Factor11 in half the genetic code — a closer investigation

Content:

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Speculations and efforts to interpret the regular Mx-table 1(Wohlin 2015, section 2.8).

1. Table Mx, first regularities

In the astonishing regular Table 1 below on 12 amino acids (aa) with mixed* codons (Mx) the 11-factor appears in rows, times 35 - 19 - 16 = 385, 209 and 176, and in columns C1 and U1 the same numbers 209 +/-1, in columns G1 and A1 176 –/+1. (*Mixed codons: first and second base from different base pairs: G+C or A+U.) Note, Arg here charged (*Karlson 1976*).

Table 1. *The 2D-table on aa coded by mixed codons (Mx)*

GA	Glu	CA	His	UG	Trp	AG	Arg	→ **385**
GA	Asp	CA	Gln	UG	Cys	AG	Ser2	→ **209**
GU	Val	CU	Leu	UC	Ser1	AC	Thr	→ **176**
175		210		208		177		
385				385				770

1.1. The most elementary scheme from the cubes 27 and 8:

It's the cubes on 3 and 2, which appears in the middle steps 3' and 2'* in the x^3-series = 27 and 8 (*Wohlin 2021*). However, the right way to think seems to be *27 +/–8*, which directly gives numbers 35 - 19 with interval 2 times 8, figure 1. It appears as the most middle of a "middle" that one can imagine!
* (3', 2' is here often used as an abridged way of referring to numbers in the actual series with different exponents.)

Fig. 1. *Elementary numbers behind factor 11 in Table 1.*

35 x 11 = **385**
/ ↑ \ ↑
27 +/- **8** |- **16** x 11 = **176**, **2 x 88**
↓ ↓
19 x 11 = **209**

1.2. About "degenerated" codons:

In the Mx-table it's obvious and should perhaps be underlined that the division between rows 1+2 versus row 3 is what here is called aa with 3B-codons versus 2B-codons:

3B = 11 x 54
2B = 11 x 16…Quotient 27/8, $3^3/2^3$.

It might imply a serial, numeral interpretation of this so called "degeneration".

1.3. Operator –/+ 100 gives another regularity

Number 100 is the last in the ES-series (*Wohlin 2015*).

Table 2: *Rows 1+2 summed, + row 3.*

285 = **385** – 100 4 aa	309 = **209** + 100 4 aa	→ 594 = rows 1+2
+ 100	176 – 100 = 76	→176

G1+C1 = 285 = 385 – 100 = Glu, Asp, His, Gln,
U1+A1 = 309 = 209 + 100 = Trp. Cys, Arg. Ser.

It’s possible also to think of the division in Table 2 as all numbers, including 27 and 8, with the operation +/– 1, figure 2:

Fig. 2. *The numbers in table 2 with operator +/–1.*

11-factor

27 +/-1 = ↑ 28, x 11 = **308**. → +1 = 309 (U1+A1, rows 1+2)
+/–1 > **594**
↓ 26, x 11 = **286**, → –1 = 285 (G1+C1, rows 1+2)

8 –/+ 1 = ↑ 7, x 11 = **77**. → –1 = 76 (U1+A1, row 3)
–/+1 > **176**
↓ 9, x 11 = **99**, → +1 = 100 (G1+C1, row 3)

1.4. Number 77 as an essential factor in the Mx-table
Number 385 = 5 x 77, divided in quotient 3/2 - 2/3, table 3: row 1 versus rows 2+3 summed:

Table 3: *Factor 77*

2 x 77 = 154		**3 x 77 = 231**		**→ 385**
3 x 77 = 231		**2 x 77 = 154**		**→ 385**
G1	**C1**	**U1**	**A1**	

More about this factor in section 5 below.

2. Mirrored codons, regarding only 1st and 2nd bases

The factor 11 in the table 1 here appear in all sums of aa from mirrored codons:

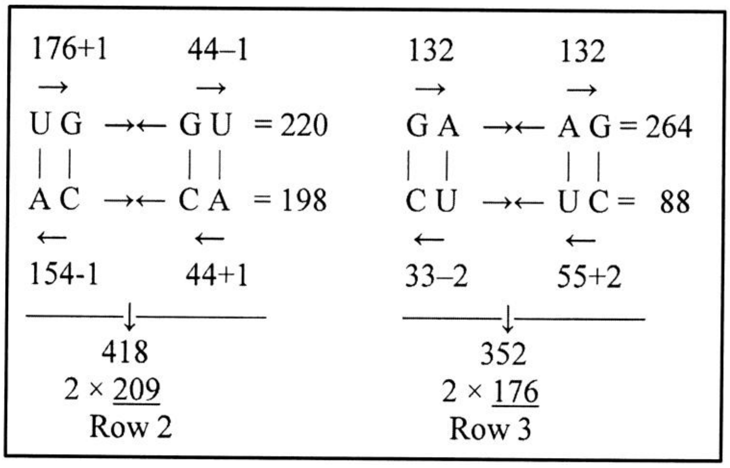
GA + AG = 132 + 132 = **264** = 11 x 24
CA + AC = 153 + 45 = **198** = 11 x 18….Sun 42 x 11 = **462** = 6 x 77
UG + GU = 177 + 43 = **220** = 11 x 20 > 3/2
UC + CU = 31 + 57 = **88** = 11 x 8…Sum 28 x 11 = **308** = 4 x 77

About numbers 462 and 308, cf. divisions of aa from Glycolysis and Citrate cycle (*Wohlin 2015)*, see section 5.4 below.

3. Codons as from opposite strands of DNA/RNA

With another layout, the 2-letter codons become complementary as from opposite strands of RNA: Here we have three polarizations: the one between 2-letter-codon pairs horizontally, the opposition of complementarities vertically, and the possible addition of reading the two strands in opposite directions, figure 3:

Fig 3. *Codons as from opposite strands.*



4. Correlations with the x^3- and ES-series

In spite of correlations with the mentioned x^3-series, it's not easy to see this series as a background for the astonishing regularities. From where the 11-factor?

The same could be said about the ES-series which also shows some correlations with the Mx-table. It's hard to believe that this complex series with exponent 2/3 (times 100) can have been a source for the scheme in the figure 1 above. Yet, the correlations are investigated below.

4.1. Correlations with the x^3-series:

The x^3-series (x = integers 5→0) = 125 - 64 (4') - 27 (3') - 8(2') - 1 - 0.

6 times this series = 750 - <u>384</u> - <u>162 - 48</u> - 6 - 0
384 210 → Sum 594

Those numbers equal those in rows 1 and 2 in the Mx-table 1 above. –/+1: 385 -1 and 209 +1.

If we take 11 as a sum divided in 5 and 6 and number 35 (27 + 8) divided in quotient 3/2 (21 - 14) we get:

5 x 21 = 105 + 6 x 21 = 126 → Sum <u>231, 3 x 77</u>.
5 x 14 = <u>70</u> + 6 x 14 = <u>84</u> → Sum <u>154, 2 x 77</u>
175 210

It's the Mx-division of 385 in 176 — 209 –/+1. (175 and 210 is the division on columns G1 and C1 in the Mx-table.). And horizontally we get the division in table 3 with its factor 77! (Vertically we get the same sums 175 and 210 when dividing 35 in quotient 4/3, 20 and 15.

But why these operations in exclusively these steps of the x^3-series?

4.2 Correlations with the ES-series:

The ES-series (*Wohlin 20t5*), x = 5 → 0, with exponent 2/3, times100, with abbreviations, figure 4, showed astonishingly many correlations with groups of aa, including sums of columns in the Mx-table 385:.

Fig. 4. *ES-series: The two 12-groups of 24 aa sums.*

```
                         367   → 2 x 367 = 734 = Nmx
                        /     \
292 — 252 — 208 — 159 — 100 — 0
   544 <——┼——————>|
             385            → 2 x 385 = 770 = Mx
```

385 as interval here might be interpreted in terms of the two numbers in the Mx-table:

544 – 367 = **177** = sum of column A1
+ **208** = sum of column U1

Interval between these numbers = 31, equal to mass of aa *Ser*, included with both it's codons in U1- and A1-columns of the Mx-table.

We can repeat that we had *last number 100* in this series as –/+ in table 2 above.
Rows 1+2: G1+C1 = 385 – 100, U1 + A = 209 + 100.

Thus, there are some connections to the ES-series.

Yet it's difficult to regard this complex series — biophysically not explained here — as a source to the factor 11.

4.3. The $2x^2$-series, sum 11 x 10?

How about the $2x^2$-series behind the Periodic system: numbers in the series as additions to whole shells and intervals as number of electrons in the different orbitals, s - p - d - f and x.

Sum of this series = 11 times 10.

```
  18    14    10    6   2      → intervals
50 — 32 — 18 — 8 — 2 — 0
  82 →        ← 28
```

Difference in step 4' –3' = 82 – 28 = **54**, times 11 = **594, the** factor 27 doubled.

Interval numbers times 11:

```
198 — 154 — 110 — 66 — 22. → Sum 550
   352 ________ 176 _______.
            264            88
```

Numbers 352-264-176-88 = 8-6-4-2 times factor 44.

198 = CA + AC,
154 = CA +1….Sum 352 = columns G1+A1
176 = UG –1.
264 = GA + AG.
110 x 2 = 220 = UG + GU.
88 = CU + UC = GU + AC

Thus, sums of codon groups in the Mx-table are possible to derive from this series.

It shouldn't be astonishing if both the x^3- and the x^2-series had relevance, with regard to the exponent *2/3* in the ES-series. Yet, nothing here explains factor 11.

5. The number 7 or 77:

5.1. Some general notes:

Table 3 above shows the Mx-table divided in 5 x 77 on both base-pair codons, G1+C1 and U1+A1 in opposite order. It's a striking regularity. 5 divided 3 — 2: 3 x 77 — 2 x 77.

First to note is that the factor 35 in 385 is 7 x 5. Both these factors show up, yet only 7 x 11, not the factor 55

(We can remember the equivalence with *numbers of aa*: 5 + 5 in G1 and C1, and 7 + 7 in U2 and A2, in this research counting on Ile AU-U/C and AUA as 2 codons.)

Factor 7 appeared also (*Wohlin 2021*) in the total sum of aa, R+B, 3276 = 7 x 468. 468 = total number of atoms in this total sum of 24 aa. Exactly Mv of an atom in the code = 7.

Notable is also that the whole ES-series is divided *in the step 4→3* in sums with difference 77:

544 (5'+4') – 467 (3'+2'+1') = 77.

5.2. Factor 77 as 43 + 34?

Do we have the factor 7 divided 4 — 3? In the Mx-table approximate sums:

3 x 43 = 129 = Trp 130 –1. Row 1.
3 x 34 = 102 = Arg^+ 101 +1. Row 1…Sum 231

129 = Asp + Gln (=131), –2. Row 2
102 = Val + Leu (=100), – 2. Row 3…Sum 231

The digits are rather close to a view that implies an assumed double-direction in the step 4-3.

Cf. the bidirectional reading of codons in *figure 3* above (1st and 2nd bases only).

5.3. A 3/2-division of factor 35:

With factor 5 in number 35 divided 3/2 in numbers 21 and 14, times 11 = 231 and 154 = 3 and 2 times 77 with eventual connections to the x^3-series.

We had in section 4.1 this division, when factor 11 was divided 5 and 6:

5 x 21 = 105	+	6 x 21 = 126	→	Sum 231, 3 x 77.
5 x 14 = 70	+	6 x 14 = 84	→	Sum 154, 2 x 77
175		210		

Cf. the ~ 3/2-division dominating in the weight series of aa (*Wohlin 2016*).

An alternative division dividing the Mx-table in 330 and 440:

Number 35 as divided 3/2 = 21 — 14 Quotient 3/2
Or as 19 — 16: 19 — 16
40 30

21 + 19 = 20 +/–1. 14 — 16 = 15 –/+ 1. → Quotient 4/3.
Columns C1 + U1, rows 1 + 2 = 153 + 177 = **330**
Columns G1 + A1, rows 1 + 2 = 264, + whole row 3 (176) = **440**

5.4. Division of aa from Glycolysis and Citrate cycle:

There are the division of aa from *stations in glycolysis* (Glyc.) *versus those from the citrate cycle* (Citr.) according to earlier calculations and conditions (*Wohlin 2015, section 4.1),* figure 5. (All aa with U-base in their codons (1st and/or 2nd base) derive from stations in glycolysis.)

Fig. 5. *The equal division of aa from Glyc. and Citr.*

```
385 +/– 77 = 462 ——— 308 = 770
              |-172    |-136
367–/+ 77 = 290 ——— 444 = 734
             752       752
             Citr.     Glyc.
```

308 + 444 = U-contenting codons from glycolysis
462 + 290 = the rest.

Vertical intervals: 172 = 4 x 43
136 = 4 x 34

Diagonally, differences = 18 (times 2 ≈ 2 x H_2O, separating the two 12-groups of aa as if it were part of the process to reduce water. (Signs ~, ≈: equivalent with or corresponding to.)

5.5. Factors 44 and 33 ?

The factor 44 is the interval 4' — 3' (252 – 208) in the ES-series. Also = mass of CO_2, a building stone of life.

This factor is closely expressed in several sums in the Mx-table:
The 3B-coded aa: GA = 132 = 3 x 44, = AG
UG = 177 = 4 x 44 +1.
The 2B-coded aa: 176 = 4 x 44.

Total sums:
UG + GU = 220 = 5 x 44. Columns G1 + A1 = 352 = 8 x 44
GA + AG = 264 = 6 x 44. Columns C1 + U1 = 418 = 9,5 x 44

The factor 33?

First as a number –/+:
385 – 33 = 352, sum of columns G1 + A1
385 + 33 = 418, sum of columns C1 + U1

Intervals as + 2 x **33** (66) in 9 steps from 132 gives at least 6 sums recognized from the Mx-table, marked here:
132 → **198** → **264** → **330** → 396 → **462** → 528 → **594** (= 9 x 66).
(= numbers 12-18-24-30-36-42-48-54 (sum 264) times 11,)

Cf. There is also the perhaps curious number 3344 = 11 x 304;
304 the difference between light and heavy chains in the weight series (*Wohlin 2016*) and the difference between domains of U2 — C2. 304 = 19 x 16,
3344 = 19 x **176** (16 x 11)
3344 = 16 x **209** (19 x 11)

A note:

Number 7 is in the *background model* (http://www.u5d.net) the sum of the "outer poles" of 4b + 3b or 4a + 3a in d-degrees 3 and 2 respectively, where the polarization of one d-degree into complementary structures defines next lower d-degree, figure 6:

Fig. 6. *D4 → D3 polarized to D3 → D2*

D3: 4b → **3** ← 4a
7 < > 7
D2: 3b → **2** ← 3a

D4 redefined as Direction, implying opposite directions "outwards" (b-poles) — "inwards" (a-poles). Reading these sums of "poles" as 77 connect it to the middle D3 — D2, the quotient 3/2 and also 4/3. (Besides that these types of reading implies one of the poles 10 times the other one.)

6. Factor 11 in steps and bidirectional series

6.1. Steps, sums and differences between opposite directions in series:

Some simple facts:
- Each step in the basic series of integers 5 →0, read as a 2-digit number, implies *minus or plus 11* outwards or inwards., 54 → 43 → 32…etc. or 01 → 12 → 23….
- The *difference* between opposite reading direction of all the steps is 9, 54 - 45 etc.

Cf. about centrioles and cilia, section 9 below.
- The *difference* between any 2-digit number and its mirrored number include a factor 9.
- The *sums* of any 2-digit number and its mirrored number always give a number with factor 11, as 17 + 71 = 88 39 + 93 = 132 = 11 x 12 etc. and 43 + 34 = 77. (The same seems to be true about 4-digit numbers.)
- The same is *not* generally true about 3-digit numbers, if they not in themselves already include a factor 11.
- However, the differences between 3-digit numbers and their mirrored numbers include both factor 9 and 11, 764 – 467 = 297, 157 – 751= – 594, 371 – 173 = 198 etc.

6.2. Addition of two series with each step mirrored:

The series as such are not mirrored ones in figure 7 below.

5-4 + 4-5 = 99
> **176**= UG –**1**
4-3 + 3-4 = 77 → x 2 **=** 154= CA +1
> **132** GA = AG
3-2 + 2-3 = 55
> **88** CU (55+2) +UC (33 –2)
2-1 + 1-2 = 33
> **44**, –/+1 = GU 43 — AC 45
1-0 + 0-1 = 11
↓ ↑- inwards
outwards

Thus, codon groups of aa in the Mx-table follows from summation of steps,, while it might be reason to note the special derivation needed for the CA-coded aa, 154 –1.

Yet, it's the number 77 that most clearly organize the Mx-table. As has been said earlier (*Wohlin 2021*), the step 4 → 3 seems dominate the genetic code in many numeral ways.

If assuming the counterdirected series starting from 5, it gives another picture.
5-4 + 0-1, 4-3 + 1-2, 3-2 + 2-3 etc.,.

All sums are 55, x 5= 275 = total sum 5^2 x 11.

Differences in this alternative aspect:

= 53 — 31 — 9 — – 13 — – 35. → steps 22
84 – 48

84 – 48 = 36, corresponding to two H_2O.
(36 + middle number 9 = 45, the mass of the aa Thr, with a special function?)

With reference to the background model, each step to a lower d-degree outwards releases one d-degree of structure into what might appear as a new degree of motion (if not meeting the other way around in synthesizing direction). The layout here implies that the second chain might be seen as a *substantiation* of this counterdirected series of motions.

We might add that double-direction might be a condition for *enclosing* of series.

Number 9 in the middle here, cf. centrioles and cilia for motions, section 9.

6.3. Only the middle numbers 27 and 8 in the x^3-series mirrored?

Factors 27 and 8 = 3^3 and 2^3, (3' +/– 2'), are the very middle of the x^3-series. If we assume two such series in opposite directions, this middle *step* in figure 7 is eventually the only one that can be seen as really a mirrored picture of one another? Especially if we regard lower d-degrees 2←1 as debranched from higher d-degree steps as in the loop model of the background model?

Fig. 7. *Two counterdirected x^3-series*

125 → 64 → **27** → | ← **8** ← 1 ← 0
↓ ↓
0 → 1 → **8** → | ← **27** ← 64 ← 125

This could perhaps be a reason why it became especially developed?
(The same concerns naturally the basic series of integers 5→0 relative its counterdirected version.)

7. The superposed series 9 - 7 - 5 - 3 - 1:

The superposed series 9-7-5-3-1 in figure 8 is dividable at station 3 into 16 — 9 (9 + 7 and 5+3+1) = 4^2 — 3^2.

Fig. 8. *The series 9-7-5-3-1, "superposed" the basic series.*

9 7 5 3 1
/ V \/ \/ \/ \
5 — 4 — 3 — 2 — 1 — 0

Introducing this superposed chain, reading *3-digit* numbers from both series, we get the 11-factor times each individual step:

594 — 473 — 352 — 231 — 110

Sum of this series, 1760. happens to be the total Z of R+B in the 24 aa.

7.1. Three of these numbers are found directly in the Mx-tables:

- 594 = rows 1 + 2, 2 x 11 x 27.
- 352 = columns G1 + A1, 2 x 176. (–/+1)
- 231 = 3 x 77, = U1+A1, row 1, = G1 + C1, rows 2+3.

7.2. The intervals in the steps = 121, 11^2:

Operating with this factor gives relation of aa-groups in the Mx-tables, figure 9:

Fig 9: *Interval 121 and number 473 in this 3-digit series*

594/2 ----- 352/2
297 —↓—176 → sum 473 = 4' in this series
121 297 + 121 = **418, 2 x 209** = Columns C1 + U1
418 + 176 = 594 = 473 + 121.

Besides the examples above, for instance:

- 209 – 121 = 88 = GU+CU = UC+AC, half the 2B-coded aa 176.
- 264 = G1 + A1, rows 1+2 = 385 – 121
- 594/2 **+** 473* = 770, the whole Mx-table.

* A note: 473 is a factor (times 6) in insulin, the kind with 51 aa, (*Karlson 1976*).

7.3. The steps in the 3-digit series read in "inward" direction:

Steps 01→ 3-4 gives sums 2 x 385, figure 10, the sum of Mx-table:

Fig. 10. *The 3-digit series in "inward" direction.*

011 → 132 → 253 → 374 → 495
↓ 385 ↓
↓ 385 ↓

AG = **132.** Column U1 = 208, + AC 45 = **253**.
GA = **132**, Column C1 = 210, + GU 43 = **253**

Interval 121 in the 3-digit series as 44 + 77:

253 – 44 = 209,
132 + 44 = 176…Sum385
253 – 77 = 176
132 + 77 = 209…Sum 385

7.4. Reading 2-digit numbers in the combined series, step 4 →3, bidirectional:

47 + 74 = 121
73 + 37 = 110…Sum **231** (or 120 - 111), 3 x 77.

7.5. Steps in the superposed series alone, two-way directed:

97 — 75 — 53 — 31
+79 — 57 — 35 — 13
= 176 132 88 44 → **Sum 440,** 4-3-2-1 x 44
132

132 = G1 and A1, rows 1+2 in the Mx-table.
Number 154 lacking here.
77 —— 55 —— 33 gives, adding mirrored numbers:
154 — 110 —— 66…Sum **330 =** CA +1 + UG –1**.**

8. “The Big Number Crown”

The relation between the 12-group of Mx-coded aa (Mx) and the 12-group with not mx-coded aa (Nmx), where the 11-factor not is found, might be the one between two-way-directed series and one-way-directed ones.

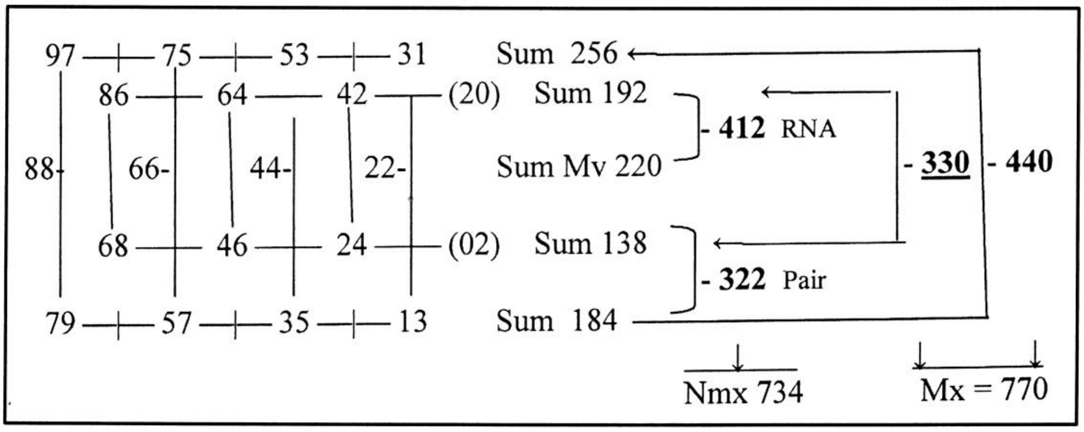
In the ES-series (figure 4) the Mx number 385 comes as intervals from 4’ → 2’, the Nmx-numbers from 3’ (208). A branching of ways might be assumed from 3’, while we had the double-direction in 4’, this also according to the background model (*Wohlin 2015*)

One illustration might be found on *https://www.u5d.net*, document “*17 small files…*”, page 50). It’s concentrated in figure 11 below.

It implies 2 x 11-steps in the superposed series, forwards and backwards, adding intermediate single 11-steps, also bidirectional, + the Mean values (Mv) of superposed series between forward and backward reading.

The illustration concerns codons divided in 4 types, regarding 1st and 2nd bases:
- Cross-codons GU-UG, CA-AC = 418
- Form-codons GA-AG, UC-CU = 352…Sum 770 (~ Mx)
- RNA-codons GC-CG, AU-UA = 412
- Pair-codons GG-CC-UU-AA = 322…Sum 734 (~ Nmx)

Fig. 11: *The superposed series mirrored with intermediate 11-steps.*



Mx: Grasping over the forward-backward series (not the Nmx-series), –/+ last number 22:
330 + 22 = 352 = Form-coded aa,
440 – 22 = 418 = Cross-coded aa.
Note the special sum for RNA-coded aa in the Nmx-group, including the Mv-series in the middle = –36 (corresponding to 2 H_2O) from sum 256, + 192, while the sum yet depends on and refers to the opposite series.

We can remember that an “H_2O-group” (-2H) often gets added to the Pair-codons Lys and Pro, which could give a potentional (before - 2 x 2H) sum of Pair-codons as 322+36 = 358, = 138 + Mv-sum 220.

The numbers in figure 11 can hardly (with some exceptions) be seen as connected with atomic mass of individual aa. Sooner be thought of as results of background processes in a mass field cloud to generate the different sums of codon types.

Another but similar aspect is to think of the base-pairs A—U and G—C-pairs in DNA/RNA translations as *two coordinate axes* (in whatever angle to one another there could be):
The Mx-group connect the 2 coordinate axes, the Nmx-group refers only to 1 axes.

9. How about a relation to factor 9 in centrioles and cilia?

Factor 9 was the difference between opposite readings of 2-digit step numbers.
In the figure above the "Mv-numbers" became the steps in the superposed series forwards - backwards = 88 –/+ 9 = 97 — 79, 66 –/+ 9 = 75 — 57 etc.
Factor 9 appears in the construction of centrioles (*centrosomes* and *basal bodies* and *cilia*), written about in *https://u5d.net/Biology* (*chapter 12*); number of microtubules anti-centric arranged around the center = 9, times 3 or 2.
Could this factor also derive from counterdirected series?
Mx- or Nmx-coded aa? More of one type of these aa or in active sites in the transport proteins of opposite kinds building up or down cilia? Here a totally open question if such relations to proteins and their aa content and codons exist.

11 and 9 might be seen as inverted (/\) numbers: 11 /\ 909090….$x10^x$. 9/\ 11111…$x10^x$.
(There is also the relation between *number- base systems* (nb-x): 9 in nb-10 = 11 in nb-8.)
Last step in the basic series (5→0) is 10, +/–1 = 11 and 9. 10 mirrored = 01: sum 11, difference 9 (if read in the same direction.): 1→0|0←1.

The arithmetical operations *addition* — *subtraction* might be seen as one type of expressions for the double-direction in d-degree 4 (D4) and in d-degree 0/00 (for pure kinetic energy) in the background model (*https://u5d.net*). "Pole 1b" as "motions from each other" (~ "outwards", creating a new anti-center), "pole 1a" as "motions towards each other" (~ "inwards", defining a new center).
There is also the earlier suggestion that *–/+1* in several different contexts between similar sums of numbers might imply and express a change to a new coordinate axis. One such example shows up in the Mx-table: *horizontally*, row 2 = 209, +/–1 = 210 — 208 = vertical sums in columns C1 and U1, and row 3 = 176 –/+1 = 175 and 177, *vertically* sums of columns G1 and A1.
A 1/x-curve joins asymptotically two *perpendicular axes* in a coordinate system and passes through number y, x = +1 or –1.
With dimensions developed out of one another through polarizations, in outward direction the released d-degree appears as plus one degree of motion in the background model (Or built in into the structure in opposite direction of synthesis.). Then we have – or +1 in every step in the processes through dimensions outwards or inwards in the basic series as deep-rooted in the number of dimensions. Five steps:

11111^2 = 123454321. (9 digits)

Number **27** from the x^3-series appears in centrioles at anti-center in the number of microtubules in centrosomes and basal bodies: 9 times triplets (3) = **27**. In cilia outside the cell the number becomes 9 times doublets (2) = **18** (in a simplified description, there seems to be exceptions). This change in numbers 3→2 seems related to d-degrees: inside ~ volumes, D3, outside a surface, D2.

An association goes to the exponent 2/3 in the ES-series. Motions are said to start from the top ends of cilia as they are last step in the background model outwards, the first inwards.

2 x 3’ (208) in the ES-series = 416:

416/18 = 23,1 1111…, 416/27 = 15,4 074074...

These a bit curious quotients give times10 (and abbreviated) the division 3 and 2 x 77 in the Mx-table.

Could the ES-series be thought of as a midst between the x^3- (with 3’ = 27) and the $2x^2$-series (with 3’ = 18)?

Why the *cubic root* out of 3 (times 100) in the exponent of ES? Here only one association to the relation between mass and radius R in stars: in ordinary stars a cubic one, inverted in dense neutron stars.

Numbers 9 — 11: A couple of added operations from the inverted numbers of 9 and 11 with connections to mass numbers of aa in the Mx-table (?):

- The difference is 2, eventually appearing as the 2 microtubules in the center of motile cilia and some other centrioles, an expression for the very inversion of the numbers?

(In prokaryotes the fibers corresponding to later developed microtubules, has been said to be 11.)

- 11 /\ = 909090…, inversion as expressing the relation center— anti-center?
- 1010101010 (five steps 1→0) ≈ 273 x 3700003,70… (99 /\ 10101010….)

In the basic series 5 ←→ 0 as dimensions there are 6 stations including d-degree “0/00” as the d-degree of pure motions. If assuming number 1 for each station it gives:

- 111111^2 = 12345654321
- 111111 x 2/3 (or through 3/2) = 74074, number for B-chains of aa, inverted 135000135, the number of the A-base.
- 111111 = 11 x **10101**:
- 10101 = 273 x 37. **273** = Mv of two aa R+B = 91 x 111...
  91 = 4’ + 3’ (64+27) in the x^3-series.
- 10101 → x 1/3 = 3367. 3367 /\ = “periodic” 297 000 297.
  10101 → x 1/6 → /\ = **594** 000 594,
  594 the sum of rows 1+2 in the Mx-table.

10. The carbon-nitrogen cycle in the sun — similarities?

After first elementary fusions in the sun the following repeated steps from Carbon, 3 alpha, to Oxygen, 4 alpha, (a 3 → 4 step) is supposed to occur in the sun: ^{12}C get fused with 2 H to nitrogen ^{14}N, then another + 2 H to oxygen ^{16}O. There a helium atom, 1 alpha, gets released and the process returns to ^{12}C for a new cycle. Thus, on the atomic level:

12 → 14 → 16, – 4 (one alpha, ~ He).
↑←————————|

10.1. The divisions of columns in 3 + 1 in the Mx-table:
In the Mx-table (Table 1), in rows 1+2 = sum 594, we had 11 times these atomic numbers as if it followed a similar process, figure 12:

Fig. 12. Rows 1+2 in the Mx-table without factor 11.

132 (GA) → 154 (–1, CA) → 176 (+1, UG) →← "back to" 132 (AG),
= <u>12 → 14 → 16 → ← 12</u>
G1 C1 U1 A1

In figure 13 this 3 to 1 division of columns are shown, where we get the two main sums of rows horizontally –/+ 1 in vertical division, a change between coordinate axis.

Fig. 13. *Three columns versus one in the Mx-table*

Row 1:	G1	C1	U1	→	A1	
	73	81	130		101	→ 385
		286 –2			**99 +2**	
Row 2:	59	72	47		31	→ 209
		176 +2			**33 –2**	
Row 3:	43	57	31		45	→ 176
		132 –1			**44 +1**	
Sums:		**594 – 1**			**176 +1**	
		Rows 2+3 = 309			Rows 2 + 3 = 76	
		Row 1 = 285 –1			Row 1 = 100 +1	

3 columns:
Row 1 = **385 – 100, –1**
Rows 2+3 = **209 + 100**

Thus, 3 columns sum up to the same as rows 1 + 2 in the Mx-table, (–1), the 4th to sum of row 3 in that table +1.

G1 + C1 + U1:
Rows 1+2: <u>132 + 154-1 + 176+1</u> =12 → 14 → 16, x 11
462
= 2 x 231 → ← 132 = A1

(132 the backward reading of 231, 3 x 77.)

10.2. A similar 3—1-division in the 12-group Nmx:
In the ES-series: 2 times **3'** (208) + **2'** (159) = 734 = Nmx.

G1+C1+U1 = 414 = 2 x 208 –2
A1 = 320 = 2 x 159 +2

(Difference 94, 2 x 47, the atomic mass R of Selenocysteine, called a "21st aa", encoded in a special way. An expression for this "middle" in the series?)

U1 = 208 + 47, A1 = (208 + 159) – 47. (Yet, 47 = Cys, UG-coded, has nothing to do with aa Cys here in the Nmx-group. In the total of U1- and A1-domains, however, we had:
U1: 463, – 47 = 416 = 2 x 3' (208).
A1: 497, + 47 = 544 = 5' + 4'.
(One interpretation was that Cys' UG-codon derived somehow from Met's AUG-codon, moved from A1 as 544 to U1 as 416.)

10.3. A quite different view on the three atom numbers 12-14-16;
Here with multiplications, an operator giving more of a volume:

```
 __________.
↓          ↑
12 → 14 → 16
```

12 x 14 = 168, sum of all ^{14}N in the 24 aa R, valence 3.
14 x 16 = 224, sum of all ^{16}O+^{32}S in the 24 aa R, valence 2.
Back: 16 x 12 = 192, times 5 = sum of all ^{12}C-atoms, valence 4.

Thus, in ES-numbers:
168 + 224 = 392 = 5' **292, + 100**
192 = 5' **292, – 100**….Sum **584**.

Atoms with valence 4 **+** valence 2:
192 + 224 (diff. 36) = **416**, 2 x 3'

Factor 56, the B-chains of each aa, bound:
168 = 3 x 56
224 = 4 x 56, quotient 3/4.
12 x 14 x 16 = 2 times 1344
(1344 is the sum of 24 B-chains bound).

Cf. B-chains and peptide bonds:

```
= C → N(Hx) → | ← O(H) ← C
  12   14     ↓   16       12   (atom numbers)
           (– H2O)
```

Sum **54**, 27 –/+1 = 26 → ←28.]

11. The "factor series" 385:

With the background model in mind, each dimensional degree (d-degree) polarizes into partial, complementary structures or "poles", defining next lower degree, D5 as into 5b →← 5a, outwards—inwards, 4b →←4a etc. Read as numbers gives 55 - 44 etc.

Such a series times 1 → 5 gives the sum 385, divided in odds and evens in figure 14 below. We get the number division 209 and 176 in the Mx-table:

Fig. 14: *The "factor series" 385.*

1 x 55	= 55		
2 x 44	=	88	
3 x 33	= 99		
4 x 22	=	88	
5 x 11	= 55		
	209	**176**	**= 385**

- 2(55 + 88) = 286, -1 = rows 1+2 in columns G1 +C1 in the Mx-table.
- 1 x 99, +1 = row 3 in these columns.
- 55 + 99 = 154, row 1, G1 + C1.

In columns U1 + A1 sums 209 and 176, +/– 99, = 308 and 77, the rows 1+2, –1, and row 3, +1.

There are, however, *no motivations here* of these "factor" multiplications.

[If using the same factor series 1 → 5 for *steps* as 54 - 43 etc. the sum becomes 370:
370 – 1 = UU + UG + GU + GG (encoded aa)
370 + 1 = AA + AC + CA + CC (—"—).
The sum 740 = Pair- plus Cross-coded aa, 322 + 418 (+/– 48).]

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