

CHAPTER OVERVIEW

14: Musical Scales

Unlike the human voice (which can make any pitch in a large range of pitches) for many instruments once the decision about how to construct the instrument is made, there are a limited number of pitches it can produce. For example, once the holes in a flute are drilled the flute can only make a certain set of notes (although for some instruments the musician can often 'bend' a note by changing the position of the lips and or fingers). This set of notes is called a scale and we would like to have a scale (or set of notes) where we get the greatest number of combinations that sound good together. We also would like to standardize the scale in such a way that if we build other instruments, two instruments playing together can play the same pitch. This turns out to be more difficult than it would seem. The choice of scale is arbitrary; we can choose any combination of notes that we like and in fact some cultures have chosen scales very different from the ones used in western music. However there are advantages and disadvantages for any of these various choices, as explained in this chapter.

Key Terms:

Scale (Pythagorean, Ptolemaic, Equal-tempered), mode (or key), septatonic, pentatonic, the problems of changing key and changing octave, the problem of fixed tuning for pianos and tube based instruments, tone, semitone, cents, temperaments, Rainsback curve.

14.1: Musical Scales

14.1.1: The Pythagorean Scale

14.1.2: Equal Temperament

14.1.3: Temperament Simulation

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