

DIETUS ELBL

ESSAY · TRANSLATION

Period Structures and the Decimal System

German original: *Periodenstrukturen und Dezimalsystem*

by Dietus Elbl

THIS ESSAY IN OTHER LANGUAGES

Deutsch · Français · Italiano

zahlen.cc · office@zahlen.cc

Every natural whole number can be represented through its decimal twin as the limit of an infinite series, whereby the number concerned and its twin always yield a decimal threshold of rank. Single-digit numbers complement each other to 10, two-digit ones to 100, three-digit ones to 1000 and so on. It should be noted here that with single-digit numbers the decimal values show successive ± 1 powers, whereas with two-digit numbers intervals of ± 2 are found in the powers, with three-digit numbers intervals of ± 3 occur, and so on, as the following examples show:

Example: number 7 and its decimal twin 3 - whose sum 7 + 3 gives 10

1/7 = 0.142857 recurring

$= 3^0/10^1 + 3^1/10^2 + 3^2/10^3 + 3^3/10^4 + 3^4/10^5 + 3^5/10^6 + \ldots$ powers ± 1

= 0.1 + 0.03 + 0.009 + 0.0027 + 0.00081 + 0.000243 + ...

= 0.1(03)(009)(0027)(00081)(000243) ...

= 0.142857 recurring

Example: number 87 and its decimal twin 13 - whose sum 87 + 13 gives 100

1/87 = 0.011494252873563218390804597 7 recurring

$= 13^0/10^2 + 13^1/10^4 + 13^2/10^6 + 13^3/10^8 + 13^4/10^{10} + \ldots$ powers ± 2

= 0.01 + 0.0013 + 0.000169 + 0.00002197 + 0.0000028561 + ...

= 0.01(13)(169)(2197)(28561) ...

= 0.0114942528735632 ...

Example: number 724 and its decimal twin 276 - whose sum 724 + 276 gives 1000

1/724 = 0.001381215469613259668508287292 82 ...

$= 276^0/10^3 + 276^1/10^6 + 276^2/10^9 + 276^3/10^{12} + \ldots$ powers ± 3

= 0.001 + 0.000276 + 0.000076176 + 0.000021024576 + ...

= 0.001(276)(76176)(21024576) ...

= 0.001381215469613 ...

In all cases overwritings occur, since only one place is available for two or more digits of a number. In the first example, for instance, the 2 of the number 27 comes to lie over the nine, whereby the latter exceeds the decimal threshold (2+9=11) and passes the one – the tens digit of the 11 – on to the 3, so that the number 4 now appears in the period. As the powers increase, the periods contain more and more zeros, which, as representatives of universal emptiness, represent outer space; see the following section on space compression, using the example of the number 79.

Superposition of the digits of a number, using the example of the period of 7:

0.1	0.1	0.1	
0.03	0.03	0.03	
0.009	0.009	0.009	
0.0027	0.0027	0.0027	
0.1417 ...	0.00081	0.00081	
	0.000243	0.000243	
	0.142753	0.0000729	
		0.00002187	
		0.000006561	
		0.142854331	→ [period 0.142857]

Note:

Numbers with an aperiodic structure, such as the 5 (whose decimal complement is likewise 5), the 50 or 500 and so on, can also be represented as the limit of an infinite series.

$$
\begin{aligned}
1/50 &= 0.02 \\
&= 50^0/10^2 + 50^1/10^4 + 50^2/10^6 + 50^3/10^8 + 50^4/10^{10} + \ldots \\
&= 0.01 + 0.005 + 0.0025 + 0.00125 + 0.000625 + \ldots \\
&= 0.01(005)(0025)(00125)(000625) \ldots \\
&= 0.02
\end{aligned}
$$

PERIODS AND THEIR SYMMETRY

The densest form of a number expresses itself in a (periodic) structure, which is uniquely determined by its partner number (decimal complement). Since all numbers have sprung from the unity 1^2 – whose centre is represented by zero – their periods can also be complemented back to unity, whereby this is represented in its "wave nature".

"Particle representation" of the unity 1^2	"Wave nature" of the unity 1^2
1.0	0.999999999 etc.

In this respect numerous odd prime numbers (Pr) have the property of possessing centre-symmetrical periods that can be folded together. Their period lengths are typically either Pr minus 1 digits long (example A) or a fraction of this (examples B and C).

Example A

The prime number seven has a period of 7 minus 1 digits (= 6 digits), which can be condensed into the sequence 0.999 as a representation of the unity 1^2. One therefore needs only half the information (3 digits) in order to build up the period.

Reciprocal **1/7** = 0.142857 recurring, 6 digits
= 0.142 + 857
= 0.999

Example B

The prime number 13 possesses a fractional period of length (Pr minus 1)/2 = (13 – 1)/2 = 12/2 = 6:

Reciprocal **1/13** = 0.076923 recurring, 6 digits
= 0.076 + 923
= 0.999

As in the case of the seven, the period here is structured centre-symmetrically in the ratio 1:1, whereby the value 0.999 approximates the 1^2 and the period length defines the number of nines. By comparison, the number 19, for instance, with its 18-digit period, already shows nine nines in its sum representation, whereby the longer the period of a number is, the more nines appear. The unity 1^2 is thereby also approximated better and better, although the tonal aspect always remains the same.
Seen in this way, the approximation of the unity 1^2 is always the same, regardless of whether 3 and 3 digits come together to form 999 or 9+9 digits to form 999999999, which is of importance with regard to non-standard analysis. An everyday example of this:

The knife that cuts a loaf of bread is not completely straight and therefore shows a blurring (approximation to the straight line, or number of nines in the period). In relation to each other, however, knife and bread behave resonantly, which is expressed in the tonal aspect of a number *(see: "Mensch Zahl Universum")*. Considered for itself, this relation is perfect and possesses maximum fit.

If, however, one compares the knife with other tools, a difference logically results, as for instance in the case of a laser, which is used in the manufacture of the smallest electronic components.

Knife + bread	=	exactness "0.999"
Laser + electronic component	=	exactness "0.999999999"

The laser beam is many times closer to the straight line than the knife, whereby knife and laser can be represented analogously to the sequences 999 and 999999999. Now there are two possibilities of interpretation:

· *Within the system* the degree of perfection is the same in both cases, because the knife and the bread show the same blurring in relation to each other as the laser beam in relation to the electronic component

· *Across systems* the degree of exactness is different, since knife and laser beam, or bread and electronic component, embody different approximations to the straight line

Numbers with multiply folded centre-symmetrical periods

Besides numbers with aperiodic characteristics (e.g.: the reciprocal representation of the number 2 gives 1/2 = 0.5) or prime numbers with period length Pr minus 1, there are also numbers with centre-symmetrical periods which are characteristic of non-prime numbers. For illustration we choose the number 203, whose 84-digit period (42+42) is folded *several times* over.

Example C

1/203 =
0.00492610837438423645320197044334975369458128
07881773399014778325123152709359605911330 0 p.

1/203 =	0.00492610837438423645320197044334975369458128	00 + 42 digits
	07881773399014778325123152709359605911330 0	42 digits
	57142857142857142857142857142857142857142857	

These 7 sequences (4/7 = 0.571428 recurring) complement each other 21 : 21 digits to the unity 1^2 in its flowing representation:

571428571428571428571	21 digits
428571428571428571428	21 digits
999999999999999999999	

THE DEVELOPMENT OF MATTER FROM EMPTY SPACES AND ZERO PLACES

In individual atoms the different energy levels are always separated by empty spaces, which are defined as spectral gaps. Materials with countless atoms, however, can also show continuous energy states which, without gaps, are characteristic of the substance concerned, whereby the transition from the ground state to the excited state is fluid.

A phase transition occurs when a material suddenly changes its properties. In quantum phase transitions this also happens at arbitrary temperatures, even close to absolute zero, whereby an insulator can be transformed into a superconductor and a solid into a superfluid.

In order to trigger a quantum phase transition, only a minimal supply of energy is needed, which becomes describable mathematically through the structure of the decimal fraction expansion. The higher a material vibrates, the lower is the impulse energy which causes a phase transition. Low-vibrating substances ("matter" in the classical sense) are maximally stable, and therefore greater amounts of energy are needed to trigger a phase transition.
The physically observed processes can be represented on the informal level in the form of numbers – which stand behind the chemical elements – whereby two cases are to be distinguished:

> on the one hand the bipolar (digital) representation of a number (of an element) through its ideal-typical limit definition with an occurring spectral gap (binary, numbers 1 and 0)

> on the other hand the analogue, process-oriented representation of a number (as a wave function) with continuous energy levels without a spectral gap (decimal, number 0.9999999999...)

When a number is represented through its infinite interval structure (e.g.: number 1 in the form 0.9999999999...), the number of nines differs depending on the theory, whereby numbers *between* zero and one also appear (see: non-standard analysis). In order to make these differences more tangible, I have introduced the api indices, which, as *active potential of infinity*, represent the potency of a substance (→ coherence; length of the chain of nines). Connected with this is also culminatory* geometry, which defines time-parallel states or synchronous moments, which in turn form the basis of entangled particles.

The representations of the number 1 through its limits in the form of 1.0 and the representation of its intermediate space (flowing continuum) in the form of 0.99999999... are *ideal-typically equivalent* (1.0 = sum 0.9999999... as limit), *but different in terms of process*.

	equivalent representation	
Limits	→—←	1.0 outside
Interval	↔	0.999999999999999... inside

* http://www.zahlen.cc/dokumente/Ursprung%20und%20Bedeutung%20der%20Zahl%20Pi.pdf

SPACE COMPRESSION AND NUMBER SIGNATURES

The inverse form of a whole number represents its inner life or its ground state as a vibrating, energetic entity. In the decimal fraction structure the process-like and field-determined signature appears in space, which is compressed step by step. Just as a balloon wrinkles when the air escapes from its interior, a decimal fraction shows overlaps.

In this process it is not the essence of the number that is transformed, but solely the ordinal aspect of the enveloping space that is condensed, which ultimately leads to the typical decimal fraction expansions and their periods.

Using the example of the number 79 (as a chemical element, gold), the representation of every number by means of its decimal mirror image (21) with simultaneous space compression can be illustrated well.

79^{-1} = 1
0.0126582278481 per.
densest form, overlaps of the pure mirror aspect of the number 21^n
(1, 21, 441, 9261, 194481, 4084101, 85766121, 1801088541,...)

979^{-1} = 2 1
0.00102145045965 27...
zero spaces 2,1

9979^{-1} = 3 2 1
0.000100210441 92804...
zero spaces 3,2,1

99979^{-1} = 4 3 2 1
0.0000100021004410926...
zero spaces 4,3,2,1

999979^{-1} = (1)
5 4 3 2 0
0.000001000021000441009261 19448508418...
end 9261 + zero

9999979^{-1} = (2) (1)
6 5 4 3 0 0
0.0000001000002100004410009261019448 1408410...
end 194481 + zero

99999979^{-1} = (3) (2) (1)
7 6 5 4 0 0 0
0.00000001000000210000044100009261001944810408410185766...
etc.

The pure decimal mirror number 21 (79 + 21 = 100) comes to light undistorted in higher "potencies" (many 9s), whereby with *progressive reduction of the zero spaces* overlaps occur, since owing to the compression of the ordinal aspect (decimal system) the cardinal contents merge into one another.

The compression of the "vacuum" (zero space) takes place regularly, vertically and horizontally, according to the sequence n = 1, 2, 3, 4, 5 ... with the effect that from the numbers 21^3 = 9261 onwards a zero must be added to their final digits in order to be able to recognise the regular succes-

sion of the zeros. In each case a one always meets a zero, which lie overlapping at the respective last places of a power of 21^n.

Viewed physically, the difference between the neighbouring "energy levels" = decimal fraction structure becomes smaller from step to step, and after only a finite number of steps already reaches an almost negligible value, which has to be applied in order to initiate a phase transition.

The basic form 79^{-1} = 0.0126582278481 per. yields a period which, through manifold overlaps, leads to a distortion of the mirror form (number 21) that is absolutely pure in the final state. Seen in this way, "matter" in its everyday state is not only "frozen light" but also an illusory image of the reality lying behind it, as conveyed, for instance, by Plato's allegory of the cave.

It shows, moreover, that the approach of homeopathy is correct if one assumes that the effect of the high potencies ("purer form") lies above that of the low potencies ("distorted form").

NOTE:

How the development out of emptiness is connected with the meaning of life is explained in more detail in the text "Der Sinn des Lebens" (The Meaning of Life) under the heading ***aktuelles*** (news).

Translation of the German original by Dietus Elbl. zahlen.cc · office@zahlen.cc

DESIGN AND REALISATION **LOTBLICK**