

LIVING AMONG THE PENTATONICS [PT. 1]
[revised 7 -11 -2012]

I have to thank Lou Harrison for steering my compass back to pentatonics and I dedicate this little paper to his great spirit as one who lived among them.

Over the years, I have used many different sets of elements as primordial musical building blocks. From one to two to three and to four note groups, depending on the tuning I was working in and what it involves. At this point I have spent maybe an embarrassingly long time with pentatonics. I think they are basically undervalued if not misunderstood in their potential.

Less like atoms or molecules, we might find pentatonics more like living cells in their ability to sustain and perpetuate themselves musically. Not only can we find examples of a single pentatonic holding an entire composition, or an evening of compositions but whole cultures for aeons. Some go on and expand their pentatonic language by common-tone modulations upward and downward adding two tones giving a 7 tone scale.

While Indian music has used both for side by side for thousands of years, Yasser might be the first in the west who pointed out the relationship of pentatonics to heptatonic as the latter evolving out of the other. Perhaps it might be better to say that one 'emerges' from the other and there are examples of this in both directions. The three overlapping pentatonics forming a heptatonic in the above being one example. The other one as in Japan where the seven tone scale gives rise to a cycle of pentatonics subsets.

The keyboard is a point where the two form also complementary sets of black and white, growing out of the seven-tone scale extended first to 5 keys. These have been the leads I have followed. In order to be useful to those not working in different tunings than my own, I will look at these in terms of 12 tone scales [which I do have my own tuned version of]

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The simplest 5 and 7 tone scales are those found by the succession of that many fourths [or fifths]. The former classic C_D_E G A where the series starts on E and if we start on B we get the latter C D E F G A B C. It is common knowledge as well that each has a disjunction, though atypical in size found between C and E in the first case and F and B in the second, regardless makes the scale cyclic,.

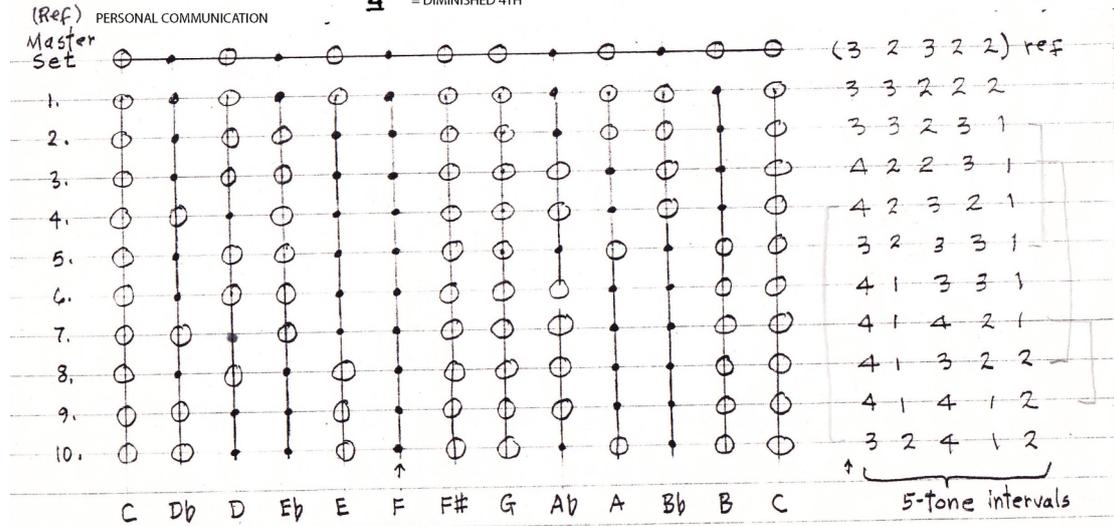
Wilson* notes that practically all the 7 tone scales of North India are modes of those 7 tone scales that have a chain of fourths that have only one augmented fourth or those with 2 augmented fourths and one diminished fourths. I extract those from his article.

* Xenharmonikon 9.available here- <http://anaphoria.com/xen9mar.PDF>
This same set of scales was found at the end of his original Moments of Symmetry article.

- fig. 1e -

Champakati	B 1.	4' 4 4' 4 4 4 (4)	S R G M' P D N S
	2.	4' 4 4 4' 4 4	S R G M' P D N S
	3.	4' 4 4 4 4' 4	S R G M' P D N S
	4.	4' 4 4 4 4 4'	S R G M' P D N S
Madhubanti	5.	4' 4 4 4' 4 4	S R G M' P D N S
	6.	4' 4 4 4 4' 4	S R G M' P D N S
Todi	7.	4' 4 4 4 4 4'	S R G M' P D N S
	8.	4' 4 4 4 4' 4	S R G M' P D N S
Purvi	9.	4' 4 4 4 4 4'	S R G M' P D N S
Marwa	10.	4' 4 4 4 4 4'	S R G M' P D N S

4 = PERFECT FOURTH
 4' = AUGMENTED 4TH
 4 = DIMINISHED 4TH



ref: The Marwa Permutations, Ervin M. Wilson, 1986, Xenharmonik IX, fig 1e
 B JAN 98-EW

○ denotes the 7-tone scales.
 ● denotes the complementary 5-tone scales.

This sketch is intended to supplement The Marwa Permutations E.W. Jan 8, 1999

If we add the classic scales from the previous page as 0. and use the numbers 1.-10. above as the designations of these new ones, we end up with 11 heptatonics and 11 pentatonics. In order to avoid confusing the two sharing the same number it is useful to use P and H afterwards to designate whether it is a pentatonic or a heptatonic.

By following the method of the Japanese [and indirectly the Indonesians] and seeing what pentatonics subsets can be derived from each heptatonic we discover a set of 19 pentatonics. 11 of these correspond to the 5 tone complements of our set of 11 heptatonics and we give them the same number.

9 of these pentatonic subsets are new which we number accordingly and we in turn take the 7 tone complements of these. Out of this set of 19 heptatonics we discover only one new pentatonic subset which in that has a 7 tone complement that gives us no new pentatonics subsets. Since we cannot proceed any further than these 20 pentatonics and heptatonics we are justified considering it a closed set.

A feature this set has is that the pentatonic complement formed by the white squares at the top and sharing the same number can be a constant in which two tones can be added to make the heptatonics of those numbers we find on the side.

