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"Chaos In Boxes: twisted adventures in music theory"
by Sean Alexander Luciw

This .pdf contains the Chapter titled
"The Modal Brightness Stars"

which does appear in the eBook versions of the book, but does not appear in the older Handmade Limited Edition or the Print-On-Demand Edition.

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CHAPTER Φ

The Modal Brightness Stars

(hitherto undiscovered music geometry palindrome)

There was one extra-super-special thought gem which somehow never made it into the earlier editions of this book.* I call it "Modal Brightness Stars" and I think you should get ready for pretty diagrams.

As previously explained... The traditional and extremely common Major Scale has 7 notes which are spaced by whole-steps and half-steps in an uneven manner (W, W, H, W, W, W, H). You could say "Root, 2nd, 3rd, 4th, 5th, 6th, 7th, 8ve", and 8ve (short for Octave) is a higher occurrence of the Root. If you temporarily decide that the 2nd is now the Root, then the step pattern gets shifted by one position (W, H, W, W, W, H, W) and a new scale is created. This new scale is called "Mode 2," which has a modified collection of intervals (Root, 2nd, flat 3rd, 4th, 5th, 6th, flat 7th, 8ve) and its own special mood. Repeat this process starting on each successive note of the Major Scale, and you will create a total of 7 different "Modes," each with its own emotional mathematical colour. The 7 Modes of the major scale have Greek names (Ionian, Dorian, Phrygian, Lydian, Mixolydian, Aeolian and Locrian) but I'll be referring to their numbers here in this Chapter.

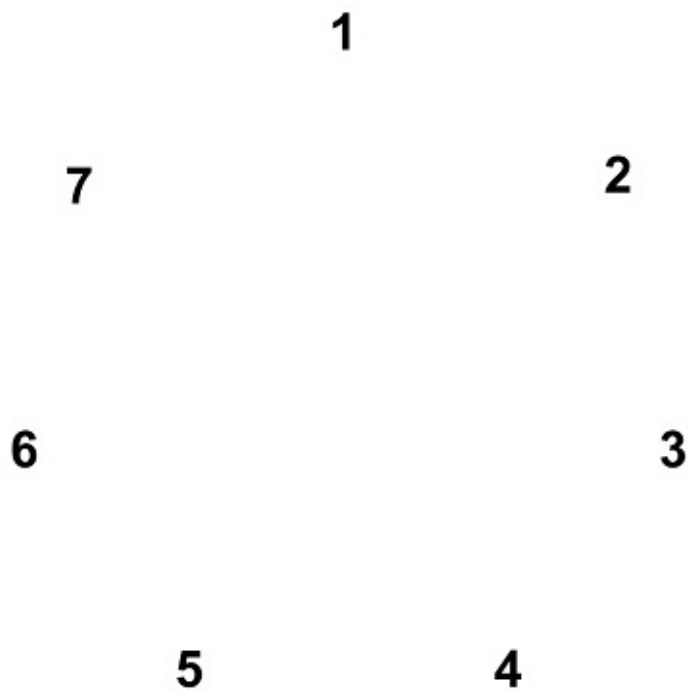
So far, all of this is fairly common knowledge amongst the musician community.

This is about to get more interesting...

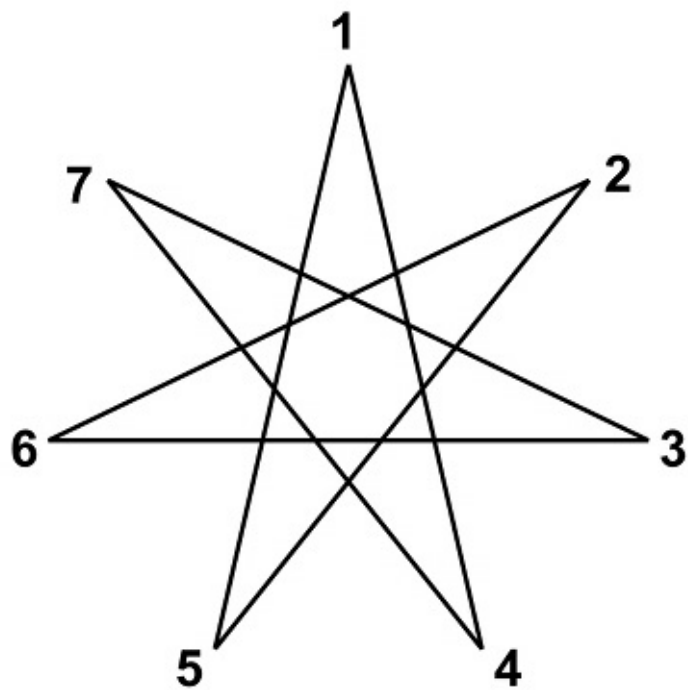
The Modes can be ordered according to "brightness" which means "how many sharp or flat intervals are contained." Sharps are brighter, flats are darker.** Mode 4 (a.k.a. Lydian) is the brightest because it has a sharp fourth, while Mode 7 (a.k.a. Locrian) is the darkest because every interval is flatted except the fourth and the Root. The complete list of Modes in decreasing order of brightness is 4, 1, 5, 2, 6, 3, 7. Before reading further, maybe you can see some sort of pattern in that list of numbers?

Here comes the fun part, my "new" discovery and contribution to the collective consciousness. At least, I've never seen this before or since...

First, draw the numbers 1 through 7 in a circular arrangement:

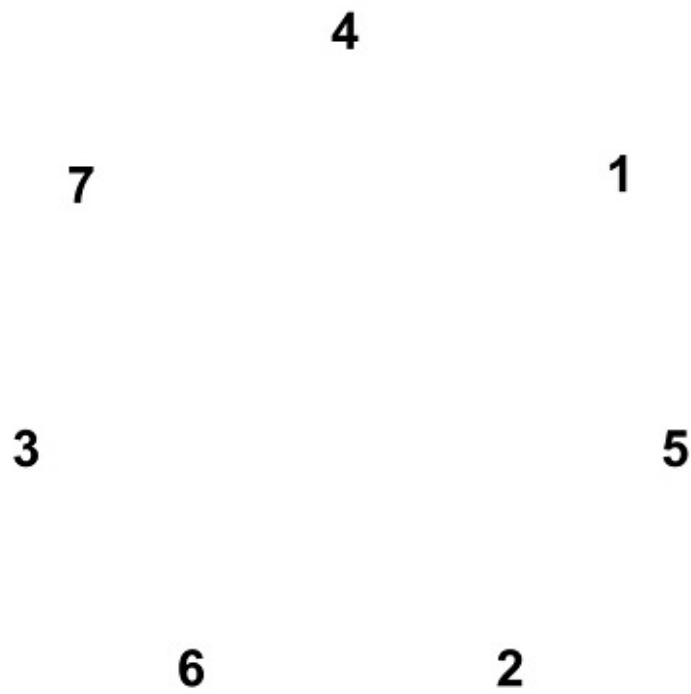


Now connect the numbers with lines, in the order of Mode brightness listed above (4, 1, 5, 2, 6, 3, 7) plus one more line to get back to the start:***

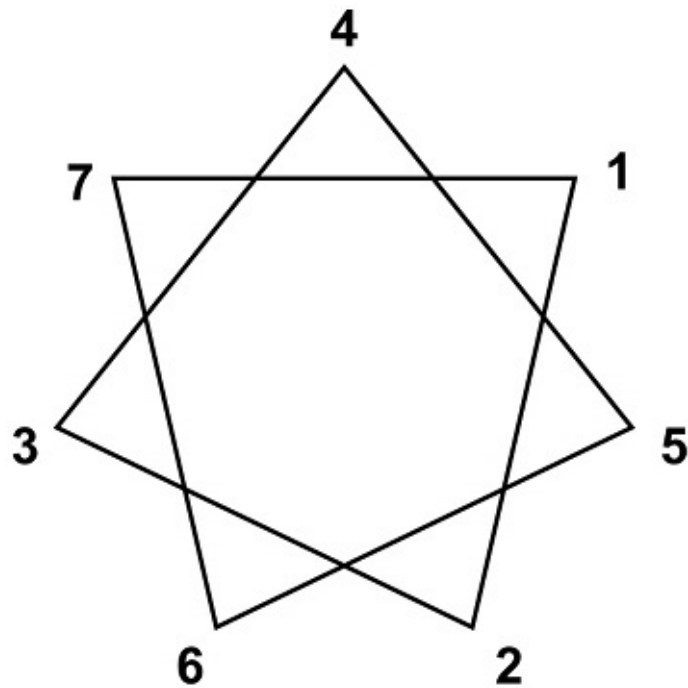


WOW! Awesome spikey 7-pointed star shape! Exciting. This amazing geometrical music thingy also works in reverse...

Draw the numbers in Mode brightness order, in a circular arrangement:



Now draw lines joining the numbers, in the order the Modes were created in the first place (1, 2, 3, 4, 5, 6, 7) plus one more line to get back to the start:



Nice. The reverse process generates another 7-pointed star shape, a rounder one this time! Whoop, there it is. If I ever get tattoos I'll probably start with these 7-pointed star shapes. Or a fretboard tattoo on my right forearm. Might as well be practical.

* A few weeks ago, it received exposure through a totally sweet local 'zine, and now I'm copy-and-pasting it into this .xhtml file, which you are now reading. Two different nows.

** At the risk of being unrealistically specific about something that's tough to pin down (and highly subjective), you could say that brighter means happier, while darker means sadder. However, I can attest from first-hand experience that "happy" scales make some people irritated (and maybe even angry), while "sad" songs can actually be pretty uplifting.

*** Each shift towards the dark end of the spectrum corresponds to the flattening of one interval. Lydian (mode 4)'s #4 gets flatted to a natural 4 to become Ionian (mode 1), whose 7th gets flatted to become Mixolydian (mode 5), whose 3rd gets flatted to become Dorian (mode 2), whose 6th gets flatted to become Aeolian (mode 6), whose 2nd gets flatted to become Phrygian (mode 3), whose 5th gets flatted to become Locrian (mode 7). A curious detail: the main text specifies the instruction "one more line to get back to the start." This might seem like cheating, like fudging it a bit to make it look better and tie up a loose end. This may be true, but there is actually some theoretical backup to validate that final line going from 7 back to 4: it corresponds to the *flattening of the Root*. The flattening of the Root? *Seriously, WTF?* I've never heard of flattening the Root before. That's weird, right? Well, when the Root of Locrian (mode 7) gets flatted, it becomes the Root of the Lydian mode whose Root is a half-step lower than the first 7 modes in the series, and so becomes the beginning of a brand-new 7-pointed Modal Brightness Star progression a half-step lower than before. This will happen for all 12 keys until the process returns to the Root note of the first Lydian. So, starting with an F root, the entire progression would be like so: F Lydian, F Ionian, F Mixolydian, F Dorian, F Aeolian, F Phrygian, F Locrian, E Lydian, E Ionian, E Mixolydian, E Dorian, E Aeolian, E Phrygian, E Locrian, D# Lydian, D# Ionian, D# Mixolydian, D# Dorian, D# Aeolian, D# Phrygian, D# Locrian, D Lydian, D Ionian, D Mixolydian, D Dorian, D Aeolian, D Phrygian, D Locrian, C# Lydian, C# Ionian, C# Mixolydian, C# Dorian, C# Aeolian, C# Phrygian, C# Locrian, C Lydian, C Ionian, C Mixolydian, C Dorian, C Aeolian, C Phrygian, C Locrian, B Lydian, B Ionian, B Mixolydian, B Dorian, B Aeolian, B Phrygian, B Locrian, A# Lydian, A# Ionian, A# Mixolydian, A# Dorian, A# Aeolian, A# Phrygian, A# Locrian, A Lydian, A Ionian, A Mixolydian, A Dorian, A Aeolian, A Phrygian, A Locrian, G# Lydian, G# Ionian, G# Mixolydian, G# Dorian, G# Aeolian, G# Phrygian, G# Locrian, G Lydian, G Ionian, G Mixolydian, G Dorian, G Aeolian, G Phrygian, G Locrian, F# Lydian, F# Ionian, F# Mixolydian, F# Dorian, F# Aeolian, F# Phrygian, F# Locrian, and finally back to the first step which was F Lydian. I guess that makes for a grand total of 84 steps (12 times 7). Give 'er! Go ahead and play through the entire progression! It's a freakin' Modal Marathon!