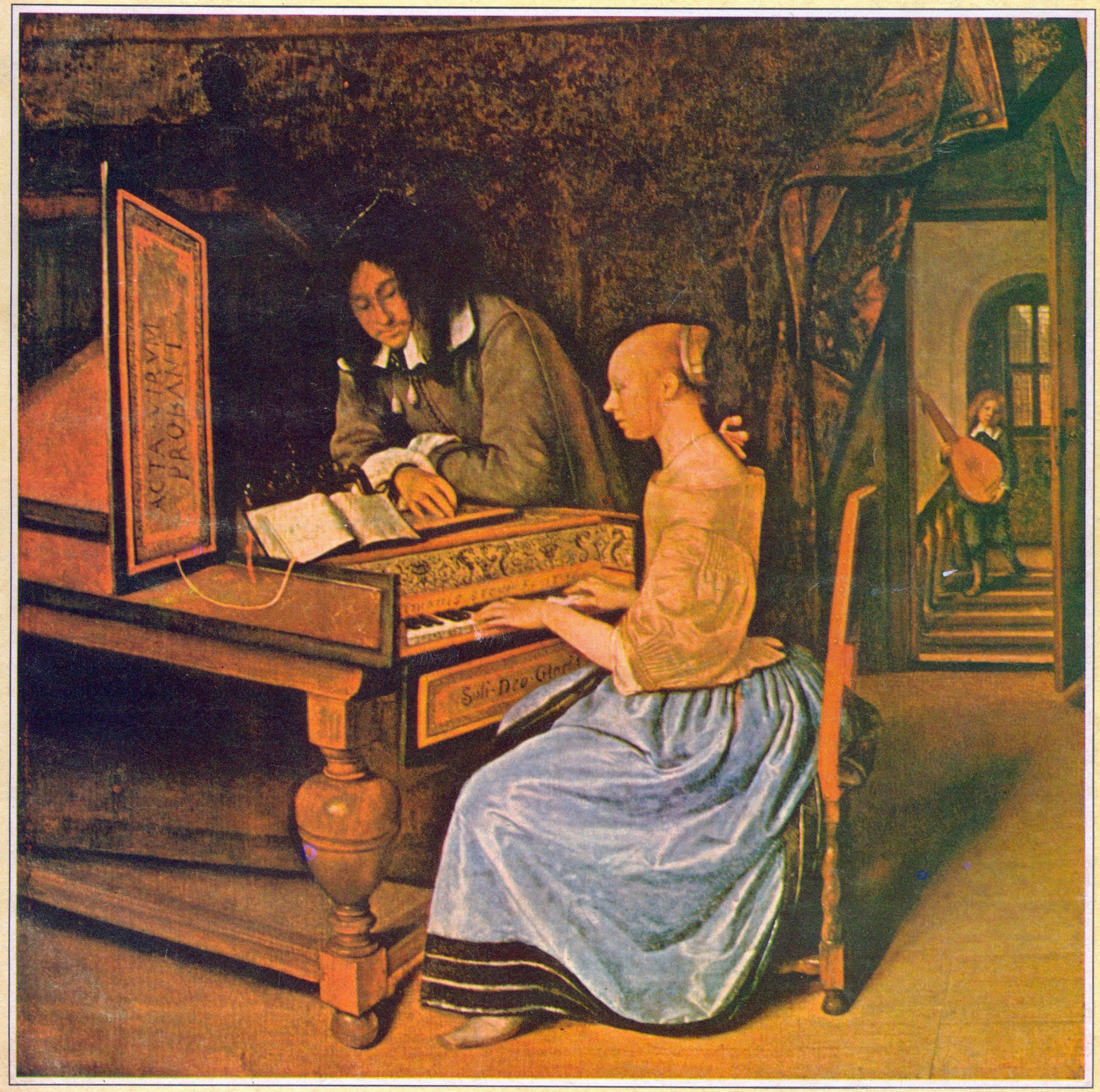
THE SENSE OF HEARING: ODD FACTS FOR AUDIOPHILES
M. PIERRE BOULEZ OF THE NEW YORK PHILHARMONIC
A SHORT HISTORY OF BELLS * MUSIC AT THE MOVIES



Louis Ouzer for Eastman School of Music

Thomas Mowrey, of the Eastman School staff, listening to a control-room playback of an experimental four-channel stereo recording of Warren Benson's Symphony for Drums and Wind Orchestra as performed by the Eastman Wind Ensemble.

FOUR-CHANNEL STEREO

A PROGRESS REPORT BY ROBERT BERKOVITZ

FOUR-CHANNEL (360-degree) stereo has for months been widely discussed—and seldom heard. However, beginning this month, Acoustic Research, Inc. is going to give millions of music listeners in the New York and Boston areas an extended opportunity to hear four-channel stereo. This new—and still experimental—audio technique, which uses four speaker systems in a room for full 360-degree reproduction, will be demonstrated by AR in Boston-area FM broadcasts which properly equipped listeners can hear at home. Four-channel 360-degree tape recordings will also be demonstrated at the AR listening rooms located in New York's Grand Central Terminal and near Harvard Square in AR's home town of Cambridge.

The FM broadcasts represent a significant technical experiment, in addition to their musical importance. The entire twenty-four-concert Saturday-night season of the Boston Symphony will be presented on *two* stereo FM broadcasting stations: WCRB-FM and WGBH-FM. Listeners to either station (in mono or two-channel stereo) will hear the same excellent sound quality as that broadcast in past years. However, those able to obtain an extra stereo receiver and an additional pair of speaker systems can be participants in an extraordinary acoustical experiment, in which the world-famous orchestra will seem to be spread around their listening rooms in the unique acoustical setting of Symphony Hall. There will be no attempt to duplicate the sound field at some hypothetical best seat; the aim will be rather to exploit the sonic potentialities of the new medium creatively. The technique for microphone pickup, broadcast, and listening arrangement was worked out cooperatively by Roy Allison and the writer, representing Acoustic Research; Richard L. Kaye of WCRB-FM; Jordan Whitelaw, Radio and Television Producer for the Boston Symphony; and William Busiek of WGBH-FM. The technique used was arrived at through evaluation of numerous recordings made during actual concerts earlier this year.

In the AR music rooms in New York and Cambridge, the medium will be four-channel, ¼-inch tape. All recording companies now own multi-channel recorders, and units capable of simultaneous recording of twenty-four channels are used regularly in some studios. However, the tapes made on such machines are *not* intended for reproduction by an equal number of amplifiers and loudspeakers; the multiple channels are used to record separately, but simultaneously, different sections of the performing group. The purpose of the multiple-track recording is to provide the producer and engineers full control over instrumental balance when the material is mixed down into the normal two-channel stereo recording released to the public.

The idea of using such recorders experimentally to make true three-, four-, or more-channel recordings for playback through as many speaker systems is not new. A recent article in the *Journal of the Acoustical Society of America* by Marvin Camras of the ITT Research Institute reports on experiments with twelve-channel recording and playback: five speakers in front, two at each side, two at the rear, and one overhead.

AR's experiments, some of which I discussed in an article in the May issue of STEREO REVIEW, began as an investigation of the extent to which two-channel stereo, rather than the quality of the components, is the major obstacle to accurate reproduction of music. And, in part, the experiments also were aimed at discovering what a listener would hear if he were placed, through electroacoustics, in a living-room duplicate of the reverberant field of the concert hall. The recordings were made using multiple microphones, playback being done with the front speakers left in their normal stereo locations and two extra speakers (driven by separate amplifier channels) set up in the upper rear corners of the listening room. The microphones in the concert hall were arranged to provide the most realistic results with such a speaker arrangement.

The idea is not different in principle from that of Camras, or of other experimenters who preceded him in various countries in earlier years. The different element is the new possibility that home listeners might soon be given the opportunity to enjoy such music reproduction. It was for this reason that AR began its experiments with four channels, in the belief that this number represents a practical limit of cost and complexity for most listeners.

Some of AR's first experiments were at the New England Conservatory of Music in the conservatory's Jordan Hall. At the writer's suggestion, Thomas Mowrey of the Eastman School of Music began experimenting with the technique, his efforts culminating in a spectacular recording of "spatial music" by composer Henry Brant, in which the musicians were arranged in various parts of the auditorium. The Eastman tape was played for several interested executives of major recording companies—and provoked considerable excitement.

IN the meantime, Acoustic Research had found an ally in a major recording company which had been investigating four-channel techniques for some time, even to the extent of having commissioned works of music for the medium. That company—Columbia Records—will supply most of the four-channel tapes AR will be demonstrating in its music rooms. Columbia has issued no statement about their experiments and is understood to have no plans to release the tapes commercially. Vanguard Records will soon be releasing the special stereo tapes that were demonstrated to selected members of the New York audio press in semi-private sessions on June 25 of this year. The Vanguard tapes will also be on hand at the AR music rooms.

The system to be used at the music rooms is one in which standard one-quarter-inch tape has four parallel tracks in the same way as the normal four-track stereo tapes. For four-track stereo, all four tracks are recorded simultaneously in the same direction and, of course, they are also played back the same way. Whether the resultant sound will be that of the immediately foreseeable future or not will depend, to some extent, on listeners' reactions to the AR demonstrations.