

Melodic Expectation of Atonal Melodies

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A method for automatic generation of atonal melodic sequences is implemented after the model of “melodic expectation” proposed by musicologist Elizabeth Margulis (2005.) Margulis’ model assigns weightings to expected melodic continuations of a reference melodic-interval. The weightings are defined by the following four factors: stability, proximity, direction and mobility. Stability refers to the rating of pitches according to their tonal function; the other factors are used to rate and describe the continuation movement of a melodic line. Since I wanted to use the model to explore the formation of melodic sequences in an atonal context, only the three remaining factors are employed (proximity, direction and mobility.) This atonal model creates all possible melodic continuations of a melodic-interval seed. Then it rates and orders (from high to low, or from more expected to last expected) the results from where to get the following note of a generated melody. The user can dynamically decide the re-ordering of the ratings according to three different distributions (see blue squares on Figure 1), so a random factor will decide which portion of the ordered-list-of-rating is going to be favored at each new generation. Once a ‘path of distribution’ is decided (encoded in a list using the symbols: +, = or -,) n number of notes are generated.

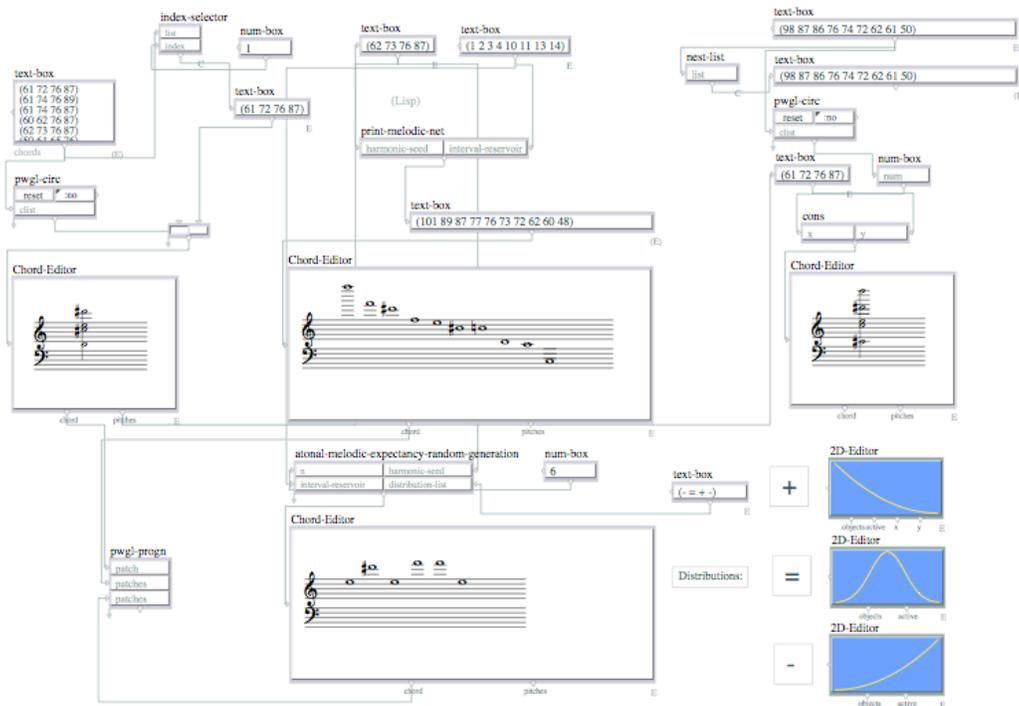


Figure 1

At each generation, the terminal of the program prints an ‘absolute’ or ‘non-user-distributed’ net of melodic relations, to help the monitoring of results. This net shows the interconnectivity of melodic values and their allowed transition movements (Table 1). The net also tests the ‘fitting’ of the generated melody in relation to a seed chord, so that all the melodic results are plausible *melodizations* of that given chord. The testing in this case double-checks that all the intervals of the melodic line and their relations to the chord-seed are in strict accordance to a user definable *interval-set*, so a specific interval selection will determine both, the resultant *color* of the melody and that of the chord-melody relation.

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PRINT-MELODIC-NET
(98 (61 72 76 87 98))
(87 (50 61 62 72 74 76 86 87 98))
(86 (61 72 76 86 87))
(76 (50 61 62 72 74 76 86 87 98))
(74 (61 72 74 76 87))
(72 (50 61 62 72 74 76 86 87 98))
(62 (61 62 72 76 87))
(61 (50 61 62 72 74 76 86 87 98))
(50 (50 61 72 76 87))

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Table 1

(The first number of each row is a melodic pointer that can continue to any of the midi-note values of the subsequent list. For instance, if a melodic transition between midi-values 98 and 50 is desired, the melody should transit first to another midi-value (possibly 61, 72, 76 or 87) before reaching the desired target (50), since a direct connection between values 98 and 50 is not allowed by the net.)

References:

Margulis, E. H. (2005.) A Model of Melodic Expectation. *Music Perception* 22, (4): 663-714.