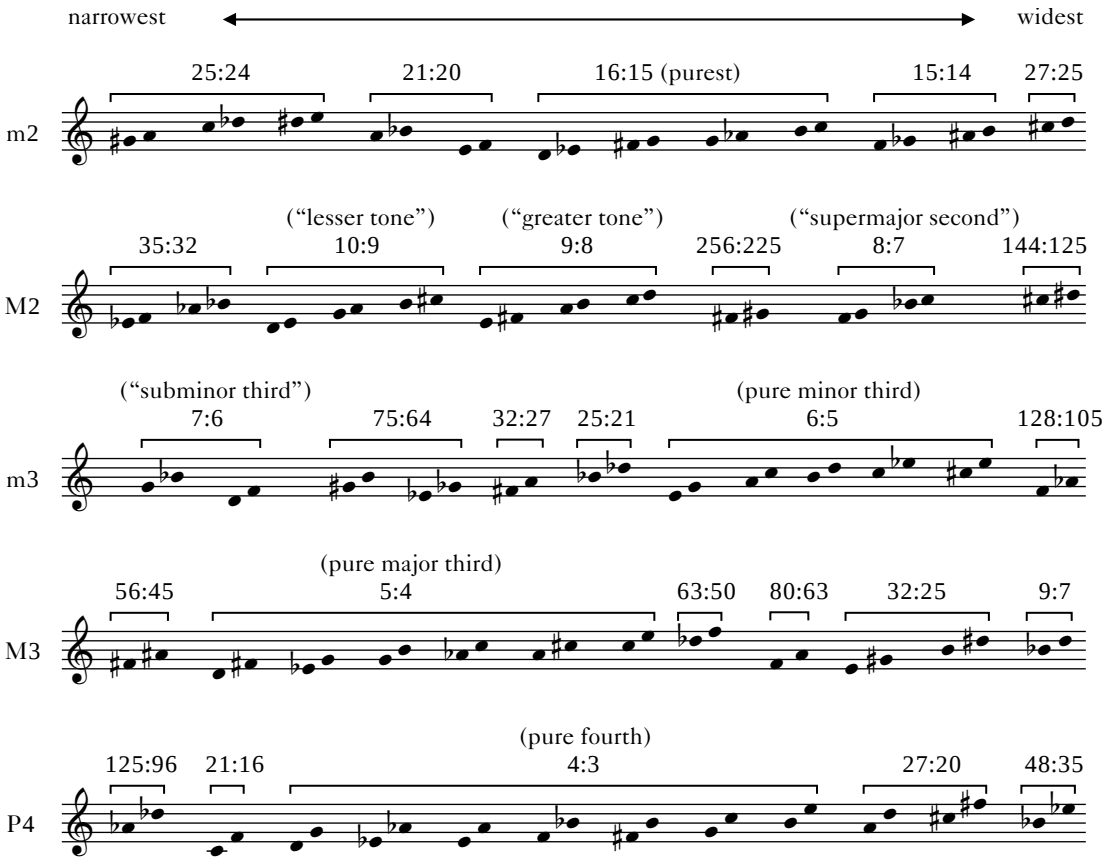
below specified pitches. He then presents the resulting chromatic scale featuring five sizes of semitone, ranging from an exceptionally small 71 cents (G♯–A, C–D♭, D♯–E) to a very wide 133 (C♯–D), none of which corresponds to the equal tempered semitone (100 cents).

In example 5, I have calculated the sizes of all intervals in *Cinna* from the minor second through the fourth and arranged them from narrowest to widest in each interval category. In contrast to the wide variety of semitone sizes, the majority of the fourths and major thirds are pure, though at the expense of others, which can be quite dissonant. The range of whole steps is similar to that of the semitones. The two sizes commonly discussed in Medieval and Renaissance tracts (the "greater tone," 9:8, and the "lesser tone," 10:9) are present, as is the 8:7 "supermajor second," an interval resulting from the "flat" seventh partial of the overtone series (example 6). In the second movement of *Cinna*, Harrison dwells for some time on this wide second (F–G)—possibly to enhance the pathos of the melodic line.

EXAMPLE 5. *Cinna*, interval sizes

a. Ratios and notation for intervals in *Cinna*

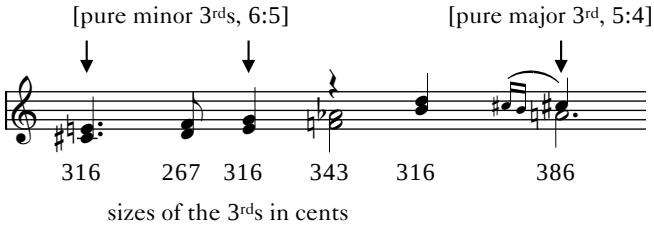


b. Interval sizes in cents

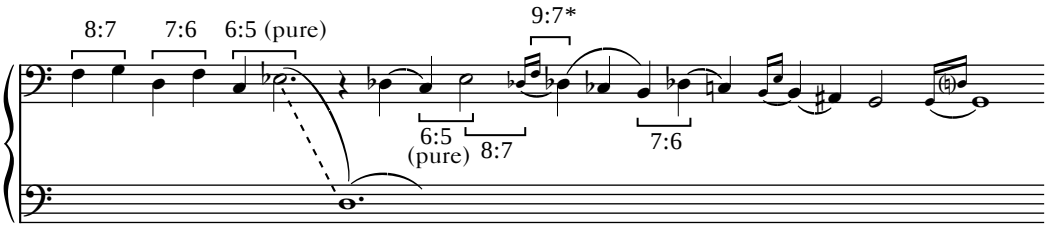
minor second		major second		minor third		major third		fourth	
ratio	*cents*	*ratio*	*cents*	*ratio*	*cents*	*ratio*	*cents*	*ratio*	*cents*
25:24	70.67	35:32	155.14	7:6	266.87	56:45	378.60	125:96	456.99
21:20	84.47	10:9	182.40	75:64	274.58	5:4	386.31	21:16	470.78
16:15	111.73	9:8	203.91	32:27	294.13	63:50	400.11	4:3	498.04
15:14	119.44	256:225	223.46	25:21	301.85	80:63	413.60	27:20	519.55
27:25	133.24	8:7	231.17	6:5	315.64	32:25	427.37	48:35	546.82
		144:125	244.97	128:105	342.91	9:7	435.08		

EXAMPLE 7. *Cinna*, compositional use of varying interval sizes

a. Movement 2: passage with parallel, unequal minor thirds, system 7.24ff., PI



b. Movement 5: fourths interwoven with the supermajor second, subminor third, and pure minor third, system 4, 18ff., PI



Pippin,[140] bears the date 1955–56, *Cinna* was probably not completed until 1957, as suggested by two contemporaneous documents: a report by Peter Yates on hearing the piece's first informal, private performance, and a letter from Harrison to the Esperanto Society.[141]

Yates's report describes a "trip up the coast" beginning "the third week of May" 1957, during which he revived a friendship with Harrison that had begun during the composer's year in Los Angeles (1942–43). Yates notes that after dinner, "we went back into Lou's studio . . . the single room cut in half by a large screen for shadow puppets, and heard—the first time he has played them for anyone—his five piano interludes, intended to be played between the five acts of . . . Cinna."[142]

Scrawled at the beginning of Harrison's working score from the 1950s is a reminder to himself to "Contact [the] Esperanto Society." He did so on June 6, 1957, describing his "just completed" piece for tack-piano and seeking help translating his performance notes into Esperanto for the title page of a "small private edition." In this letter, Harrison suggests that the tack piano was merely an imitation of his vision of the ideal instrument: a single-strung piano[143] "struck by light hammers of aluminum" to produce "an harmonious twanging of strings."

Although the surviving sketches for *Cinna* are not dated, they do reveal the evolution of both the composition and the tuning system.[144] They also provide hints about Harrison's state of mind at the time, for intermingled among them are random musings on a variety of subjects (see plate 4):

On just intonation:

> Dean Luther Marchant (of the Mills College Music Dept.) once asked of me: was I not a radical, an iconoclast? Actually, of course, I've always been a conformist, and an intense one; for I think that all our arts and activities had ought to have to do with "the-way-things-are-ness. . . ." For example, I find that we are all (so made, so constituted, so living) that "just-intonation" is

[140]The premiere took place at the Old Spaghetti Factory in San Francisco on August 4, 1968.

[141]Letter to the Esperanto Society from the composer's archive (thanks to Charles Hanson for bringing this document to my attention). Peter Yates, "A Trip up the Coast," *Arts and Architecture* 74:12 (Dec. 1957), 4, 6–7, 10, 33–34. Yates erroneously identifies the author as Racine.

[142]Yates, "A Trip Up the Coast," 33.

[143]That is, with one string per note instead of the normal two or three.

[144]All manuscript materials relating to *Cinna* are at Special Collections, University of California, Santa Cruz.

PREMIERE

Composed between 1955 and May 1957, *Incidental Music for Corneille's 'Cinna' (Suite for Tack Piano)* was first performed by Donald Pippen at The Old Spaghetti Factory in San Francisco on August 4, 1968.

General notes.

Tacks are to be inserted into each hammer at the striking point so as to create a pseudo-harpsichord sound. Either an upright piano or a grand piano may be used. "Graces [i.e., double grace notes], throughout, are before the beat" (Source B, see Critical Notes). Tempi are derived from Harrison's working score (Source B), but are approximations; Harrison's own performance is free and the tempo fluctuates (see recordings list below). Accidentals apply only to the note immediately following. Cautionary accidentals are enclosed in parentheses. Phrase marks, at times, intentionally stretch to or from rests indicating a sustaining of the notes for their fullest possible value. These incomplete slurs are used to create the impression of "LV" (*let vibrate* or *laissez vibrer*). Unless metric modulations are indicated, all eighth notes are of equal value; beaming indicates note groupings only. Horizontal lines over individual pitches do not indicate lengthening, but rather a stress, equivalent to a string *louré* stroke. ⌙ ⌙ = pedal.

Movement I.

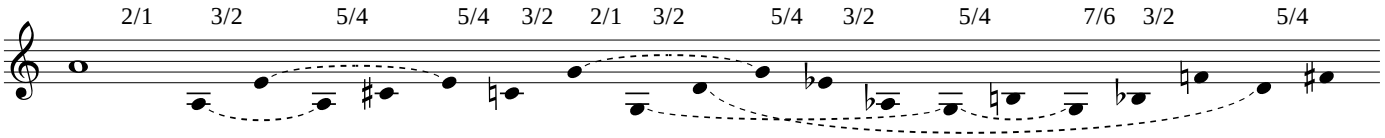
For the metric modulations, the tempo change is shown as the note value of preceding section = the note value of following section.

Movement III.

Harrison intends the stress patterns and groupings created by the legato marks in the first two statements of the right hand motive to apply to each statement of this gesture.

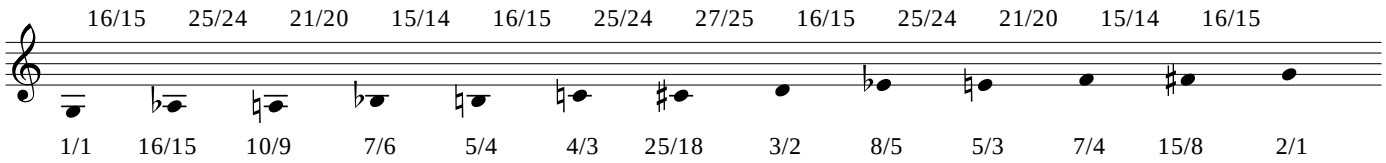
Tuning.

The composer requires that the piano be tuned according to the following procedure. First, lower the pitch of the "A" by approximately one half step and then proceed in the following manner.



This process will result in the following:

ratios between adjacent pitches



relationship of each tone to pitch 1

Recordings.

Lou Harrison, tack piano, remastering of recording from 1957 on compact disc included in Leta E. Miller and Fredric Lieberman, *Lou Harrison: Composing a World* (New York and London: Oxford University Press, 1998).