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Theory Of Natural Metric

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Author:
Ramesh Chandra Bagadi

Affiliation 1:	*Affiliation 2:*	*Affiliation 3:*
Data Scientist **International School Of Engineering (INSOFE)** 2nd Floor, Jyothi Imperial, Vamsiram Builders,, Janardana Hills, Above South India Shopping Mall,, Old Mumbai Highway, Gachibowli,, Hyderabad, Telangana State, 500032, India. Email: ramesh.bagadi@insofe.edu.in	*Founder & Owner* **tex*N* Consulting Private Limited**, Gayatrinagar, Jilleleguda, Hyderabad, Telengana State, 500097, India. Email: rameshcbagadi@uwalumni.com	*Founder & Owner* **Ramesh Bagadi Consulting LLC** (R420752), Madison, Wisconsin-53715, United States Of America. Email: rameshcbagadi@uwalumni.com

Abstract

In this research investigation, the author has detailed about the Scheme of construction of Natural metric for any given positive Integer. Natural Metric can be used for Natural Scaling of any Set optimally. Natural Metric also forms the Universal Basis for the Universal Correspondence Principle between Quantum mechanics and Newtonian Mechanics. Furthermore, Natural Metric finds great use in the Science of Forecasting Engineering.

Theory

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

$$^{k}b_h = c_1.c_2.c_3.............c_{k-1}.c_k$$

where $c_1, c_2, c_3, ..., c_{k-1}, c_k$ 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 ${}^{1}c_{i_{(g_{c_i}+1)}} \neq c_j$ for $j=\{\{1\,to\,k\}-\{i\}\}$. Here, the notation ${}^{1}c_{i_{(g_{c_i}+1)}}$ 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 $\left(g_{c_i}+1\right)$ indicates the location number of this element ${}^{1}c_{i_{(g_{c_i}+1)}}$ 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], [2]. 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

$$s=(p_1)^{a_1}(p_2)^{a_2}(p_3)^{a_3}\dots\dots\dots(p_{n-1})^{a_{n-1}}(p_n)^{a_n}$$

where p_i, $i=1\,to\,n$ are positive integers.

We now re-write s as

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

$$s=\overbrace{(r_1.r_2.r_3......r_{m-1}.r_m)+(r_1.r_2.r_3......r_{m-1}.r_m)+........+(r_1.r_2.r_3......r_{m-1}.r_m)}^{q\ times}$$

Now, since we know how to evolve $r_1.r_2.r_3......r_{m-1}.r_m$, and as $s=q(r_1.r_2.r_3......r_{m-1}.r_m)$, we can find one step evolved s by first naming $(r_1.r_2.r_3......r_{m-1}.r_m)$ as ${}^m t_l$, i.e., ${}^m t_l=(r_1.r_2.r_3......r_{m-1}.r_m)$ and writing one step evolved s as $s=q({}^m t_l)$. 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

$$\begin{aligned}752&=2\times376\\&=2^4\times47\\&=2^3\times(2\times47)\\&=8\times(2\times47)\\&=\overbrace{(2\times47)+(2\times47)+........+(2\times47)}^{8\ times}\end{aligned}$$

One Step Evolution of (2×47)

Cases:

1. $(3\times47)=141$
2. $(2\times53)=106$

Since, 106 is the smallest among all the cases, we say that $(2\times53)=106$ is the One Step Evolved Element of (2×47).

Hence, 752 one step evolved is $8\times(2\times53)=8\times106=848$

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

One Step Devolution of (2×47)

Cases:

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

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

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

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

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