Appendix A

Referential Scores of Melodies

1. Empty Bed Blues

Words and music by J. C. Johnson, copyright holder J. C. Johnson, address c/o ASCAP, 575 Madison Ave., New York 22, N.Y. The ASCAP Biographical Dictionary lists twenty-six songs and two musical shows by J. C. Johnson. Leonard Bernstein used "Empty Bed Blues" as an example of blue intonation in an Omnibus program on jazz, issued on records as What is Jazz?, Columbia album CL 919.

The recording accompanying this report uses two excerpts from the Bernstein album: first, blue intonation, for which Bernstein chose a classic Bessie Smith recording of "Empty Bed Blues," and second, for contrast, a 'straight' version sung by an operatic soprano.

These are followed by "Empty Bed Blues" on the referential organ, in a referential pattern selected by Paul C. Boomsliter, taken from the Bessie Smith recording. The following pages show the tuning of this pattern, comparing it with classical just tuning and tempered tuning.

The form used in this appendix shows the notes as they appear on the referential keyboard in the levels above the staff. These are numbered upward from 1 through 6, as the keyboard is arranged in levels upward. The characteristic linkage is shown on the form between levels 1 and 2—in this case it is "5/4 Blue." It is understood that all linkages except the first are by 3/2, that is, that 3/2 of each keyboard becomes 1/1, the reference, for the keyboard above.

The squares above the staff show the ratio and level for each note. Thus the first note, Sol, is 3/2 on the first level; it stands in this ratio to the reference of the first level. It is also 6/5 on level 2 and 8/5 on level 3, standing in those ratios to the second and third blue reference notes.

Tunings for referential, classical and tempered patterns are shown below the staff, with the note names and cent values. Thus the second note has the name Du in referential notation. It is related by the ratio 7/5 to the fourth blue reference. In referential tuning the cent value is 1172.7, so this is a low Do, flatter by 27.3 cents than Do. (The octave contains 1200 cents, and Do, the base is both zero and 1200). Du stands in the ratio 63/32 to the Do below it.

Farther down, the form shows that this would be Do, at zero cents in classical tuning, and in tempered tuning Do again, at zero cents.

24 Referential Keyboard Level 6 5 6/5 4 7/5 7/5 8/5 8/5 3 4/3 7/5 3/2 6/5 2 5/4 Blue 3/2 I woke up this mornin' with an Ref. Sol Du Lay Sol Mi Faw fi 1172.7 702.0 905.9 386.3 Cents 470.8 590.2 3/2 63/32 5/4 27/16 21/16 45/32 Abs. Ratio Class. Sol Do La Sol . Mi fi Fa 884.4 0 Cents 702.0 386.3 498.0 590.2 1/1 5/3 5/4 4/3 3/2 Abs. 45/32 Ratio Temp. G C A G E F F#

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2. If I Didn't Care

Words and music by Jack Lawrence. Copyright 1939 by Chappell & Co., Inc., New York, N.Y.

Jack Lawrence compositions include: "Play, Fiddle, Play";
"In an Eighteenth Century Drawing Room"; "Sunrise Serenade";
"Sleepy Lagoon"; "With the Wind and the Rain in Your Hair";
"All or Nothing at All"; "Johnson Rag"; "Symphony"; "Tenderly";
"Linda," and others.

"If I Didn't Care" is the theme song of the famous Ink Spots quartet. The referential pattern on the following pages was selected on the referential organ by Joseph Boatner, arranger for the Ink Spots, and bass singer of the quartet for the past sixteen years. Mr. Boatner is active as a professional arranger in addition to arranging for his own group.

The concluding four lines of the refrain are used in the recording and the following pages. Mr. Boatner was both careful and positive in his selections. For example, this passage opens with an apparent repetition of a phrase, so far as the classical or tempered notation is concerned. Mr. Boatner did not repeat; for the first he chose rah Mi Su Tay Lay, and for the second rah May Sol Ti Lay. We asked him to recheck this, and he held to it.

We asked if he had been conscious of such distinctions before, and he said he had not. As we were driving him back to his hotel he remarked, "It is very strange that you can do these things all your life and not know what you are doing until you come in contact with a piece of apparatus like this."

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35 If I Didn't Care - 6 Referential Keyboard L∈vel 6 5 4 3 8/5 8/5 3/2 7/5 4/3 2 5/4 4/3. 8/5 1 #1 # this I did-Would all be If true Ref. lie Ti La Do Do вi La Do 1088.3 Cents 968,8 884.4 772.6 0

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### 3. Serenata Notturna--Mozart

The recorded example is the opening of Mozart's "Serenata Notturna" K 239. The linkage is major. The referential tuning was selected by Edgar Curtis, music director of the Albany Symphony Orchestra and head of the Music Department at Union College, Schenectady, New York.

After listening to the complete demonstration tape accompanying this report, Edgar Curtis remarked that a few notes, including some in his own selections, strike him as not precisely right, but perhaps only the nearest available on the present keyboard. He adds that this means only that the search for new notes and organization should be continued; it does not suggest a return to classical or tempered tunings, because those sound clearly wrong.

Mozart - 1 Referential Keyboard Level 6

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39 Mozart - 2 Referential Keyboard Level 6 5 4 9/5 8/5 9/5 8/5 3/2 4/3 6/5 3 2 3/2 Major 1 3 Ref. Say Say Fay Fay May Re Day 723.5 407.8 Cents 519.5 203.9 21.5 Abs. 243/160 27/20 81/64 9/8 81/80 Ratio Class Sol Fa Sol Fa Mi Re Do 702.0 Cents 498.0 386.3 203.9 0 3/2 4/3 5/4 9/8 1/1 Abs. Ratio

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## 4. Hungarian Peasant Song

Minor linkage. This is No. 6 of Bela Bartok's <u>Fifteen</u>
Hungarian <u>Peasant Songs</u>, copyright Boosey and Hawks. Tuning selected by Edgar Curtis.

For the closing note, Mr. Curtis chose Day, which is not the tonic, before the repeat, and Do for the final close. His comment: "This is a theme for variations. It keeps to Day when the singer will continue, using Do only for ending or changing to another set of variations."

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Abs.   1/1   3/2   27/20    Class   Do   Sol   Sol   Fa    Cents   O   702.0   498.0    Abs.   1/1   3/2   4/3    Temp.   C   C   G   G   G   F	· ····································							
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Ref.	Say	son	li	Fay		Fay	ri
Cents	723.5	835.2	1017.6	519.5			315.6
Abs. 2 Ratio	43/160	81/50	9/5	27/20			6/5
Class	Sol	sen	li	Fa		Fa.	ri
Cents	702.0	813.7	1017.6	498.0			315.6
Abs. Ratio	3/2	8/5	9/5	4/3			6/5
Temp.	G	G#	A#	F		F	D#
Cents	700	800	1000	500			300

Referential Keyboard Level 6 5 9/8 1/1 4 9/8 4/3 4/3 5/4 3 2 6/5 Minor 2 3 Ref. ri. ri Say Fay Re Da y 203.9 723.5 519,5 203.9 21.5 Cents 6/5 243/160 27/20 9/8 81/80 Abs. Ratio Class. ri Sol Fa ri Re Do 702.0 Cents 203.9 498.0 203.9 0 6/5 3/2 4/3 9/8 1/1 Abs. Ratio Temp. D# G F D# D C

Cents

300

700

500

200

Referential Keyboard Level 6 5 4 3 5/4 3/2 4/3 9/8 5/4 9/8 2 6/5 Minor 1 Ref. Re ri Fay Day Re Day Cents 203.9 315.6 519.5 21.5 Abs. 9/8 Ratio 6/5 27/20 81/80 Class. ri Re Fa Do Re Do 203.9 Cents 315.6 498.0 0 .ada. 9/8 6/5 4/3 1/1 Ratio D Temp. D# F C D C

Cents

200

300

500

Level							
6	. **						
5							
4	-						
3	. 9/8	9/8	5/4				
2 6/5							
Minor 1			9/8	1/1			
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()					3.	Σ.	
J	1 -6-	2 -//	1	3 🕶	3	4	5 6 7
Ref.	Lay	Day	Re	Do			
Cents	21.5	* 1 * * 1	203.9	0			
Abs. Ratio	81/80		9/8	1/1			
Class.	Do		Re	Do	· · · · · · · · · · · · · · · · · · ·		·
Cents	0	4 × 1	203.9	0			····
Abs. Ratio	1/1		9/8	1/1			•
Temp.	С		D	С			
		1		1	!	:	l