

A STUDY ON WELL-TEMPERED AND JUST TONE SCALES -
A MORE CONSONANT KEYBOARD INSTRUMENT?*

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So far it has been generally held that the tone quality of just intonation harmony is perfectly "consonant" and superior in "naturalness" to equal temperament harmony, but the number of different tones in the scale of just intonation is so great that it is simply impractical to build instruments for use in the just scale. As the result, equal temperament has dominated in the history of development of European music. The present-day electronics and computer technology seem to have made it worth while to reconsider the problem. It may be feasible now to construct a keyboard instrument that appears much like a piano to the player but produces sound in the just scale, provided that we can formulate appropriate algorithms for selecting and interpreting tone combinations to be taken as consonant harmonies. Essential problems involved in this principle are discussed, particularly in respect to discontinuities encountered in harmony to harmony transitions and the consequent sense of instability. In this connection, quantitative measures for partially effective "consonance" and "naturalness" are also tentatively proposed.

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