1117-00-505 **Adrian P Childs*** (`apchilds@uga.edu`), Hugh Hodgson School of Music, 250 River Rd, Athens, GA 30602-7287. *Musical and Mathematical Explorations of a Voice-Leading Graph of Referential Collections and Its Interesting Subgraphs.*

Musical scales (here termed "referential collections") can be defined by a variety of musical or mathematical properties. This paper focuses on the family of 29 referential collections that emerges from two restrictions: that scale steps exist as only whole- or half-steps in chromatic space; and that consecutive half-steps are not permitted. This family—comprising 12 diatonic, 12 acoustic, 3 octatonic, and 2 whole-tone collections—can be represented by a simple, connected graph. Vertices of the graph are labeled with the 29 collections. Edges connect vertices whose collections exhibit one of two common voice-leading relations: the alteration of a single pitch class by one half-step (termed P1 by Douthett and Steinbach 1998); or the splitting of a single pitch class into its neighbors one half-step away (termed split/fuse by Callender 1998).

For any pitch-class set X, an associated induced subgraph can be formed from the vertices labeled by the referential collections of which X is a subset. The properties, symmetries, and musical implications of these subgraphs—which are always connected (unless trivially empty)—will be explored through multiple examples. (Received January 19, 2016)