Abstract

In this research investigation, the author has presented a novel scheme of Universal Evolution Model.

Theory Of Natural Metric

One Step Evolution Scheme Of Any Element Of Any Higher Order Sequence Of Primes

Consider any element of any higher Order Sequence Of Primes [1], say
\[ k b_h = c_1 c_2 c_3 \ldots c_{k-1} c_k \]

where \( c_1, c_2, c_3, \ldots, c_{k-1}, c_k \) are Primes (Standard) of First Order.

We now consider any one of \( c_i \), (among \( i = 1 \) to \( k \)) and evolve it by One Step. By One Step Evolution of \( c_i \), we mean if \( c_i \) is the \( g_i^{th} \) Prime Metric Element of the First Order Sequence Of Primes, i.e., the Standard Primes, then, the \((g_i + 1)^{th}\) Prime Metric Element of this First Order Sequence Of Primes is the One Step Evolved Prime of \( c_i \). Therefore, for \( k \) values of \( c_i \), we have \( k \) values of \( b \). However, only those cases of Evolution must be considered wherein \( c_{i(g_i+1)} \neq c_j \) for \( j = \{|1 \text{ to } k| - \{i\}\} \). Here, the notation \( c_{i(g_i+1)} \) indicates that it is One Step Evolved Prime of \( c_i \). The 1 on the North Left indicates the Order of the Sequence Of Primes to which it belongs and \((g_i + 1)\) indicates the location number of this element \( c_{i(g_i+1)} \) along the Prime Metric Basis of Standard Primes. Let us say, we have now \( l \) values of \( b \) after ruling out such cases of aforementioned kind. We now pick the lowest number of this Set and call this as \( k b_{(h+1)} \), with notation being explicit. We call this \( k b_{(h+1)} \) as one step Evolved Prime of \( k b_h \). Also, one can note that for a set upper limit \( U \), we can find the entire list of \( k^{th} \) Order Sequence Of Primes (upto say, \( U \)), using [1]. Using this list as well, we can find \( k b_{(h+1)} \). A seasoned reader of author’s literature can now also infer the One Step Devolution Scheme of Any Higher Order Sequence Of Primes.

**One Step Evolution Of Any Given Positive Integer**

Firstly, we consider any Positive Integer \( S \), which we know can be written as

\[ S = (p_1)^{a_1} (p_2)^{a_2} (p_3)^{a_3} \ldots (p_{n-1})^{a_{n-1}} (p_n)^{a_n} \]
where \( p_i, i = 1 \text{ to } n \) are positive integers.

We now re-write \( S \) as

\[
S = q\left( r_1 \cdot r_2 \cdot r_3 \cdot \ldots \cdot r_{m-1} \cdot r_m \right) \quad \text{where } r_i, i = 1 \text{ to } m \quad \text{are all distinct Primes of First Order and } \quad q \quad \text{only has Prime Factors (maybe even repeating) which must be in } r_i, \text{ or rather the repeating or Non-Repeating Prime Factors of } q \text{ are the Subset of the Set } \{ r_i \}_{i=1}^{m} . \quad \text{We can therefore now write } S \text{ as }
\]

\[
S = \underbrace{\left( r_1 \cdot r_2 \cdot r_3 \cdot \ldots \cdot r_{m-1} \cdot r_m \right)}_{\text{q times}} + \underbrace{\left( r_1 \cdot r_2 \cdot r_3 \cdot \ldots \cdot r_{m-1} \cdot r_m \right)}_{\ldots} + \ldots + \underbrace{\left( r_1 \cdot r_2 \cdot r_3 \cdot \ldots \cdot r_{m-1} \cdot r_m \right)}_{\ldots}
\]

Now, since we know how to evolve \( r_1 \cdot r_2 \cdot r_3 \cdot \ldots \cdot r_{m-1} \cdot r_m \), and as \( S = q\left( r_1 \cdot r_2 \cdot r_3 \cdot \ldots \cdot r_{m-1} \cdot r_m \right) \), we can find one step evolved \( S \) by first naming \( \left( r_1 \cdot r_2 \cdot r_3 \cdot \ldots \cdot r_{m-1} \cdot r_m \right) \) as \( m t_l \), i.e., \( m t_l = \left( r_1 \cdot r_2 \cdot r_3 \cdot \ldots \cdot r_{m-1} \cdot r_m \right) \) and writing one step evolved \( S \) as \( S = q\left( m t_{l+1} \right) \). A seasoned reader of author’s literature can now also infer the One Step Devolution Scheme of any given Positive Integer.

**Example:**

Considering the number 752

\[
752 = 2 \times 376
\]

\[
= 2^4 \times 47
\]

\[
= 2^3 \times (2 \times 47)
\]

\[
= 8 \times (2 \times 47)
\]

\[
= \underbrace{(2 \times 47) + (2 \times 47) + \ldots + (2 \times 47)}_{\text{8 times}}
\]

**One Step Evolution of \( 2 \times 47 \)**
Cases:

1. \((3 \times 47) = 141\)
2. \((2 \times 53) = 106\)

Since, 106 is the smallest among all the cases, we say that \((2 \times 53) = 106\) is the One Step Evolved Element of \((2 \times 47)\).

Hence, 752 one step evolved is \(8 \times (2 \times 53) = 8 \times 106 = 848\)

Hence, the next term of 752 is 848 along the Natural Metric of 752.

**One Step Devolution of \((2 \times 47)\)**

Cases:

1. \((2 \times 43) = 86\)

Therefore, we say that \((2 \times 43) = 86\) is the one step devolved element of \((2 \times 47)\).

Hence, 752 one step devolved is \(8 \times (2 \times 43) = 8 \times 86 = 688\)

Hence, the previous term of 752 is 688 along the Natural Metric of 752. Therefore, now 688, 752 and 848 are along the Natural Metric of 688.

**Evolution Of A Set**

For a Set \(S\) whose elements belong to the Set of positive integers, i.e, \(S = \{d_1, d_2, d_3, \ldots, d_{n-1}, d_n\}\), One Step Evolution \(E^1\{S\}\) is considered as described in the following lines:

1. Firstly, One Step Evolution happens in any one term only. Therefore, we note all these cases and arrange these cases of the One Step Evolved Set(s) in ascending order wherein the ascending order is with respect to the sum of the elements of the thusly evolved cases of the Set.
2. Secondly, One Step Evolution happens in any two terms only. Therefore, we note all these cases and arrange these cases of the One Step Evolved
Set(s) in ascending order wherein the ascending order is with respect to the sum of the elements of the thusly evolved Set.

...

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3. We keep considering One Step Evolution similarly till finally One Step Evolution happens each in all the terms. We now arrange all these results of all these cases in ascending order. Now, $E^1\{S\}$ can be given by that particular case of One Step Evolution of the Elements among all the cases of the Set which gives a minimum possible climb for $S$ with regards the sum of the elements of the thusly evolved Set.

**Evolution Of A Function**

The One Step Evolution of the Product of Two Positive Integers can be taken as the One Step Evolution of the Value of the Product.

The One Step Evolution of the Sum of Two Positive Integers can be taken as the One Step Evolution of the Value of the Sum.

The One Step Evolution of the Positive Difference of Two Positive Integers can be taken as the One Step Evolution of the Value of the Positive Difference.

The One Step Evolution of the Ratio of Two Positive Integers is given by those operations of One Step Evolution of its Numerator and Denominator such that the climb in the value of the ratio is minimum possible, as detailed already.
Fractional Order Evolution Of Any Positive Integer

Case 1: \( E^f \{d_i\} \) denotes that the Element \( d_i \) is Evolved \( \frac{e}{f} \) times. Here, \( e > f \). Note that we can write \( \frac{e}{f} = t + \frac{j}{f} \) or rather \( t \frac{j}{f} \).

Therefore, \( E^f \{d_i\} = E^{t\frac{j}{f}} \{d_i\} \) can be written as

\[ E^{t\frac{j}{f}} \{d_i\} = E^t \{d_i\} + E^{\frac{j}{f}} \{d_i\} \]

Case 2: \( E^f \{d_i\} \) denotes that the Element \( d_i \) is Evolved \( \frac{e}{f} \) times. Here, \( e < f \).

Therefore, \( E^f \{d_i\} \) can be written as

\[ E^f \{d_i\} = E^0 \{d_i\} + \frac{e}{f} \{E^1 \{d_i\} - E^0 \{d_i\}\} \]

\[ E^f \{d_i\} = d_i + \frac{e}{f} \{E^1 \{d_i\} - d_i\} \]
Fractional Order Evolution Of Any Positive Integer  (Hyper-Refined Version)

Let \( d_i \) be some Prime Metric Basis Element belonging to the Sequence of Primes of Order \( G \).

Case 1: \( E^{\frac{e}{f}} \{d_i\} \) denotes that the Element \( d_i \) is Evolved \( \frac{e}{f} \) times. Here, \( e > f \). Note that we can write \( \frac{e}{f} = \frac{t}{f} + \frac{j}{f} \) or rather \( t \frac{j}{f} \).

Therefore, \( E^{\frac{e}{f}} \{d_i\} = E^{-\frac{j}{f}} \{d_i\} \) can be written as

\[
E^{\frac{i}{j}} \{d_i\} = E^{t} \{d_i\} + E^{\frac{j}{f}} \{d_i\}
\]

Here, we consider the ratio

\[
\delta = \frac{j^{th} \text{ Prime Metric Basis Element Of } G^{th} \text{ Order Sequence Of Primes}}{f^{th} \text{ Prime Metric Basis Element Of } G^{th} \text{ Order Sequence Of Primes}}
\]

\[
E^{\frac{i}{j}} \{d_i\} = E^{t} \{d_i\} + \delta \{E^{(t+1)} \{d_i\} - E^{t} \{d_i\}\}
\]

Case 2: \( E^{\frac{e}{f}} \{d_i\} \) denotes that the Element \( d_i \) is Evolved \( \frac{e}{f} \) times. Here, \( e < f \). Here, we consider the ratio

\[
\mu = \frac{e^{th} \text{ Prime Metric Basis Element Of } G^{th} \text{ Order Sequence Of Primes}}{f^{th} \text{ Prime Metric Basis Element Of } G^{th} \text{ Order Sequence Of Primes}}
\]
Therefore, $E^f \{d_i\}$ can be written as

$$E^f \{d_i\} = E^0 \{d_i\} + \mu (E^1 \{d_i\} - E^0 \{d_i\})$$

$$E^f \{d_i\} = d_i + \frac{e}{f} (E^1 \{d_i\} - d_i)$$

The Next Term Of Any Sequence Generating Algorithm

Given the first $n$ terms of a sequence, say

$$R = \{b_1, b_2, b_3, \ldots, b_{n-1}, b_n\}$$

We find the differences between $b_{i+1}$ and $b_i$ for $i = 1$ to $n-1$. Let these be represented by $\alpha_{11}, \alpha_{12}, \alpha_{13}, \ldots, \alpha_{1(n-2)}, \alpha_{1(n-1)}$.

We again find the differences between the newly found differences $\alpha_{11}, \alpha_{12}, \alpha_{13}, \ldots, \alpha_{1(n-2)}, \alpha_{1(n-1)}$ and name them $\alpha_{21}, \alpha_{22}, \alpha_{23}, \ldots, \alpha_{2(n-2)}$ and so on so forth till we find the last difference down the inverted pyramid as shown below:

$$\begin{align*}
\{ & b_2 - b_1, \quad b_3 \rightarrow b_2, \quad \ldots \ldots, \quad b_n \rightarrow b_{n-1} \\
& \underbrace{\alpha_{11}} \quad \underbrace{\alpha_{12}} \quad \underbrace{\alpha_{1(n-1)}} \quad \underbrace{\alpha_{1(n-1)}} \quad \underbrace{\alpha_{1(n-1)}} \quad \underbrace{\alpha_{1(n-1)}} \\
\{ & \alpha_{12} - \alpha_{11}, \quad \alpha_{13} - \alpha_{12}, \quad \ldots \ldots, \quad \alpha_{1(n-1)} - \alpha_{1(n-2)} \\
& \underbrace{\alpha_{21}} \quad \underbrace{\alpha_{22}} \quad \underbrace{\alpha_{2(n-2)}} \quad \underbrace{\alpha_{2(n-2)}} \quad \underbrace{\alpha_{2(n-2)}} \quad \underbrace{\alpha_{2(n-2)}}
\end{align*}$$
We now consider One Step Evolution of $\alpha_{(n-1)l}$, i.e., $E^1\{\alpha_{(n-1)l}\}$ and using $E^1\{\alpha_{(n-1)l}\}$ and $\alpha_{(n-2)2}$, we find the next term of the Sequence $\{\alpha_{(n-2)l} \to \alpha_{(n-2)2}\}$ (as detailed in the following lines). Let this term be denoted by $N\{\alpha_{(n-2)2}\}$. That is,

$$E^1\{\alpha_{(n-1)l}\} = \{N\{\alpha_{(n-2)2}\}\} - \{\alpha_{(n-2)2}\}$$

Now, we find the next term of the Sequence $\{\alpha_{(n-3)l} \to \alpha_{(n-3)2} \to \alpha_{(n-3)3}\}$ using the relation

$$N\{\alpha_{(n-3)2}\} - \alpha_{(n-3)3} = N\{\alpha_{(n-2)2}\}$$

In a similar fashion, we find $N\{\alpha_{(n-4)4}\}, \ldots, N\{\alpha_{2(n-2)}\}, N\{\alpha_{1(n-1)}\}$ and finally $N\{b_n\}$. This $N\{b_n\}$ is the next term of $b_n$. 
Note:

One can note that some Natural Systems Evolve such that the Next term of its Sequence can be gotten by considering

\[ E^{\delta}\{\alpha_{(n-1)!}\} \] in place of \[ E^1\{\alpha_{(n-1)!}\} \] where

\( \delta \) is some small positive Integer. We can find this by trying \( \delta = 1, 2, 3, \ldots \).

Actually, we can use the first \( (n - 1) \) terms and apply this method and find the \( \delta \) that exactly predicts the \( n^{th} \) term. Henceforth, we can use this \( \delta \) for predicting the next term.

Note:

The \( \delta \) number (may or may not be Fractional) of steps of Evolution can be computed by knowing how many seconds of Earth Time is equivalent to One Step Evolution of our Galaxy at our Earth’s Location, down the Recursional Field Intensity Gradient Function.

References

1. Bagadi, Ramesh Chandra (2016). Field(s) of Sequence(s) Of Primes Of Positive Integral Higher Order Spaces. PHILICA.COM Article Number 622. ISSN 1751-3030.