Journal of Advances in Mathematics and Computer Science

36(7): 1-10, 2021; Article no.JAMCS.72488
ISSN: 2456-9968
(Past name: British Journal of Mathematics & Computer Science, Past ISSN: 2231-0851)

Global Dimensional Mathematics

Olivier Denis[1*]

[1]*EntropicInformation.Space, 13 Rue Joseph Nicolas 4300 Waremme, Belgium.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/JAMCS/2021/v36i730378
Editor(s):
(1) Dr. Sheng Zhang, Bohai University, China.
Reviewers:
(1) Dalal Adnan Amer Maturi, King Abdulaziz University, Saudi Arabia.
(2) Totohasina André, University of Antsiranana, Madagascar.
(3) Vandana, Punjabi University, India.
Complete Peer review History: https://www.sdiarticle4.com/review-history/72488

Original Research Article

Received 09 June 2021
Accepted 17 August 2021
Published 18 August 2021

Abstract

Here we build the fundamentals of global dimensional mathematics in order to build the new basis of the new theoretical scientific paradigm.
Research on the foundations of mathematics covering the definition of fundamental mathematical concepts such as point, line, direction, dimension, addition, multiplication, division, zeros, infinities, limits, factorization, integers and prime numbers, were carried out and further still the resolution of the Goldbach conjecture is now effective.
New original fundamental mathematical notions are established building the core of global dimensional mathematics based on the decomposition of integers into an addition of prime numbers terms and on fundamental geometric concepts such as the concept dimension based on the notion of direction and point, as well as research on set theory and work on the notion of limits and infinity.
The termization as a decomposition of integers into an addition of prime number terms by a python program, breaks the unique factorization theorem, the fundamental theorem of arithmetic while the geometric notions developed break Euclidean geometry leading to a new mathematical framework, geometry, topology and metrics leading to a total change of theoretical scientific paradigm.
Global dimensional mathematics forms the basis for the construction of the new scientific paradigm of the 21st century and beyond, opening up a still unknown perspective on the world of science in general.

**Corresponding author: Email: olivier.denis.be@gmail.com;*

Keywords: Global dimensional mathematics; termization; paradigm shift.

1 Introduction

Research on the foundations of mathematics covering the definition of fundamental mathematical concepts such as point, line, direction, dimension, addition, multiplication, division, zeros, infinities, limits, factorization, integers and prime numbers, were carried out and further still the resolution of the Goldbach conjecture is now effective. Here, we build the fundamentals of global dimensional mathematics in order to build the new basis of the new theoretical scientific paradigm. Global dimensional mathematics forms the basis for the construction of the new scientific paradigm of the 21st century and beyond, opening up a still unknown perspective on the world of science in general.

2 Methodology

2.1 Nothing

To support this theory, we had to start from a starting point ...Let's start from "nothing"!!! However, "nothing" does not exist!!!

Zero and infinity have no existence of their own, only a palpable mathematical existence.

Well ... let's start from zero ... so it is logical and healthy to think that:

"The null part added to itself will always remain the same as itself, namely null."

This is our starting point ...Let us now look at the "practice" of what has just been stated.

In arithmetic, 3 * 0 = 0 + 0 + 0 = 0; It is therefore healthy to extrapolate as follows:

infinity-1 * 0 = 0 + 0 + 0 +…. + 0 + 0 + 0 + 0 = 0

infinite * 0 = 0 + 0 + 0 +…. + 0 + 0 + 0 + 0 + 0 = 0

That being said, we'll come back to arithmetic a bit later in the explanation process of the theory of global dimensional mathematics.

2.2 Dot

Let's come back to our starting point, …. Speaking of dot, let's see what happens in geometry for this dot and more particularly in Euclidean geometry where for Euclid and his axioms ..... knowing that an axiom is not than a postulate, a proposition considered true and obvious, admitted without proof.

It is obvious that from a mathematical dot of view it is easy to have recourse to axioms, ... This indeed greatly facilitates the establishment of the mathematical structure to the detriment of its veracity.
according to Euclid and his definitions, ….

Translation: A *point* is that which has no part.
(Euclid's Elements [1])

Euclid begins these Elements with a series of definitions.

This work, the first example of the axiomatic system of Antiquity, is constructed in such a way that this system stands out perfectly. The first definition applies to dot.

Euclid defines it as "that whose part is zero", that is, a dot has no width, length or height.

Its dimension is therefore zero. It forms a whole; it is indivisible. It is therefore that a dot is a first element, a primitive constituent. This definition has something to surprise us since it is based on a negation. Indeed, "a point is what has no part" translates the same idea!

The next definitions will therefore logically be based on the terms defined previously.

It is the basis of an axiomatic system, therefore deductive.

For the moment, the first geometrical "tools" are not defined by means of any other mathematical term: they are "primitive" terms.

2.3 Line

Translation: A *line* is breadthless length

The term "line" is the second primitive element of the Elements.

"A length without width" It therefore has neither width nor height.

Euclid will speak of "straight line" in the fourth definition of the Elements. The term "curve" would therefore surely be an adequate translation of Euclid's idea. (the length of a line is the set of parts of the length of that line) If we remember that it is logical and healthy to think that:

"The null part added to itself will always remain the same as itself, namely null."

how does a zero (zero) part which is added to itself give something different from "self" namely 0, ...? from (1) we can say that the dot has no length and (2) that the curve which is the juxtaposition of dot (the addition of a zero (zero part) would have one ...?

Axioms 1 and 2 of Euclidean geometry are obsolete.

We have just seen that our starting point, namely:

"The null part added to itself will always remain the same as itself, namely null."

breaks general arithmetic as well as Euclidean geometry.

Let us return to the first definition of Elements which applies to the point.

Euclid defines it as "that whose part is zero (zero)", that is, a point has no width, length or height.

2.4 Dimension

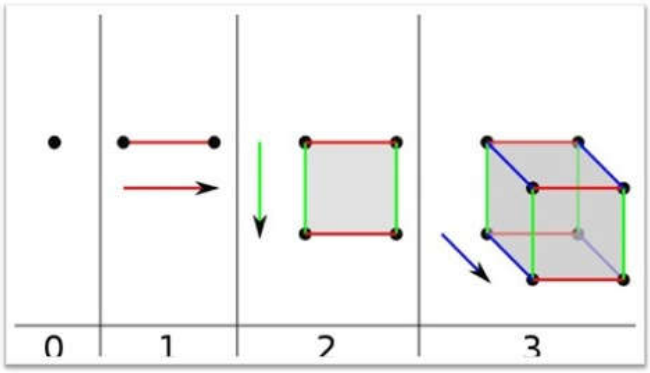
Its Dimension is therefore zero. We have the Dimension dot parameter.

The Dimension (D) is a function of three parameters of directions (d) perpendicular to each other: the length, width and height of the element considered.

whose

the LENGTH is the direction (d) of the FORWARD or REVERSE direction of the considered element
the WIDTH is the direction (d) of the LEFT or RIGHT direction of the considered element.
the HEIGHT is the direction (d) of the UP or DOWN direction of the considered element

Table 1. Euclidean Dimensions: zero dimension: the dot; One dimension: the line, Two dimension : the plane surface; Three dimension: the volume



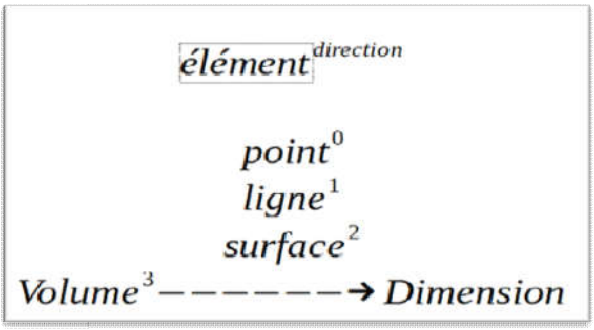
the dot has no spatial direction or spatial dimension
the plane line has a spatial direction, but no spatial dimension
the plane surface has two spatial directions, but no spatial dimension, it is the projection of two perpendicular plane lines in space

Only the third direction perpendicular to the 2 others defining the spatio-temporal plane has a spatial existence in the spatial dimension.

2.5 Direction

The direction is expressed by the order of the exponent of the element considered.

Table 2. element by direction exponent: point: zero direction, line: one direction, surface: two directions, volume: 3 directions so 1 dimension



It characterizes this element at the level of the state of manifestation of the potential considered, namely: Table 3.

Table 3. Manifestation of the element by direction exponent parameter: $point^0$: zero direction, no manifested potential; $line^1$: one direction: manifested potential; $surface^2$:time manifested potential; $volume^3$: space manifested potential

$$élément^{direction}$$

$$point^0 : Potentiel\ non-manifesté$$
$$ligne^1\ Potentiel\ manifesté$$
$$surface^2\ Potentiel\ manifesté\ temporellement$$
$$Volume^3 \rightarrow Dimension \rightarrow Potentiel\ manifesté\ spatialement$$

2.6 Addition

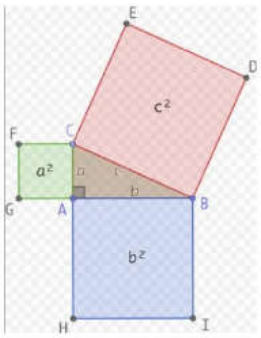
But let us return from this step towards arithmetic, a first approach of the Global Dimensional Mathematics was presented with regard to the multiplication relating only to a generalization of the addition, the only fundamental operation in arithmetic having as proof the mathematical demonstration for addition and multiplication which follows, ...

2.7 Multiplication

Table 4. Geometrical proof of addition as the fundamental arithmetic operation

DRAW

TAKE a right triangle

Draw	**In the triangle with c for hypotenuse**	**In the square formed by the hypotenuse**
	$a^2 + b^2 = c^2$	$c * c = c + c$ by termization (decomposition in addition of prime number) $c^2 = 2c$ $1^2 = 2$

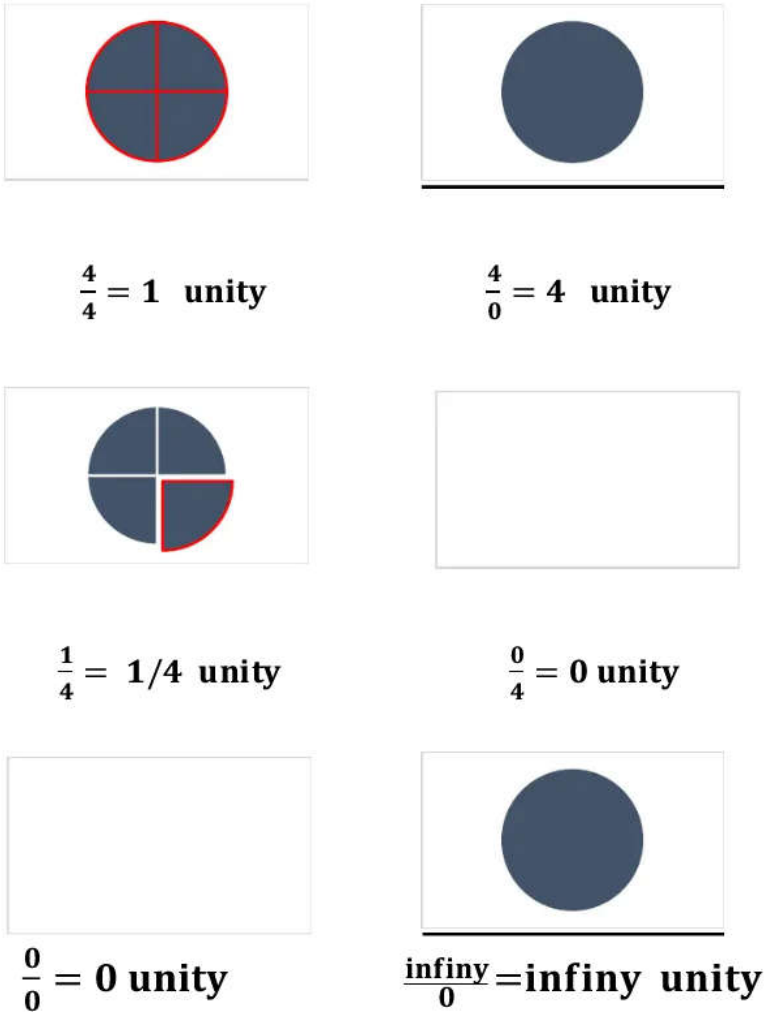
In mathematics, the **Pythagorean theorem**, or **Pythagoras's theorem**, is a fundamental relation in Euclidean geometry among the three sides of a right triangle. It states that the area of the square whose side is the hypotenuse (the side opposite the right angle) is equal to the sum of the areas of the squares on the other two sides. This theorem can be written as an equation relating the lengths of the sides *a*, *b* and *c*, often called the **Pythagorean equation [2]:**

$$a^2 + b^2 = c^2,$$

2.8 Division

Now let's take a look at the basic mathematical operation of division and its properties in Global Dimensional Mathematics.

Table 5. Division by zero in global mathematics by olivier denis



2.9 Zéro

Let's take another look at zero and its different interpretations in math.

Concerning the axiom of the empty set:

There is a set A such that, for any set B, B is not an element of A, that is, there is a set of which no set is an element.

it is the ZERO set !!!! But excluding by nature any element … ABSURD!!! Indeed, the set of natural numbers does not include the number zero.

Let's take a closer look at the axiom of the empty set, this statement asserts the existence of a set without elements in axiomatic set theory.

It is an axiom of Kripke-Platek set theory and the variant of general set theory that Burgess (2005) calls "ST", and a demonstrable truth in Zermelo set theory and Zermelo-Fraenkel set theory, with or without the axiom of choice [3].

Table 6. Axiom of infinity from Zermelo-Fraenkel set theory

Axiom of Infinity

The axiom of Zermelo-Fraenkel set theory which asserts the existence of a set containing all the natural numbers,

$$\exists x\,(\emptyset \in x \wedge \forall y \in x\,(y' \in x)),$$

where $\exists$ denotes exists, $\emptyset$ is the empty set, $\wedge$ is logical AND, $\forall$ means for all, and $\in$ denotes "is an element of" (Enderton 1977). Following von Neumann, $0 = \emptyset$, $1 = 0' = \{0\}$, $2 = 1' = \{0, 1\}$, $3 = 2' = \{0, 1, 2\}$, ...

SEE ALSO:
Zermelo-Fraenkel Set Theory

2.10 Infinity

In arithmetic, Euclid's theorem on prime numbers states that there is an infinity of prime numbers stated in Euclid's Elements, it is Proposition 20 of Book IX.

Euclid offered a proof published in his work Elements (Book IX, Proposition 20), [4] which is paraphrased here [5]. Compatible with the conception of the infinity of the author that turns out to be false.

Consider any finite list of prime numbers p1, p2, ..., pn. At least one additional prime number not in this list exists.

The new notion of zero proposed by Global Dimensional Mathematics allows us to move from zero to the mathematical notion of infinity, to explore its properties as well as its properties in relation to the mathematical notion of zero.

> in Fact, zero doesn't exist !!! it's a mathematical concept, nothing and identity are those aspects depend the operational concept context.

As we have already seen with Robinson 's arithmetic stay always the same...

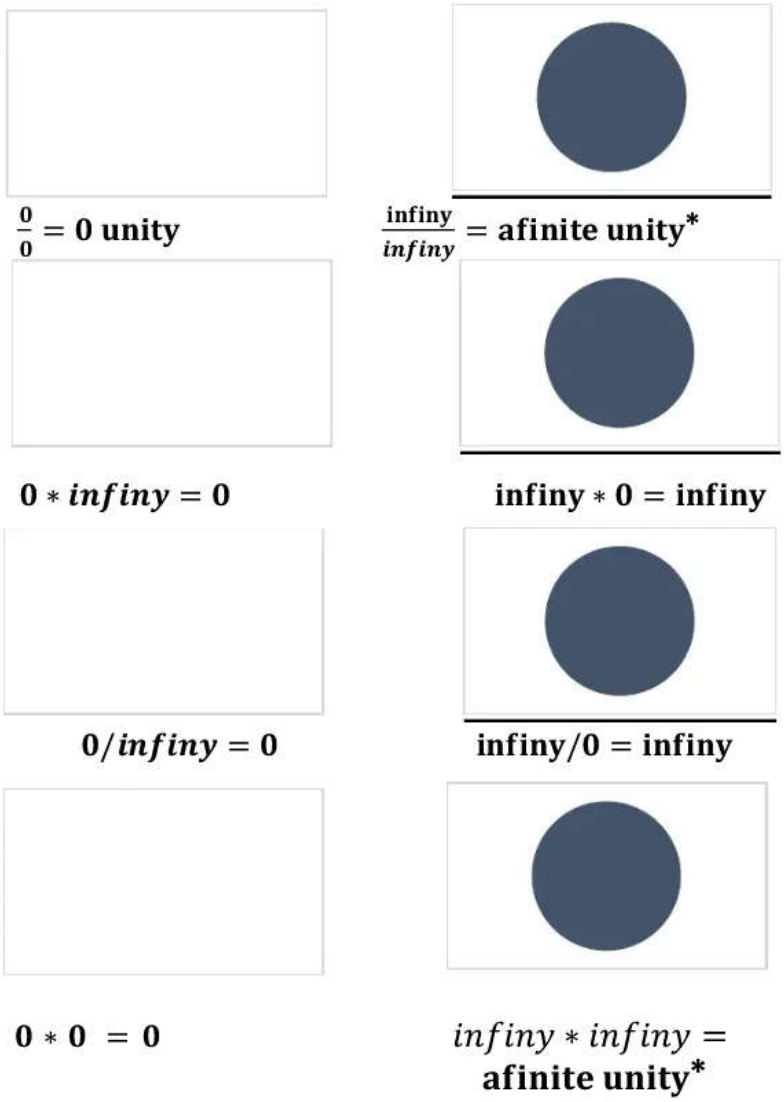
> nothing…any part of nothing is still nothing
> 0 X infinity==0
> you take indefinitely nothing is still nothing...
> But, infinity X 0 == infinity
> and
> infinity/0== infinity

The rest is trivial..

But that does not end with the results of Global Dimensional Mathematics in arithmetic.

Global Dimensional Mathematics allows by the generalization of addition to break the fundamental theorem of arithmetic namely the factorization.

Table 7. Mathematics without limits finished in global mathematics by oliver denis



*: afinite unity = without limits

2.11Termization

In number theory, the **fundamental theorem of arithmetic**, also called the **unique factorization theorem** or the **unique-prime-factorization theorem**, states that every integer greater than 1 [6] either is a prime number itself or can be represented as the product of prime numbers and that, moreover, this representation is unique, up to (except for) the order of the factor [7-9].

The fundamental theorem of arithmetic or the product of prime factor decomposition theorem is stated as follows: any strictly positive integer can be written as a product of prime numbers in a unique way, up to the order of the factors.

Here is a computer program made in python which allows to decompose any integer [+, -] into an addition of terms of prime numbers (ending).

2.12 Conjecture de Goldbach

Goldbach's conjecture is one of the oldest and best-known unsolved problems in number theory and all of mathematics. It states that every even whole number greater than 2 is the sum of two prime numbers [10].
This program can also find all numbers from GOLDBACH [even, odd] up to the one specified.

Indeed, the Goldbach conjecture is thus resolved.

3 Discussion

The new original concept of Dimension built on the new conception of the notion of direction allows to build a new mathematical kernel with the arithmetic of Robinson and the termization like the decomposition of integers into an addition of terms of prime numbers by a python program, those break the unique factorization theorem, the fundamental theorem of arithmetic and furthermore solve the Goldbach conjecture.

4 Conclusion

New original conception for such mathematical concepts as point, line, direction, dimension, addition, multiplication, division, zeros, infinities, limits, factorization, integers and prime numbers leading to a new mathematical framework, geometry, topology and metric leading to a total change of paradigm...

Moreover, Robinson Arithmetic and termization with python 3 program break the fundamental theorem of arithmetic and resolve the Goldbach Conjecture while the developed geometric notions breaks Euclidean geometry.

Global Dimensional Mathematics is the basis for building the new scientific paradigm of the twenty-first century and beyond, opening up an unknown perspective regarding the world of science in general.

Supplementary Materials

The code is available online at https://github.com/olivierdenis/Termization/blob/main/ULTIMATEPrimeTools.py

Acknowledgment

To my family, Valérie and Léa without whom I would not be what I become To my Dad for his patience and his comprehension

Competing Interests

Author has declared that no competing interests exist.

References

1. Euclid's Elements – All thirteen books complete in one volume, Based on Heath's translation, Green Lion Press. ISBN 1-888009-18-7.
2. Judith D Sally, Paul Sally. Chapter 3: Pythagorean triples. Roots to research: A vertical development of mathematical problems. American Mathematical Society Bookstore. 2007;63. ISBN 978-0-8218-4403-8.
3. Jech Thomas J. Set theory (The 3rd millennium ed., rev. and expanded ed.). Berlin: Springer. 2003;3. ISBN 3-540-44085-2. OCLC 50422939.
4. James Williamson (translator and commentator), The Elements of Euclid, With Dissertations, Clarendon Press, Oxford. 1782;63.

5. Ore, Oystein. Number Theory and its History, Dover. 1988,1948;65.
6. Using the empty product rule one need not exclude the number 1, and the theorem can be stated as: every positive integer has unique prime factorization.
7. Long. 1972;44.
8. Pettofrezzo, Byrkit. 1970;53.
9. Hardy & Wright. 2008;2.
10. Weisstein Eric W. Goldbach Conjecture. Math World.

Peer-review history:
The peer review history for this paper can be accessed here (Please copy paste the total link in your browser address bar)
https://www.sdiarticle4.com/review-history/72488