Hi, all … I'm in a hustle to get some things documented. One area that I like is sound. A long time ago, I thought about expanding the musical scale for fun. Why don't we have a bit more freedom with the scales? Is the octave so sacrosanct? It seems that a lot of liberty is used by musicians anyway. Glen Gould predicted some dramatic changes. Rock is not the change predicted.

Beauty is contained in all these wonderful sounds.

In 1964 I discovered an infinite series of numbers that I illustrated in a few examples of sound. The sound was special. It seemed to have a texture.

I came across a way to make rich sounds that were related to prime numbers and not traditional scales. In their sound the listener can hear how composite a number fit with the primes.

Unfortunately, entropy is consuming me, and I need to document what I have discovered. Due to my negligence some of it is gone, but what remains is very beautiful. I've constructed a couple of examples on my small web site at: wmichaelsterling.com.

For example: **Bell to 101 Up Pitch** and **Bell and Trumpet**

The idea was based upon the integers 1 to n and especially the Primes. I have demonstrated it with a little over 100 notes. The basic sound uses what I discovered and a little arithmetic.

I start with using a pitch of 1024 as the basis. That is the pitch in vibrations per second. The young human ear can do well from below 27.5 to above 4186 Hertz which is the normal piano range. Age loses the high end.

I will work with just n = 100. All primes are assigned ½. I've attached the complete scale builder from 1 to 100, calling it Bell and Trumpte.

To hear the full 100 at high speed you should click **Bell to 101 Up Pitch**. Using a slower pace, we get this sounds … Click Here.

The numbers are based upon the positive integers and the function that I discovered that I call S(n). You can find the value table below named The First Hundred Values of S(n).

I took those numbers and used them in a program at Carnegie Mellon University's School of Music, I think? It's been a very long time. I did the work remotely and had no contact with the faculty or students. In any event all that remains of my encounter with Carnegie are the beautiful tones I developed using AI software written in Lisp and using S(n).

Note that each prime is heralded by a trumpet sound. The very first sound is at pitch 1024. This is followed by S(n)*1024, where n goes from 1 to 100.

Carnegie Mellon did not develop what you hear, but they did package some tools that I used.

Using the table of values of S(n) below follow along and see how the notes are created.
Click Here and then concentrate on the sounds.

The First Hundred Values of S(n)							
n	S(n)	n	S(n)	n	S(n)	n	S(n)
1	1	26	1/4	51	1/4	76	3/16
2	1/2	27	5/16	52	3/16	77	1/4
3	1/2	28	3/16	53	1/2	78	1/8
4	3/8	29	1/2	54	5/32	79	1/2
5	1/2	30	1/8	55	1/4	80	35/256
6	1/4	31	1/2	56	5/32	81	35/128
7	1/2	32	63/256	57	1/4	82	1/4
8	5/16	33	1/4	58	1/4	83	1/2
9	3/8	34	1/4	59	1/2	84	3/32
10	1/4	35	1/4	60	3/32	85	1/4
11	1/2	36	9/64	61	1/2	86	1/4
12	3/16	37	1/2	62	1/4	87	1/4
13	1/2	38	1/4	63	3/16	88	5/32
14	1/4	39	1/4	64	231/1024	89	1/2
15	1/4	40	5/32	65	1/4	90	3/32
16	35/128	41	1/2	66	1/8	91	1/4
17	1/2	42	1/8	67	1/2	92	3/16
18	3/16	43	1/2	68	3/16	93	1/4
19	1/2	44	3/16	69	1/4	94	1/4
20	3/16	45	3/16	70	1/8	95	1/4
21	1/4	46	1/4	71	1/2	96	63/512
22	1/4	47	1/2	72	15/128	97	1/2
23	1/2	48	35/256	73	1/2	98	3/16
24	5/32	49	3/8	74	1/4	99	3/16
25	3/8	50	3/16	75	3/16	100	9/64