

Prime Rhythm

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This paper reveals the hidden rhythm of the prime numbers.

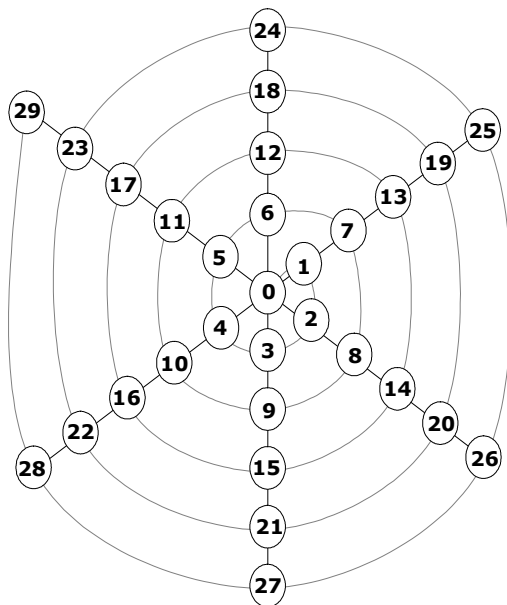
An integer that cannot be decomposed as the outcome of the multiplication of two integers other than 1 is ranked as a *primary* integer. All other integers are ranked as secondary integers.

For many centuries countless mathematicians have unsuccessfully tried to find a rhythm in the series of the primary integers, also referred to as primes. In order to discover this hidden rhythm, we need to reconsider the status of the smallest prime numbers. By claiming that 1 is not a prime number, the number 1 is degraded to be a secondary number, which is clearly not the case. The number 1 cannot be decomposed as the outcome of the multiplication of two integers other than 1, and must therefore be treated a prime number, though it is a very special prime, as will be shown below.

Next, 2 and 3 turn out to be so special that they are no (ordinary) prime numbers. The numbers 2 and 3 are the (universal) *Ratio Base Numbers*. When we study the relative frequencies of harmonic music, we always find 2 and 3 as base numbers in all harmonic ratio's between the tones of the scale. To learn more about this read the fifth chapter in the e-book entitled '*Understanding Nature*' on www.Pateo.nl.

Now we have included 1 and excluded 2 and 3, the series of prime numbers starts as follows:

1 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103 107 109 113..



How can we discover the rhythm in this series of the prime numbers? The first step to reveal the prime rhythm is to spiral out all integers in six directions. To do so, we plot all integers in six consecutive directions in a spiral form starting with 0 in the centre.

In the resulting figure as shown to the left, we see that all prime numbers are in only two of these six directions (which are the directions of *right hand side up* (the direction of 1) and *left hand side up* (the direction of 5) in the above figure). This is of course logical, since three of the remaining four directions only contain even numbers (which are multiples of 2) and half of the remaining four directions contain multiples of 3. So also here we see 2 and 3 as base numbers.

To understand the prime rhythm we have to shift our focus of attention to all numbers in both directions that are **not** primes. The prime rhythm turns out to be the *reverse* of the rhythm of the non-primes in both directions. To explain this non-primes rhythm we can compare the

group of primes with an orchestra. The number 1 is the conductor of the orchestra. Every prime is allowed to start playing as soon as conductor has counted up to the square of its own number. This square is *always* found in the direction of 1. As soon as a prime is allowed to start playing the number of the prime dictates the playing frequency.

The first prime to start playing is 5 (at the square of 5). Next, on every 5th position in the direction of 1, the number 5 beats on its drum. But before the second beat in the direction of 1, the number of 5 also starts to beat in the direction of 5 on every 5th position. On the square of 7, the number 7 joins in (In the direction of 1). And thus on every 7th position, the number 7 beats on its drum, first in the direction of 1, and then in the direction of 5. Next, 11 is allowed to start playing (at the square of 11), followed by 13 (at the square of 13). The start of this orchestrated play is shown in the table below.

1					5
7					11
13					17
19					23
25	5×5				29
31					35
37					7×5
43					41
49		7×7			47
55	11×5				53
61					59
67					65
73					13×5
79					71
85	17×5				77
91		13×7			11×7
97					83
103					89
109					95
115	23×5				19×5
121		11×11			101
127					107
133		19×7			113
139					119
145	29×5				17×7
151					125
157					5×5×5
163					131
169					137
175	5×7×5	5×5×7			143
181			13×13		149
187					155
193					31×5
199					161
205	41×5				23×7
211					167
217		31×7			173
					179
					185
					37×5
					191
					197
					203
					29×7
					209
					19×11
					215
					43×5
					221
					17×13

This rhythm goes on infinitely. To higher the numbers are, the more primes have joined in to beat their drum. That is why primes become rarer the longer the orchestra is playing.

The prime rhythm must not be confused with the Sieve of Eratosthenes. That sieve is just an algorithm for scoring out secondary integers. The prime rhythm shows how the game of *multiplication* is played only by primes in interaction with themselves or other primes!

I have noticed that most mathematicians fail to see the mathematical beauty in the prime rhythm as explained above. A short video on YouTube revealing this rhythm did not 'shock' the community of number theorists. On the contrary, many people started to attack me because they thought the prime rhythm was nothing special. So let us see what more there is to discovered concerning the rhythm of the primes.

Let me start with a formula, because if the prime rhythm is not a formula, mathematicians are apparently not able to see the logic. The letter p in the formula below represents any prime number.

$$(p^2-1)/6$$

Applying this function to the first 33 primes starting with 7 results in the following series:

8 20 28 48 60 88 140 160 228 280 308 368 468 580 620 748 840 888 1040 1148 1320 1568
1700 1768 1908 1980 2128 2688 2860 3128 3220 3700 3800

The last digit (or cipher) of each of these numbers (applied to all primes) is always a 0 or an 8. And the digit on the position of the tens is always an even cipher. This is clearly not random, so it is also part of the prime rhythm.

And finally numerological addition shows another remarkable rhythm related to the primes. This technique keeps adding up the ciphers of a number until the result is a single digit. Applying numerological addition to the squares of all primes (starting with 1) shows the following starting series:

1 7 4 4 7 1 1 7 4 7 1 7 4 4 1 7 4 7 1 1 4 4 1 4 4 7 1 1 7 1 7 4 7 7 4 7 1 7 4 1 1 4 7 1 1 7 4 4 7 1
7 4 1 7 4 1 1 4 4 7 7 1...

Not only does this series only contains the ciphers 1, 4 and 7, also each of these three digits appears at most twice in a row. To me these three numbers are very meaningful because of my knowledge of the Enneagram.

Science becomes much more meaningful as soon as we start to see the bigger picture!

Thank you for reading this short paper. I appreciate suggestions for further research.

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