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Intensive and Durative Aspects of the Interpretation of a Musical Score

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threshold for perception of temporal differences as determined by such as the eyes. By means of specific directions these long fixations have been voluntarily reproduced in the eye movements of normal good readers, during oral readers.

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STUTTERING IN RELATION TO VARIOUS SPEECH SOUNDS

WENDELL JOHNSON AND SPENCER F. BROWN

Thirty-two stutterers read over 300,000 words, stuttering in relation to over 30,000 of them. Stuttering was analyzed with reference to its relative frequency in relation to specific sounds, and conclusions were drawn with reference to the problem of the precipitation of a moment of stuttering.

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INTENSIVE AND DURATIVE ASPECTS OF THE IN- TERPRETATION OF A MUSICAL SCORE

ARNOLD SMALL

The purpose of this study was to determine how closely the violinist follows the printed score in assigning temporal and intensity values to notes and to demonstrate some ways in which duration and intensity are utilized in stress and phrasing.

The strobophotographic technique has been utilized in the analysis of a performance by the writer of Bach's Air for the G-string. The intensive and durative factors discussed here are extracted from this analysis.

An exact division of the duration of the measures was made into parts corresponding to the printed note values. These are compared with time values actually given the notes in performance.

Of the forty-four notes so treated only six show exact correspondence between computed and performed durations. Thirty deviated three-twentieths of a second or less from the mathematically determined values. This is below or so very near the average

the Seashore tests that these deviations may be considered of no significance individually. Collectively, however, they assume importance when it is considered that proximity and direction of successive temporal deviations, due to their cumulative effect, offer many possibilities in phrasing through temporal contrast even with deviations which are individually subliminal.

The most significant underholding, with but one exception, occurs on long notes of not less than two seconds duration.

The most significant overholding occurs on both long and short notes. It occurs most frequently, however, on notes under one second in duration but with the greatest extent on notes of about two seconds duration. The greatest extent of overholding is only approximately half of that found in the individually significant underholdings.

The maximal average intensity for a single tone is found at middle C sharp and within a whole-tone of it on either side. In previous studies the writer has found this frequency region to be the one of strongest resonance in the violin, the fundamental air cavity resonance. The minimal average intensity is found at the beginning of a crescendo and culmination of a diminuendo.

The prolonged crescendo on the initial note covers a range of twenty-seven decibels. The remaining changes in dynamics range from five to sixteen decibels, the average of which is ten. Not only are all of the dynamic indications of the score carried out but three additional gradations of similar types are added.

The maximum intensities do not correspond with the natural primary and secondary stresses of the measure, except on the secondary stress of measure five. Furthermore, neither do the significant overholdings. On the contrary, three of the most significantly underheld notes do fall at points of primary stress. It may be doubted that this creates a primary stress however, for the note's duration even with the underholding is far beyond the limit found by Bolton to be necessary for establishing or maintaining a rhythmic figure. Its purpose is probably to prevent melodic stagnation.

Such a function as this just mentioned would serve in phrasing, therefore, to set out the phrase unit by bringing its internal units into more immediate temporal relationship. In the opposite direction, overholding is utilized in phrasing for drawing out the climax of the phrase and broadening cadences. The function of intensity in phrasing is clearly exemplified by the contour of the intensity curve where each dynamic grouping portrays a phrase.

In conclusion, it has been found that:

- (a) The violinist deviates from time values of the score over eighty per cent of the time.
- (b) The individually significant underholding occurs on long notes.
- (c) The individually significant overholding occurs on both long and short notes.
- (d) Underholding is twice as great in extent as overholding.
- (e) Maximum intensity is found in the region of middle C sharp, the strongest resonance region of the violin.
- (f) The average range of intensity is ten decibels but a range of twenty-seven is possible.
- (g) Neither intensity, overholding, nor underholding is significant in establishing the primary and secondary stresses of the measure.
- (h) Intensity and temporal over and underholding play a definite part in phrasing.

Table I—*Deviations of note duration in performance from calculated values according to the score (in seconds).*

Measure	2	3	4	5	6
Note No.					
1	—	—1.25	—1.30	—0.70	—0.05
2	0	0	+0.20	+0.15	+0.05
3	—0.25	+0.05	—0.10	+0.05	+0.05
4	—0.10	—0.20	0	—0.05	0
5	—0.15	+0.05	—0.05	0	+0.15
6	—0.10	—0.15	—0.15	—0.05	+0.45
7	—0.10	+0.25	+0.15	—0.05	+0.20
8	—0.35	+0.30	+0.25	0	+0.30
9	—0.10			—0.05	+0.05
10	+0.35			+0.05	

Table II—*Deviations of average intensity per note from mean intensity of whole performance (in decibels).*

Measure	2	3	4	5	6
Note No.					
1	—7	—4	—3	—2	0
2	+2	—2	—4	+1	0
3	+3	—2	—1	+3	—2
4	+1	—2	0	+8	+2
5	+3	+3	+4	+4	+3
6	+2	+7	+5	+6	+3
7	+1	0	+2	+4	—2
8	+2	+1	0	0	—8
9	—7			+1	—10
10	—9			+2	

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