The Foundation of Life

Mathematical patterns in the Amino-acids

by Craig Paardekooper 2023

Background

Previously, Vernon Jenkins, a university lecturer in mathematics, discovered a mathematical pattern encoded within the Hebrew text of the Old Testament creation narratives.

In 2007, I came across the works of Shcherbak, mathematician and geneticist. What was quite surprising was the resemblance between the Shcherbak's genetic patterns and those found by Vernon in the creation narratives.

I informed Vernon straightaway, and Vernon went on to investigate these resemblances himself. He created his own web page where his findings are clearly depicted -

http://www.whatabeginning.com/Misc/Genetics/Genetics_VS.htm

This caused me to look further, and I came across the work of Rakocevic. Myself and Stephen Coneglan carried out a further analysis of Rakocevic's pattern, which I include in section 2.

The Hebrew Numbering System

The Book of Genesis, which is the first book of the Bible, was originally written in Hebrew. The Hebrews did not have separate symbols for numbers, as we do today. Rather, they used the letters of their alphabet to represent numbers. Because of this, it is legitimate to convert each letter of the biblical text into a corresponding number.

The Hebrew Alphabetic Numbering Scheme

The Hebrew alphabet has 22 letters - five with 'end forms', i.e. variants used only when words end with one or other of these letters. From circa 200 BC, as the following table reveals, each letter was made to function as a numeral - thus copying the earlier Greek model (c 600 BC).

Place:	1	2	3	4	5	6	7	8
Letter:	א	ב	ג	ד	ה	ו	ז	ח
Value:	1	2	3	4	5	6	7	8

Place:	9	10	11	12	13	14	15	16
Letter:	ט	י	כ ך	ל	מ ם	נ ן	ס	ע
Value:	9	10	20	30	40	50	60	70

Place:	17	18	19	20	21	22
Letter:	פ ף	צ ץ	ק	ר	ש	ת
Value:	80	90	100	200	300	400

The practice that existed then was to record numbers on an *additive* basis, i.e. the value represented by a string of letters was simply the sum of the tabular values assigned to each. The *characteristic value* (CV) of a conventional Hebrew word, name, or phrase, is obtained in this manner. As an illustration of the procedure, the characteristic value of the name *SIMEON* is derived below. We observe that all Hebrew reading proceeds from right to left.

(50)	(6)	(70)	(40)	(300)
ן	ו	ע	מ	ש

Thus, CV (SIMEON) = 50 + 6 + 70 + 40 + 300 = 466

Outline of the Patterns in Genesis

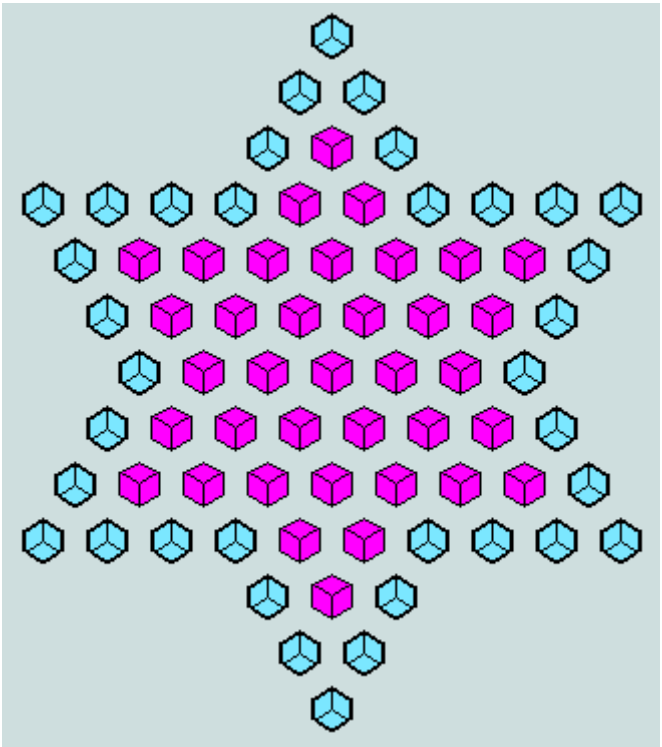
Taking the first verse of the Book of Genesis, Vernon calculated the numerical values of the words as follows –

This verse consists of 7 Hebrew words. The sum of the number values for these **7** words add to **2701**. There are two factors of 2701; they are 37 and 73

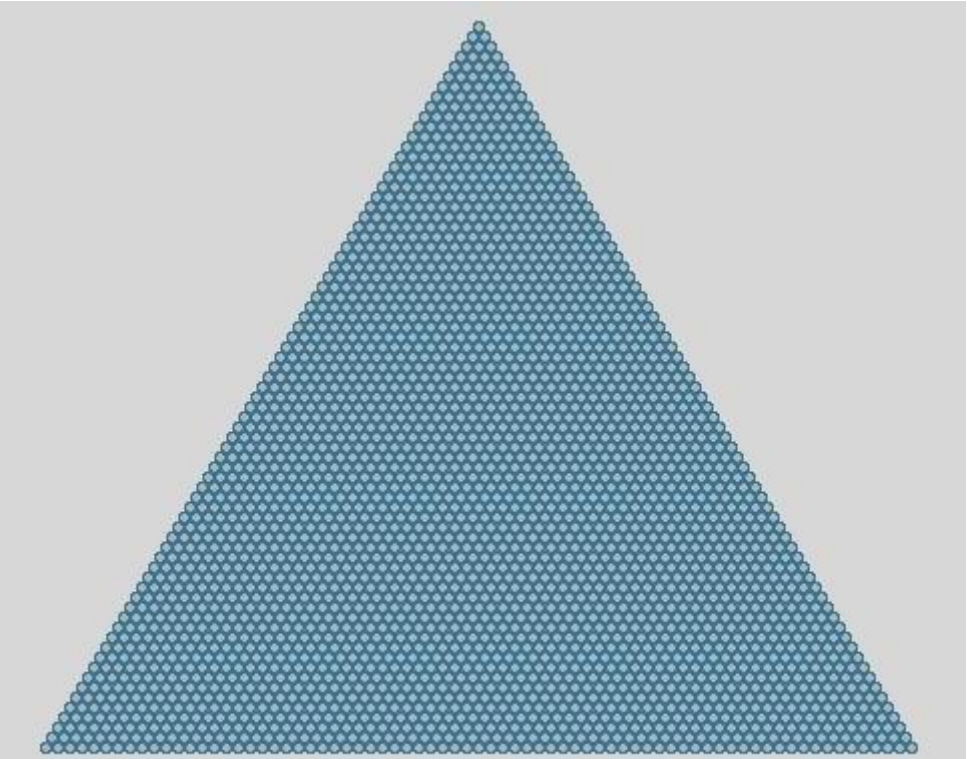
2701 = 37 x 73.

Here are some intriguing coincidences regarding 37 and 73

1. Both 37 and 73 are **PRIME** numbers, meaning that they are not divisible by any number except themselves and one.
2. Secondly, 37 and 73 are digital **REFLECTIONS** of each other.
3. Thirdly, both 37 and 73 can be arranged as **HEXAGRAMS** that fit neatly inside each other – it is a coincidence that the Star of David should appear in the very first verse



4. When 2701 counters are arranged into a triangle, the triangle produced has 73 layers; 2701 is the **73rd triangular number** – thus



2701 (the CV of Genesis 1:1) as 73rd triangular number

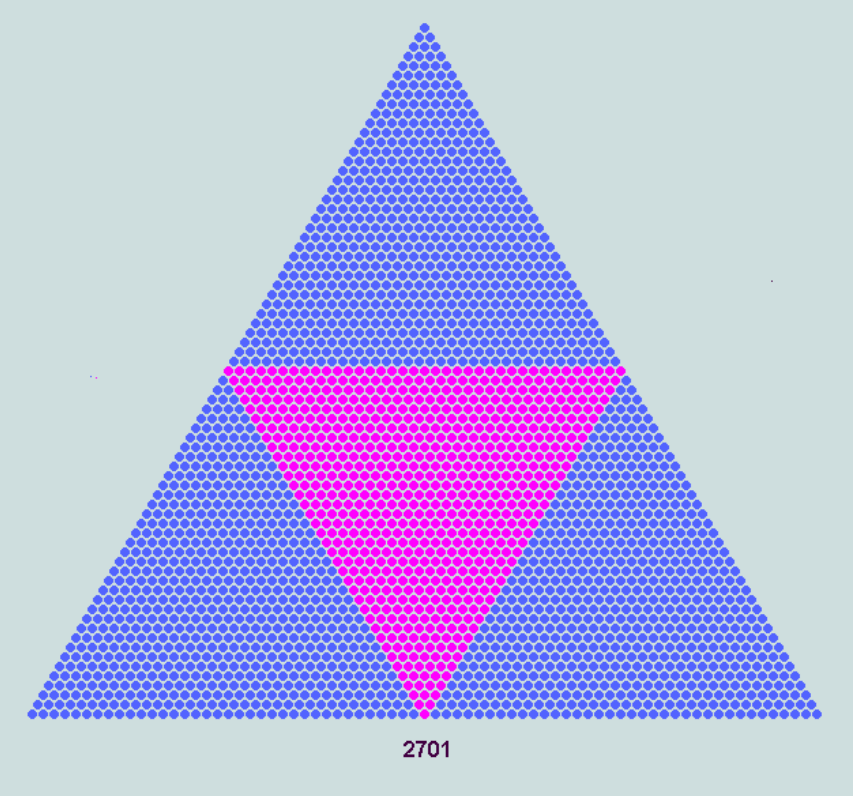
But are the individual words also multiples of 37?

Vernon found that only 2 of the 7 words in this verse were multiples of 37 on their own. These were the last two Hebrew words of the verse, which translate as - "and the earth". The numerical value of these last two words comes to 407 + 296 = **703**.

So we have -

5. The two words add to 703, which **reflects** 73 and 37.
6. It is curious that 703 is also a **triangular** number. 703 counters form a triangle with 37 layers – 703 happens to be the **37th triangular number**!

The 703 triangle fits neatly into the 2701 triangle like so –



The 703 triangle is shown in pink. The three blue triangles surrounding it each have a value of 666, and the total triangle has a value of 2701.

It is a further coincidence that 703 – 666 = 37, and 703 + 666 = 37 x 37

666 + 666 + 666

But what of the remaining 5 words whose numbers are 913, 203, 86, 401 and 395? Individually they are not multiples of 37, but as a group they add to 666 + 666 + 666, which is a multiple of 37.

These 5 numbers possess another strange property.

As shown above, the numbers for these 5 words are – 913, 203, 86, 401, and 395. Their sum is 1998. When written in reverse, the sum of these 5 numbers is still 1998 - as it is when the same cyclic permutation is applied to the digits of the individual values (rows 2 and 3), or to the block of five (rows 4 and 5), thus:

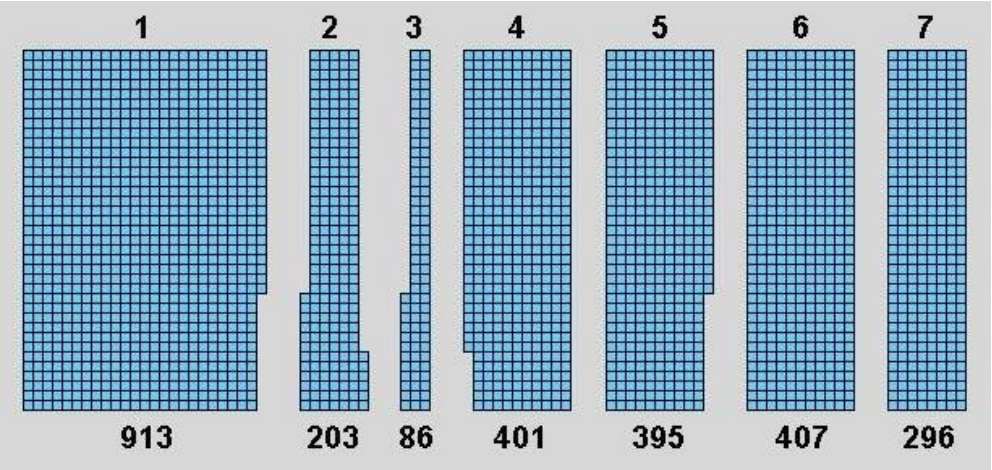
913 + 203 + 086 + 401 + 395 = 1998 = 593 + 104 + 680 + 302 + 319
391 + 320 + 608 + 140 + 539 = 1998 = 359 + 410 + 068 + 230 + 931
139 + 032 + 860 + 014 + 953 = 1998 = 935 + 041 + 806 + 023 + 193
591 + 320 + 308 + 640 + 139 = 1998 = 959 + 310 + 468 + 030 + 231
959 + 132 + 030 + 864 + 013 = 1998 = 195 + 931 + 046 + 803 + 023

1998 = 666 + 666 + 666

This numerical phenomena is called a cyclic permutation. The numbers always add to 666 + 666 + 666, no matter how they are read!

Jigsaw Pattern

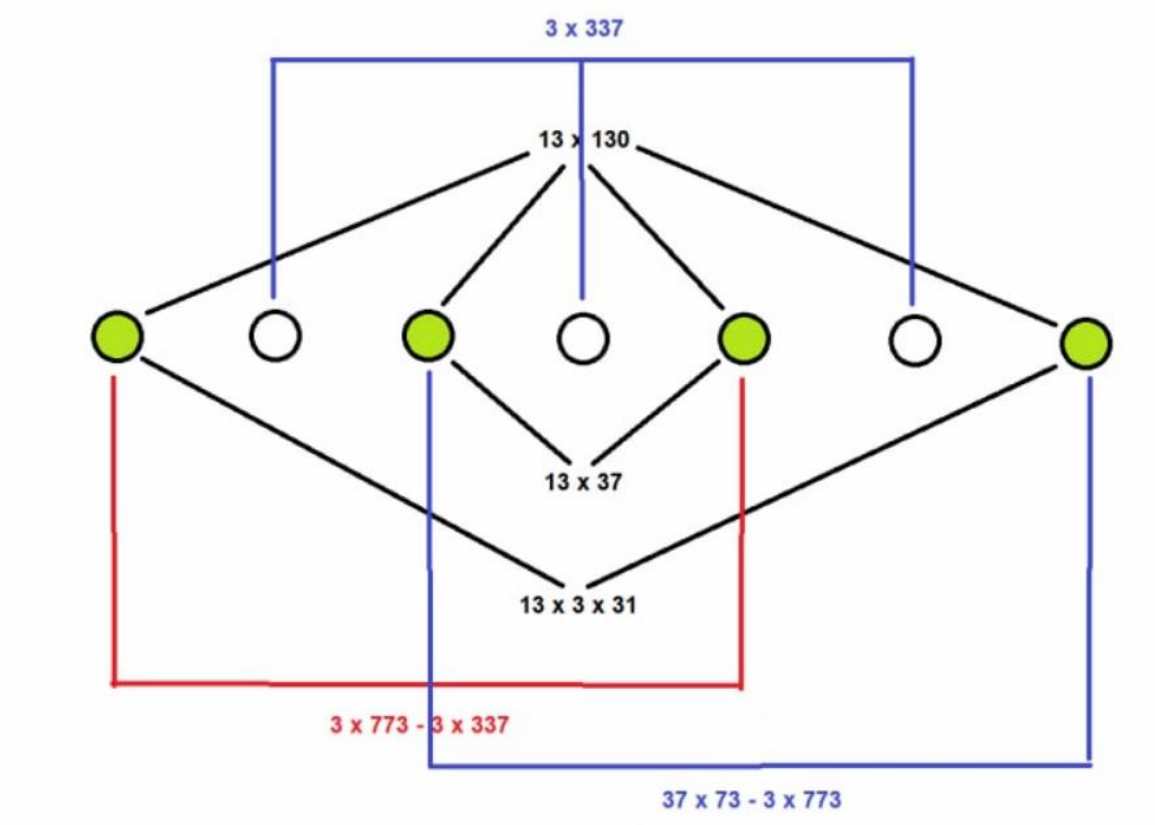
When we look at the numbers for each individual word in the verse, we notice a strange pattern



Here is a diagram where each word is represented by a block of height 37. Notice that the words form a kind of jigsaw, where each number varies from a whole multiple of 37 by a multiple of 6. Strangely enough, all of the words vary from a multiple of 37 by either 0 x 6, 1 x 6 or 2 x 6. This is quite a big coincidence. I think you will agree that the jigsaw nature of this verse is very apparent.

Further Patterns in Genesis 1

Here are the 7 words of the opening verse of the Bible. Each Hebrew letter has a standard numerical value.



Sum of all words	**=**	**37 x 73**
Even Words	**=**	**3 x 337**
All Odd Words	**=**	**37 x 73 – 3 x 337**
Alternate Odd	**=**	**3 x 773 – 3 x 337**
Alternate Odd	**=**	**37 x 73 – 3 x 773**
All Odd words	**=**	**13 x 130**
First and Last Odd	**=**	**13 x 3 x 31**
Central Odd	**=**	**13 x 37**

Reflection

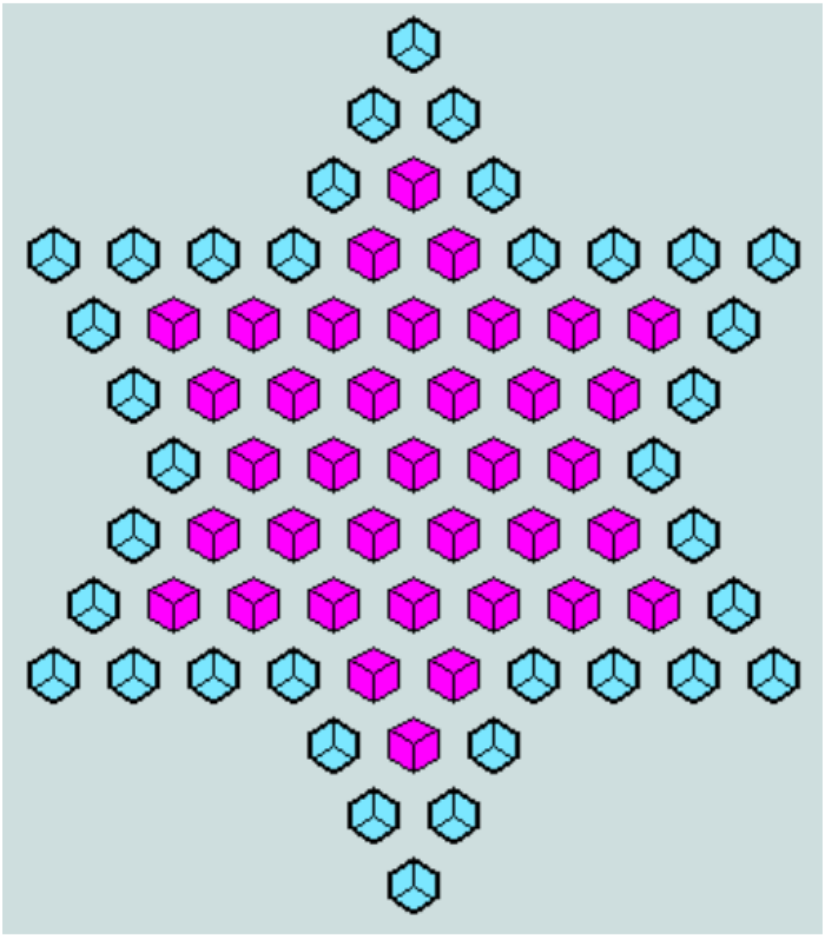
It is filled with digital reflection

37	reflects	**73**
13	reflects	**31**
337	reflects	**773**

Nested Geometry

73, 37 and 13 form a nested geometry – a triple Star of David

Outer blue hexagram	-	**73 counters**
Inner pink hexagram	-	**37 counters**
Central hexagram	-	**13 counters**



Summary

1) **Prime** numbers
2) **Reflective** primes 73 x 37
3) **Symmetries** of geometry
4) **Natural Division** into 703, and 666 + 666 + 666
5) **Cyclic permutations** of 666 + 666 + 666

Do we find that the building blocks of life – the 20 amino acids - are structured around these patterns?

Building Blocks of All Life : The 20 Amino-acids

In order to impress upon you the perfection of mathematical balance found in the amino-acids, here is a table of the 20 amino-acids that make up all life.

What follows is based on the work of Rakocevic, myself and Stephen Coneglan.

Aspartic acid D 133.10	Arginine R 174.20	Lysine K 146.19	Histidine H 155.15	Glutamic acid E 147.13
Asparagine N 132.12	Tryptophan W 204.23	Tyrosine Y 181.19	Phenylalanine F 165.19	Glutamine Q 146.14
Threonine T 119.12	Glycine G 075.07	Alanine A 089.09	Proline P 115.13	Serine S 105.09
Isoleucine I 131.17	Leucine L 131.17	Cysteine C 121.16	Methionine M 149.21	Valine V 117.15

Table (see amino-acid atomic mass table below)

If we label the rows A, B, C and D

A + D = 2 x 703 (to nearest whole number)
B + C = 2 x 666 (to nearest whole number)
A + C = 2 x 666 – 73 (to nearest whole number)
B + D = 2 x 703 + 73 (to nearest whole number)

If we label the columns A, B, C, D, E

A + B + C/2 = 666 + 703 (to nearest whole number)
D + E + C/2 = 666 + 703 (to nearest whole number)

This is just one example.

As you have seen, analogous mathematical patterns are found encoded into Genesis 1.

They have the same signature.

Checking the numbers

To get the mass of each amino acid, I did the following -

1. counted the number of Hydrogen, Carbon, Nitrogen, Oxygen and Sulphur atoms in each amino acid
2. obtained the atomic mass Hydrogen, Carbon, Nitrogen, Oxygen and Sulphur

Here is the resulting spreadsheet

			1.007975		12.0106		14.00686		15.9994		32.0675		Total Mass	
Name	3-letter	1-letter	H number	H mass	C number	C mass	N number	N mass	O number	O mass	S Number	S mass		
Alanine	Ala	A	7	7.055825	3	36.0318	1	14.00686	2	31.9988	0	0	89.09329	89.09
Arginine	Arg	R	14	14.11165	6	72.0636	4	56.02744	2	31.9988	0	0	174.2015	174.20
Asparagine	Asn	N	8	8.0638	4	48.0424	2	28.01372	3	47.9982	0	0	132.1181	132.12
Aspartic Acid	Asp	D	7	7.055825	4	48.0424	1	14.00686	4	63.9976	0	0	133.1027	133.10
Cysteine	Cys	C	7	7.055825	3	36.0318	1	14.00686	2	31.9988	1	32.0675	121.1608	121.16
Glutamic Acid	Glu	E	9	9.071775	5	60.053	1	14.00686	4	63.9976	0	0	147.1292	147.13
Glutamine	Gln	Q	10	10.07975	5	60.053	2	28.01372	3	47.9982	0	0	146.1447	146.14
Glycine	Gly	G	5	5.039875	2	24.0212	1	14.00686	2	31.9988	0	0	75.06674	75.07
Histidine	His	H	9	9.071775	6	72.0636	3	42.02058	2	31.9988	0	0	155.1548	155.15
Isoleucine	Ile	I	13	13.10368	6	72.0636	1	14.00686	2	31.9988	0	0	131.1729	131.17
Leucine	Leu	L	13	13.10368	6	72.0636	1	14.00686	2	31.9988	0	0	131.1729	131.17
Lysine	Lys	K	14	14.11165	6	72.0636	2	28.01372	2	31.9988	0	0	146.1878	146.19
Methionine	Met	M	11	11.08773	5	60.053	1	14.00686	2	31.9988	1	32.0675	149.2139	149.21
Phenylalanine	Phe	F	11	11.08773	9	108.0954	1	14.00686	2	31.9988	0	0	165.1888	165.19
Proline	Pro	P	9	9.071775	5	60.053	1	14.00686	2	31.9988	0	0	115.1304	115.13
Serine	Ser	S	7	7.055825	3	36.0318	1	14.00686	3	47.9982	0	0	105.0927	105.09
Threonine	Thr	T	9	9.071775	4	48.0424	1	14.00686	3	47.9982	0	0	119.1192	119.12
Tryptophan	Trp	W	12	12.0957	11	132.1166	2	28.01372	2	31.9988	0	0	204.2248	204.22
Tyrosine	Tyr	Y	11	11.08773	9	108.0954	1	14.00686	3	47.9982	0	0	181.1882	181.19
Valine	Val	V	11	11.08773	5	60.053	1	14.00686	2	31.9988	0	0	117.1464	117.15
													2738.01	2738.01

The values in yellow are the atomic masses of Hydrogen, Carbon, Nitrogen, Oxygen and Sulphur

I looked at several sources to get the most accurate atomic masses –

Source of data	Hydrogen	Carbon	Nitrogen	Oxygen	Sulphur
Nuclear-power.com	1.0079	12.0107	14.0067	15.9994	32.065
Coneglan	1.0079	12.0108	14.0065	15.9994	32.0645
Periodic-table.org	1.0079	12.0107	14.0067	15.9994	32.065
Lower limit	1.00784	12.0096	14.00643	15.99903	32.059
PeriodicTableSigFigBW (tqn.com)					
Upper Limit	1.00811	12.0116	14.00728	15.99977	32.076
Average	1.007975	12.0106	14.00686	15.9994	32.0675

The pattern held for all inputs regardless of data source – namely that –

1. the nearest whole number sum of all 20 amino acids is 2 x 37 x 37
2. the nearest whole number vertical division of the amino acid table divides it into 666 + 703 on each side
3. the nearest whole number sum of the outside rows is 2 x 703
4. the nearest whole number sum of the inner rows is 2 x 666
5. the nearest whole number sum of the 1st and 3rd rows is 2 x 666 – 73
6. the nearest whole number sum of the 2nd and 4th rows is 2 x 703 + 73

This pattern holds for ALL data sources where atomic masses are provided to 4 decimal places.

[This spreadsheet is available as a download on Telegram at https://t.me/c/1568554345/171]

The Meaning of This Pattern

As you have seen, analogous mathematical patterns are found encoded into Genesis 1. They have the same signature. So one meaning is that the Creator of the amino acids is the God of the Bible - YHWH.

But there is another meaning.

When we look at Genesis 1, we can see that –

1. 703 corresponds to the words **"and the earth"**

2. 666 + 666 + 666 corresponds to the words **"In the beginning God created the heavens"**

So the intertwining of the numbers 666 and 703 in the amino-acid table shows that life (the amino-acids) arose from the combining of heaven and earth – of spirit and matter.

In the amino-acid table, these two numbers 666 and 703 dance together like partners in a marriage.

The Creation of life wasn't just about making "clever" machines – rather it was about the infusion of matter with spirit – the union of the finite and the eternal.

Further Balances in the Columns of the Amino-acid Table

Aspartic acid	D	133.1026	133.1026 + 132.1176 + 119.1190 + 131.1728 = 515.5120	147.1292 + 146.1442 + 105.0924 + 117.1462 = 515.5120	Glutamic acid	E	147.1292
Asparagine	N	132.1176			Glutamine	Q	146.1442
Threonine	T	119.1190			Serine	S	105.0924
Isoleucine	I	131.1728			Valine	V	117.1462

Aspartic acid	D	133.1026	133.1026 + 131.1728 = 264.2754	147.1292 + 117.1462 = 264.2754	Glutamic acid	E	147.1292
Asparagine	N	132.1176			Glutamine	Q	146.1442
Threonine	T	119.1190	132.1176 + 119.1190 = 251.2366	146.1442 + 105.0924 = 251.2366	Serine	S	105.0924
Isoleucine	I	131.1728			Valine	V	117.1462

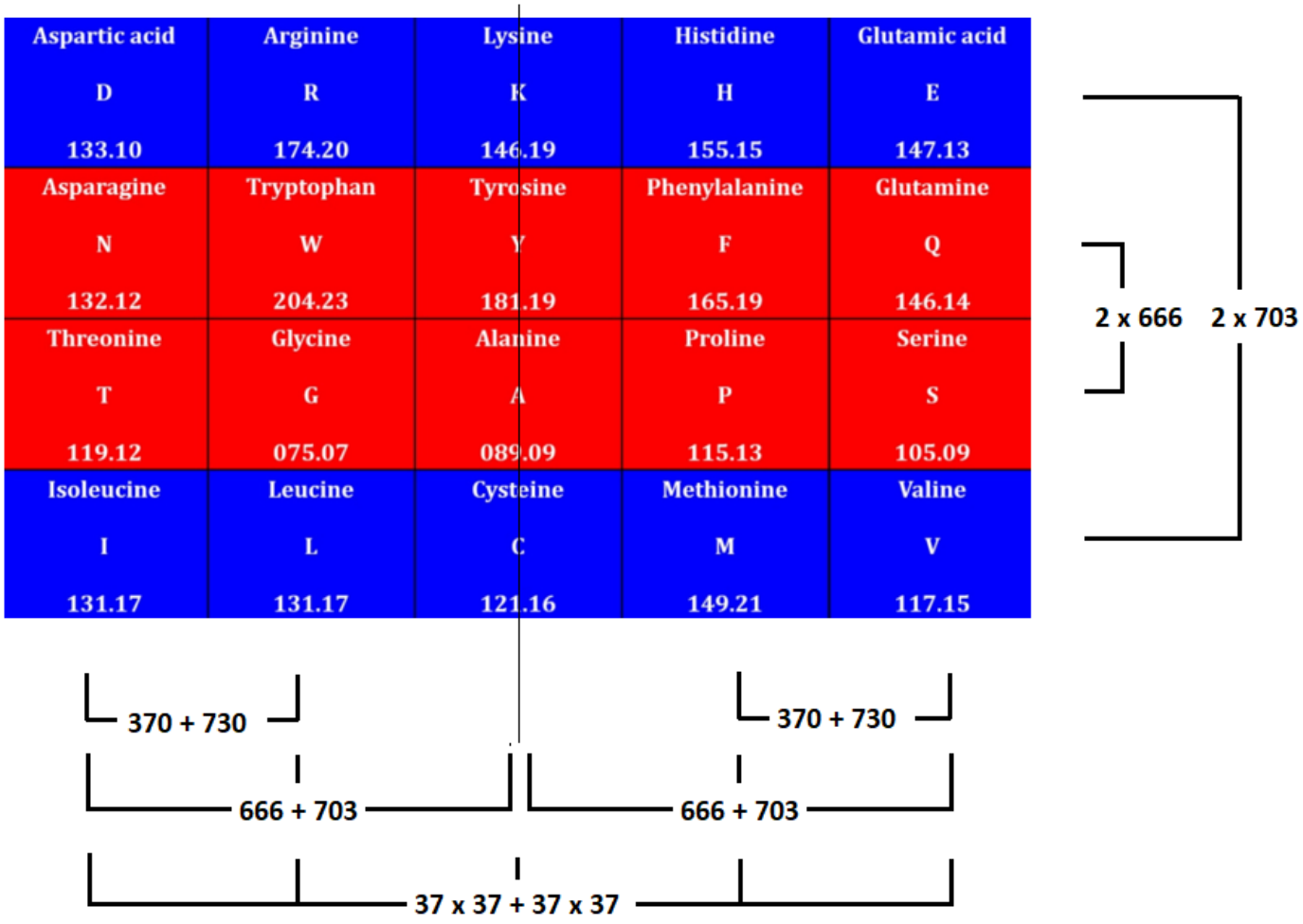
Arginine	R	174.2002	174.2002 + 204.2254 + 075.0664 + 131.1728 = 584.6648	155.1542 + 165.1894 + 115.1304 + 149.2107 = 584.6847	Histidine	H	155.1542
Tryptophan	W	204.2254			Phenylalanine	F	165.1894
Glycine	G	075.0664			Proline	P	115.1304
Leucine	L	131.1728			Methionine	M	149.2107

The reason why the vertical division of the amino-acid table yields an equal sum of masses on both sides is because the mass sum of each column is reflected symmetrically about an imaginary line drawn through the central column..

The result of this balance is that the columns on either side sum to 1100 = 730 + 370 (to the nearest whole number).

Imagining the central column as the pivot, the two columns on either side have a total mass of 1100 = 730 + 370.

If we split the central column down the middle, and add half its mass to either side, the total mass for each side becomes 1100 + 538/2 = 666 + 703 or 37 x 37 !



Please note that some of my early publications on this matter have undergone slight revision. Those were early and heady times – faced with this astonishing mathematical abacus found within the genetic code, within DNA and within the amino acids, I felt compelled to share quickly, and often my writings were drafts needing corrections.

What Rakocevic Concluded

Here are quotations from Rakocevic –

> "The results show that if only one amino acid should be replaced within the 5 x 4 table of amino acids, then all symmetry will be lost – there will no longer be any balance or coherency."

Given the arithmetic integration of the genetic code, Rakocevic comments –

> "It is hard to see how any other kind of 'original form of life', could have been built with fewer than 4 purine-pyrimidine bases, and fewer than 20 amino acids, or with anything other than the twenty standard amino acid molecules. That is the reason we can only consider an abiotic origin, and not by any means a biotic evolution of the genetic code."

Rakocevic argues that the genetic code has remained unchanged since it was first created at the very beginning of life, and that physical and chemical determinants are inadequate to explain the patterns.

> "However, with the knowledge of the synergy influence of previously discussed principles, particularly the principle of compromise, and the principle of coherence with simple arithmetic structures and regularities, it becomes clear that physical and chemical influences are limited. On the other hand, the genetic code is "frozen", but not during biotic evolution, but immediately at the very beginning from the very moment the code was created."

References

Vladimir Shcherbak, **(2003)** (Department of Applied Mathematics, al-Faraby Kazakh National University, Kazakhstan): Paper - "Arithmetic Inside the Universal Genetic Code" Biosystems 2003, vol. 70, n o 3, pp. 187-209 [23 page(s) (article)]

(2013) The "Wow! signal" of the terrestrial genetic code, Icarus

(1988) The co-operative symmetry of the genetic code. J. Theor. Biol. 132, 121-124.

(1993) The symmetrical architecture of the genetic code systematization principle. J. Theor. Biol. 162, 395-398.

https://t.me/Creationevidence/7
https://t.me/Creationevidence/18

Miloje M. Rakocevic, **(2004)** "A Harmonic Structure of the Genetic Code", Journal of Theoretical Biology 229 (2004) 221-234

A harmonic structure of the genetic code - ScienceDirect
pdf : Rakocevic pdf : https://t.me/Creationevidence/103

Vernon Jenkins, (formerly Senior Lecturer of the Department of Mathematics and Computer Science, University of Glamorgan, Wales):

www.otherbiblecode.com (no longer available)
http://www.whatabeginning.com/Misc/Genetics/Genetics_VS.htm
https://t.me/Creationevidence/6
https://t.me/Creationevidence/9

Stephen Coneglan, https://t.me/Creationevidence/12
https://t.me/Creationevidence/10
https://t.me/Creationevidence/13

Ken Cheung, https://t.me/Creationevidence/20

Craig Paardekooper, https://t.me/Creationevidence/71
https://t.me/Creationevidence/88
https://t.me/Creationevidence/19
geneticpatterns.pdf (goyimgazette.com)

John Elias, https://t.me/Creationevidence/90

CERN Symmetry, Amino Acids molecular number matrix

Peter Bluer, 37genesis73 - Peter Bluer (google.com)
Bible Numerics,Preterism,Universalism,70 weeks, Daniel (biblemaths.com)

Appendix 1

Wikipedia Values for Amino-acid Molecular Masses

http://en.wikipedia.org/wiki/Alanine

http://en.wikipedia.org/wiki/Arginine

http://en.wikipedia.org/wiki/Asparagine

http://en.wikipedia.org/wiki/Aspartic_acid

http://en.wikipedia.org/wiki/Cysteine

http://en.wikipedia.org/wiki/Glutamic_acid

http://en.wikipedia.org/wiki/Glutamine

http://en.wikipedia.org/wiki/Glycine

http://en.wikipedia.org/wiki/Histidine

http://en.wikipedia.org/wiki/Isoleucine

http://en.wikipedia.org/wiki/Leucine

http://en.wikipedia.org/wiki/Lysine

http://en.wikipedia.org/wiki/Methionine

http://en.wikipedia.org/wiki/Phenylalanine

http://en.wikipedia.org/wiki/Proline

http://en.wikipedia.org/wiki/Serine

http://en.wikipedia.org/wiki/Threonine

http://en.wikipedia.org/wiki/Tryptophan

http://en.wikipedia.org/wiki/Tyrosine

http://en.wikipedia.org/wiki/Valine

Appendix 2

In this appendix, I provide the data sources used by Stephen Coneglan.

His figures are fairly accurate, but mostly I liked his method – namely that he counted the atoms in each aminoacid, then multiplied by the atomic masses.

AMINO ACID RELATIVE ATOMIC MASS TABLE

Amino Acid			Atomic Mass Composition										Atomic Mass	
Amino Acid Full Name	Amino Acid 3-Letter	Amino Acid 1-Letter	Hydrogen[1]	1.0079	Carbon[2]	12.0108	Nitrogen[3]	14.0065	Oxygen[4]	15.9994	Sulphur[5]	32.0645	Total Mass 4 Decimals	Total Mass 2 Decimals
Alanine	Ala	A	7	7.0553	3	36.0324	1	14.0065	2	31.9988	0	0	89.0930	089.09
Arginine	Arg	R	14	14.1106	6	72.0648	4	56.0260	2	31.9988	0	0	174.2002	174.20
Asparagine	Asn	N	8	8.0632	4	48.0432	2	28.0130	3	47.9982	0	0	132.1176	132.12
Aspartic Acid	Asp	D	7	7.0553	4	48.0432	1	14.0065	4	63.9976	0	0	133.1026	133.10
Cysteine	Cys	C	7	7.0553	3	36.0324	1	14.0065	2	31.9988	1	32.0645	121.1575	121.16
Glutamic Acid	Glu	E	9	9.0711	5	60.0540	1	14.0065	4	63.9976	0	0	147.1292	147.13
Glutamine	Gln	Q	10	10.079	5	60.0540	2	28.0130	3	47.9982	0	0	146.1442	146.14
Glycine	Gly	G	5	5.0395	2	24.0216	1	14.0065	2	31.9988	0	0	75.0664	075.07
Histidine	His	H	9	9.0711	6	72.0648	3	42.0195	2	31.9988	0	0	155.1542	155.15
Isoleucine	Ile	I	13	13.1027	6	72.0648	1	14.0065	2	31.9988	0	0	131.1728	131.17
Leucine	Leu	L	13	13.1027	6	72.0648	1	14.0065	2	31.9988	0	0	131.1728	131.17
Lysine	Lys	K	14	14.1106	6	72.0648	2	28.0130	2	31.9988	0	0	146.1872	146.19
Methionine	Met	M	11	11.0869	5	60.0540	1	14.0065	2	31.9988	1	32.0645	149.2107	149.21
Phenylalanine	Phe	F	11	11.0869	9	108.0972	1	14.0065	2	31.9988	0	0	165.1894	165.19
Proline	Pro	P	9	9.0711	5	60.0540	1	14.0065	2	31.9988	0	0	115.1304	115.13
Serine	Ser	S	7	7.0553	3	36.0324	1	14.0065	3	47.9982	0	0	105.0924	105.09
Threonine	Thr	T	9	9.0711	4	48.0432	1	14.0065	3	47.9982	0	0	119.1190	119.12
Tryptophan	Trp	W	12	12.0948	11	132.1188	2	28.0130	2	31.9988	0	0	204.2254	204.23
Tyrosine	Tyr	Y	11	11.0869	9	108.0972	1	14.0065	3	47.9982	0	0	181.1888	181.19
Valine	Val	V	11	11.0869	5	60.0540	1	14.0065	2	31.9988	0	0	117.1462	117.15
Totals			197	198.5563	107	1285.1556	29	406.1885	49	783.9706	2	64.1290	2738.0000	2738.00

1. **Hydrogen 1.0079 at:**
   http://www.elementsdatabase.com/el.php?id=4

2. **Carbon 12.0108 at:**
   https://books.google.co.nz/books?id=9l3o1K2B26QC&pg=PA12&lpg=PA12&dq=carbon+12.0108&source=bl&ots=FjjBYMWKTP&sig=ACfU3U31kb5kzirzrue0aY6FrQTZgy0VPQ&hl=en&sa=X&ved=2ahUKEwjb3Oyvzs7tAhWFyzgGHcYsDcsQ6AEwCHoECAUQAg#v=onepage&q=carbon%2012.0108&f=false
   In Arthur E. Morris, Gordon Geiger, H. Alan Fine: Handbook on Material and Energy Balance Calculations in Material Processing. John Wiley & Sons, Hoboken, New Jersey: 2011, page 12.

3. **Nitrogen 14.0065 at:**
   https://moen.tistory.com/14429
   https://core.ac.uk/download/pdf/322968441.pdf Page 32
   EUCASS2019-0091.pdf Valentina König, Siegfried Müller and Michael Rom: Numerical investigation of transpiration cooling in supersonic nozzles. Page 9

4. **Oxygen 15.9994 at:**
   http://www.elementsdatabase.com/el.php?id=11

5. **Sulphur 32.0645 at:**
   https://qualifications.pearson.com/content/dam/pdf/A%20Level/Physics/2013/Exam%20materials/6PH04_01_que_20110621.pdf See Page 17, Question 17, Section (c), Part (ii)

6. **Hydrogen 1.0079; Carbon 12.0108; Oxygen 15.9994 at:**
   https://en.intl.chemicalaid.com/tools/empiricalformula.php?composition=C%3D12.0108%25+H%3D1.0079%25+N%3D14.0067%25+O%3D15.9994%25

7. **Hydrogen 1.0079; Oxygen 15.9994 at:**
   https://www.lenntech.com/periodic-chart-elements/atomic-mass.htm

Sulphur has been taken to four decimal places. Some sources give a relative atomic mass figure of 32.064 for Sulphur, and others give a figure of 32.065. We have taken the middle ground figure of 32.0645 in extending it to the fourth decimal.

- **Sulphur 32.064 at:**
  https://webbook.nist.gov/cgi/formula?ID=C14701123&Mask=40
  https://www.accessscience.com/content/sulfur/667200
  https://memory-beta.fandom.com/wiki/Sulfur
  https://radiopaedia.org/articles/sulfur
  https://www.britannica.com/science/equivalent-weight

- **Sulphur 32.065 at:**
  http://www.boulderdan.com/elementfile.php?action=Sulfur
  https://www.livescience.com/28939-sulfur.html
  https://energyeducation.ca/encyclopedia/Sulfur
  https://webbook.nist.gov/cgi/cbook.cgi?ID=C7704349&Units=CAL&Mask=FFFFFF&Type=JANAFG&Plot=on
  https://www.chemeurope.com/en/encyclopedia/Isotopes_of_sulfur.html