The Effects of Different Saxophone Reed Varieties on Tonal Harmonic Response

The purpose of this experiment is to determine if there is a difference in sound produced between four different varieties of saxophone reeds. In this case, four Vandoren jazz varieties were tested: Java Red, Java Green, ZZ, and V16. An 'artificial blowing machine' was engineered to eliminate the need for human subjects and the variability that comes with it. With this, consistent relative airflow and pressure were accomplished alongside the ability to replace reeds from trial to trial. Using a microphone and Vernier software, a frequency table was generated, amplitudes of the fundamental pitch and the first two overtones were taken, and results were analyzed.

It was hypothesized that, by using different reeds, the sound produced by a saxophone would be different, giving each reed quantifiable characteristics. The hypothesis was accepted after utilizing descriptive statistics and the ANOVA test of significance to compare the findings of each reed. Across the fundamental pitch and first two overtones, definite patterns were apparent. The proportions of the amplitudes of the harmonics were different across the four reeds. Whether or not a reed was filed, in addition to the style in which it was cut, changes its vibrational patterns, thus producing a different sound quality.

Information obtained from this research is beneficial to all woodwind players who find the process of finding the 'perfect' reed too tedious. The results can also educate those who are inquisitive about how an instrument's sound is produced, and how it can change based on the reed's structure.

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