A-little-bit-Discovery-of-Prime-Numbers-2021

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Abstract

In general, three tried and failed questions over centuries about Prime numbers, are location, trend and prediction. There is not any clear persuasive solution about them in any Number Theory work so far. However, under the Primes study banner, there should be a journey as a way out to answer what had never been achieved in the Number Theory. This is the whole topic will be focused on at this time.

Key words: Prime, Rzhong-score, Rjian-score, Tree Number, Tree Dao, Prime Model, Dao Theory, Pzhong-score, Prediction, Tree Net, Netting Theory, First-jian, absFirst-jian, Organisation Array, Instruction Set, Triggers

I, The Very Beginning:

2021, end of June, everything started from listing the rest numbers of the Triangular numbers, which was defined by Pythagoras on one day in BC^{R1} are 1,3,6,10,15,…etc., are 2,4,5,7,8,9,11,12,13,14,…etc. The question is could any hint inside them will be discovered and taken about Prime number (pn will be used below) study? Yes, there is the regularity somehow. So that, after days, the triangle where the Triangular numbers is presented was transformed to the Right triangle and organised by the rest numbers only. Nine lines of them were listed initially and then twelve rows of numbers on 0630 in Table 1.1.

2								
4	5							
7	8	9						
11	12	13	14					
16	17	18	19	20				
22	23	24	25	26	27			
29	30	31	32	33	34	35		
37	38	39	40	41	42	43	44	
46	47	48	49	50	51	52	53	54

2021, end of June

2											
4	5										
7	8	9									
11	12	13	14								
16	17	18	19	20							
22	23	24	25	26	27						
29	30	31	32	33	34	35					
37	38	39	40	41	42	43	44				
46	47	48	49	50	51	52	53	54			
56	57	58	59	60	61	62	63	64	65		
67	68	69	70	71	72	73	74	75	76	77	
79	80	81	82	83	84	85	86	87	88	89	90

06-30-2021

Table 1.1

On 07-2021, full numbers were listed in the Right triangle. Thus, there are 2 sides of the triangle following the functions are n*(n+1)/2, this is well known as Triangular number line the green one in Table 1.2, and n*(n-1)/2+1 which is a Straight blue edge, while n>=1 both of above sides will start from value 1.

n(n+1)/2												
	1											
	2	3										
	4	5	6									
	7	8	9	10								
	11	12	13	14	15							
	16	17	18	19	20	21						
	22	23	24	25	26	27	28					
	29	30	31	32	33	34	35	36				
	37	38	39	40	41	42	43	44	45			
	46	47	48	49	50	51	52	53	54	55		
	56	57	58	59	60	61	62	63	64	65	66	
	67	68	69	70	71	72	73	74	75	76	77	78
	79	80	81	82	83	84	85	86	87	88	89	90	91
n(n-1)/2+1												
n>=1												

Table 1.2

Drawing 2 sides to a chart, they are 2 exponential curves in fact and shape a victory gesture especially by left hand deemed, according to the upper line is definitely larger than the below in a same period of x value as 1 to 30. And the above one should be the middle finger (n*(n+1)/2) and forefinger (n*(n-1)/2+1) below. In the famous picture Churchill pose the Right hand but people usually do left. So now naming them to the "Left Hand Victory Sign" in Chart 1.1.

Chart 1.1

On 07-07-2021, Theorem-1.1: Two sides of the Right triangle, the middle finger n*(n+1)/2 and forefinger n*(n-1)/2+1 while n>=1, they pinch all integers above the zero in the Integer world.

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II, Eureka, Eureka, Silver Linings:

On 07-15-2021, there are some slash cuts have been observed through the Right triangle which start from the forefinger curve n*(n-1)/2+1, maybe parallel to the middle finger curve n*(n+1)/2, are n*(n+1)/2-6 (n>=7), n*(n+1)/2-10 (n>=11), n*(n+1)/2-15 (n>=16), n*(n+1)/2-21 (n>=22), n*(n+1)/2-28 (n>=29), n*(n+1)/2-36 (n>=37), n*(n+1)/2-45 (n>=46), n*(n+1)/2-55 (n>=56), n*(n+1)/2-66 (n>=67), n*(n+1)/2-78 (n>=79) etc., who may never pass any Prime number as so far as it is acquired. They are named as real middle finger score, in short Rzhong-score, the symbol is 𝕫. By the same principle, there are also some Rjian-scores, the symbol is 𝕛, who go through the gap start from forefinger line and end to middle finger line, which must not pass any pn, are n*(n-1)/2+6(5>=n>=3), n*(n-1)/2+60(59>=n>=30), n*(n-1)/2+84(83>=n>=42) etc. In Chart 2.1 it is shown.

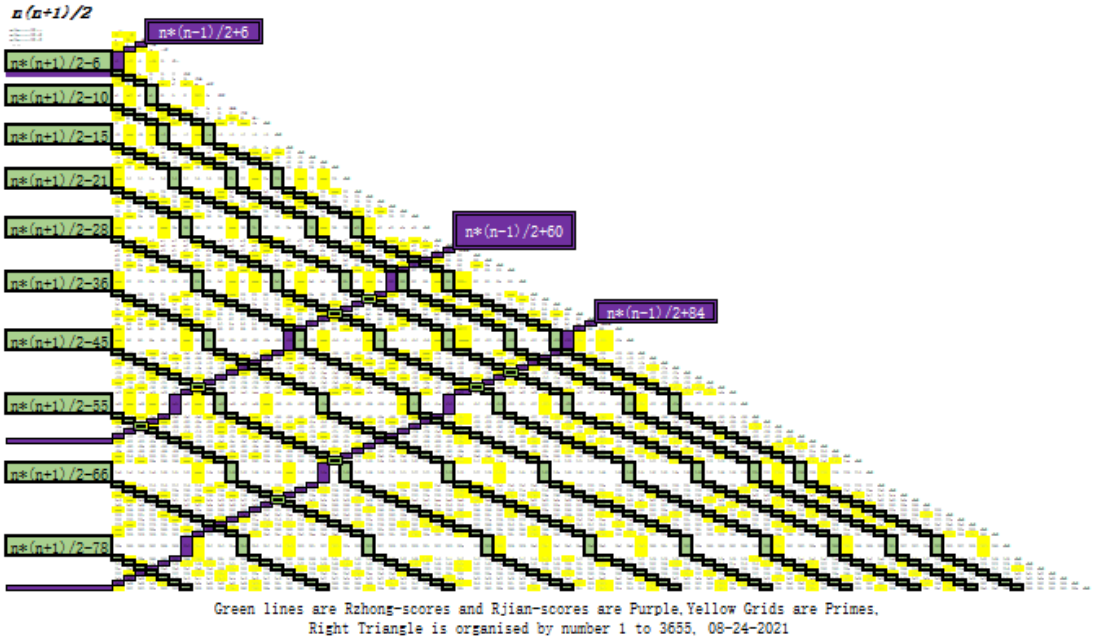

Chart 2.1

Also there are some lines maybe parallel to the forefinger curve (n*(n-1)/2+1 (n>=1)), so these lines which start from the middle finger curve n*(n+1)/2, are n*(n-1)/2+2 (n>=2), n*(n-1)/2+3 (n>=3), n*(n-1)/2+4 (n>=4), n*(n-1)/2+5 (n>=5) etc. will be called as Shi-score curves in Chart 2.2 marked by deep blue.

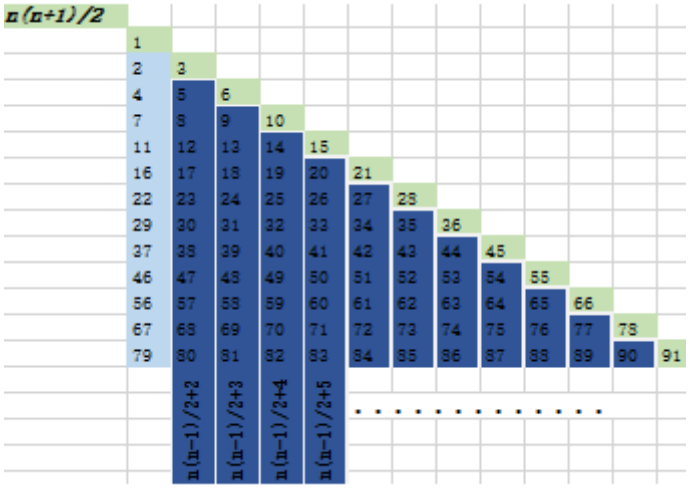

Chart 2.2

On 07-15-2021, Theorem-2.1: The tree numbers now can be identified are 6, 10, 15, 21, 28, 36, 45, 55, 66, 78… etc., which are from the constants of 之 curve functions. The naming is according to, at the first, they are from the triangle, and pns could be regarded as trees in a forest here also. So it is named as tree numbers, in short Trno.

e.g. In a Right triangle which is filled up by about top 5000 integers then the tree numbers can be identified are 6, 10, 15, 21, 28, 36, 45, 55, 66, 78. Definitely, there is a rule for tree numbers growth is Trno3 = Trno2+ (Trno2 - Trno1 +1).

On 07-15-2021, Theorem-2.2: Following the same principle the jian-tree numbers can be identified are 6, 60, 84 etc., which

are from the constants of jian-score curve functions, in short is jTrno.

On 07-15-2021, Theorem-2.3: Rzhong-score curves, 𝕫, must never pass any Prime number, are n*(n+1)/2 -6 (n>=7), n*(n+1)/2-10 (n>=11),n*(n+1)/2-15 (n>=16), n*(n+1)/2-21 (n>=22), n*(n+1)/2-28 (n>=29), ...n*(n+1)/2-a (n>=a+1) etc., the constant a must be a Trno. Eventually, a normal 𝕫 function is n*(n+1)/2-Trno (n >= Trno+1).
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III, Try To Orchestrate The Primes:

On 08-19-2021, Tree Dao, the symbol is 𝔻, is defined as it means by the space is pinched by two Rzhong-score curves. Therefore, 𝕫 n*(n+1)/2-6 (n>=7) and 𝕫 n*(n+1)/2-10 (n>=11) and left side n*(n-1)/2+1 (11>=n>=7) pinch the first Tree Dao 𝔻. And 𝕫 n*(n+1)/2-10 (n>=11) and 𝕫 n*(n+1)/2-15 (n>=16) and left side n*(n-1)/2+1 (16>=n>=11) pinch the next one and so on and forth.

The point of Tree Dao is to turn the super unclear problem into a linear manner in the wake of it is splitting the pns into different slices. Hence, each 𝔻 can be regarded as a thicker curve which maybe parallel to the middle finger curve n*(n+1)/2 then. Tree Dao 𝔻 is the first Prime model here, is also known as "Dao Theory", which can make the answers for location, trend and prediction of pn become possible.

The top 19 𝔻s will be studied here. Because they are endless so that the same length size of theirs will be intercepted and tested here is 20, say each slice is a quadrilateral organised by top 20 integers in each score curves inside it (moreover, the curves maybe parallel to the middle finger curve n*(n+1)/2, are Rzhong-score curves, 𝕫, which may never pass any pn and the others is phantom zhong-score curve, in short Pzhong-score, which may pass one pn at least. So that there are merely Pzhong-scores inside 𝔻s as an acknowledgment so far) and shaped by 4 lines are forefinger line n*(n-1)/2+1 (n>=1) and Shi-score curve n*(n-1)/2+20 (n>=20) and two Rzhong-score curves top and bottom.

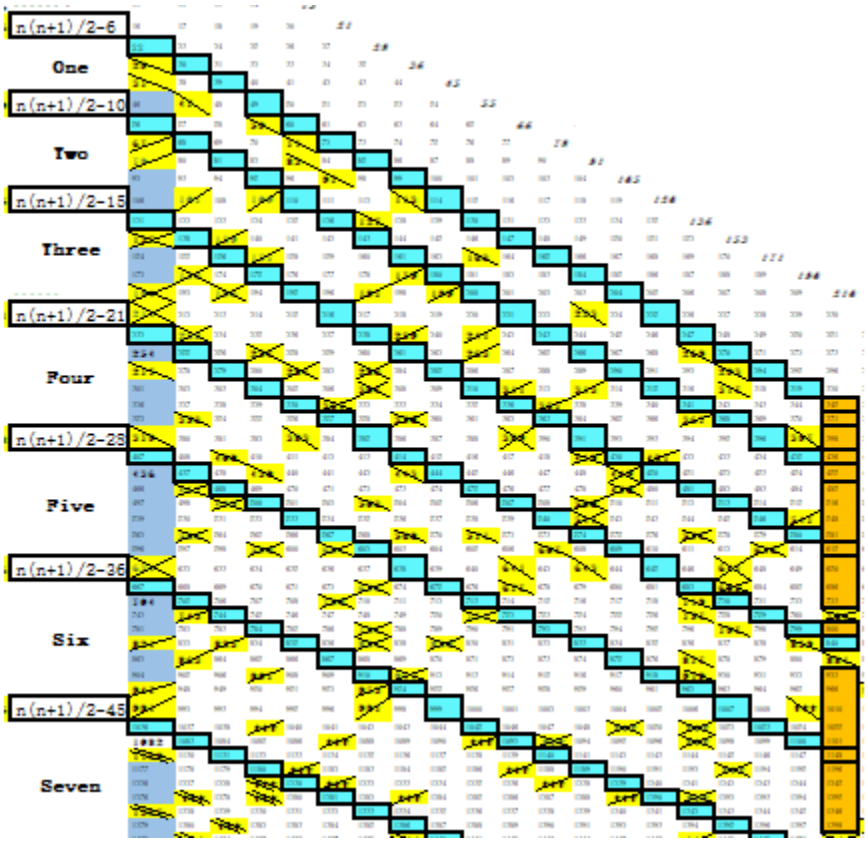

Chart 3.1

In Chart 3.1, there is a piece of instance about Tree Dao. Straight Blue line is forefinger line n*(n-1)/2+1 (n>=1) and Straight Orange one is Shi-score curve n*(n-1)/2+20 (n>=20), the oblique light green lines are 𝕿 curves, yellow grids are Primes. In the wake of "One" marked there is the following the first slanting Tree Dao, Two is the second and so on and forth.

With Tree Dao, the question about location can be answered to. The first Tree Dao quadrilateral is the narrowest and 15 pns locate inside it that can be identified in Chart 3.1. It shaped by blue line n*(n-1)/2+1(n>=1) and orange n*(n-1)/2+20(n>=20) and 𝕿 n*(n+1)/2-6(n>=7) and 𝕿 n*(n+1)/2-10(n>=11). With this way, the top 19 Tree Daos location numbers are 15, 18, 23, 22, 20, 30, 31, 26, 36, 29, 34, 33, 36, 45, 34, 42, 43, 43 and 44 displayed in Chart 3.2 below.

Chart 3.2

In Chart 3.2, generally speaking, the trend of quantity of pns, Qpn in short below, is growing up along with 𝔇s become wider and wider.

At last but not the least, prediction can be evaluated now.

For instance, a simulated prediction function can be generated from Chart 3.2 is y $= 18 * e^{0.05x}$, while x (𝔇 ID) is 10 the y (Quantity of Primes) value can be estimated now is about, accurate to two decimal places, 29.68 which is very close to the 29. Furthermore, if the ending area is the target at 16 for example then a simulated prediction function y = 11ln(x) + 11 can be adopted and the predictive answer is about, accurate to two decimal places, 41.50 which is close to the fact value 42.

On 08-2021, Function-3.1: y $= 18 * e^{0.05x}$.
On 08-2021, Function-3.2: y = 11ln(x) + 11.

Moreover, say width of a 𝔇 is wd, so that each next x-cut line (the line is perpendicular to the x-axis) in a 𝔇 could have the quantity of pns is n, and there must be wd/2>=n>=0 (rounding for decimal). The red line outlines the wd which's size is 3 in a Tree Dao 𝔇 shaped by two light green Rzhong-scores 𝕿s which is displayed in Chart 3.3.

Chart 3.3

In the Chart 3.3, five feasible moves for a Prime to link to the next can be identified in a Đ, such as right, lower-right, straight-down, lower-left or pause/stop, basically speaking. For instance, 97 takes a lower-right step to 113, 113 takes a lower-left step to 127 and 127 pauses/stops there shown in the Chart. And the second continuous straight-down step of a Prime cannot be discovered as so far as it is acquired. Above could also be a part of the vector for prediction.

There are also some basic prediction rules could be helpful to substantiate the prediction about what is the exact next Prime number. First, by line size adding, the 83 can be predicted by 71 (in line 12) to add 12 in the first Đ. And by the prediction direction follows an acceleration function, say the current Prime inside a Đ is Pc in short and the next Prime is Pnext and current line size is Ls, then the next Prime function is Pc/((Ls-1)*(Ls-1))= Pnext/(Ls*Ls). So the Pnext of 257 in the third Đ should be equal to 257*(23*23) / ((22)*(22)), accurate to zero decimal place, is about 281. Another one is the prediction direction by difference of speed function, say the last one is Plast, then the next Prime function is Pc/Ls - Plast/(Ls-1) = Pnext/(Ls+1) - Pc/Ls, for instance, in the fifth Đ, 1801/60-1741/59= Pnext/61-1801/60, the Pnext is, accurate to two decimal place, about to 1861.11 and close to 1861. And another case is 359/27 - 331/26 = Pnext/28 - 359/27 in the third Đ, accurate to two decimal places, Pnext is approximate equal to 388.36 very close to 389.

On 08-2021, Function-3.3: Pc/((Ls-1)*(Ls-1))= Pnext/(Ls*Ls).
On 08-2021, Function-3.4: Pc/Ls - Plast/(Ls-1) = Pnext/(Ls+1) - Pc/Ls.

Actually, above prediction knowledge could be adjusted for different purposes and considerations by various prediction models and skills beyond the number theory to achieve goals.

From the above study, some sayings can be proved in the future:
On 08-10-2021, Saying-3.1: There must be an extreme width size of the Tree Dao Đ along with its ID number is increasing. In other words, Tree Dao Đ width is not unlimited.
On 07-24-2021, Saying-3.2: By using regression techniques, down trend of pns in Đs can be drawn finally, what is the ending period of pns is close to.
On 08-19-2021, Saying-3.3: It is possible that whole trend of pn quantity for Đs can be shown.

An agreement about Đ is it can show the relationship between Qpn and the size of Tree Dao's clearly, it is also obvious that score lines are harder to be marked with Integers are growing as Đs are always wider than before. And maybe it is possible to cover surface with points as investigating several Đs of all can realise whole Primes properties, Qpn, Density and Distribution etc.
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IV, Exploring A New Way, Netting:

On 08-10-2021, Gridding the "left hand victory sign" into a net based on Đ, it is the Tree Net Ł, which is the second pn study model here, is also known as "Netting Theory" now. Absolutely, this could be another solution for location, trend and prediction of pn.

The reasons of excelsior are:
1, Netting will show more details about pns;
2, Especially, Ł will show more details about statistics of pns;
3, Sometimes it is no sense to study an endless case while Đ is still unlimited. Netting may help this one;
4, The area is pinched by Σ n*(n+1)/2 -6(n>=7) and middle finger curve n*(n+1)/2(n>=1) is not researched yet. etc.
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V, The Netting Rules:

Three netting rule categories will be introduced here are Big-Jian manner, Middle-Jian manner and First-Jian manner. (Jian is about some scores, including Rjian-scores are mentioned above, who go through the gap start from forefinger line or Rzhong-score and end to middle finger line, which must not pass any pn.) The difference among them is the way to attain the scores.

On 07-16-2021, Big-jian manner, is gridded by Rjian-scores, are n*(n-1)/2+6(5>=n>=3), n*(n-1)/2+60(59>=n>=30), n*(n-1)/2+84(83>=n>=42) etc., s are n*(n+1)/2-6(n>=7), n*(n+1)/2-10(n>=11),n*(n+1)/2-15(n>=16), n*(n+1)/2-21(n>=22) etc., and two sides of the Right triangle, n*(n+1)/2 and n*(n-1)/2+1 while n>=1. Chart 2.1 showed an example of it.

Every grid is named as Tree Net Block, in short is b, and the lowest number inside a b, except the grids in boundaries, is its ID number, and in short is ID. The quantity of pns inside a b is Qpn in short.

In Chart 2.1, the first b can be outlined by n*(n+1)/2(3>=n>=1) and n*(n-1)/2+1(5>=n>=1) and n*(n-1)/2+6(5>=n>=3), the second b is shaped by n*(n+1)/2(30>=n>=3) and n*(n-1)/2+60(59>=n>=30) and n*(n-1)/2+6(5>=n>=3) and n*(n+1)/2-6(33>=n>=7) etc.

Following the above gridding way so that the statistics of top 21 b, for instance, can be collected in the form (ID, Qpn) as (1,5), (10,31), (29,19), (67,21), (137,23), (254,20), (430,15), (704,16), (1082,10), (1597,1), (496,8), (622,7), (691,9), (764,10), (881,13), (1051,12), (1237,16), (1439,17), (1714,15), (2279,11), (3161,1) is shown in Chart 5.1 below.

Reordering it by id is (1,5), (10,31), (29,19), (67,21), (137,23), (254,20), (430,15), (496,8), (622,7), (691,9), (704,16), (764,10), (881,13), (1051,12), (1082,10), (1237,16), (1439,17), (1597,1), (1714,15), (2279,11), (3161,1) is Chart 5.2 below.

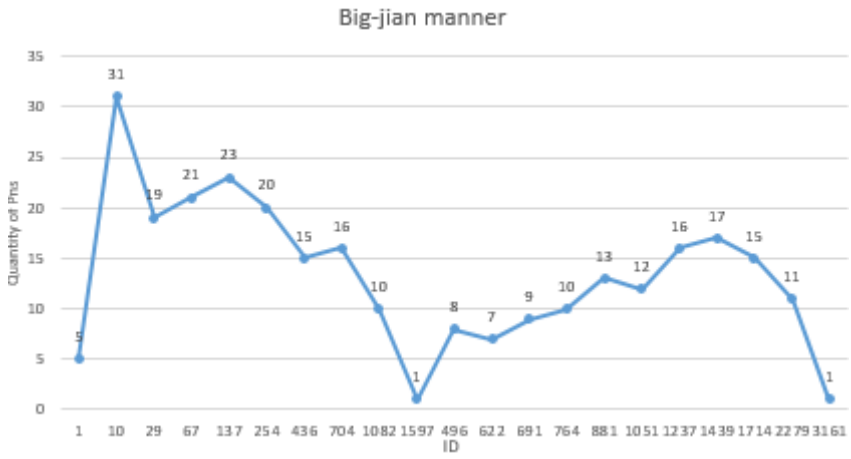

Chart 5.1

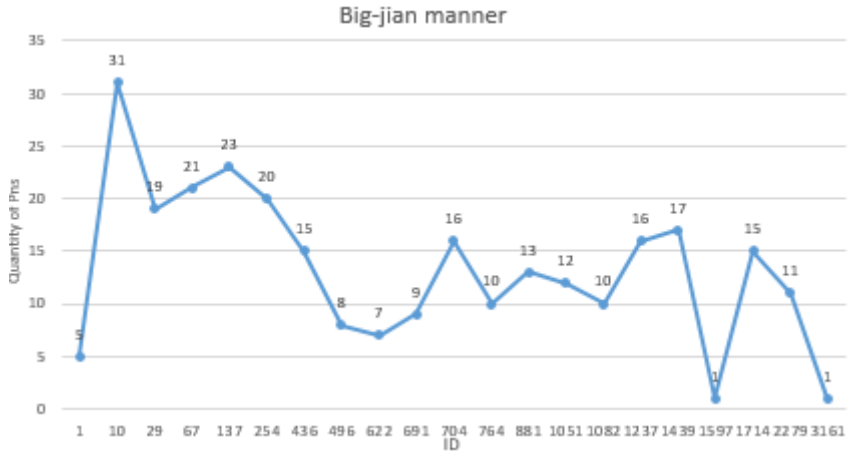

Chart 5.2

In Chart 5.1 the quantity boomed out after the 5 and 1 twice so that there must be the third booming happened after the second value 1 of quantity, which is the last point of the chart, in prediction. And in Chart 5.2 quantity is generally descending with the higher ID number according to the way of the current Netting rule of b outlined.

On 07-25-2021, Changing to Middle-jian manner, by adopting the middle value line, in short is Mivaline, is the line pass every middle number(s) in each row in Right triangle. e.g. it goes through the numbers are 1, 2-3, 5, 8-9, 13, 18-19, 25, 32-33, 41, 50-51, 61, 72-73, 85, 98-99, 113, 128-129, 145, 162-163, 181, 200-201, 221, 242-243, 265, 288-289, 313, 338-339, 365, 392-393, 421, 450-451, 481, 521-513 etc. Obviously, if the quantity of numbers in a row is even number then two middle central values will be considered. See in Chart 5.3 the Mivaline is marked by orange color includes the boundary grids which is red, and prime grids yellow ones in it.

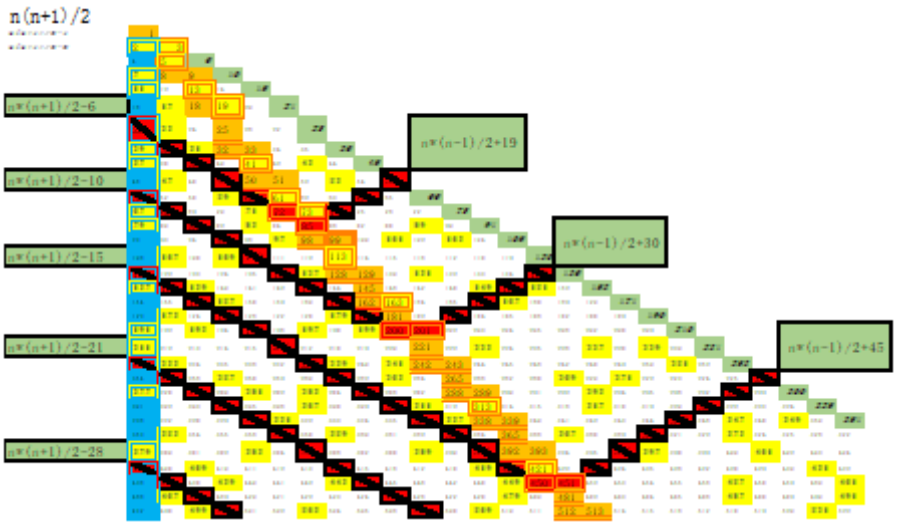

Chart 5.3

The Tree Net here is gridded by , marked by red color in Chart 5.3, are n*(n+1)/2-6(n>=7), n*(n+1)/2-10(n>=11),n*(n+1)/2-15(n>=16), n*(n+1)/2-21(n>=22) etc. and Half-Rjian-scores, marked by red color in Chart 5.3, which start from and end to middle finger line must not pass any pn mentioned above, with two sides of the Right triangle n*(n+1)/2, green line, and n*(n-1)/2+1, blue line, while n>=1. (Again, Half-Rjian-scores, also H, here who start from a and the start point must be in Mivaline which never pass any pn untill to the last number which close to the side n*(n+1)/2) or in it.)

In Chart 5.3, for the first b, n*(n+1)/2-6 and H n*(n-1)/2+19 intersect at middle centre point is 85 in the Mivaline, is

shaped by green line n*(n+1)/2(10>=n>=1) and blue line n*(n-1)/2+1(7>=n>=1) and red H line n*(n-1)/2+19(12>=n>=9) and red line n*(n+1)/2-6(13>=n>=7). The next b, n*(n+1)/2-10 and H n*(n-1)/2+30 meet in Mivaline at 200 and 201 as the quantity of numbers of the row is even, is shaped by n*(n+1)/2(15>=n>=10) and H n*(n-1)/2+30(19>=n>=15) and n*(n+1)/2-10(20>=n>=11) and n*(n-1)/2+1(11>=n>=7) and n*(n+1)/2-6(13>=n>=7) and H n*(n-1)/2+19(12>=n>=9) etc.

Under Middle-jian top 4 bs in form (ID, Qpn) are (1, 15), (29, 15), (67, 25), (137, 80) etc. Qpn is increasing.

2021, the first week of June, First-jian manner was in sight, as the reason of, unfortunately, along with the Integer numbers are growing, it is not easy to set the b boundary gradually by adopting above manners.

So a new way is to abandon the Mivaline, by using the first Rjian-score manner which is the rule for the Half-Rjian-score H starts from a point, should be the most front one, in a Rzhong-score as long as it never passed any pn until to the last number which close to the side n*(n+1)/2 or in it. The orange line n*(n-1)/2+11(8>=n>=5) is the one H Shown in Chart 5.4 below. The brown grids are Primes, are 2, 3, 5, 7, 11, 13, 17, 19, 23 and 31, in the first Tree Net block b.

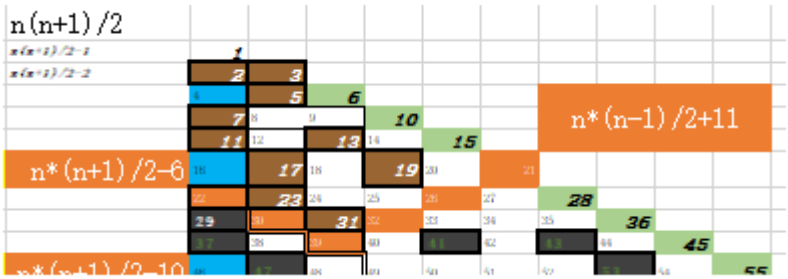

Chart 5.4

Again, H and are not required to meet at Mivaline anymore.

There are three distinct ways to execute the First-jian manner.

Absolute half-first-jian, in short is absFirst-jian, which will adopt the absolute first H which starts from the most front point in a as long as it never pass any pn until to the last number which is close to the side n*(n+1)/2) or in it.

Second one, no-duplicate first-jian, in short is noduFirst-jian, which will use the first Half-Rjian-score starts from the and never pass any pn until to the last number which close to the side n*(n+1)/2) or in it and this H must not be duplicate to the last b border(s). Say the second b should not have a new border is duplicate to n*(n-1)/2+11, which was outlined for the first b, displayed in Chart 5.4 and its H must be a different one, according to the constant of the H function, either large or small.

High first-jian, in short is hiFirst-jian, which will adopt the Half-Rjian-score which starts from the and never pass any pn until to the last number which close to the side n*(n+1)/2) or in it and the newest H must be larger, according to the constant of the H function, than any H boundary of last Tree Net blocks' before.

This investigation focused on the absFirst-jian so that the newest H could have the same or even smaller curve function, according to the constant of the H function, to previous ones. Thus, clearly in Chart 5.4, the first b is shaped by green line n*(n+1)/2(6>=n>=1) and n*(n-1)/2+1(7>=n>=1), some blue grids in it, and two orange lines n*(n+1)/2-6(9>=n>=7) and H n*(n-1)/2+11(8>=n>=5) , then second polygon b is shaped by n*(n+1)/2-6(9>=n>=7) and H n*(n-

1)/2+11(8>=n>=5) and n*(n+1)/2(11>=n>=7) and n*(n-1)/2+1(11>=n>=7) and n*(n+1)/2-10(16>=n>=11) and n*(n-1)/2+21(15>=n>=10) shown in Chart 5.5.

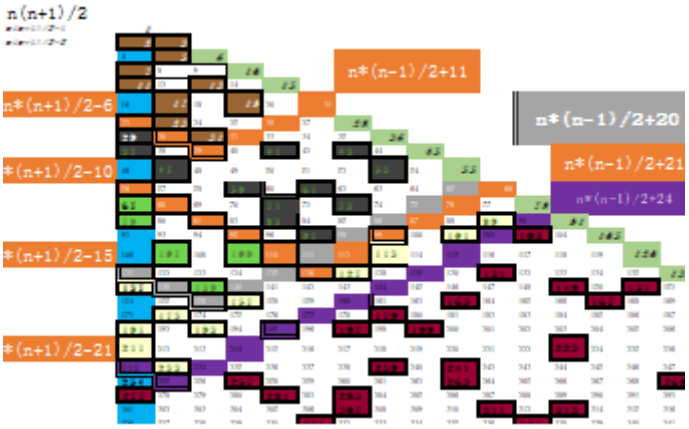

Chart 5.5

Top 16 bs are counted, in form {ID..Qpn}(Trno@jTrno), are {1..10}(6@11), {29..12}(10@21), {67..5}(15@20), {77..11}(21@24), {103..99}(28@69), {436..19}(36@69), {704..17}(45@60), {1082..10}(55@60), {665..215}(66@117), {2279..38}(78@117), {1829..268}(91@162), {3403..955}(105@324), {5672..1492}(120@549), {7382..329}(136@549), {9454..1983}(153@792), {11936..511}(171@792). By the way, jian-tree numbers, in form jTrno(Trno), can be identified are 11(6), 21(10), 20(15), 24(21), 69(28), 69(36), 60(45), 60(55), 117(66), 117(78), 162(91), 324(105), 549(120), 549(136), 792(153), 792(171).

With absFirst-jian, the general structure about top bs are drafted and distinguished by colors in Chart 5.6.

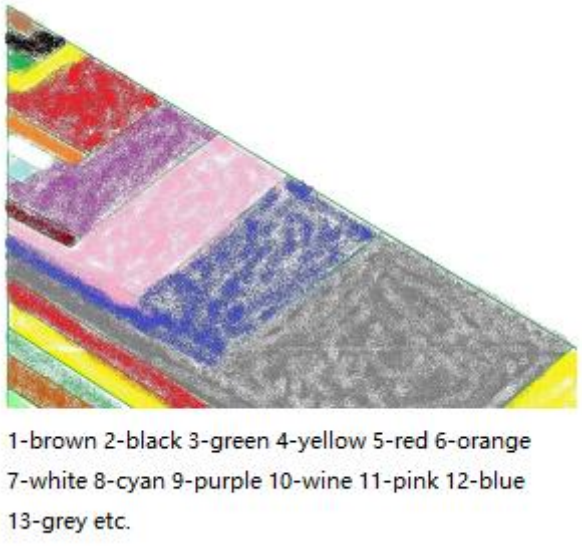

Chart 5.6

In addition, reorganising them by ID in a trend is displayed in Chart 5.7 below.

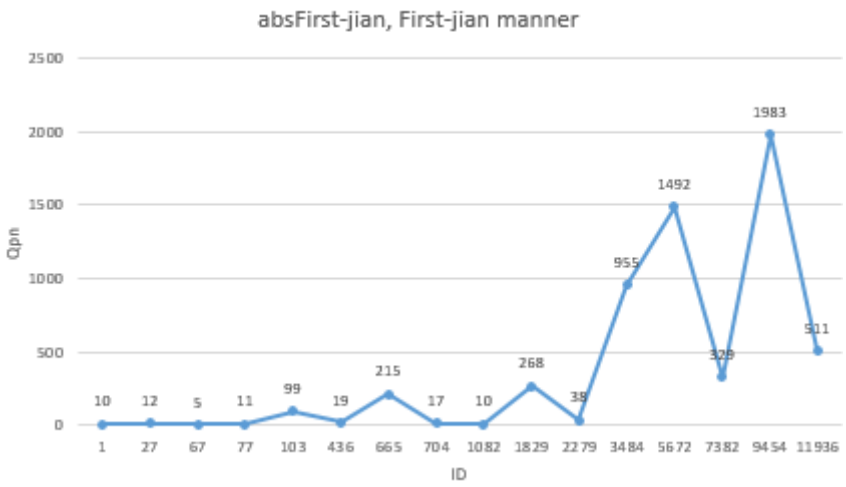

Chart 5.7

This shows that the pns is smoothly soaring before b□ 2279 and then the Qpn is following a rocketing increase as a result of the b□ ID is soaring into the air generally.

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VI, Bingo, Density Is Not Decisive:

In addition, say the amount of grids in each b□ including the boundary grids is the area of its and Chart 6.1 displays the relationship between Qpn and Area for top 16 b□s, which is matching to the structure in Chart 5.6 in the gridding order and without reordering ID.

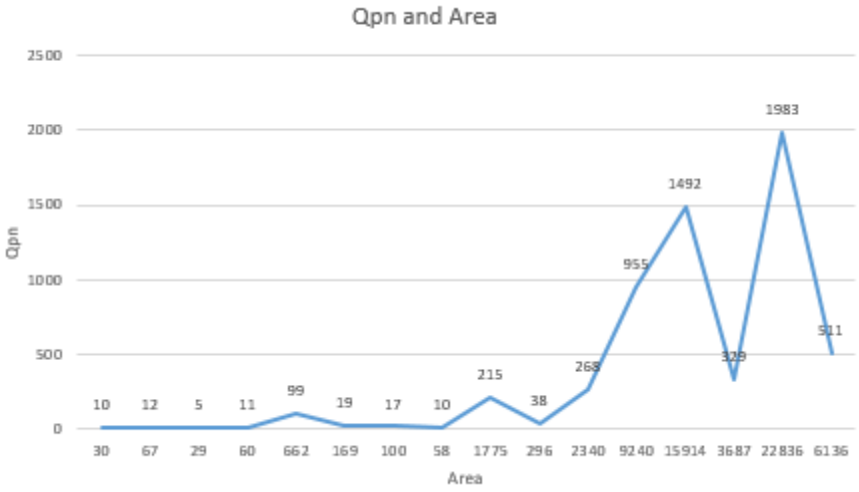

Chart 6.1

What can be identified from Chart 6.1 is, relatively speaking, the Area of a b□ and the Qpn in it nearly have a directly proportional relationship. In other words, larger b□ more Primes there.

On 08-25-2021, Saying-6.1: There must be a critical point for larger b□ area more Primes, and after that much land but few Primes will be in sight.

At last but not the least, say the density function of a b□ is Density = Qpn/Area. So that the densities of top 16 b□s, in girdding order, can be calculated are about 0.33, 0.18, 0.17, 0.18, 0.15, 0.11, 0.17, 0.17, 0.12, 0.13, 0.11, 0.10, 0.09, 0.09,

0.09 and 0.08. Thus, result is Qpn synchronises with the area of a b but the density not.

On 08-26-2021, Function-6.1: D = Qpn/Area, D for Density.

Especially, focusing on the b eleven, b twelve and b thirteen the densities are descending are 0.11, 0.10 and 0.09. However, in Chart 5.6, Chart 6.1 and Chart 6.2, it can be identified that from the b pink, b blue to b grey the area is increasing in the charting order. More details about these three polygons can be observed as the eleven with pink Prime dots and the twelve is blue and thirteen is grey in the diagram below.

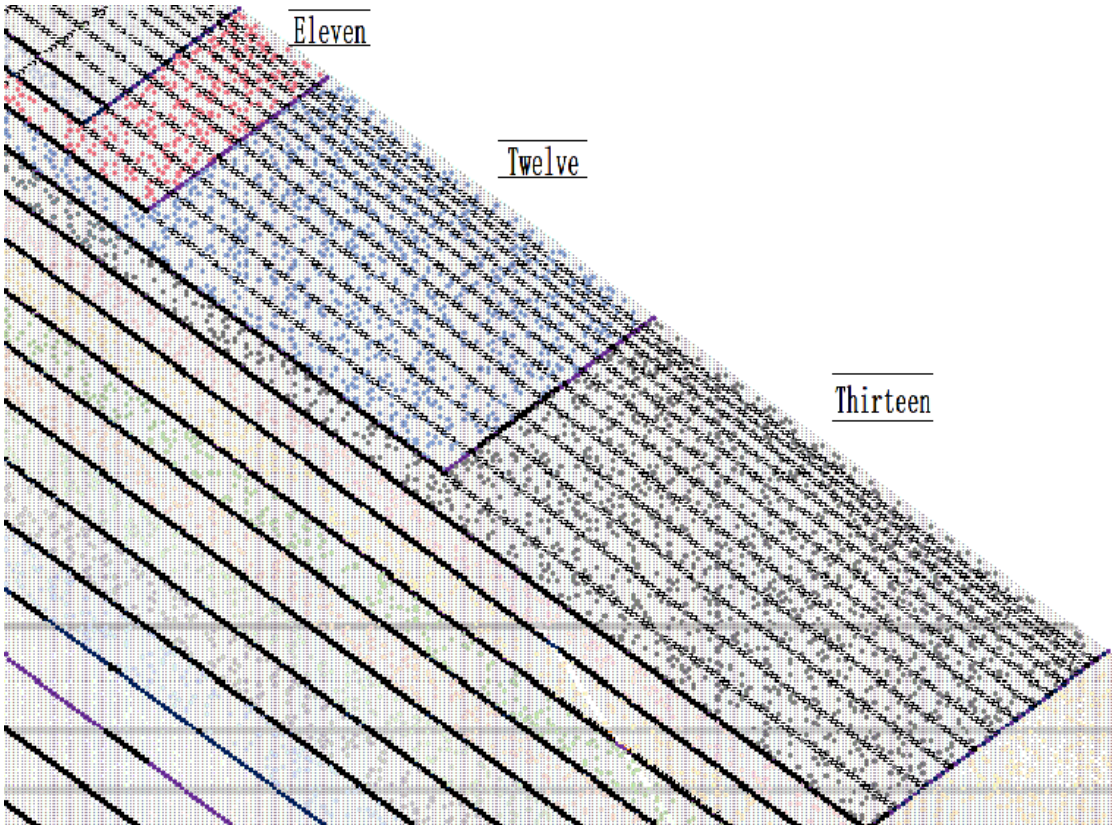

Chart 6.2

In b eleven, b twelve and b thirteen above, the area differences are 6900 and 6674 for eleven to twelve and twelve to thirteen in augment direction respectively and the density differences are all the 0.01 in a decreasing direction. Furthermore, b fifteen and former have the same density is 0.09 but it has a sudden surge in area the difference is 19149 which can be identified in Chart 6.1. And the difference area between b thirteen and b fifteen is 6922 but no difference in density which is 0.09 for both also.

It is obvious that the b thirteen, b fourteen and b fifteen construct a continuous area with the same density, which is 0.09, shown in Chart 6.3 below. The thirteen with grey Prime dots and the fourteen is deepred and fifteen is maize.

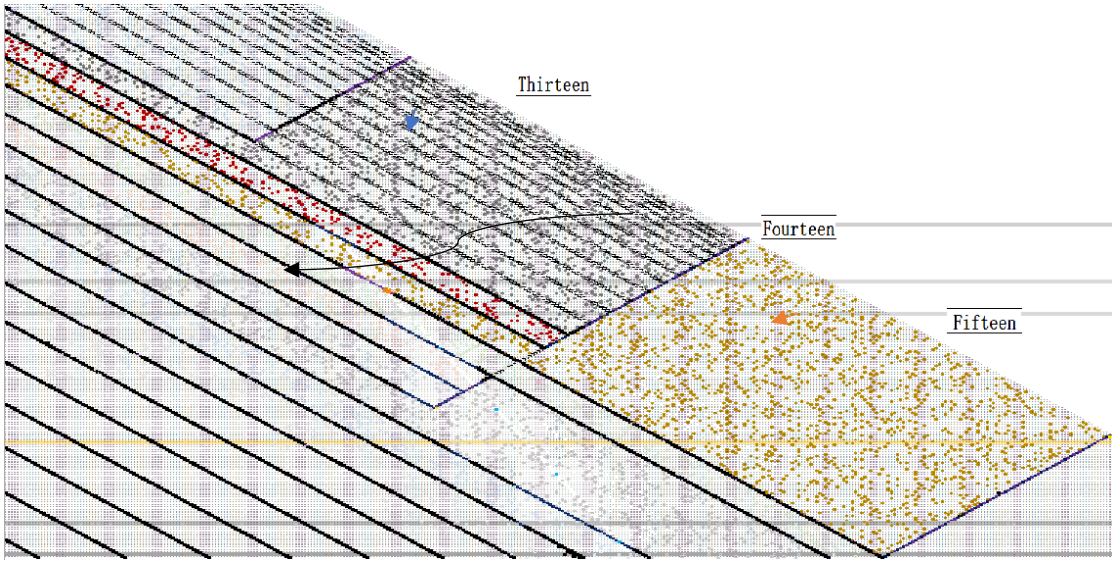

Chart 6.3

Thus, the question is why it is cut such differently for the same piece of “tofu”.

On 08-26-2021, Saying-6.2: As it is harder to make the demarcation while the Larger Area but Fewer Density. What an effective Organisation Array, as the symbol is ⧋, over there is working to organise the Primes into some mysterious and complicated arrays, to block the average demarcation indeed.

With the integers are growing the reason of score lines are harder to be marked is not merely the density but the Organisation Array of Primes ⧋ probably. It proved that the Tree Net can absolutely offer the statistics of pns quite accurate, particularly in a specific area. However, the details about operations of Organisation Array ⧋ are still quite iffy.

VII, World Of Hypothesis:

An arrangement of Primes to give desired directional characteristics in the Organisation Array ⧋ to block average demarcation is what the Prime Algorithm, in short is PA ⧋. Every ⧋ has its own unique logics.

In a ⧋, set of rules are invoked and executed with definite order to archive the target. Upcoming contents is the one of imaginations will be introduced is about the rules in two scenarios.

The first one, as mentioned above, in a ⧋, five feasible moves for a Prime to link to the next can be identified, such as right, lower-right, straight-down, lower-left or stop, basically speaking. Their performance deemed a partial Oriental Xiangqi chess^{R2} except the pieces of General, Rook and Elephant, dipictions are listed below:

1, Each move includes two Primes as one start and one end. Both of them construct a sub-structure in the Right Triangle;
2, Right, also Cannon-Horizontal-Right, could be the move of Cannon which captures by moving with a jump over one grid, also is well known as Twin-Prime-Pairs. e.g. 107 to 109 in the ⧋ two;
3, Lower-Right, also Mandarin-Lower-Right, could be the move of Mandarin which moves lower-right one square diagonally. e.g. 37 to 47 in the ⧋ one;
4, Lower-Right, also Knight-Horizontal-Lower-Right, could be the move of Knight which moves lower-right one square diagonally and then one square horizontally. e.g. 47-59 in the ⧋ one;
5, Lower-Right, also Knight-Vertical-Lower-Right, could be the move of Knight which moves lower-right one square diagonally and then one square vertically. e.g. 79-107 in the ⧋ two;
6, Straight-Down, also Soldier-Vertical-Down, could be the move of Soldier, before crossing the river, which moves straight-

down one grid once. e.g. 29 to 37 in the one;
7, Lower-Left, also Mandarin-Lower-Left, could be the move of Mandarin which moves lower-left one square diagonally. e.g. 113 to 127 in the one;
8, Lower-Left, also Knight-Horizontal-Lower-Left, could be the move of Knight which moves lower-left one square diagonally and then one square horizontally. e.g. 193 to 211 in the three;
9, Lower-Left, also Knight-Vertical-Lower-Left, could be the move of Knight which moves lower-left one square diagonally and then one square vertically. e.g. 109 to 139 in the two;
10, Pause/Stop one that no further sub-structure is formed with it or the sub-structure is itself, e.g. 127, 163 etc. in the one.

Six sub-structures are displayed in the Chart 7.1.

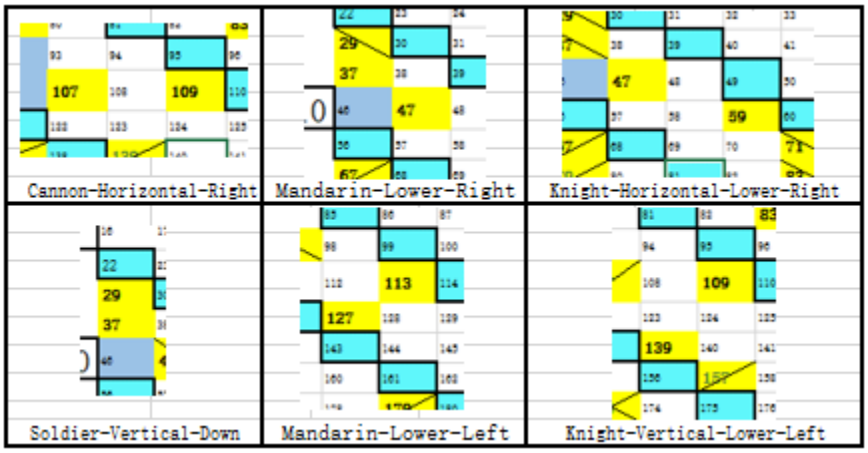

Chart 7.1

Above is the Absolute Instruction Set, in short AIS.

The second one has the same Instruction Set generally but it is not absolute, in short NAIS. Because there are always some primes between the prime start and prime end as a result of the becomes wider than before. Some examples are demonstrated below:

1, Mandarin-Lower-Right, e.g. 1181 to 1231 in the six, and 1187 is flown over;
2, Knight-Horizontal-Lower-Right, e.g. 787 to 829 in the five, and 827 is flown over;
3, Knight- Vertical -Lower-Right, e.g. 419 to 479 in the three, and 449 is flown over;
4, Soldier-Vertical-Down, e.g. 641 to 677 in the four, and 643 is flown over;
5, Mandarin-Lower-Left, e.g. 1613 to 1669 in the six, and 1667 is flown over;
6, Knight-Horizontal-Lower-Left, e.g. 6689 to 6803 in the eleven, and 6691 is flown over;
7, Knight- Vertical -Lower-Left, e.g. 607 to 677 in the four, and 641 and 643 are flown over.

In brief, the Instruction Set cases are interpreted above. And the very is about to read and execute the set with definite order, in other words, some logics. It can be imagined that, for any model or imagination, all consequent sub-structures together could establish the whole to block average demarcation.

On 08-31-2021, Saying-7.1: The Prime Algorithm maybe have two possibilities. One World One PA , it is the Macro in short m, and One Piece (or b) One PA , this is also the Micro in short mi.

Moreover, now, the result of execution can be recognised from the Right Triangle with s. For instance, the order of top ten steps in the first is AIS6(to 37)-AIS3(to 47)-AIS4(to 59)-AIS3(to 71)-AIS6(to 83)-AIS3(to 97)-AIS4(to 113)-AIS7(to 127)- AIS10- AIS10, the order of top ten moves in the second is AIS6(to 79)-AIS5(to 107)-AIS2(to 109)-AIS9(to 139)-

AIS3(to 157)- AIS10-AIS7(to 197)-AIS2(to 199)-AIS9(to 239)-AIS2(to 241), etc. However, it is still debatable whether or not the result is caused by One Piece (or b) One PA .

No matter what, so far so amazing, with , Sets and the Step Orders are mapped. Nevertheless, the last part, the Triggers, symbol is , which switch rules on is still an enigma of the map. And each rule should have its own matching trigger(s) . For example, while the integer is within 81800, only Mandarin the Soldier in the first except the ones in the wild. By the majority rule, while the integer is within 180900, only Knight and Mandarin can the Cannon, except one case which is 88817 and 88819 with is the Soldier and ones in the wild, in the second . Again, in the first , while the integer is within 180900, only Knight and Soldier can the Mandarin except the ones in the wild. And in the first , there is not Cannon-Horizontal-Right sub-structure as so far as it is known.

On 09-02-2021, Saying-7.2: The Prime Trigger maybe have two possibilities. One World One Trigger , also m, and One Piece (or b) One Trigger , also mi.

On 09-02-2021, Theorem-7.1: Soldier cannot Soldier, Cannon cannot Cannon and Mandarin cannot Mandarin.

On 09-02-2021, Theorem-7.2: There is always the even number on the start prime of a Soldier-Vertical-Down sub-structure but only odd numbers for Mandarins. (As so far as it is explored)

On 09-07-2021, Theorem-7.3: All Mandarins begin in odd rows only. (Number 1 is in the first row)(As so far as it is explored)

On 09-08-2021, Theorem-7.4: The Integers on the left side of the Cannon start Prime are all end with 6, 8 or 0, except the first column and the Primes less than 10. (As so far as it is explored)

VIII, Short Epilogue:

Definitely, it is well worth while to investigate the PA triggers what is a part of the in more detail. With the desired lab surroundings one day, the vital clues to the regularity of s can be identified, which are in the enormous data of execution steps probably.

The Right triangle is one of various possible transformations while it is the infrastructure in this study. During the course of this number theory discovery, the highways () and roads () of the Composite Number in the forest were developed. A series of attempts about location numbers identified, trend outlines described and prediction functions simulated which are reported. Both the quantity of Prime numbers and the exact next one Prime number can be estimated here now. And the factor what influences the score lines (e.g. , , and H, etc.) demarcation is not the simple density probably but also could be the Organisation Array of Primes , especially the , again.

In a nutshell, after the small step of the Tree Dao and Tree net trials, the solutions of Location, Trend and even the Prediction of Prime numbers are facing a bright future despite difficulties. The further study about the Arrays and Algorithms of Primes deserves to be taken more seriously. No doubt of that both Dao theory and Netting theory are absolutely potential methodologies, there is challenge though , to study the Prime numbers what is tried and failed in the long long Mathematics history before.

amaler from Beijing 09/08/2021

Reference:

R1, https://baike.baidu.com/item/三角形数/5836749
R2, https://www.crockford.com/xiangqi.com