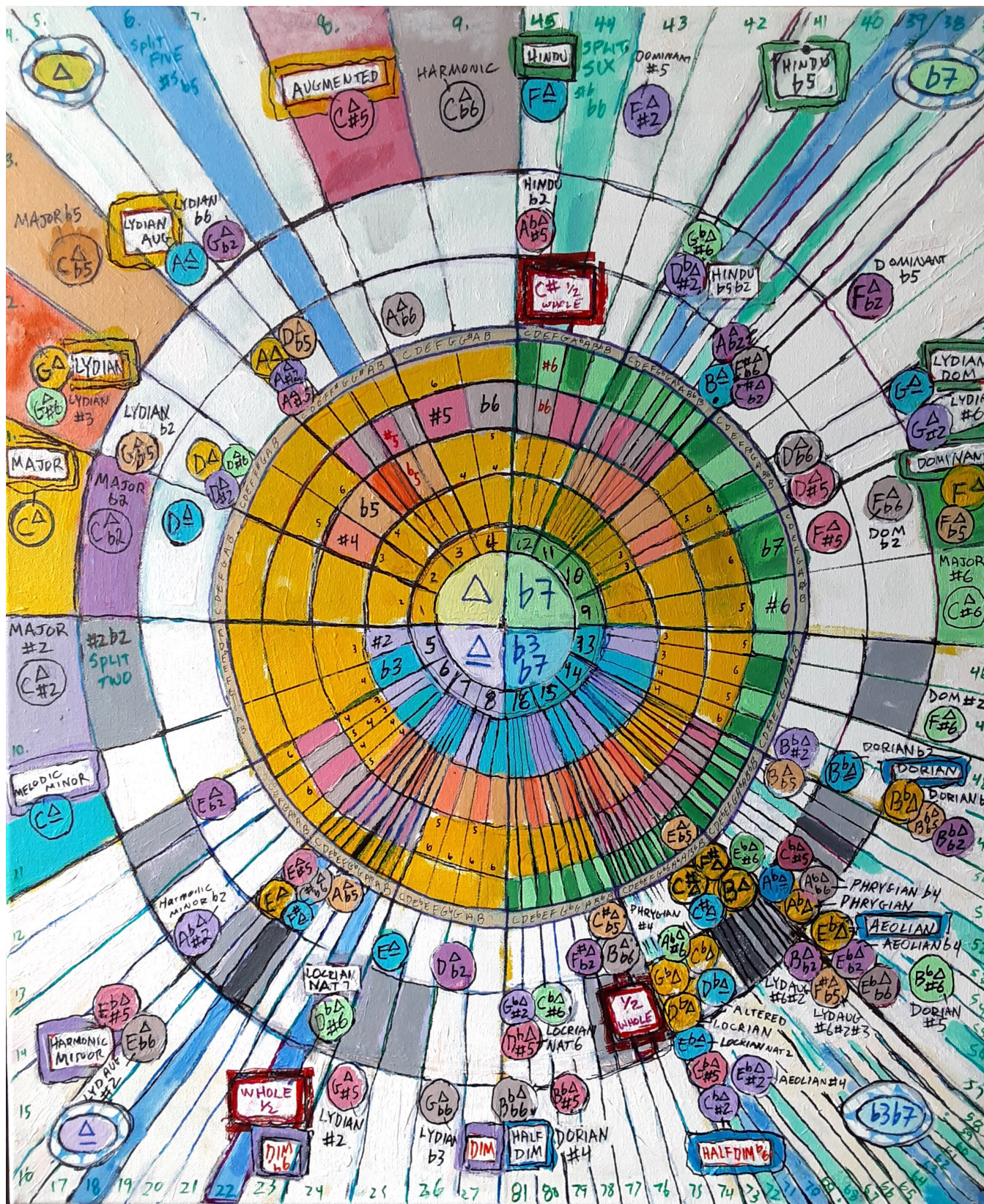


Modes, Scales & Keys IV

Acrylic and Ink on Canvas, 24 x 20 inches, July 2026

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Introduction

Modes, Scales & Keys IV is the fourth painting associated with my investigations into the creation of a musical taxonomy of tonal space in 12-tone equal temperament. This painting differs from the previous three paintings in that it has a different layout and an updated numbering system. The paintings, databases, this document and related materials are my interpretations of this musical system. There is no finality to this work — it is an ongoing exploration.

The system behind this painting grew out of five years of investigating traditional music theory. What I found is that there are entire territories of musical possibility that standard theory barely mentions or leaves out completely. This project is my attempt to document those territories by building a database of scales, modes, and keys, and finding a way to see and understand this fuller picture. The result is a map of the entire universe of tonal relationships in 12-tone equal temperament.

I started music lessons in fifth grade on saxophone. I learned to read music quickly and had a good tone, so people said I was really good. I had weekly lessons but rarely practiced, so I became excellent at sight-reading. In high school I played first chair in the jazz band and carried the attitude of what I thought a jazz musician should be — but I had almost no idea how to improvise beyond the C blues scale. Like many people, my ambitions eventually faded and I stopped playing for many years.

In 2013, after twenty years away, I picked up the saxophone again and committed to learning all the jazz theory I had missed. I also taught myself piano. The deeper I went, the more I noticed huge areas of tonal space that went unmentioned in standard materials. So I began building my own taxonomy. What other systems call “exotic” or “outside the rules” turned out to be completely natural once the full map became visible. Nothing in existing music had changed — I had only created a different, more complete context for understanding any chord, scale, progression, or even musical system.

The painting itself is sectioned into four quadrants which are the simple result of whether the third in a scale in that quadrant is major (natural) or minor (flat), and whether the seventh is similarly otherwise major or minor. It should be noted that scales with a #2 are included in the two quadrants with a b3, and scales with a #6 are included in the two quadrants with a b7.

Major (3 7) upper left	with a major third and major seventh this is the diatonic major scale; tonic.
Melodic Minor (b3 7) lower left	the minor third and major seventh; tonic minor.
Dominant (3 b7) upper right	the major third and the flat seven create a tritone, the feature of this quadrant; dominant.
Dorian (b3 b7) lower right	the flat three and flat seven are the minor scale; sub-dominant, minor, diminished.

The quadrants are subsequently divided into four groups each, which altogether comprise the 16 basic tonal groups, of which there are three types (C, Db, C#) which appear on the painting in ‘rings’. The C ring is located from the outer edge of the painting inward to the first circle. Moving inward from there is the Db ring, and then the C# ring. The numbers for the groups (1-16) are shown near the center of the painting. Each group contains either 1, 2, 4 or 8 sub-groups. The numbers for the sub-group are located around the outer perimeter of the canvas in green ink.

Between the group numbers and the C# ring are the four color rings. The color shows what the notes in that sub-group are. Yellow indicates a diatonic note—C D E F G A B.

The inner color ring: Orchid=D#, Blue=Eb, Yellow=D, E, & (F if Gb present)

The next color ring moving outward: Orange=F#, Ochre=Gb, Yellow = F & (G if no G#)

The next color ring moving outward: Red=G#, Brown=Ab, Yellow=(G if no Gb) & (A if no A#)

The outer color ring: Light Green=A#, Dark Green=Bb, Yellow= B & (A if no Ab)

Magenta is used to represent Db, and Aqua for C#, however these notes are not part of the color rings

The 507 scales, generated by a clear set of permutation rules, comprise the database, and are the heart of the system. Of these there are 363 7-note scales, 136 8-note scales, and 8 9-note scales.

The 363 7-note scales adhere to the following ruleset:

1. The scale must contain one and only one note of each letter name: C, D, E, F, G, A, and B.
2. Each letter name may appear as natural (nat), flat (b), or sharp (#).
3. No double flats (bb) or double sharps (##) are allowed.
4. Enharmonic equivalents that create duplicate pitches are not permitted (ex. B# is not allowed if C is present).

Primary Scales

By altering each note of the major scale with a # or b, we can generate fourteen possible 7-note scales. Four of these collapse into 6-note scales due to diatonic enharmonic duplication and are therefore set aside, leaving us with eleven scales—listed here with C as the root note. These are what I call the Primary Scales—the foundational reference points for this concept.

C Major (Major), C△ *the Prime Primary Scale*
 C# Altered D△ *also a mode of D Melodic Minor*
 C Major b2 (Flat Two), C△b2
 C Major #2 (Sharp Two), C△#2
 C Major b3 (Melodic Minor), C△
 C Major #4 (Lydian), G△ *also a mode of G Major*
 C Major b5 (Flat Five), C△b5
 C Major #5 (Augmented), C△#5
 C Major b6 (Harmonic), C△b6
 C Major #6 (Sharp Six), C△#6
 C Major b7 (Dominant), F△ *also a mode of F Major*

Modes of the Primary Scales

Here is the complete set of modes for the primary scales. Major b7, Major #4, and #1 Altered aren't shown because they are modes of other primary scales. I call mixolydian dominant, and ionian major. On the painting, the name of each mode is shown in the appropriate sub-group, and nearby one will also see the key that mode is associated with.

I△	IVL	viiø	iii	vi	ii	V7
Major	Lydian	Locrian	Phrygian	Aeolian	Dorian	Dominant
Major b2	Lydian b6	<i>Locrian bb3</i>	<i>Phrygian bb7</i>	Aeolian b4	Lyd Aug #6 #2	Dominant b5
Major #2	Lydian #6	Hindu b5 b2	Harmon Min b2	Aeolian #4	<i>Lyd Aug 6 (b9)</i>	Dominant #5
Melodic Minor	Lydian Dom	Altered	Lydian Aug	Locrian nat 2	Dorian b2	Hindu
Major b5	Lydian b2	<i>Locrian bb6</i>	<i>Phrygian bb3</i>	<i>Harmon Min bb7</i>	Dorian b4	Lyd Aug #6#2#3
Augmented	Lydian #2	Locrian nat 6	Hindu b2	Harmonic Minor	Dorian #4	<i>Altered bb7</i>
Harmonic Major	Lydian b3	<i>Locrian bb7</i>	Phrygian b4	Lydian Aug #2	Half Diminished	Dominant b2
Major #6	Lydian #3	Locrian nat 7	Phrygian #4	<i>Lydian 6 (b9)</i>	Dorian #5	Dominant #2

Some of the primary scale modes fall outside the ruleset for seven-note scales in that they include double flats (bb) or double sharps (##). For example, the mode in the seventh position of C Harmonic Major (b6) is *B Locrian bb7*. This has a double flat, and is outside of our ruleset. *These are shown in italics here*—but not included on the painting. The ruleset is used as a boundary to help separate specific data to assist in a specific number of modes to create the design for the painting around. Scales outside the ruleset are still of equal interest.

Modes of Altered Root Notes

I included this table to have this interesting collection of modes in a known location for reference.

Mode—>	<—Mode with Flat Root	Mode with Sharp Root—>	<—Mode
C Major	6. Cb 6-note B (Cb) D E F G A	7. B# 6-note (B#) C D E F G A	B Locrian
D Dorian	4. Db Lydian Augmented #6 #2	2. C# Altered (Locrian b4)	C Major
E Phrygian	2. Eb Lydian Augmented	4. D# Altered bb3 bb7	D Dorian
F Lydian	7. Fb 6-note E (Fb) G A B C D	6. E# 6-note (E#) F G A B C D	E Phrygian
G Dominant	5. Gb Lydian Augmented #6 #2 #3	1. F# Locrian	F Lydian
A Aeolian	3. Ab Lydian Augmented #2	3. G# Altered bb6	G Dominant
B Locrian	1. Bb Lydian	5. A# Altered bb3 bb6 bb7	A Aeolian

Sub-Groups List

Groups	Sub-Groups, Ring -1 (C)	Ring -2 (Db)	Ring -3 (C#)
1. Major	1. Major, C△	82. C△b2	*163. C# Altered, D△
2. Lydian	*2. Lydian, G△, G△#6 3. C△b5	*83. Lydian b2, G△b5 84. Flat Five b2	***164. D△, D△#2, D△#6 *165.
3. Lydian Augmented	*4. Lydian Aug, A△ *5. #4 b6, G△b2 6. Split Five (b5 #5) 7. b5 b6	*85. Lyd Aug b2 *86. b2 #4 b6 87. Split Five b2 88.	***166. A△, A△#2, A△#5 ***167. D△b5 *168. Split Five #1 *169.
4. Augmented	8. Augmented, C△#5 9. Harmonic, C△b6	88. Augmented b2 89. Harmonic b2	*170. A△b6 *171.
5. Melodic Minor	10. C△#2 *11. C△	91. Split Two (b2 #2) *92. Melodic Minor b2	*172. ***173.
6. Harmonic Minor	12. #2 #5 13. #2 b6 *14. b3 #5 *15. Harmonic Minor Eb△#5	93. Split Two #5 94. Split Two b6 *95. b2 b3 #5 *96. Har Min b2, Ab△#2	*174. E△b2 *175. ***176. ***177.
7. Diminished b6	*16. #2 #4 #5 E△b6 *17. #2 #4 b6 18. Split Five #2 19. #2 b5 b6 20. b3 #4 #5 21. b3 #4 b6 *22. Split Five b3 *23. Diminished b6	*97. Split Two #4 #5 *98. Split Two #4 b6 99. Split Two, Split Five 100. Split Two b5 b6 101. 102. *103. Split Five b3 *104. Db△#6	***178. E△, E#5, F#△, C#b6 ***179. *180. Split Five #2 #1 *181. *182. A△b5 *183. ***184. Split Five b3 #1 ***185.
8. Diminished	*24. #2 #4 G△#5 25. #2 b5 26. b3 #4 G△b6 *27. Diminished	*105. Split Two #4 106. Split Two b5 107. *108. Diminished b2	***186. E△ *187. *188. D△b2 ***189.
9. Dominant	28. C△#6 *29. Dominant, F△, F△b5	109. *110. Dom b2, F△b6	*190. 191. F△#5
10. Lydian Dominant	*30. #4 #6 G△#2 ***31. Lydian Dominant, G△ 32. b5 #6 *33. b5 b7 F△b2	*111. ***112. 113. *114.	***192. D△#5 *193. D△b6 *194. 195.
11. Lydian Augmented Dominant	*34. #4 #5 #6 ***35. Lydian Aug Dominant *36. Split Six #4 ***37. #4 b6 b7 38. Split Five #6 *39. Split Five b7 40. Split Six b5 *41. b5 b6 b7	*115. ***116. *117. Split Six #4 b2 ***118. 119. Split Five #6 b2 *120. Split Five b7 b2 121. Split Six b5 b2 *122. Db△#2, Gb△#6	***196. B△, C#b2, F#b6 *197. A△b2 ***198. Split Six #4 #1 *199. *200. Split Five #6 #1 201. Split Five b7 #1 *202. Split Six b5 #1 203.
12. Hindu	42. #5 #6 *43. Augmented Dominant, F△#2 44. Split Six (b6 #6) *45. Hindu, F△	123. *124. 125. Split Six b2 *126. Hindu b2, Ab△#5	*204. 205. *206. Split Six #1 207.

Tonal Groups	Tonal Sub-Groups, Ring 1. (C)	Ring 2. (Db)	Ring 3. (C#)
13. Dorian	46. #2 #6 *47. #2 b7 F△#6 *48. b3 #6 ***49. Dorian, Bb△, △b2,△b5	127. Spilt Two #6 * 128. Split Two b7 *129. ***130. Dorian b2, Bb△	*208. 209. ***210. *211. Bb△#2
14. Aeolian	50. #2 #5 #6 *51. #2 #5 b7 52. Split Six #2 *53. #2 b6 b7 *54. b3 #5 #6 ***55. b3 #5 b7 Bb△#6 * 56. Split Six b3 ***57. Aeolian Eb△, Eb△b6, Eb△b2,	131. Split Two #5 #6 * 132. Split Two 133. Split Two, Split Six * 134. Split Two *135. ***136. * 137. Split Six b3 b2 ***138. Phrygian Ab△, Ab△b6, △, Cb#5	*212. B△b5 213. * 214. Split Six #2 #1 215. ***216. *217. Eb△#6 *** 218. Split Six b3 #1 *219.
15. Aeolian b5 (locrian nat2)	*58. #2 #4 #5 #6 F#△b5, B△b2 ***59. #2 #4 #5 b7 * 60. Split Six #2 #4 ***61. #2 #4 b6 b7 62. Split Five #2 #6 * 63. Split Five #2 b7 64. Split Six #2 b5 *65. #2 b5 b6 b7 66. b3 #4 #5 #6 *67. b3 #4 #5 b7 68. Split Six b3 #4 *69. b3 #4 b6 b7 Eb△#2 * 70. Split Five b3 #6 *** 71. Split Five b3 b7 * 72. Split Six b3 b5 ***73. ∅ nat 2; Half Dim b6 Cb△#2, Gb△#5, Eb△	* 139. Split Two *** 140. Split Two * 141. Split Two, Split Six *** 142. Split Two 143. Split Two, Split Five * 144. Split Two, Split Five 145. Split Two, Split Six * 146. Split Two 147. *148. 149. Split Six *150. Ab△#6 * 151. Split Five *** 152. Split Five * 153. Split Six ***154. ∅; Cb, Gb, Db△△	***220. B△, F#△, C#△△ *221. E△b5 *** 222. Split Six *223. * 224. Split Five 225. Split Five * 226. Split Six 227. *228. 229. * 230. Split Six 231. *** 232. Split Five * 233. Split Five *** 234. Split Six *235.
16 Half Diminished	*74. #2 #4 #6 ***75. #2 #4 b7 76. #2 b5 #6 *77. #2 b5 b7 78. b3 #4 #6 *79. b3 #4 b7 Bb△#5 *80. b3 b5 #6 ***81. ∅ nat 2 nat 6: Half Dim b7 Bb△b6	* 155. Split Two *** 156. Split Two #4 b7 157. Split Two * 158. Split Two 159. *160. *161. ***162. ∅ nat 6: Half Dim b2 Gb△#2, Db#5, Cb#6	***236. F#△b2, C#b5, B△b6 *237. *238. 239. *240. 241. ***242. * 243.

Plain text = 7-note scale

bold = 8-note scale

bold italics = 9-note scale

△ = Major △ = Melodic Minor ∅ = Locrian: 1 b2, b3, 4, b5, b6, b7.

* = 2 Scales in sub-group. *** = 4 Scales in sub-group. Diatonic enharmonic, from b1, #3, b4, #7 single or combos.

An interesting discovery is that the three common 8-note 'synthetic' diminished jazz scales exist in our database:

22-1: C Whole Half Diminished
C D Eb F Gb G# A B
Melodic Minor, Split Five

44-3: C# Half Whole Diminished
C# D E F G Ab A# B
Altered, Split Six

75-2: C Half Whole Diminished
C Db D# E F# G A Bb
Lydian Dominant, Split Two

Groups & Sub-Groups

The 16 basic tonal groups (16 groups) are created by running all permutations of #2/b3, #4/b5, #5/b6, and #6/b7. Sixteen additional groups can be created by adding a b2—the Db Ring. Adding a #1 one creates 16 more groups—the C# Ring. Together, these 48 groups contain the complete universe of tonal possibilities.

These groups can be further divided, by finer permutation rules, into 81 basic sub-groups per ring. This makes a grand total of 243 total sub-groups divided over three rings in 81 sub-groups. These are the ‘cells’ where the actual scales from the database reside. Each cell contains either 1, 2, or 4 scales from our database. The painting itself does not show each specific scale—at this size there is not enough room to write down the name and notes of each in the appropriate location.

16 Basic Tonal Groups (C Ring)		Sub-Groups	7-note Scales	(C)	(Db)	(C#)
		81	363	127	87	149
<u>Major Family, Tonic Major (upper left)</u>						
1. Major	—	1	4	1	1	2
2. Lydian	#4/b5	2	12	3	3	6
3. Lydian Augmented	#4/b5, #5/b6	4	20	5	5	10
4. Augmented	#5/b6	2	8	2	2	4
			44	11	11	22
<u>Melodic Minor Family, Tonic Minor (lower left)</u>						
5. Melodic Minor	#2/b3	2	11	3	2	6
6. Harmonic Minor	#2/b3, #5/b6	4	22	6	4	12
7. Diminished b6	#2/b3, #5/b6, #4/b5	8	31	9	4	18
8. Diminished	#2/b3, #4/b5	4	21	6	3	12
			85	24	13	48
<u>Dominant Family, Dominant (upper right)</u>						
9. Dominant	#6/b7	2	9	3	3	3
10. Lydian Dominant	#5/b6, #6/b7	4	27	9	9	9
11. Hindu b5	#4/b5, #5/b6, #6/b7	8	33	12	12	9
12. Hindu	#5/b6, #6/b7	4	14	5	5	4
			83	29	29	25
<u>Dorian Family, Sub-Dominant (lower right)</u>						
13. Dorian	#2/b3, #6/b7	4	24	9	6	9
14. Aeolian	#2/b3, #5/b6, #6/b7	8	37	15	10	12
15. Half Diminished b6	#2/b3, #4/b5, #5/b6, #6/b7	16	45	21	9	15
16. Half Diminished	#2/b3, #4/b5, #6/b7	8	45	18	9	18
			151	63	34	54

Keys

In traditional Western music, a key is defined by a root note and a quality—usually major or minor. For example, a major key with C as the root is “in the key of C Major.” For this project we expand the concept of a key to include the primary scales themselves. Since there are eight unique primary scales we now have eight “key-types”.

Each of these can have any of the possible root notes: B# E# A# D# G# C# F# B E A D G C F Bb Eb Ab Db Gb Cb Fb. However, some of these possible root notes create scales with double sharps or double flats, and are outside of the parameters of our scales ruleset, and are not included in the painting.

The keys of C# Major and Db Major are of interest because they are enharmonically equivalent.

Key Tables

The 94 keys which adhere to our scales ruleset are shown below in two tables, one for groups and one for sub-groups. Each key listed can be found on the painting within or close to the corresponding cell location. The name of each key is written plainly within a circle that is the color used to represent that key-type. Major=Yellow, Major b2=Magenta, Major #2=Orchid, Melodic Minor (b3)=Blue, Major b5=Ochre, Major #5=Red, Major b6=Brown, Major #6=Light Green.

Group Number (1-16)—Ring Number (1-3)						example: C# Major b5 is in group 16, ring 3.									
Key	C#	F#	B	E	A	D	G	C	F	Bb	Eb	Ab	Db	Gb	Cb
Major	15-3	15-3	15-3	7-3	3-3	2-3	2-1	1-1	9-1	13-1	14-1	14-2	15-2	15-2	15-2
Major b2	11-3	16-3	15-1	6-3	11-3	8-3	3-1	1-2	10-1	13-1	14-1				
Major #2					3-3	2-3	10-1	5-1	12-1	13-3	15-1	6-2	11-2	16-2	15-1
Mel Minor	15-3	7-3	11-3	8-3	3-1	1-3	10-1	5-1	12-1	13-2	15-1	14-2	15-2		
Major b5	16-3	15-1	14-3	15-3	7-3	3-3	2-2	2-1	9-1	13-1					
Major #5				7-3	3-3	10-3	8-1	4-1	9-3	16-1	6-1	12-2	16-2	15-1	14-2
Major b6	7-3	11-3	16-3	7-1	4-3	10-3	8-1	4-1	9-2	16-1	14-1	14-2			
Major #6						2-3	2-1	9-1	13-1	14-1	14-3	15-2	7-2	11-2	16-2

Sub-Group Number (1-81)—Ring Number (1-3)						example: C# Major b2 is in sub-group 34, ring 3.									
Key-type	C#	F#	B	E	A	D	G	C	F	Bb	Eb	Ab	Db	Gb	Cb
Major	58-3	58-3	58-3	16-3	4-3	2-3	2-1	1-1	29-1	49-1	57-1	57-2	73-2	73-2	73-2
Major b2	34-3	74-3	58-1	12-3	35-3	26-3	5-1	1-2	33-1	49-1	57-1				
Major #2					4-3	2-3	30-1	10-1	43-1	49-3	69-1	15-2	41-2	81-2	73-1
Mel Minor	58-3	16-3	34-3	24-3	4-1	1-3	31-1	11-1	45-1	49-2	73-1	57-2	73-2		
Major b5	74-3	58-1	50-3	59-3	20-3	5-3	2-2	3-1	29-1	49-1					
Major #5				16-3	4-3	30-3	24-1	8-1	29-3	79-1	15-1	45-2	81-2	73-1	57-2
Major b6	16-3	34-3	74-3	16-1	8-3	31-3	26-1	9-1	29-2	81-1	57-1	57-2			
Major #6						2-3	2-1	28-1	47-1	55-1	57-3	69-2	23-2	41-2	79-2

Split Scales

Cell Color

8-note scales (136): In our database, created by permutation ruleset.

—**Split Five** (found in 4 groups, 24 sub-groups) Sub-groups that contain both b5 and #5. [9-note]
 C Ring: 6 18 22 38 39 62 63 70 71
 Db Ring: 6-2 [18-2] 22-2 38-2 39-2 [62-2] [63-2] 70-2 71-2
 C# Ring: 6-3 18-3 22-3 38-3 39-2 62-3 63-3 70-3 71-3

Pale Blue

—**Split Six** (found in 4 groups, 24 sub-groups) Sub-groups that contain both b6 and #6. [9-note]
 C Ring: 32 36 40 52 56 60 64 68 72
 Db Ring: 32-2 36-2 40-2 [52-2] 56-2 [60-2] [64-2] 68-2 72-2
 C# Ring: 32-3 36-3 40-3 52-3 56-3 60-3 64-3 68-3 72-3

Pale Aqua

—**Split Two** (found in 8 groups, 27 sub-groups) Those scales with a #2 in b2 ring. [9-note]
 Db Ring: 10-2, 12-2, 13-2, 16-2, 17-2, [18-2], 19-2, 24-2, 25-2, 46-2, 47-2, 50-2, 51-2, [52-2],
 53-2, 58-2, 59-2, [60-2], 61-2, [62-2], [63-2], [64-2], 65-2, 74-2, 75-2, 75-2, 76-2

Gray

[9-note] scales (8): In our database, created by permutation ruleset.

—**Split Five + Split Two** (in 3 sub-groups) b2 ring that already contain a #2 and contains both b5 and #5.
 [18-2] 1 b2 #2 3 4 b5 #5 6 7 no 2, 5, b7
 [62-2] 1 b2 #2 3 4 b5 #5 #6 7 no 2, 5, 6
 [63-2] 1 b2 #2 3 4 b5 #5 6 b7 no 2, 5, 7
 [63-2] b1 b2 #2 3 4 b5 #5 6 b7 no 2, 5, 7 <—diatonic scale in sub-group

Dark Gray

—**Split Six + Split Two** (in 3 sub-groups) b2 ring that already contain a #2 and contains both b6 and #6.
 [52-2] 1 b2 #2 3 4 5 b6 #6 7 no 2, b5, 6,
 [60-2] 1 b2 #2 3 #4 5 b6 #6 7 no 2, 4, 6
 [60-2] 1 b2 #2 #3 #4 5 b6 #6 7 no 2, 4, 6 <—diatonic scale in sub-group
 [64-2] 1 b2 #2 3 4 b5 b6 #6 7 no 2, 5, 6

Dark Gray

Composite Scales

The “composite scales” are created by taking the C major scale (C D E F G A B) and *adding* all possible combinations of the altered notes, not as the sharp or flat replacement of another note, but as an *additional* note to the major scale. Whether one thinks of it as a flat or sharp, is up to the individual. For me it depends on the musical context. The composite scales without C#/Db are written out on the painting between the color rings & the #1 ring in my personally preferred way.

By naming any collection of notes, from a single note up to all twelve, we can find a composite scale(s) in which that collection of notes fits. That collection of notes will also correspond to a group(s), which we can locate on the painting. For example, the Major and Dominant Bebop scales can be found here.

12-Note Composite Scale (1)						Chromatic						Major scale plus 5 altered notes						Group(s)	
C	C#/Db	D	D#/Eb	E	F	F#/Gb	G	G#/Ab	A	A#/Bb	B							15-2	16-3

11-Note Composite Scales (5)						Undecatonic						Major scale plus 4 altered notes						Group(s)	
C	C#/Db	D	D#/Eb	E	F	F#/Gb	G	G#/Ab	A		B							7-2	7-3
C	C#/Db	D	D#/Eb	E	F	F#/Gb	G		A	A#/Bb	B							16-2	16-3
C	C#/Db	D	D#/Eb	E	F		G	G#/Ab	A	A#/Bb	B							14-2	14-3
C	C#/Db	D		E	F	F#/Gb	G	G#/Ab	A	A#/Bb	B							11-2	11-3
C		D	D#/Eb	E	F	F#/Gb	G	G#/Ab	A	A#/Bb	B							15-1	

10-Note Composite Scales (10)						Diatonic						Major scale plus 3 altered notes						Group(s)	
C	C#/Db	D	D#/Eb	E	F	F#/Gb	G		A		B							8-2	8-3
C	C#/Db	D	D#/Eb	E	F		G	G#/Ab	A		B							6-2	6-3
C	C#/Db	D	D#/Eb	E	F		G		A	A#/Bb	B							13-2	13-3
C	C#/Db	D		E	F	F#/Gb	G	G#/Ab	A		B							3-2	3-3
C	C#/Db	D		E	F	F#/Gb	G		A	A#/Bb	B							10-2	10-3
C	C#/Db	D		E	F		G	G#/Ab	A	A#/Bb	B							12-2	12-3
C		D	D#/Eb	E	F	F#/Gb	G	G#/Ab	A		B							7-1	
C		D	D#/Eb	E	F	F#/Gb	G		A	A#/Bb	B							16-1	
C		D	D#/Eb	E	F		G	G#/Ab	A	A#/Bb	B							14-1	
C		D		E	F	F#/Gb	G	G#/Ab	A	A#/Bb	B							11-1	

9-Note Composite Scales (10)						Nonatonic						Major scale plus 2 altered notes						Group(s)	
C	C#/Db	D	D#/Eb	E	F		G		A		B							5-2	5-3
C	C#/Db	D		E	F	F#/Gb	G		A		B							2-2	4-3
C	C#/Db	D		E	F		G	G#/Ab	A		B							4-2	2-3
C	C#/Db	D		E	F		G		A	A#/Bb	B							9-2	9-3
C		D	D#/Eb	E	F	F#/Gb	G		A		B							8-1	
C		D	D#/Eb	E	F		G	G#/Ab	A		B							6-1	
C		D	D#/Eb	E	F		G		A	A#/Bb	B							13-1	
C		D		E	F	F#/Gb	G	G#/Ab	A		B							3-1	
C		D		E	F	F#/Gb	G		A	A#/Bb	B							10-1	
C		D		E	F		G	G#/Ab	A	A#/Bb	B							12-1	

8-Note Composite Scales (5)						Octatonic						Major scale plus 1 altered note						Group(s)	
C	C#/Db	D		E	F		G		A		B							1-2	1-3
C		D	D#/Eb	E	F		G		A		B							5-1	
C		D		E	F	F#/Gb	G		A		B							2-1	
C		D		E	F		G	G#/Ab	A		B							4-1	
C		D		E	F		G		A	A#/Bb	B							9-1	

The 7-Note Major Scale (1)						the major scale is included in all composite scales, as shown here						Group	
C		D		E	F		G		A		B		1-1