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MUSIC PRACTICE ROOMS

D.C. LAMBERTY
SANDY BROWN ASSOCIATES, LONDON

INTRODUCTION

Music Students spend in the region of 42 hours per week practising. How good or bad they find their practice rooms has a significant effect on how many hours they practice and, more importantly how beneficial that practice is. The careful design of such rooms is therefore critically important to the success or otherwise a school of music.

This paper is largely based on research work carried out by the author into the likes, dislikes, preferences, tendencies etc of a group of full-time students, and was carried out over a period of three months at the Royal Academy of Music and Drama Glasgow, and concentrates on the following aspects of the design:-

(a) Reverberation time
(b) Background noise levels
(c) Volume and shape

and briefly covers other items such as construction, finishes planning and services.

OBJECTIVE

The principal object is to determine the important factors in the design of music practice rooms from a user point of view, and use this information, together with other relevant facts to arrive at a set of guidelines for the design of such rooms.

METHOD OF ASSESSMENT

The method of assessment is critical when one is seeking to obtain meaningful results from a wide set of subjective opinions. The author therefore sought the help of a research psychologist in order to derive a set of questionnaires that would yield the required information.

Five ten-part questionnaires were used; the format of each one (except the first) being determined by the interpretation of, and information gleaned from, the preceeding questionnaire.

The first two sets of questions concerned many aspects of music practice rooms ranging from reverberation, aesthetics, privacy, lighting etc but the particular information concerning acoustics was repeated in both questionnaires in a different form. After these questionaires had been completed six practice rooms were surveyed in detail (Background noise, reverberation time, size, appearance, lighting etc) and the remaining questionnaires were related directly to these rooms.

The third and fourth questionnaires were primarily aimed at determining whether there were major non-acoustic factors that might influence the opinion of the students and this was followed up by a final set of questionnaires related directly to the acoustics of the six practice rooms.

At this point a fairly clear picture was beginning to emerge, but it was felt that confirmation was required and it was decided to use a method of assessing each students' reaction to a room by a system known as 'Scalogram Analysis'. As applied to this study the subjects are asked to circle the number between 1 and 7 they find appropriate in the table below.

HAPPY	1 2 3 4 5 6 7	SAD
HOT	1 2 3 4 5 6 7	COLD
WELCOMING	1 2 3 4 5 6 7	UNWELCOMING
SOFT	1 2 3 4 5 6 7	HARD
RELAXED	1 2 3 4 5 6 7	TENSE
KIN D	1 2 3 4 5 6 7	CRUEL
SYMPATHETIC	1 2 3 4 5 6 7	UNSYMPATHETIC
SOFT	1 2 3 4 5 6 7	LOUD
FRIENDLY	1 2 3 4 5 6 7	UNFRIENDLY
INTERESTING	1 2 3 4 5 6 7	UNINTERESTING

The Scalogram Rating (S.R.) in most cases confirmed the information already obtained from the questionnaires, and were compared with the objective factors already known. (R.T., Background noise levels and Volume). The S.R. was also compared with a 'Room Rating' given by the author to each room based on its state of decor, lighting, ventilation, general appearance etc. The table below shows the results obtained:-

Practice Room	S.R.	R.T.(500Hz)	Vol(m^3)	Background Noise(dBA) A	B	Room Rating
A	3.1	0.8	75	15	25	2
B	3.6	0.66	72	25	40	3
C	3.9	0.6	60	42	48	7
D	5.1	0.76	154	30	32	6
E	5.6	0.82	33	48	40	9
F	6.5	2.4	77	26	34	11

S.R. and Room Rating - lowest numbers indicate preferred room
Background Noise Levels - A from other people practicing
B general background noise (mainly from traffic)

Considering R.T. and S.R. only, one sees that the three preferred rooms (A,B and C) had R.Ts ranging from 0.6sec. to 0.8sec. Although rooms D and E had similar R.Ts their volumes are significantly different.

Of course, one should interpret these results with great caution but considering volume and S.R., the preference for rooms A, B and C may well be connected with the volume and R.T. Clearly, Room F which has a similar volume but a much higher R.T. is unsatisfactory.

CONCLUSIONS

Various tentative conclusion were drawn from the information obtained concerning construction, H & V, finishes acoustics etc. The principle ones were as follows:-

REVERBERATION TIME

On average students preferred to practice in fairly large rooms (60-70m^3) with a reverberation time of about 3/4 sec.

This was originally suggested by the answers obtained in the first and second questionnaires and substantiated by the same students when asked more detailed questions about the six rooms surveyed. Further questioning after the Scalogram Ratings had been taken showed that about 65% of the students felt that rooms with a substantially lower R.T. (in the region of .5sec) were more beneficial to practice in, but they

generally felt that they could only practice in them for a short time, as not only did they find it most discouraging, but also, particularly for 'brass' students, extreamly arduous. The optimum design would be a room whose R.T. could vary from say .5sec. to .9sec. and, although such a large variation is not practical in a relatively small room, every effort should be made to achieve as great a variation as possible by simple means such as heavy curtains, sliding panels etc.

BACKGROUND NOISE LEVELS

Almost all students (92%) agreed that the sound of other people practising, particularly on the same instrument as their own, more disturbing than any other background noise. Continuous traffic noise at 45dBA for example, was found to be less disturbing than another person practicing at 23dBA. It is therefore recommended that the design should be such that the background noise from another person practising is at least 10dBA lower than the continuous background noise level whether it be traffic noise or ventilation noise. Although traffic noise levels as high as 45dBA were not found to seriously affect practise, a level of 40dBA is recommended.

The following sound levels were recorded at a distance of 2 metres. (The students were asked to play a short passage containing the maximum dB output for the instrument

Voice-Female (Soprano	-86-102dBA	Clarinet	- 64-86dBA
Voice-Male (Tenor)	-64-98dBA	Bass Clarinet	- 60-83dBA
Voilin	-65-76dBA	Trumpet	- 55-90dBA
Pianofonte	-64-78dBA	Trumbone	- 61-90dBA

References:-

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