4 Ascents for James Tenney

-Michael Winter **(2007)**

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For all of these pieces, instrumentation is variable (realizations that implement electronics are also allowed) and in the notation, the horizontal axis is proportional to time and the vertical axis is proportional to pitch. The pieces are also infinitely variable in many other respects[1]. For *Rise I*, an automatic score generator is either included with the score package or can be obtained. The score generator[2] is a computer application written in Java that allows the user to define the variables of the piece (outlined in the appendix) and outputs a unique realization. *Rise II – IV* share the same score as they undergo the same process but have different sets of pitches with certain types of relationships. The appendix also includes mathematical instructions to build these sets.

Performance Instructions

Rise I

Rise I comprises several sections each of the same length of time to be predetermined by the ensemble. These sections are represented on the page between the sets of notes that are vertically aligned. Throughout the piece, the black lines that are rising indicate suggested glissandi[3]. Any instruments that can perform parts of these glissandi can play them starting and stopping at any point so long as they enter and exit imperceptibly. The written notes give reference points for the suggested glissandi. They also indicate suggested tones of definite pitch that can be played by any instruments throughout the time indicated by the gray lines that extend from the notehead[4]. However, the fundamental should be sounding at all times. The tones of definite pitch should be longer in duration at first and slowly get shorter thus increasing the temporal density throughout the piece. Performers should also enter and exit these tones imperceptibly with one exception. This one exception is the points in time represented by where the noteheads are placed on the page, which indicates when the glissandi coincide with the written notes. At these points, all instruments not performing a glissando should simultaneously initiate one of these tones with a strong accent followed by a slow decay to articulate the chords. When the final destination chord is reached, all instruments should play the tones that compose the chord and then slowly fade out to end the piece.

Even though the individual performers enter and exit imperceptibly, the general dynamic of the piece should start soft and get louder to the final chord, which is composed of tones with pitches that are equivalent to the final destination of the suggested glissandi. The ensemble should attempt to play as much of the material presented in the score of a realization as possible by trying to play any part of the suggested glissandi and any of the tones with definite pitches that are *not* already sounding. Also, every parameter of the piece should change and develop fluidly from beginning to end.

Rise II – IV

As in *Rise I*, the ascending black lines indicate suggested glissandi, which, unlike *Rise I*, are linear pitch glissandi. Any instruments that can perform parts of these glissandi can play them starting and stopping at any point so long as they enter and exit imperceptibly. In between any two given glissandi, performers can play tones of definite pitch from the pitch set corresponding to the number written between the black lines. For example, if the number 3 is written, then tones with pitches from the set S_3 may be played. Though these sets, which are infinitely variable, may be defined according to the mathematical instructions in the appendix, the notes written on the first and last page are provided examples that satisfy the mathematical instructions[5]. The tones with definite pitches should last approximately the same length even though they may start and end at any point within the rising black lines. Performers should also enter and exit these tones imperceptibly. The conglomerate timbre of a group of instruments playing a certain pitch set should be distinct from the timbre of the group of instruments playing an adjacent set.

Peak dynamics of any sound are determined based on the verticality of a tone's pitch[6]. It is not necessary to play the entire pitch range suggested by the score. An ensemble may choose to play within any range of three or more octaves and can transpose this range by any amount. If the ensemble does not play the entire range presented in the score, then the dynamics should be scaled so that tones played near the center of the range are loud and get softer as they deviate from the center till, by the outermost parts of the range, tones are primarily soft.

In general, except for the rising effect, the piece should feel relatively static. Tones should be uniformly distributed in time and across the pitch space. Also, the middle section of the piece may be repeated any number of times.

[1] In keeping with this, any realization of *Rise I – IV* can be transposed by any amount.
[2] The score generator also allows users to format the score. For example, the user can select individual notes on the screen to change the clef and the note spellings. The title and page numbers have been added afterwards to the included score.
[3] The suggested glissandi are calculated by functions over time outlined in the appendix.
[4] A way to calculate the available times of these tones is also outlined in the appendix. The number written above each notehead represents a deviation in cents (one-hundredth of a tempered-semitone), from the written pitch and the ratio written below represents the frequency relationship of that tone to the fundamental of the piece.
[5] In the provided pitch sets, all pitches are transposable by octaves even though there are sets that can be defined that may be transposed by powers of intervals other than an octave (see appendix). Also, blank staves are provided to write in one's own set of pitches.
[6] This is marked by dynamics and hairpins preceding each section of the score.

Appendix

Rise I

The variables are as follows: n = numerator of the first interval (the first interval will then be $\frac{n}{n-1}$, c = current time, v = voice, t = time to final chord, and s = time per section such that $\frac{t}{s} \in \mathbb{Z}$. The fundamental sounds throughout the piece. For each rising voice, v from 1 to $\frac{t}{s}$, the pitch (in cents from the fundamental, which is 0 cents) of the glissando over time is written as $f(c) = 1200 \log_2\left(\frac{nt + tv - sc}{nt - sc}\right)$ starting from $c = sv$ to the final destination chord at $c = t$. The chords are accented when $\frac{x}{s} \in \mathbb{Z}$, but may sound before or after this point such that, one by one, pitches of tones from one chord are replaced by pitches of tones from the next chord from low to high and such that the starting pitch of the entering voice/glissando does not sound until that voice enters.

RISE II ($\mathbb{Q}$-rise)

$S_1, S_2, S_3, S_4, S_5, S_6, S_7$ are sets created from $\left(\text{a fundamental frequency}\right) f \in \mathbb{Q}^+$ such that

$S_i = \left\{f, f\frac{d_i + 1}{d_i}, f\frac{d_i + 2}{d_i}, \ldots, f\frac{2d_i - 1}{d_i}\right\}, d_i \in \mathbb{Z}^+$, and $d_1 < d_2 < d_3 < d_4 < d_5 < d_6 < d_7$

and for any d_i and d_j, d_i and d_j must be coprime.

All frequencies are transposable by octaves, a frequency ratio of $\frac{2^p}{1}$ or $\frac{1}{2^p}$ such that $p \in \mathbb{Z}^+$.

RISE III ($\mathbb{R}$-rise)

$S_1, S_2, S_3, S_4, S_5, S_6, S_7$ are sets created from $\left(\text{a fundamental frequency}\right) f \in \mathbb{R}^+$ such that

$S_i = \left\{f, f\left(\sqrt[r_i]{n_i}\right)^1, f\left(\sqrt[r_i]{n_i}\right)^2, \ldots, f\left(\sqrt[r_i]{n_i}\right)^{r_i - 1}\right\}, n_i \in \mathbb{Q}^+, r_i \in \mathbb{Z}^+$, and $\sqrt[r_1]{n_1} > \sqrt[r_2]{n_2} > \sqrt[r_3]{n_3} > \sqrt[r_4]{n_4} > \sqrt[r_5]{n_5} > \sqrt[r_6]{n_6} > \sqrt[r_7]{n_7}$.

If for any n_i and n_j used for the composition of any S_i and S_j where $n_i \neq n_j$,

then the corresponding r_i and r_j must be calculated such that $S_i \cap S_j = \{f\}$;

else if for any n_i and n_j used for the composition of any S_i and S_j where $n_i = n_j$,

then the corresponding r_i and r_j must be coprime $\left(\text{this results in } S_i \cap S_j = \{f\}\right)$.

All frequencies are transposable by a frequency ratio $\frac{n_i^p}{1}$ or $\frac{1}{n_i^p}$ such that $p \in \mathbb{Z}^+$.

RISE IV (T-rise)

$S_1, S_3, S_3, S_4, S_5, S_6, S_7$ are sets created from $\left(\text{a fundamental frequency}\right) f \in \mathbb{R}^+$ such that

$S_i = \{f, fm_1, fm_2, \ldots, fm_{n-1}\}, m \in \mathbb{R}^+, |S_1| < |S_2| < |S_3| < |S_4| < |S_5| < |S_6| < |S_7|$, and $S_1 \cap S_2 \cap S_3 \cap S_4 \cap S_5 \cap S_6 \cap S_7 = \{f\}$.

All frequencies are transposable by a frequency ratio $\frac{m_n^p}{1}$ or $\frac{1}{m_n^p}$ such that $p \in \mathbb{Z}^+$.

Or... mix any of the ways to compose S_i from *Rise II – IV* such that

$|S_1| < |S_2| < |S_3| < |S_4| < |S_5| < |S_6| < |S_7|$ and $S_1 \cap S_2 \cap S_3 \cap S_4 \cap S_5 \cap S_6 \cap S_7 = \{f\}$.

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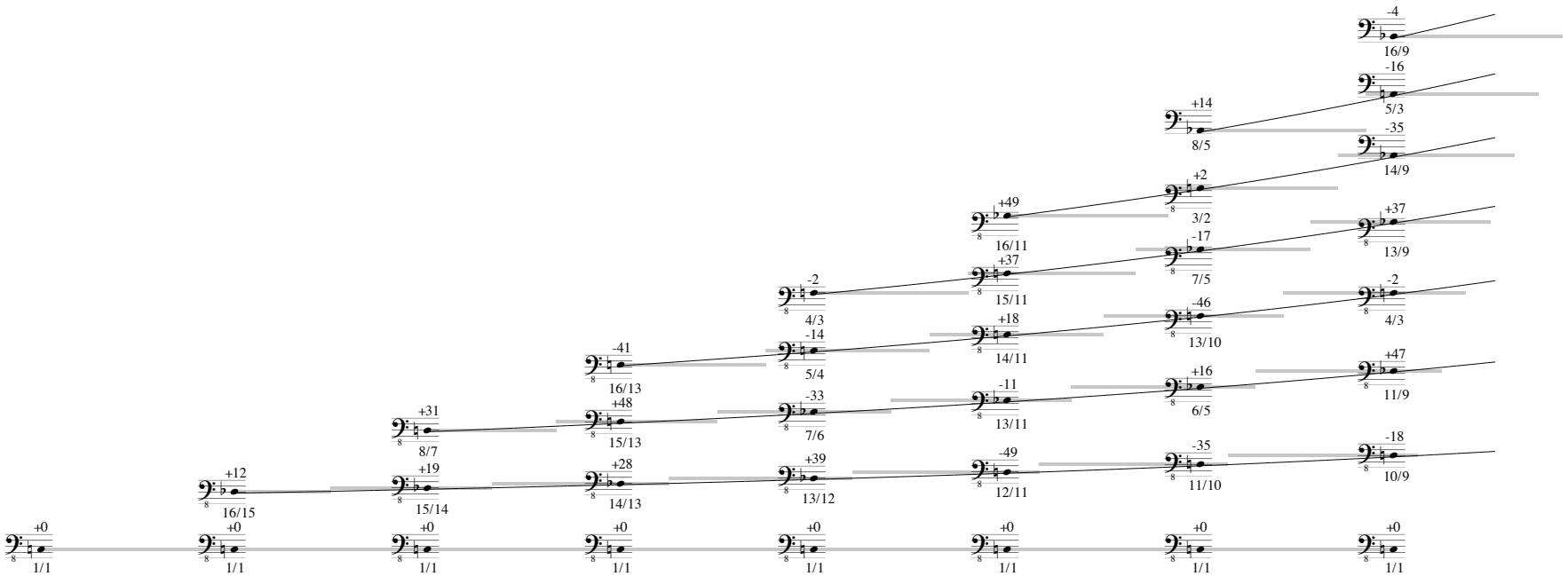
Rise I

The font in this realization is small so that the entire score can fit on two tabloid-sized pages. However, the score generator provides many features that allow the user to manipulate the format of a generated score.



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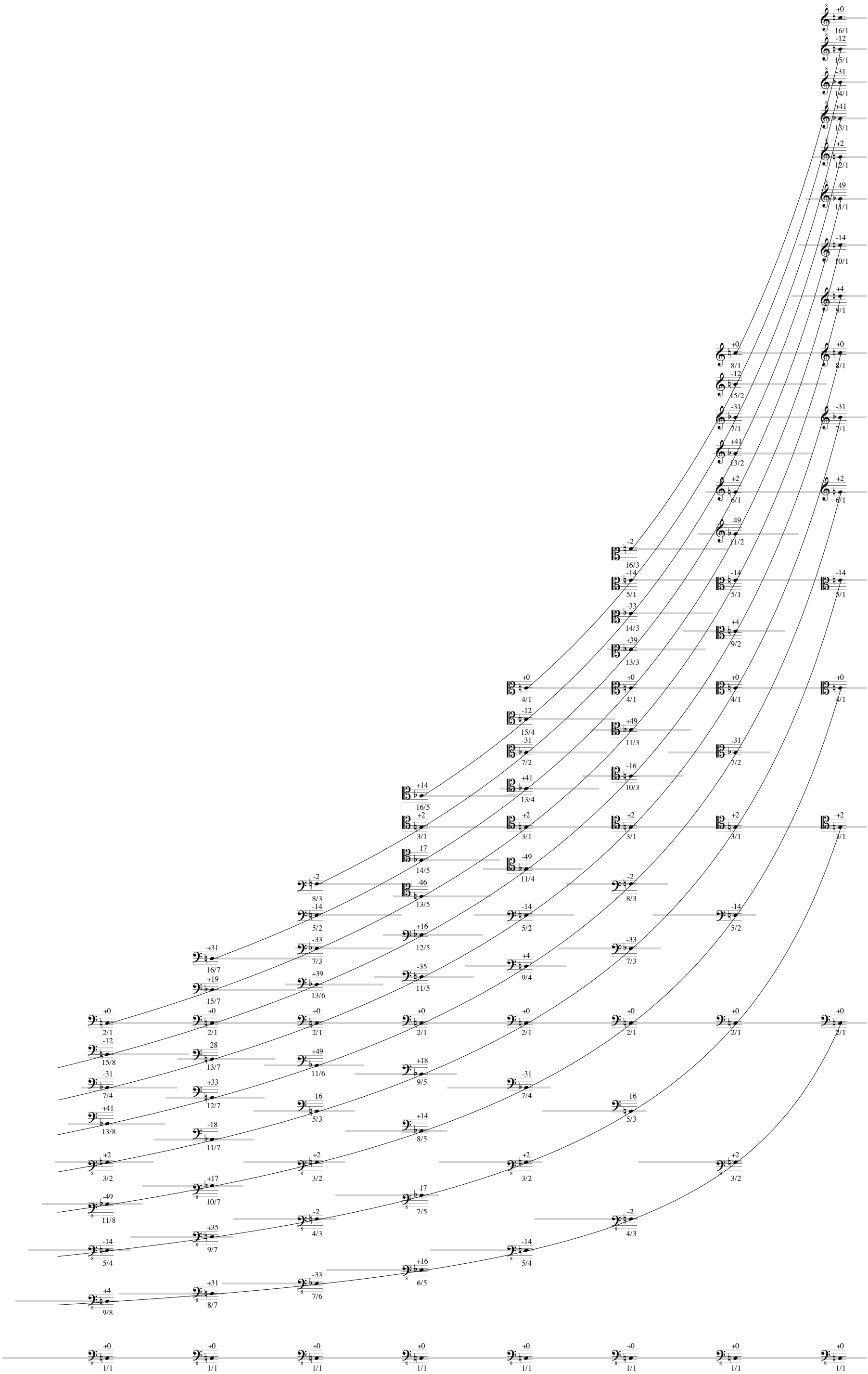
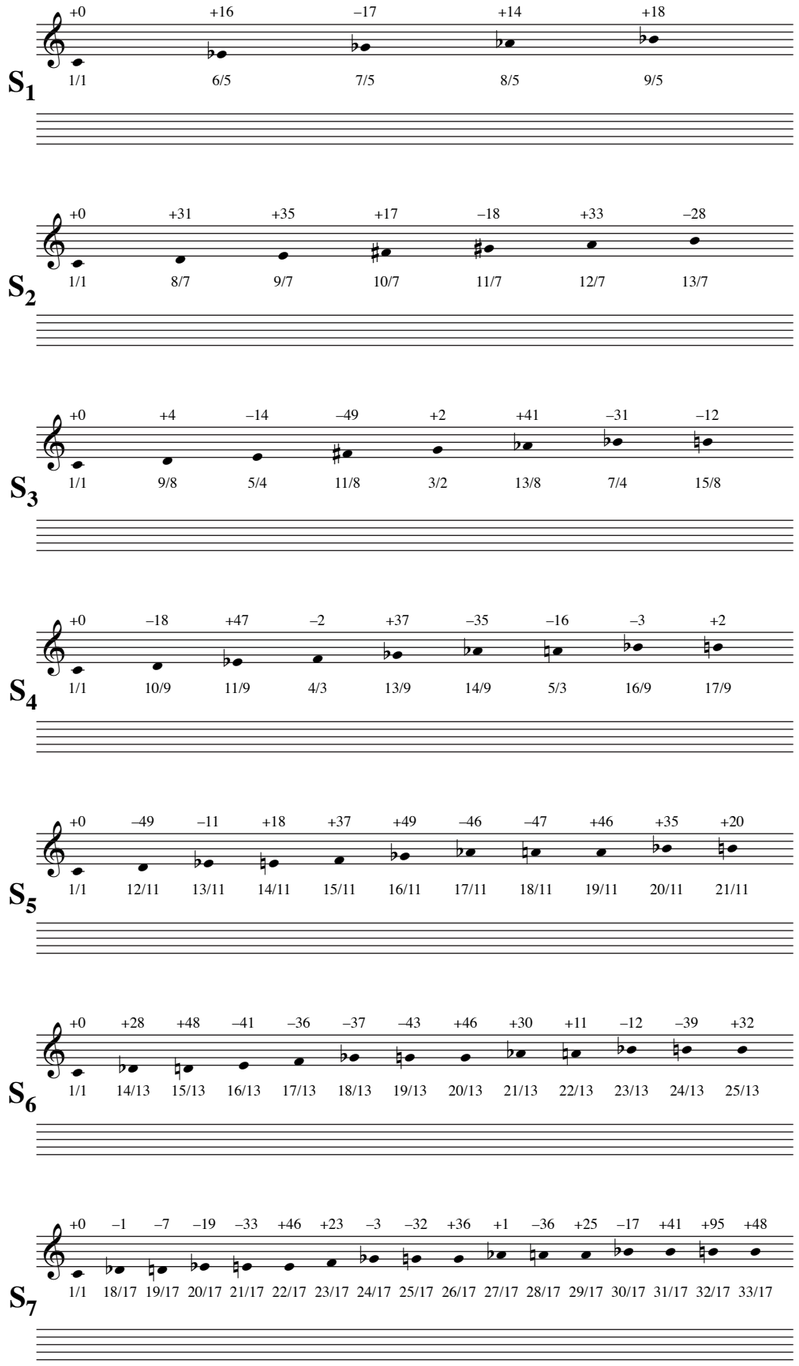
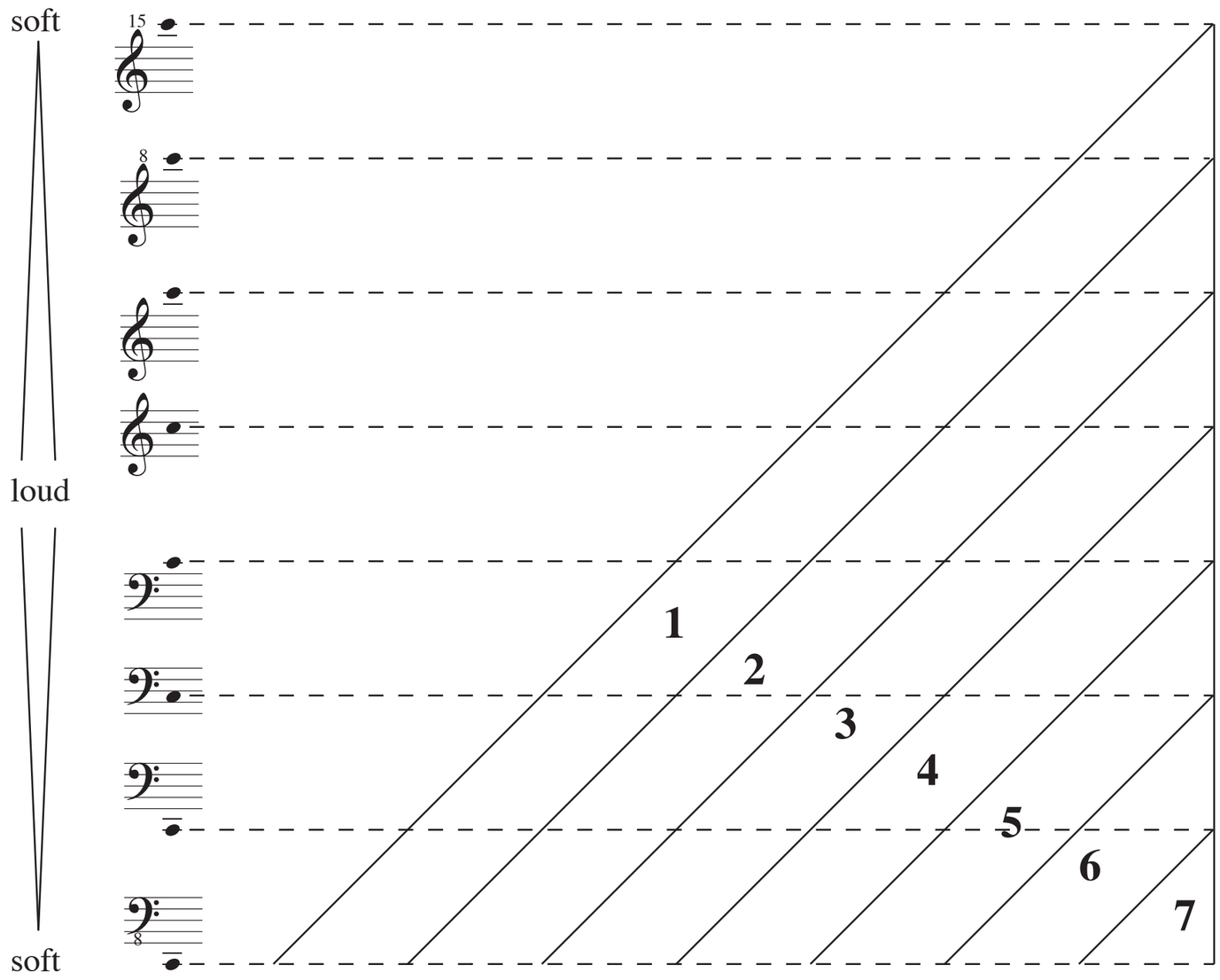
fade out final chord over a long time.



- mbw (2007)





*Example of pitch sets for *Rise II* from *4 Ascents for James Tenney -mbw (2007)*

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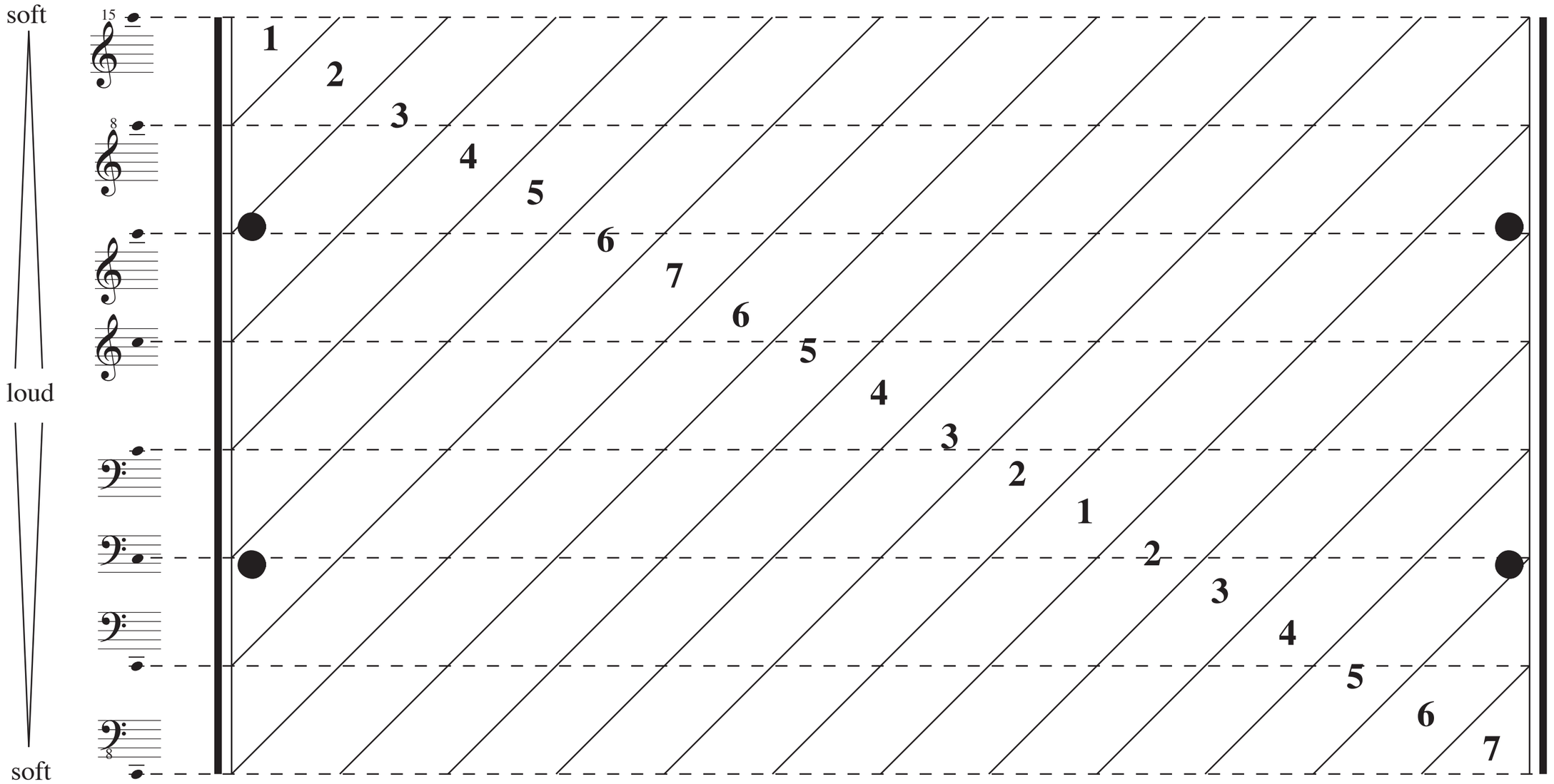
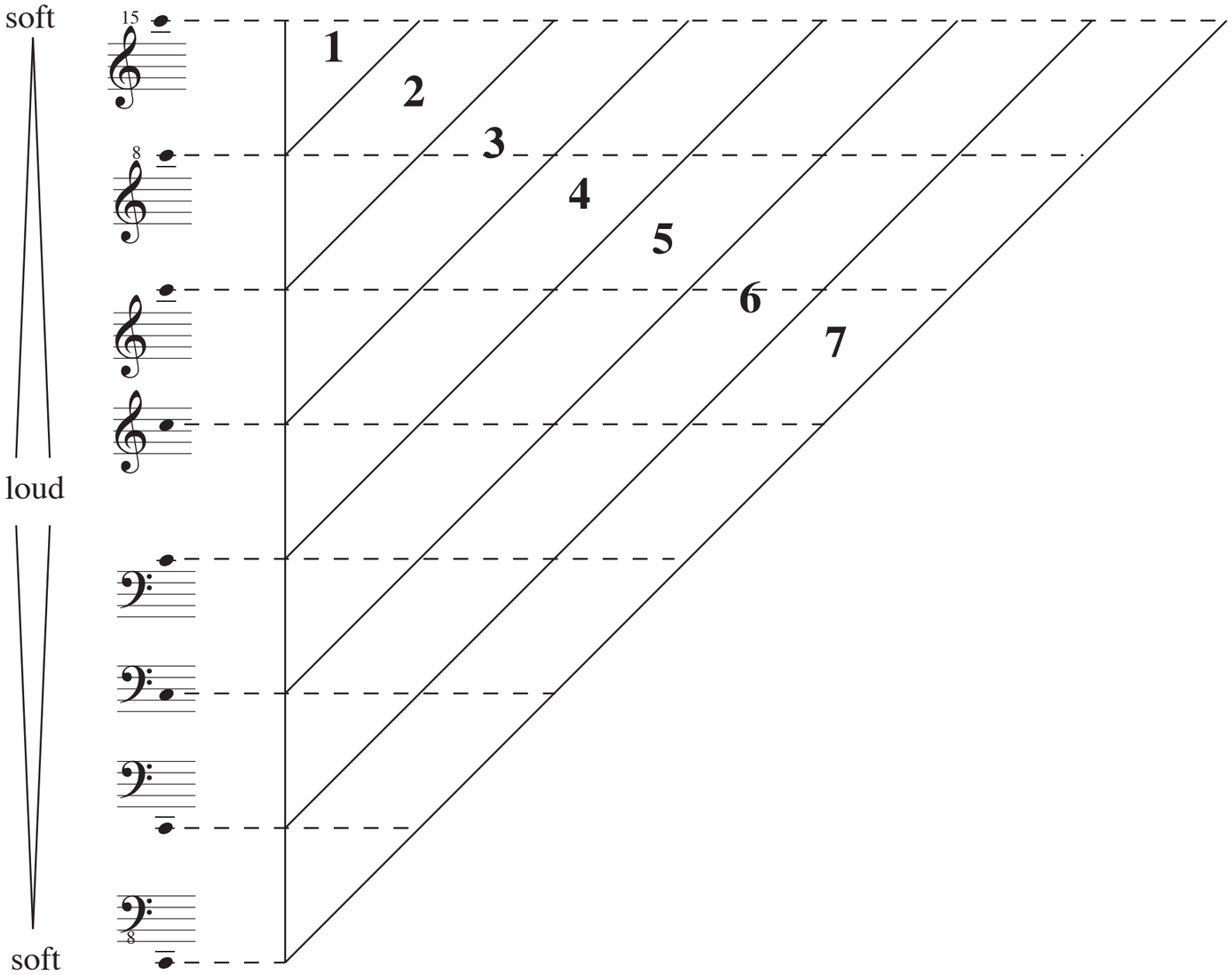
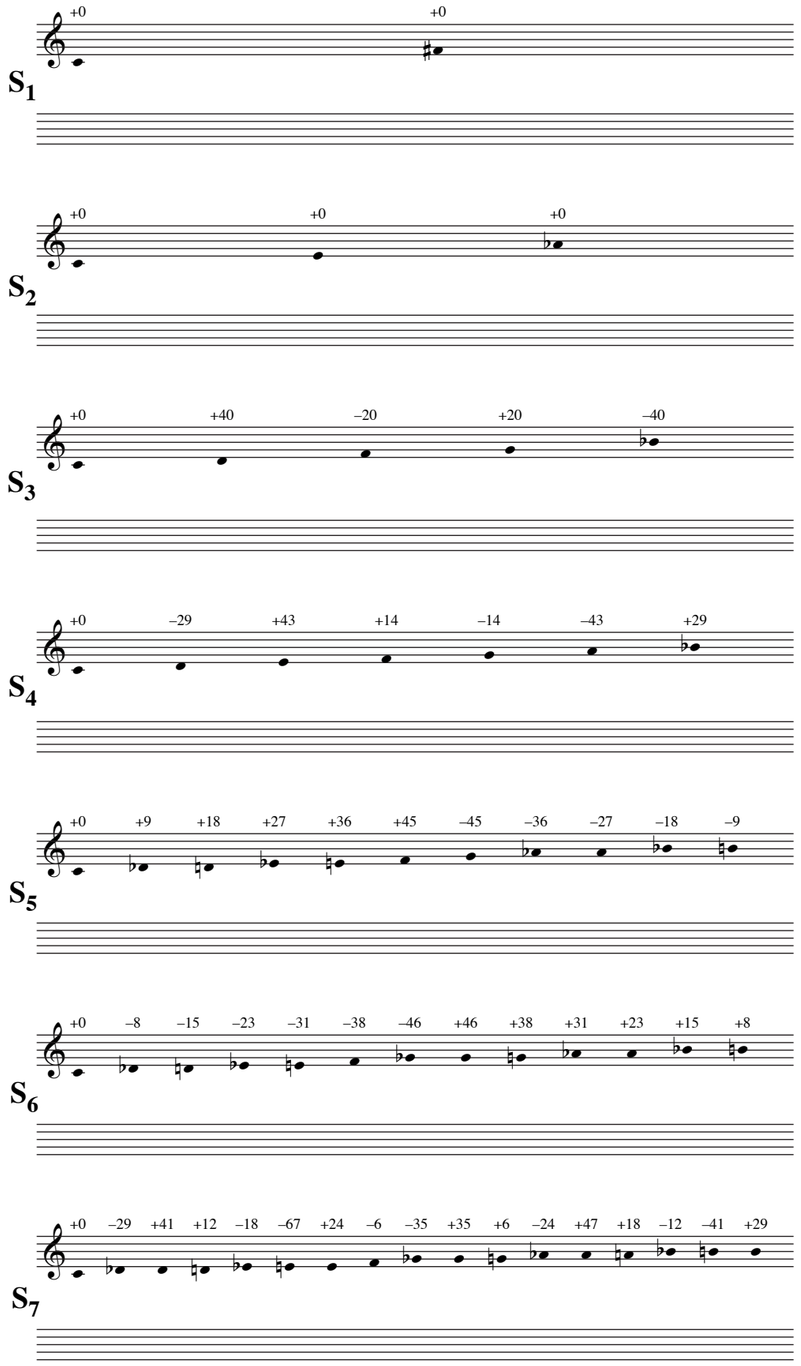


Rise II - IV

- mbw (2007)





*Example of pitch sets for *Rise III* from *4 Ascents for James Tenney -mbw (2007)*