Applying Viggo Brun's Algorithm* to Rhythm
[in progress]

Kraig Grady 8 June, 2011.

I really like this Algorithm shown to me by Erv Wilson. While the application is much more limited in comparison with its use to his scale making, the rhythm application might be of benefit to more, so I thought I would write it up in this quick note. For those who have glanced at my use of Horogram rhythms (see last page) they will appreciate how this method, while similar, produces patterns left out or skipped over. It also allows a more hands on approach to how the patterns unfold and allows many points of choice. It is the easy way in which creative impulse can interject, that I find so compelling.

Here I will show you the simplest case that the following document [in progress] serves as a good model even though the application is for pitch. http://anaphoria.com/viggo2.PDF

The formula being used and then reused is

	1	*2*			*1*	*2*
a	a^1	a^2	*x*-	a-b	a^1	a^2
b	b^1	b^2	*y*	b	a^1+b^1	a^2+b^2

then row a and b are reshuffled depending on which is largest and the process is repeated. The first example uses one of Wilson's pages where I have interjected the pattern to show the process. Next I show it can be used to generate long meter or metric patterns.

What I find more interesting is when we have two 'sums' instead of one to seed our process. This requires a rewriting of the formula as such.

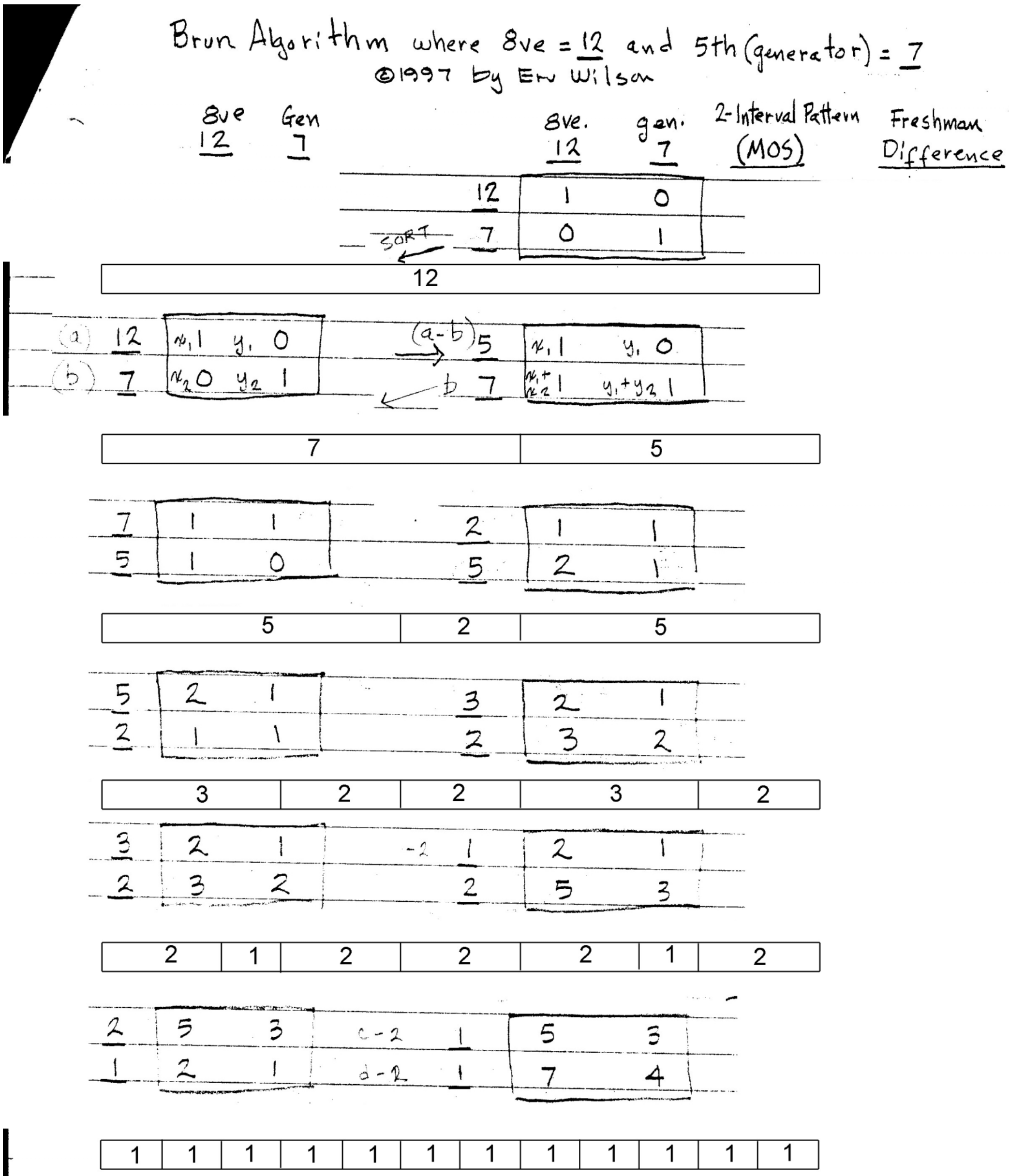
Here is the formula one uses and reuses.

	1	*2*	*3*			*1*	*2*	*3*
a	a^1	a^2	a^3	*x-y*	*a-b*	a^1	a^2	a^3
b	b^1	b^2	b^3	*b*	*b*	a^1+b^1	a^2+b^2	a^3+b^3
c	c^1	c^2	c^3	*z*	*c*	c^1	c^2	c^3

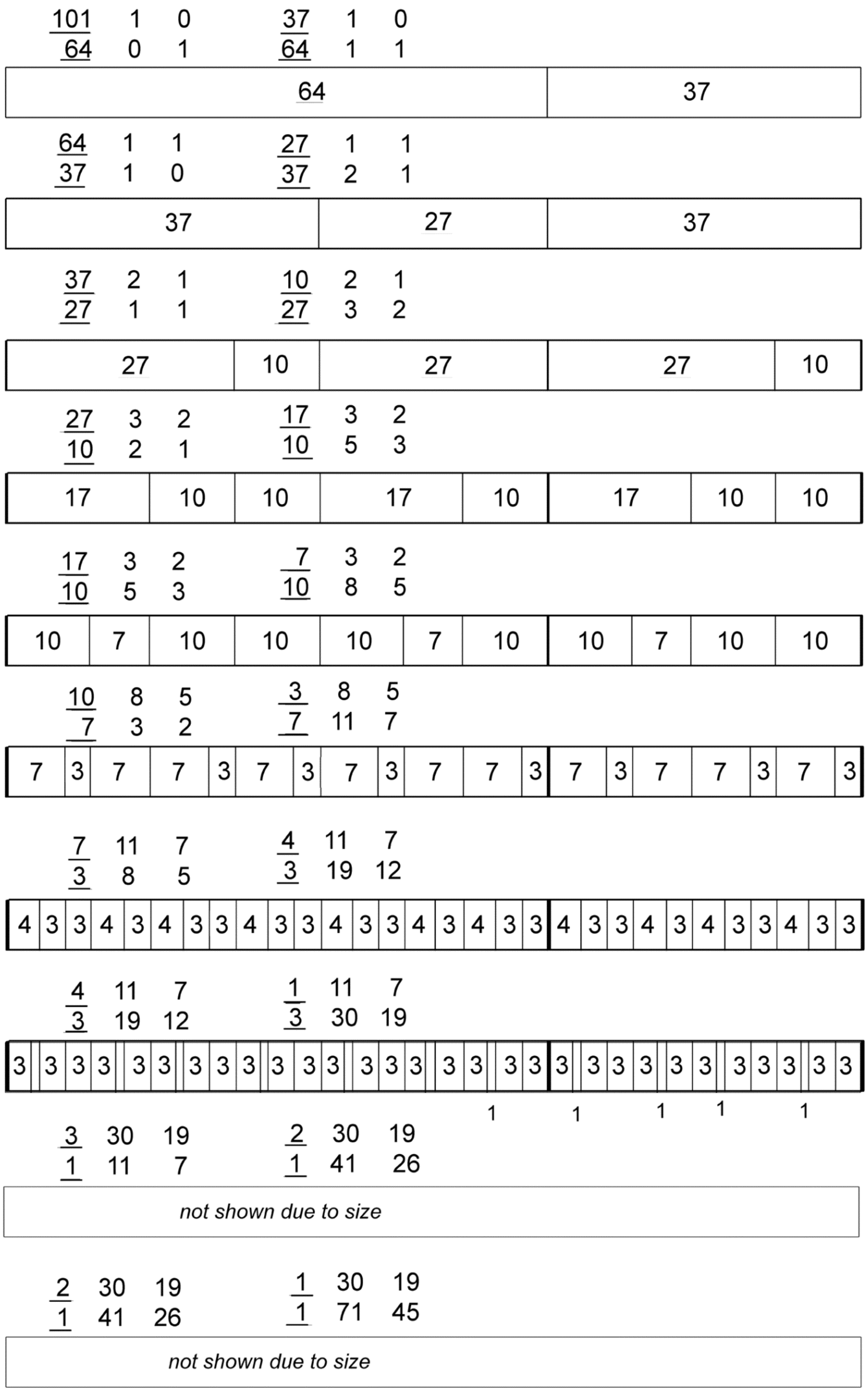
Once again one reshuffles these rows according to the largest to the smallest. This is referred to as the a-b configuration. There is another that we will let the reader investigate on their on. It is known as the a-c version. One can mix these two how one wishes, patterned or otherwise.

	1	*2*	*3*			*1*	*2*	*3*
a	a^1	a^2	a^3	*x-y*	*a-c*	a^1	a^2	a^3
b	b^1	b^2	b^3	*b*	*b*	b^1	b^2	b^3
c	c^1	c^2	c^3	*z*	*c*	a^1+c^1	a^2+c^2	a^3+c^3

*It appears that Nils Pippin and others contributed to some of the applications here .



Let us do this with a large number such as say 101 subdivided by 64. We get the following that opens the door to long term thinking in metric space and proportion. I have found these patterns quite natural in progression.



The next is an example of 3 sums. If we had chosen a number smaller than 37 as our third number we can see this would have progressed like above for a bit before it influenced the pattern. This means that one can introduce a third number if one wants at certain points in the pattern where it would enter. If one does not like the results one can try adjacent or numbers that are near to compare. It is this flexibility that makes it more pliable to work with and does require the user to succumb to whatever is provided. It is better to work out by hand for this very reason.

101.)	1	0	0	37.)	1	0	0
64 .)	0	1	0	64.)	1	1	0
49 .)	0	0	1	49.)	0	0	1

64	37

64.)	1	1	0	15.)	1	1	0
49.)	0	0	1	49.)	1	1	1
37.)	1	0	0	37.)	1	0	0

49	15	37

49.)	1	1	1	12.)	1	1	1
37.)	1	1	0	37.)	2	1	1
15.)	1	0	0	15.)	1	1	0

12	37	15	37

37.)	2	1	1	22.)	2	1	1
15.)	1	1	0	15.)	3	2	1
12.)	1	1	1	12.)	1	1	1

12	22	15	15	22	15

22.)	2	1	1	7.)	2	1	1
15 .)	3	2	1	15.)	5	3	2
12 .)	1	1	1	12.)	1	1	1

12	15	7	15	15	7	15	15

15.)	5	3	2	3.)	5	3	2
12.)	1	1	1	12.)	6	4	3
7.)	2	1	1	7.)	2	1	1

12	3	12	7	3	12	3	12	7	12	3	12	3

12.)	6	4	3	5.)	6	4	3
7.)	2	1	1	7.)	8	5	4
3.)	5	3	2	3.)	5	3	2

5	7	3	7	5	7	3	7	5	3	7	5	7	5	7	3	7	5	3

7.)	8	5	4	2.)	8	5	4
5.)	6	4	3	5.)	14	9	7
3.)	5	3	2	3.)	5	3	2

5	2	5	3	5	2	5	2	5	3	5	2	5	3	5	2	5	2	5	5	2	5	3	5	2	5	3

5.)	14	9	7	2 .)	14	9	7	
3.)	5	3	2	3 .)	19	12	9	*not shown*
2.)	8	5	4	2 .)	8	5	4	

Unlike Moments of Symmetry patterns, the order in which to place the dividing numbers it is not always clear. Evenness is the key. Best to watch that the shortest duration is flanked by the largest when possible. One ideally wants all composite durations in a row to lie within a close range without overlapping those higher or lower.

References:

- MULTIPLE DIVISION OF THE OCTAVE AND THE TONAL RESOURCES OF 19-TONE TEMPERAMENT
BY MAYER JOEL MANDELBAUM,1961

MUSIK OG EUKLIDSKE ALGORITHMER- Viggo Brun 1961

VIGGO BRUN'S ALGORITHM APPLIED TO MOS SCALE STEPS

SOME CONSTANT STRUCTURES PREDICTED BY VIGGO BRUN'S ALGORITHM

VIGGO BRUN'S EUCLIDEAN ALGORITHM

HOROGRAM RHYTHMS from Xenharmonikon 16

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