Universal Natural Recursion Schemes Of R^{th} Order Space

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Abstract

In this research investigation the authors have advented a novel '*Universal Natural Recursion Schemes Of R^{th} Order Space*'. The author also sheds light on the method to build a Universal Natural Recursion Scheme characteristic of any sequence set.

Theory

One should note that when we consider the image of a triangle with vertices labeled 1, 2, 3 in the clockwise direction and when we find it's lateral image* {* Finally, one can derive all the other such Natural Recursion Scheme Bases (if at all they are found to be distinct from the above) by considering all other images (North, South, Left Lateral, Right Lateral) and also at all angles in the Steradianical angle range.} which should be in the anti-clockwise direction, the vertices label will be in the order 2, 1, 3. That is the perception of the image is actually this Recursion Scheme.

By Recursion Scheme we mean the scheme along which manifestations exist as a wave. For example, we can consider a certain type of 'Life' following a certain Recursion Scheme such as 2, 1, 3 which implies that it manifests a certain property or a set of properties with normalized magnitude 2, then with normalized magnitude 1 and finally with normalized magnitude 3 for one complete cycle of observation and/ or perception least count.

One should note that, when we consider the Recursion Scheme 2-1-3,

2 ----- 1 ------ 3

(1) (2)

The absolute value of the difference between 2 and 1 is 1 and the absolute value of the difference between 1 (First Prime) and 3 is 2 (Second Prime).

Similarly,

One should note that, when we consider the Recursion Scheme 3-1-4,

3 ----- 1 ----- 4 = (2 (of the previous recursion scheme 2-1-3) x 2)

(2) (3)

The absolute value of the difference between 3 and 1 is 2 (Second Prime) and the absolute value of the difference between 1 and 4 is 3 (Third Prime).

Also,

One should note that, when we consider the Recursion Scheme 4-1-6,

4 ----- 1 ----- 6 =(3 (of the previous recursion scheme 3-1-4) x 2)

(3) (5)

The absolute value of the difference between 4 and 1 is 3 (Third Prime) and the absolute value of the difference between 1 and 6 is 5 (Fourth Prime).

As we can observe that the considered Recursion Scheme can be made to evolve along the sequence of prime numbers, as can be noticed from the above observation.

And so, on so forth, one can slate the evolution of the Recursion Scheme as follows:

2-1-3

3-1-4

4-1-6

6-1-8

8-1-12

12-1-18

18-1-20

20-1-24

…

…

…

Etc.

One should note that the Recursion Scheme 2-1-3 considered here is the most optimal one that reflects the manifestations of the 7-8-6 recursion scheme world. However, one should note that all Recursion Schemes evolve from this as stated above using the Prime Sequence Function. Therefore, all these recursion Schemes can be called as the Bases for the Universal Recursion Scheme.

That is there is no manifestation in the Universe that cannot be explained using these bases and the combinations of these. The authors like to name these bases Universal Natural Recursion Scheme Bases. A seasoned reader of our research works would also note that any type of Life can be constructed using these bases and/ or the combinations of these bases. Conversely, one can also characterize the truth of Life constructed of such bases and/ or combinations of bases.

One can use [1], [2] for evaluating The Primes In Any Higher Order Space and can therefore, along similar lines as stated above can build Universal Natural Recursion Schemes Of Any R^{th} Order Space.

One should note that the Recursion Scheme evaluated using the Prime(s) (Numbers) In Higher Spaces Of R^N is the Recursion Intelligence Of that order in R^N.

Algebraic Properties Of Universal Natural Recursion Schemes Of R^{th} Order Space

Furthermore, one should note that when we mean Universal Recursion Scheme such as 2-1-3, 7-1-11 and/ or 31-1-43, we actually mean them as a function of the progression of the Sequence of Primes (of appropriate 2^{nd}, 3^{rd} and/ or 4^{th} order space here in this case for the Universal Recursion Schemes 2-1-3, 7-1-11 and/ or 31-1-43 respectively).

That is 2-1-3 is actually

{2-1-3, 3-1-4, 4-1-6, 6-1-8, 8-1-12, 12-1-18, 18-1-20, 20-1-24,…..}

One can actually write any *Universal Natural Recursion Schemes Of R^{th} Order Space* in general as

$\{(1+{}^{R}p_i)\leftrightarrow 1\leftrightarrow(1+{}^{R}p_{i+1})\}$ where ${}^{R}p_i$ denotes ith Prime element of *Rth Order Space Sequence Of Primes*.

Now, considering a few elements of the Sequence's Of Primes of 2nd Order, 3rd Order and 4th order space as follows,

Universal Natural Recursion Scheme Of Rth Order Space	First Few Elements Of Sequence's Of Primes	Of Rth Order Space
2-1-3 i.e., $\{(1+{}^{R=2}p_i)\leftrightarrow 1\leftrightarrow(1+{}^{R=2}p_{i+1})\}$	{2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, …}	R=2
7-1-11 i.e., $\{(1+{}^{R=3}p_i)\leftrightarrow 1\leftrightarrow(1+{}^{R=3}p_{i+1})\}$	{6 (3x2), 10 (5x2), 14 (7x2), 15 (5x3), 21 (7x3), 22 (11x2), 26 (13x2), 33 (11x3), 34 (17x2), 35 (7x5), 38 (19x2), 39, (13x3), 45 (9x5), … }	R=3
31-1-43 i.e., $\{(1+{}^{R=4}p_i)\leftrightarrow 1\leftrightarrow(1+{}^{R=4}p_{i+1})\}$	{30 (5x3x2), 42 (7x3x2), 70 (7x5x2), 84 (7x4x3), 102 (17x3x2), 105 (17x3x2), 110 (11x5x2), 114 (19x3x2), 130 (13x5x2), …}	R=4
210-1-275 i.e., $\{(1+{}^{R=5}p_i)\leftrightarrow 1\leftrightarrow(1+{}^{R=5}p_{i+1})\}$	210 (7x5x3x2), 275 (11x5x3x2), 482 (11x7x3x2), 770 (11x7x5x2), 1155 (11x7x5x3), …	R=5
…	…	…

From the above sequence's elements, one can note that the *Universal Natural Recursion Schemes Of Rth Order Space* are Super-Settingly span (Cover and/ or Super-Set) 'Additive' (For example: 210 {1st Prime of 5th (5=2+3) Order Dimension Sequence Of Primes (excluding 1)}=107{30th Prime of 2rd Order Dimension Sequence Of Primes (excluding 1)}+106 {30th Prime of 3rd Order Dimension Sequence Of Primes (excluding 1)} and 'Subtractive' aspects !

Also, given some *Universal Recursion Schemes* of concern, one can find the common denominator *Universal Recursion Scheme* of all these *Universal Recursion Schemes* by simply multiplying the corresponding elements of all the given *Universal Recursion Schemes* of concern.

Building Universal Recursion Scheme Characteristic Of Any Set

One can build an appropriate *Universal Recursion Scheme* Characteristically representing any Set of concern in the following fashion:

Firstly, we list out the given set 'S' with its elements. We now again segregate the elements of set as different sub-sets of the given set S such that each sub-set

is a sub-set of the Sequence Of Primes of certain distinct Higher Order Space. Furthermore, we order (place) the elements of such sub-sets in such a fashion such that the element corresponding the i^{th} (concerned distinct Higher Order Space) Prime Metric Basis element of the Sequence Of Primes of concerned distinct Higher Order Space is placed in the i^{th} position while the sub-set may have blanks along the Prime Metric Basis elements of the Sequence Of Primes of concerned distinct Higher Order Space.

We now list the Higher Order Space distinct Number(s) of the Sequence's Of Primes {of concerned distinct Higher Order Space(s)}, the aforementioned thusly formed sub-sets belong to. We now add up all these Numbers and then slate down the Sequence Of Primes of (this thusly computed) Sum Numbered Ordered Space.

We now add all these sub-sets in such a fashion that their elements corresponding to the Prime Metric Basis elements of the Sequence's Of Primes (of concerned distinct Higher Order Space's) get added up giving us another set which is a subset of the Sequence Of Primes of (the aforementioned) Sum Numbered Ordered Space.

Now, using this Sequence Of Primes of (the aforementioned) Sum Numbered Ordered Space, we slate down the Universal Natural Recursion Scheme which is the Universal Natural Recursion Scheme characteristically representing the given set of concern. We can achieve the same in the following fashion:

One should note that firstly, that when 'n' Recursion Schemes' are given for which we have to build a common denominator Recursion Scheme that can explain all the 'n' Recursion Schemes, we should first remove the extra elements other than the elements of the individual 'n' Recursion Schemes, present in the Recursion Scheme gotten from the Sequence Of Primes of (the aforementioned) Sum Numbered Ordered Space representing the given 'n' Recursion Schemes of concern and from this set, selectively deduct all the elements of the Sequence Of Primes representing the (n-1) Recursion Schemes other than the one k^{th} Recursion Scheme that we wish to explain, retrieve and/

or activate using our thusly built Universal Natural Recursion Scheme that can explain and/ or represent many Recursion Schemes.

Formula For Sequence Of Primes Of any R^{th} Order Sequence Of Primes

One can also note that the Sequence Of Primes Of any R^{th} Order Sequence Of Primes can be gotten using the following formula which was constructed using observation.

$$p_{i+1} = \sum_{k=j+1}^{\infty}\left[\{p_i(k)\}\{p_i\} - \sum_{j}^{\infty} p_i(j)\right]$$

where $p_i(j)$ represents the j^{th} element of the i^{th} Order Dimension (Space) Sequence Of Primes.

References

1.http://www.vixra.org/abs/1502.0100 'The Prime Sequence Generating Algorithm'.
2. http://www.vixra.org/abs/1509.0291 'The Prime Sequence's (Of Higher Order Space's) Generating Algorithm'.

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Note

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