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“Analysis of Variance (ANOVA)” is undoubtedly one of the most used and most useful techniques in statistics, but it may be one of the least understood procedures that nonstatisticians use. My experience is that when ANOVA is discussed in elementary statistical texts or taught in methods courses, particularly to nonstatistics majors, there is very little attempt to clearly state what *variance* is being analyzed. Students who take these courses often do not even realize they are analyzing a variance in an ANOVA so the words do not imply any special meaning.

It seems to me that there are two aspects to this: (1) a model that contains, means, variances and covariances; and (2) a statistical analysis of this model (this is where ANOVA comes in if appropriate for a statistical analysis of the model under study). It is important to precisely state each. Writers often tend to use the same words to describe the model and the statistical analysis of the model.

My understanding of what Fisher meant when he used ANOVA to analyze means is the following: To test a null hypothesis of equal means there are two models (1) the original model, and (2) the model specified by the null hypothesis. An estimate of the variance is computed for each model and if the estimates are sufficiently different, the null hypothesis of equal means is rejected. If this is what Fisher meant, then he was indeed *analyzing a variance* and by ANOVA he