

florentin smarandache

nidus idearum

seed & heed

Neutrosophic Triplets

Refined Neutrosophication

Positive Indeterminacy

Dezert-Smarandache Theory

Hybridization

Spherical Neutrosophic Set

Refined Neutrosophic Set

Neutrosophic Algebraic Structures

Infinitude of Infinitudes

Special Theory of Relativity

Electromagnetic Signals

Superluminal Speeds

Florentin Smarandache

Nidus idearum.
Scilogs, XII: seed & heed

Miami, Florida, USA, 2023

Exchanging ideas with Pritpal Singh, Mohamed Abobala, Muhammad Aslam, Ervin Goldfain, Dmitri Rabounski, Victor Christianto, Steven Crothers, Jean Dezert, Tomasz Witzczak (in order of reference in the book).

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Florentin Smarandache

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Peer-Reviewers:

Xindong Peng

School of Information Science and Engineering, Shaoguan University,
Shaoguan 512005, China, Email: 952518336@qq.com

Muhammad Saeed

Department of Mathematics, University of Management and Technology,
Lahore, Pakistan, Email: muhammad.saeed@umt.edu.pk

Muhammad Aslam

King Abdulaziz Univ., Jeddah, Saudi Arabia,
Email: magmuhammad@kau.edu.sa

Akbar Rezaei

Department of Mathematics, Payame Noor University, P.O.Box 19395-3697,
Tehran, Iran, Email: rezaei@pnu.ac.ir

INVITATION

Welcome into my scientific lab!

My **lab**[oratory] is a virtual facility with non-controlled conditions in which I mostly perform scientific meditation and chats: *a nest of ideas* (**nidus idearum**, in Latin).

I called the jottings herein *scilogs* (truncations of the words *scientific*, and gr. Λόγος (logos) – appealing rather to its original meanings "ground", "opinion", "expectation"), combining the welly of both science and informal (via internet) talks (in English, French, and Romanian).

In this *twelfth book of scilogs* – called *seed & heed* –, one may find topics on Neutrosophy, Superluminal Physics, Mathematics, Information Fusion, Philosophy, or Sociology – email messages to research colleagues, or replies, notes, comments, remarks about authors, articles, or books, spontaneous ideas, and so on.

Feel free to budge in or just use the scilogs as open source for your own ideas!

Already published SCILOGS

Nidus idearum. Scilogs, I: *de neutrosophia*.

Brussels, 2016 <http://fs.unm.edu/NidusIdearumDeNeutrosophia.pdf>

Nidus idearum. Scilogs, II: *de rerum consecratione*.

Brussels, 2016 <http://fs.unm.edu/NidusIdearum2-ed2.pdf>

Nidus idearum. Scilogs, III: *Viva la Neutrosophia!*

Brussels, 2015 <http://fs.unm.edu/NidusIdearum3.pdf>

Nidus idearum. Scilogs, IV: *vinculum vinculorum*.

Brussels, 2019 <http://fs.unm.edu/NidusIdearum4.pdf>

Nidus idearum. Scilogs, V: *joining the dots*.

Brussels, 2019 <http://fs.unm.edu/NidusIdearum5-v3.pdf>

Nidus idearum. Scilogs, VI: *annotations on neutrosophy*.

Brussels, 2019 <http://fs.unm.edu/NidusIdearum6.pdf>

Nidus idearum. Scilogs, VII: *superluminal physics*.

Brussels, 2019 <http://fs.unm.edu/NidusIdearum7-ed3.pdf>

Nidus idearum. Scilogs, VIII: *painting by numbers*.

Grandview Heights, 2022 <http://fs.unm.edu/NidusIdearum8.pdf>

Nidus idearum. Scilogs, IX: *neutrosophia perennis*.

Grandview Heights, 2022 <http://fs.unm.edu/NidusIdearum9.pdf>

Nidus idearum. Scilogs, X: *via neutrosophica*.

Grandview Heights, 2022 <http://fs.unm.edu/NidusIdearum10.pdf>

Nidus idearum. Scilogs, XI: *in-turns and out-turns*.

Grandview Heights, 2023 <http://fs.unm.edu/NidusIdearum11.pdf>

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Neutrosophy [1998], as a new branch of philosophy and a generalization of dialectics, is based on the dynamics of opposites and the neutralities between them, and it has been extended to Refined Neutrosophy, and consequently the Neutrosophication was extended to Refined Neutrosophication. Whence, Regret Theory, Grey System Theory, and Three-Ways Decision are particular cases of Neutrosophication and of Neutrosophic Probability. We have further extended the Three-Ways Decision to n-Ways Decision, the last one is a particular case of Refined Neutrosophy.

Neutrosophy is also an extension of the international movement called Paradoxism (based only on contradictions in science and literature) [1980].

Neutrosophic Set, defined on three components {membership (T), indeterminacy (I), and nonmembership (F)}, is a generalization of Crisp Set, Fuzzy Set, Intuitionistic Fuzzy Set, Inconsistent Intuitionistic Fuzzy Set (Picture Fuzzy Set, Ternary Fuzzy Set), Pythagorean Fuzzy Set, q-Rung Orthopair Fuzzy Set, Spherical Fuzzy Set, Fermatean, and n-HyperSpherical Fuzzy Set. Neutrosophic Set has been further extended to Refined Neutrosophic Set. Further on, as extension and alternative there was defined the Plithogenic Set [2017] based on MultiVariate Analysis.

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NEUTROSOPHIC ENDEAVOURS

Ambiguous Set (AS) is a particular case of the Quadripartitioned Neutrosophic Set (QNS)

[Pritpal Singh]

Definition of the AS is provided in terms of four membership degrees [1]:

“Definition 4: (AS) [4, 5]. Let $U = \{g\}$ be the universe for any event g , which is fixed. An AS \acute{S} for $g \in U$ is defined by:

$$\acute{S} = \{g, \Pi t(g), \Pi f(g), \Pi ta(g), \Pi fa(g) \mid g \in U\}, \quad (7)$$

where $\Pi t(g): U \rightarrow [0,1]$, $\Pi f(g): U \rightarrow [0,1]$, $\Pi ta(g): U \rightarrow [0,1]$, and

$\Pi fa(g): U \rightarrow [0,1]$ are called the true membership degree (TMD), false membership degree (FMD), true-ambiguous membership degree (TAMD), and false-ambiguous membership degree (FAMD), respectively.

In Eq. (7), $\Pi t(g)$, $\Pi f(g)$, $\Pi ta(g)$ and $\Pi fa(g)$ must satisfy the following condition as:

$$0 \leq \Pi t(g) + \Pi f(g) + \Pi ta(g) + \Pi fa(g) \leq 2 \quad (8)$$

All these four membership functions together are called ambiguous membership functions (AMFs).

Example of Ambiguous Set

Consider the following perception of human cognition while eating pizza in a restaurant to illuminate the idea of AS:

$\rightarrow P_1$: Pizza is *very tasty*.

In the case of a Fuzzy Set, the above perception P_1 can be considered true, and it is assigned a true membership degree (i.e., $\Delta_t(\text{very tasty})$).

In the case of an Intuitionistic Fuzzy Set, if perception P_1 has a $\Delta_t(\text{tasty})$, there must be a false perception, which can be defined as:

$\rightarrow P_2$: Pizza is *not very tasty*.

Here, perception P_2 is a contradiction to perception P_1 , which can be regarded as false and to which a false degree of membership, i.e., $\Delta_f(\text{not very tasty})$ is assigned.

Human perception cannot fully distinguish between *very tasty* and *not very tasty* in perceptions P_1 and P_2 because there is an indeterminate unconsciousness between perceptions P_1 and P_2 . Such a perception can be defined as:

→ P_{12} : Pizza is *either very tasty or not very tasty*.

In the case of Neutrosophic Set, the perceptions P_1 and P_2 can be represented by the $\Delta_t(\text{very tasty})$ and $\Delta_t(\text{not very tasty})$. Perception P_{12} , however, can be considered indeterministic, and it is assigned an indeterministic membership degree, i.e., $\Delta_i(\text{either very tasty or not very tasty})$. Thus, in the case of NS, indeterministic perception always leads to confusion in decision-making and final opinion.”

[Florentin Smarandache]

This is a FALSE interpretation, because in the neutrosophic set the indeterminacy means neither (very tasty) nor (not very tasty), but in between the opposites: i.e. unclear (indeterminate) taste between them.

While the author’s “either very tasty or not very tasty” means: very tasty, or not very tasty. Clearly, “very tasty” does not represent indeterminacy, nor “not very tasty”.

[Pritpal Singh]

“Another problem with NS is that the perceptions P_1 - P_{12} are independent, i.e., $\Delta_t(\text{very tasty})$, $\Delta_t(\text{not very tasty})$, and $\Delta_i(\text{either very tasty or not very tasty})$ are also independent. In this example, however, the three perceptions, namely P_1 - P_{12} , are defined over the same perception. So, it is obvious that the membership degrees are interdependent.”

[Florentin Smarandache]

In neutrosophic set, the components T, I, F are not necessarily ‘independent’, but they may be: either totally independent, or partially independent and partially dependent, or totally dependent (all possibilities).

[Pritpal Singh]

The following two additional perceptions can also be made with respect to perceptions P_1 and P_2 :

→ P_3 : Pizza is *a little tasty*.

→ P_4 : Pizza is *not a little tasty*.

Perceptions P_3 - P_4 may have different membership degrees in addition to the two membership degrees, i.e., Δ_t (very tasty) and Δ_f (not very tasty). Perception P_3 is very closely related to perception P_1 , and it inherits unconsciousness from perception P_1 . Therefore, perception P_3 can be considered true-ambiguous, and represented by a TAMD. Similarly, perception P_4 is very closely related to perception P_2 , and it inherits unconsciousness from perception P_2 . Therefore, perception P_4 can be considered as false-ambiguous, and represented by a FAMD. To solve the problem of including these four membership degrees in the analysis of perception or uncertain events, the AS theory was introduced.

To make a clear distinction in the representation of the membership degrees of FS, IFS and NS, the designations TMD, FMD, TAMD, and FAMD of AS are used (Definition (4)). According to these designations, the membership degrees for the perceptions P_1 , P_2 , P_3 , and P_4 can be defined with AS as:

→ Πt (very tasty) $\in [0,1]$,

→ Πf (not very tasty) $\in [0,1]$,

→ Πta (a little tasty) $\in [0,1]$, and

→ Πfa (not a little tasty) $\in [0,1]$.

The above four representations of membership degrees solve the problem of uncertain arises through human unconsciousness. In the case of AS, the AMFs define the four membership degrees in such a way that it must satisfy the condition (Eq. (8)) as:

$$0 \leq \Pi t(\text{very tasty}) + \Pi f(\text{not very tasty}) + \Pi ta(\text{a little tasty}) + \Pi fa(\text{not a little tasty}) \leq 2 \quad (9)$$

Suppose two customers A and B visit a restaurant and order a pizza. After eating the pizza, both customers may judge the taste of the pizza differently. The perceptions of customers A and B regarding the taste of the pizza can be denoted by ASs \acute{S}_1 and \acute{S}_2 , and defined in Eq. (10) and (11), respectively, as:

$$\acute{S}_1 = \{\text{tasty}, 0.46, 0.47, 0.42, 0.43 \mid g \in U\} \quad (10)$$

$$\acute{S}_2 = \{\text{tasty}, 0.55, 0.38, 0.51, 0.35 \mid g \in U\} \quad (11)$$

Here, Eqs. (10) and (11) can be read as:

{tasty, $\Pi t(\text{very tasty})$, $\Pi f(\text{not very tasty})$, $\Pi ta(\text{a little tasty})$, $\Pi fa(\text{not a little tasty}) \mid \text{tasty} \in U$ }.

[Florentin Smarandache]

You just copied the quadripartitioned neutrosophic set and renamed it Ambiguous Set.

You split the indeterminacy in two parts, as in quadripartitioned neutrosophic set, that you named the two sub-indeterminacies as true-ambiguous and false-ambiguous respectively.

In the Single-Valued Quadripartitioned Neutrosophic Set and in the Refined Neutrosophic Set all components may be totally independent, or partially independent and partially dependent, or totally dependent.

See this paper, Definition 1.1.

M. Mohanasundari, K. Mohana: [Quadripartitioned Neutrosophic Mappings with its Relations and Quadripartitioned Neutrosophic Topology](#), *Int. J. Math. And Appl.*, 9(1) (2021), 83-93,

<http://fs.unm.edu/neut/QuadripartitionedNeutrosophicMap.pdf>,

where $0 \leq T + C + U + F \leq 4$,

therefore the sum $T + C + U + F$ can be any number between 0 and 4 (depending on the application),

where T = truth-membership, F = falsehood-membership,

and C = contradiction, U = ignorance (that you renamed true-ambiguous and false-ambiguous; actually, you can rename them anyway you want, because there are many types of indeterminacies).

The sum of the four components can also be 2 as in your case, since $0 \leq 2 \leq 4$, but then the four components are partially DEPENDENT.

*

Neutrosophic set has no problem with indeterminacy, since it deals with all kinds of indeterminacies, as in this case: contradiction and ignorance. The AS has problems with indeterminacy, as shown below.

Check my paper on Indeterminacy:

<http://fs.unm.edu/Indeterminacy.pdf>,

where it's explained that:

Indeterminacy = partial-truth & partial-falsehood.

[Pritpal Singh]

In the AS, all the memberships are interdependent.

[Florentin Smarandache]

That's why the AS is a particular case of the quadruple neutrosophic set (QNS), where the four QNS components may be, in addition of interdependent (partially dependent and partially independent), also totally independent, or totally dependent.

Many papers on quadripartitioned neutrosophic set you get from

<http://fs.unm.edu/neutrosophy.htm>,

For example:

Surapati Pramanik, Interval quadripartitioned Neutrosophic Sets, Neutrosophic Sets and Systems, Vol. 51, 2022, pp. 146-156. DOI: [10.5281/zenodo.7135267](https://doi.org/10.5281/zenodo.7135267)

[Pritpal Singh]

Following researcher discussed many disadvantages of NS theory as: U. Riviuccio, Neutrosophic logics: Prospects and problems, Fuzzy sets and systems, vol. 159, no. 14, pp.1860-1868, July 2008.

[Florentin Smarandache]

The problems about the Neutrosophic Set, revealed by Riveccio fifteen years ago, have been solved long ago, since:

we designed a total order for the neutrosophic triplets (T, I, F), see this paper:

F. Smarandache, The Score, Accuracy, and Certainty Functions determine a Total Order on the Set of Neutrosophic Triplets (T, I, F), Neutrosophic Sets and Systems, vol. 38, 2020, pp. 1-14. DOI: [10.5281/zenodo.4300354](https://doi.org/10.5281/zenodo.4300354)

<http://fs.unm.edu/NSS/TheScoreAccuracyAndCertainty1.pdf>

and we have improved all neutrosophic operators (union, intersection, negation, complement, implication, equivalence), that all seven thousands of neutrosophic researchers agreed upon.

But, related to your Ambiguous Set, the conscientious and unconscientious do not work for numbers, letters, objects, algebraic concepts, etc. only for patients in a psychiatric hospital. So, it is very restrained. You cannot talk about the conscientious and unconscientious of a rock, a number, a variable, a matrix, a group, a ring, etc.

Also, **you have NO total order** on the Ambiguous Set for the components (T, I₁, I₂, F)!! But you jumped to criticize the neutrosophic triplets' order, without knowing that the problem has been solved long ago. What a hypocrisy!

Therefore, you should use your Ambiguous Set for patients into a hospital, since the objects and the numbers do not have conscience!

[Pritpal Singh]

However, true, false, true-ambiguous and false-ambiguous membership degrees individually belong to the interval $[0, 1]$, but their summation is restricted between 0 and 2.

[Florentin Smarandache]

This makes limitations to ambiguous sets, since you cannot have totally dependent components when the sum is equal to 1, nor totally independent components. You have only partially dependent and partially independent components (what you call interdependent components).

[Pritpal Singh]

But, in the case of NS, there is no restriction on the sum of true, false and indeterministic membership degrees.

[Florentin Smarandache]

This is the advantage of the neutrosophic set ($0 \leq T + I + F \leq 3$), since it allows for all three possibilities (I repeat myself):

- 1) totally dependent components;
- 2) partially dependent and partially independent components (as in your AS);
- 3) and totally independent components.

*

In Quadruple Neutrosophic Set (and in general in the Refined Neutrosophic Set), we also have three possibilities of the components:

- 1) totally dependent components;
- 2) partially dependent and partially independent components (as in your AS);
- 3) and totally independent components.

Since $0 \leq T + I_1 + I_2 + F \leq 4$.

While in the Ambiguous Set you only have the second case (partially dependent and partially independent), since where $0 \leq T + I_1 + I_2 + F \leq 2$. This is the proof that your so-called AS is a particular case of the quadripartitioned neutrosophic set (and of course of the refined neutrosophic set, when setting $n = 4$).

[Pritpal Singh]

In case of an ambiguous set, four membership degrees are provided 2-dimensional (2-D) representation, i.e., only x - and y -planes are required to represent them.

However, NS requires 3-dimensional representation, i.e., x -, y - and z -planes to represent T, I, and F.

[Florentin Smarandache]

The Ambiguous Set is a particular case of the Refined Neutrosophic Set that has $n \geq 4$ components, not of the Neutrosophic Set which has only 3. Please read this paper to better understand it:

<http://fs.unm.edu/RefinedNeutrosophicSet.pdf> .

As I have explained above, the AS is exactly a particular case of the Quadripartioned Neutrosophic Set (which is a particular case of the Refined Neutrosophic Set), that has only 4 components of the form T, I_1 , I_2 , F, where I_1 and I_2 can be any types of indeterminacies, not only Truth-Ambiguous as you named I_1 , and Falsehood-Ambiguous as you named I_2 .

[Pritpal Singh]

"In future, if we discretize true-ambiguous and false-ambiguous membership degrees, then true and false membership degrees would also be discretized. But, such discretization will be carried out by maintaining the linear relationship among the true, false, true-ambiguous and false-ambiguous membership degrees."

[Florentin Smarandache]

Not only linear, but also non-linear relationships as in our real world can be considered between (refined) neutrosophic set in general.

The distinctions between Neutrosophic Set vs. Intuitionistic Fuzzy Set (that you recalled in your message) and other fuzzy extensions are presented in this paper:

F. Smarandache, *Neutrosophic Set is a generalization of Crisp Set, Fuzzy Set, Intuitionistic Fuzzy Set, Inconsistent Intuitionistic Fuzzy Set (Picture Fuzzy Set, Ternary Fuzzy Set), Pythagorean Fuzzy Set, Fermatean Set, q-Rung Orthopair Fuzzy Set, Spherical Fuzzy Set, and n-HyperSpherical Fuzzy Set. Neutrosophic Set has been further extended to Refined Neutrosophic Set*, in “Journal of New Theory” 29 (2019) 01-35; arXiv, Cornell University, New York City, NY, USA, pp. 1-50, 17-29 November 2019;

<https://arxiv.org/ftp/arxiv/papers/1911/1911.07333.pdf> ;

University of New Mexico, Albuquerque, USA, Digital Repository, pp. 1-50, https://digitalrepository.unm.edu/math_fsp/21 ;

and <http://fs.unm.edu/Raspunsatan.pdf> .

Ambiguous Set brings nothing new

[Florentin Smarandache]

The Ambiguous Set is nothing new, just a particular case of the Quadruple Neutrosophic Set, where the indeterminacies I_1 and I_2 are baptised True-ambiguous, False-ambiguous.

Other researchers have called them: Contradiction and Uncertainty. They depend on the opposites that arise in each application.

Infinitely Many Indeterminacies

If the opposites are, let's say, white and black, then the indeterminacies in between may be any other color, for example: yellow, red, violet etc. (as many indeterminacies as needed into each specific application).

In such practical example one has infinitely many indeterminacies (= color nuances between white and black).

The quadruple neutrosophic set is a particular case of the refined neutrosophic set (RNS) (the last one has $n \geq 4$ components), so the AS is also a particular case of the RNS. So AS brings nothing new.

About P_1, P_2, \dots they are subjectively interpreted and subjectively have assigned values in any fuzzy set or fuzzy extensions. So, Pritpal Singh works with approximations. What Pritpal Singh has assigned to them are not the exact values; other experts may assign different values. If more sources (9 as Pritpal Singh says) assigned values to the same event, then one combines them using the \wedge (intersection operator).

Reference

[1] Pritpal Singh (2023). "Ambiguous Set Theory: A New Approach to Deal with Unconsciousness and Ambiguity of Human Perception." *Journal of Neutrosophic and Fuzzy Systems (JNFS)* 5(1) 52-58.

[2] M. Mohanasundari, K. Mohana (2021). "Quadripartitioned Neutrosophic Mappings with its Relations and Quadripartitioned Neutrosophic Topology." *Int. J. Math. and Appl.* 9(1) 83-93.

<http://fs.unm.edu/neut/QuadripartitionedNeutrosophicMap.pdf>

The Neutrosophic Components may not be only independent, but also totally dependent, or partially dependent and partially independent

[Florentin Smarandache to Pritpal Singh]

"The neutrosophic set (NS) theory was first proposed by Smarandache [35]. According to this theory, the factors $\pi(G)$, $\pi_f(G)$, and $\pi_h(G)$ of IFS are considered to be independent in the range $[0, 1]$."

The author used strange notations such as $\pi(G)$, $\pi_f(G)$, and $\pi_h(G)$, instead of the classical neutrosophic notations $T(G)$, $I(G)$, $F(G)$, or respectively: degrees of truth/membership, indeterminacy, and falsehood/nonmembership.

The author talks about "the feedback G from a customer" and he emits the assertion that "the factors $\pi(G)$, $\pi_f(G)$, and $\pi_h(G)$ " are considered independent.

His statement that $T(G)$, $I(G)$, $F(G)$ are considered independent, is partially false, since in the neutrosophic set, the components T , I , F can be in all possible ways: either totally dependent, or partially dependent and partially independent, or totally independent (see paper [2], published since 2016, but probably he did not read it).

“When the indeterminacy of G is expressed by NS, Smarandache explicitly states that $\pi_t(G)$, $\pi_f(G)$ and $\pi_i(G)$ are not related.”

This is a false mathematical statement again, since the neutrosophic components T , I , F may be in all ways, as I wrote before: totally related (or dependent), partially related (or dependent) and partially unrelated (or independent), or totally unrelated (or independent). [2]

“In determining the complement of $\pi_i(G)$ in the case of a partially true or partially false membership of G where two truths exist, this assumption of NS raises a problem. In this situation, the complement of $\pi_i(G)$ might not just be arbitrary.” [1]

The complement in NS is not “arbitrary” as Singh says, this is another mathematical false statement. The neutrosophic complement is mathematically computed.

There are classes of neutrosophic complements, the most used one by the neutrosophic community is the following: $C(T, I, F) = (F, 1 - I, T)$, where $C(T, I, F)$ means complement of (T, I, F) . The complement of the indeterminacy “ I ” is “ $1 - I$ ”, therefore they are different.

References

[1] P. Singh, A general model of ambiguous sets to a single-valued ambiguous numbers with aggregation operators, Decision Analytics Journal (2023).

[2] F. Smarandache, Degree of Dependence and Independence of the (Sub)Components of Fuzzy Set and Neutrosophic Set, Neutrosophic Sets and Systems, Vol. 11, 95-97, 2016,

<https://fs.unm.edu/NSS/DegreeOfDependenceAndIndependence.pdf>

An Infinitude of Infinitudes

Let's call a set, that has infinitely many elements, *infinitude*.

For example, the set of natural numbers $N = \{1, 2, 3, \dots\}$ is an infinitude.

The set N has infinitely many infinitudes, i.e.

$$N_2 = \{2^1, 2^2, 2^3, \dots\}$$

is the set of powers of 2, and it is an infinitude.

$$N_3 = \{3^1, 3^2, 3^3, \dots\}$$

is the set of powers of 3, and it is an infinitude.

In general, for any prime (or non-prime) integer number $p > 0$, one has an infinitude

$$N_p = \{p^1, p^2, p^3, \dots\}$$

the set of powers of p .

Hence:

$$N \supset \bigcup_{\substack{p=2 \\ p=\text{prime}}}^{\infty} N_p$$

For prime numbers $p, q > 0$, with $p \neq q$, one has:

$$N_p \cap N_q = \emptyset$$

Therefore, N contains an infinitude of disjoint infinitudes.

$$N - \{1\} = \bigcup_{\substack{i=2 \\ i=\text{positive integer}}}^{\infty} N_i$$

But N_i and N_j are not disjoint if $i = j^k$ (i is a power of j), or $j = i^k$ (j is a power of i).

Refined Neutrosophic Algebraic Structures

The neutrosophic quadruple numbers:

$a + bT + cI + dF$ refined as:

$$a + b_1T_1 + b_2T_2 + \dots + b_pT_p + c_1I_1 + c_2I_2 + \dots + c_rI_r + d_1F_1 + d_2F_2 + \dots + d_sF_s$$

where T, I, F and respectively $T_1, T_2, \dots, T_p, I_1, I_2, \dots, I_r$, and F_1, F_2, \dots, F_s are literal (not numerical) neutrosophic components and respectively sub-components in refined neutrosophic algebraic structures.

3D-Neutrosophic Diophantine Equations

$$\begin{aligned} (1 + I_1 - I_2)(x_0 + x_1I_1 + x_2I_2 + x_3I_3) \\ + (5 + 3I_1 - 6I_2 + I_3)(y_0 + y_1I_1 + y_2I_2 + y_3I_3) \\ = 2 + I_1 - 4I_2 + 5I_3 \end{aligned}$$

where I_1, I_2, I_3 are three types of literal indeterminacies.

One multiplies and add on the left hand side:

$$\left\{ \begin{array}{ll} x_0 + 5y_0 = 2 & \text{corresponding to the constant} \\ \alpha_1 = 1 & \text{corresponding to } I_1 \\ \alpha_2 = -4 & \text{corresponding to } I_2 \\ \alpha_3 = 5 & \text{corresponding to } I_3 \end{array} \right.$$

where $\alpha_1, \alpha_2, \alpha_3$ may depend on $x_0, x_1, x_2, x_3, y_0, y_1, y_2, y_3$.

One solves a Diophantine System of 4 classical Diophantine Equations.

Total order on $R(I)$ and AH -isometry on $R(I) \times R(I)$

[to Mohamed Abobala]

a. First possible research: can we find a total order on the set of neutrosophic numbers $R(I) = \{a + bI, \text{ where } a, b \text{ are real numbers}\}$?

First you apply the AH -isometry for $a_1 + a_2I$ and $b_1 + b_2I$.

But in case that $a_1 \leq b_1$ and $a_1 + a_2 \geq b_1 + b_2$?...

Try to get something.

You might need to design a second function or isometry as we did for the triplets (T, I, F) using three functions in order to get a total order

<http://fs.unm.edu/NSS/TheScoreAccuracyAndCertainty1.pdf> ?

b. Some Neutrosophic researchers are asking of an extension from $R(I) \times R(I) \rightarrow R^2 \times R^2$ of your *AH*-isometry.

AH-Isometry: Examples

Definition 2.5., page 643:

“Let $R(I)$ be the neutrosophic field of reals, the neutrosophic logarithmic function can be defined as:

$$\ln(x+yI) = \ln(x) + [\ln(x+y)-\ln(x)]I, \text{ where } x+yI >_N 0.”$$

Reference

Abdulrahman Astambli, Mohamed Bisher Zeina and Yasin Karmouta, *On Some Estimation Methods of Neutrosophic Continuous Probability Distributions Using One-Dimensional AH-Isometry*, in “Neutrosophic Sets and Systems”, Vol. 53, 2023, pp. 641-652. DOI: 10.5281/zenodo.7536101;

<http://fs.unm.edu/NSS/NeutrosophicContinuousProbability38.pdf>

[Florentin Smarandache]

Let’s take an example, replacing $x = 2$, $y = 3$ and substitute them into the above equality:

$$\ln(2+3I) = \ln(2) + [\ln(2+3)-\ln(2)]I, \text{ where } 2+3I >_N 0,$$

$$\ln(2+3I) = \ln(2) + [\ln(5)-\ln(2)]I, \text{ where } 2+3I >>_N 0.$$

[Mohammad Abobala]

“ I ” can be anything with the property $I^2=I$

Maybe interval, or matrix, or logical symbol... all these points of view are suitable for I .

We deal with I as an algebraic element with the property you have defined it before $I^2 = I$.

In a similar way of split-complex numbers in which $I^2 = 1$, or Dual numbers $I^2 = 0$, or even complex numbers $I^2 = -1$.

This point of view helps with building a new parallel theory to split complex or complex numbers, this theory built only over Neutrosophic numbers.

Until today, me and many co-authors have presented strict approaches to neutrosophic inner products, Euclidean geometry, differentiation, integrals, real functions, number theory and now cryptography... All these ideas built with the AH-isometry which has helped us to transform neutrosophic points to the classical points and preserving operations. As well as distances.

With AH-isometry we can compute sin, cos, exp, log functions easily and to study their properties (which are very similar to classical cases).

And now there is an ambitious work of some of my colleagues to use neutrosophic integers in generalizing classical known cryptography algorithms...

Since neutrosophic numbers have more than one dimension, they will give more complex crypto-schemes which will be better than classical ones.

[Florentin Smarandache]

A general definition of a neutrosophic function with one neutrosophic variable $x+yI$ would be:

$$f(x + yI) = f_1(x, y) + f_2(x, y)I$$

Can you make/get a computer program to draw such thing from (R, R) to (R, R) ?

For now, the things are not very clear, until we have some clear example. I observed that for some polynomial functions your AH-isometry works well (the two resulting function are equal). Professor Al-Hasan from Saudi Arabia used your AH-isometry for neutrosophic integrals:

<http://fs.unm.edu/NSS/DefiniteNeutrosophicIntegrals18.pdf> .

[Mohammad Abobala]

Isometry will be working well for any function using addition, multiplication or exponents (because it preserves all algebraic operations), so that we have defined the function f to be with one neutrosophic variable $f(X)$.

Remark that if the function is defined with other operations (hyper operations for example) it will not work.

So that it is very helpful when we study continuous probability distributions but it fails for discrete distributions.

Maybe other authors will add these interesting functions to Matlab or to other famous programs.

Extending the $R(I)$ -sets on $R(I_1, I_2, \dots, I_n)$ Sets

[Florentin Smarandache]

An extension of Neutrosophic Set is the Refined Neutrosophic Set, by refining the components (T, I, F) as $(T_1, T_2, \dots; I_1, I_2, \dots; F_1, F_2, \dots)$, see: <http://fs.unm.edu/n-ValuedNeutrosophicLogic-PiP.pdf>.

$$R(I) = \{a + bI, \text{ where } a, b \in \mathbb{R}, \text{ and } I = \text{literal indeterminacy}\}$$

and the correspondent

$$R(I_1, I_2, \dots, I_n) = \{a_0 + a_1I_1 + a_2I_2 + \dots + a_nI_n, \text{ where } a_0, a_1, a_2, \dots, a_n \in \mathbb{R}, \text{ and } I_1, I_2, \dots, I_n \text{ are literal subindeterminacies.}\}$$

New Neutrosophic Algebraic Structures

[Florentin Smarandache]

Instead of considering that if G is a group, then $G(I) = \{a_0 + a_iI, \text{ where } a_0, a_i \in G \text{ be a neutrosophic group (although it might not satisfy the axioms of a classical group), the author simply proved that } G(I) \text{ itself is a group in the classical way, verifying all group axioms.}\}$

Spherical Neutrosophic Set is a generalization of Spherical Fuzzy Set

I introduced the Spherical Neutrosophic Set in 2017:

A Single-Valued Spherical Neutrosophic Set (SNS), of the universe of discourse U , is defined as follows:

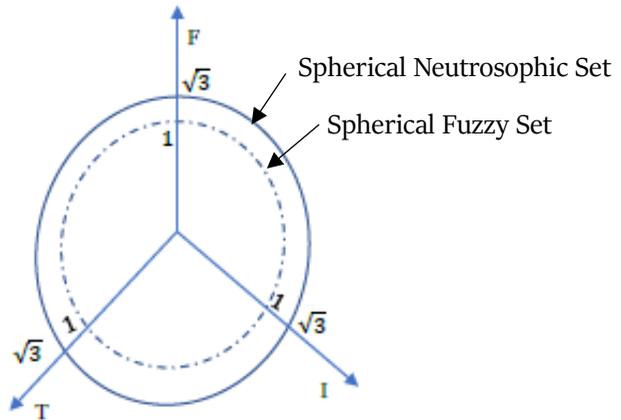
$$A_{SNS} = \{ \langle x, T_A(x), I_A(x), F_A(x) \rangle | x \in U \}$$

where, for all $x \in U$, the functions $T_A(x), I_A(x), F_A(x): U \rightarrow [0, \sqrt{3}]$ represent the degree of membership (truth), the degree of indeterminacy, and the degree of nonmembership (falsity) respectively, that satisfy the conditions:

$$0 \leq T_A^2(x) + I_A^2(x) + F_A^2(x) \leq 3.$$

The Spherical Neutrosophic Set is a generalisation of Spherical Fuzzy Set, because we may restrain the SNS's components to the unit interval $T_A(x), I_A(x), F_A(x) \in [0, 1]$, and the sum of the squared components to 1, i.e. $0 \leq T_A^2(x) + I_A^2(x) + F_A^2(x) \leq 1$.

Further on, if replacing $I_A(x) = 0$ into the Spherical Fuzzy Set, we obtain as a particular case the Pythagorean Fuzzy Set.



$T^2 + I^2 + F^2 = 3$ is a $\frac{1}{8}$ sphere, the sphere of radius = $\sqrt{3}$, the big sphere.

While $T^2 + I^2 + F^2 = 1$ is a $\frac{1}{8}$ sphere of radius = $\sqrt{1} = 1$ (the dotted one, inside the bigger one).

The x, y, z axes (actually the planes xy, yz, zx) split the sphere into 8 equal parts. The two above spheres are only on positive x , positive y , and positive z axes.

Spherical Neutrosophic Overset

$$T, I, F \in [0, \sqrt{3}]$$

$$0 \leq T^2 + I^2 + F^2 \leq 3$$

This is called a spherical neutrosophic overset (SNOS) because T, I, F may be >1 .

For example:

$$T = 1.2, I = 0.3, F = 1.1,$$

$$\text{with } 0 \leq 1.2^2 + 0.3^2 + 1.1^2 = 1.44 + 0.09 + 1.21 = 2.74 \leq 3.$$

$T > 1$ is called overtruth,

$I > 1$ is called overindeterminacy,

and $F > 1$ is called overfalsehood.

As an example, if an employee works overtime, then his degree of membership with respect to the company he works for should be $T > 1$, in order to distinguish him from employees who do not work overtime and whose membership degree is 1.

Reference

F. Smarandache, *Spherical Neutrosophic Numbers*, Section II.2, pages 28-29, in his book *Neutrosophic Perspectives: Triplets, Duplets, Multisets, Hybrid Operators, Modal Logic, Hedge Algebras. and Applications*, Second extended and improved edition, Pons Publishing House Brussels, 2017, <http://fs.unm.edu/NeutrosophicPerspectives-ed2.pdf>

Positive Indeterminacy

[Muhammad Aslam]

When we have an interval of two values from *PDF* of distribution such as [*PDF_L*, *PDF_U*]. In this case, we have two curves, so the total probability will be 2?

[Florentin Smarandache]

Therefore, the real curve *C* is in between the two curves,

$$PDF_L \leq C \leq PDF_U$$

The area below the curve *C* is 1 (classical).

Then the area below the curve $PDF_L \leq 1$.

And the area below the curve $PDF_U \geq 1$.

If you add the last two areas: $PDF_L + PDF_U = \text{near } 2$,

we may say [2-indeterminacy, 2+indeterminacy]

where indeterminacy is > 0 .

You add a number less than 1, for example $1-I_1$, where $I_1 \geq 0$ is a positive numerical indeterminacy,

with a number greater than 1, for example $1+I_2$, where $I_2 \geq 0$ is a positive numerical indeterminacy,

so you get:

$$(1-I_1) + (1+I_2) = 2 + (I_2-I_1)$$

but I_2-I_1 can be either < 0 , or $= 0$, or > 0 , depending on the values of the two indeterminacies.

Therefore, the sum is either a little less than 2, or 2, or a little greater than 2.

If indeterminacies reduce to 0, i.e. $I_1 = I_2 = 0$, then all three curves coincide.

If you add the left and right ones (only two curves) you get $1+1=2$ (but in this situation the two curves coincide).

Hybridization of Classical, Fuzzy, and Fuzzy Extension Sets

[Florentin Smarandache]

Actually, the Type-n Neutrosophic Set is different.

In your paper it is a Hybridization of Classical, Fuzzy, and Fuzzy Extension Sets.

Neutrosophic (T, I, F) combined with intuitionistic fuzzy (T, F) , gives neutrosophic-intuitionistic $((TT, TF), (IT, IF), (FT, FF))$,

where TT = believe in truth

TF = disbelieve in truth

IT = believe in indeterminacy

IF = disbelief in indeterminacy

FT = believe in falsehood

FF = disbelieve in falsehood

where $TT + TF \leq 1$, $IT + IF \leq 1$, and $FT + FF \leq 1$.

Now, the above neutrosophic-intuitionistic combined with Pythagorean Fuzzy Set, $T^2 + F^2 \leq 1$ gives a neutrosophic-intuitionistic-Pythagorean-fuzzy:

$((TT, TF), (IT, IF), (FT, FF))$,

where $TT^2 + TF^2 \leq 1$, $IT^2 + IF^2 \leq 1$, and $FT^2 + FF^2 \leq 1$.

We can do other hybridizations.

For example, neutrosophic-neutrosophic give:

$((TT, TI, TF), (IT, II, IF), (FT, FI, FF))$,

which resembles the Refined Neutrosophic Set:

<http://fs.unm.edu/RefinedNeutrosophicSet.pdf>.

Ranking the Single-Valued Neutrosophic Triplets

[Florentin Smarandache]

Let (T_1, I_1, F_1) and (T_2, I_2, F_2) be two single-valued neutrosophic triplets from M , i.e. $T_1, I_1, F_1, T_2, I_2, F_2 \in [0, 1]$.

Single-Valued Neutrosophic Score Function (average of positiveness)

$$s: M \rightarrow [0, 1]$$
$$s(T, I, F) = \frac{T + (1 - I) + (1 - F)}{3} = \frac{2 + T - I - F}{3}$$

Single-Valued Neutrosophic Accuracy Function

$$a: M \rightarrow [-1, 1]$$
$$a(T, I, F) = T - F$$

Single-Valued Neutrosophic Certainty Function

$$c: M \rightarrow [0, 1]$$
$$c(T, I, F) = T$$

Apply the Neutrosophic Score Function:

If $s(T_1, I_1, F_1) > s(T_2, I_2, F_2)$, then $(T_1, I_1, F_1) > (T_2, I_2, F_2)$.

If $s(T_1, I_1, F_1) < s(T_2, I_2, F_2)$, then $(T_1, I_1, F_1) < (T_2, I_2, F_2)$.

Apply the Neutrosophic Accuracy Function:

If $s(T_1, I_1, F_1) = s(T_2, I_2, F_2)$.

If $a(T_1, I_1, F_1) > a(T_2, I_2, F_2)$, then $(T_1, I_1, F_1) > (T_2, I_2, F_2)$.

If $a(T_1, I_1, F_1) < a(T_2, I_2, F_2)$, then $(T_1, I_1, F_1) < (T_2, I_2, F_2)$.

Apply the Neutrosophic Certainty Function:

If $a(T_1, I_1, F_1) = a(T_2, I_2, F_2)$.

If $c(T_1, I_1, F_1) > c(T_2, I_2, F_2)$, then $(T_1, I_1, F_1) > (T_2, I_2, F_2)$.

If $c(T_1, I_1, F_1) < c(T_2, I_2, F_2)$, then $(T_1, I_1, F_1) < (T_2, I_2, F_2)$.

If $c(T_1, I_1, F_1) = c(T_2, I_2, F_2)$, then $(T_1, I_1, F_1) \equiv (T_2, I_2, F_2)$,

i.e. $T_1 = T_2, I_1 = I_2, F_1 = F_2$.

Neutrosophic Triplets

[Florentin Smarandache]

Theorem

Let $\langle T, I, F \rangle$ be a single-valued neutrosophic triplet, where $T, I, F \in [0, 1]$. Then, the sum of positiveness and negativeness of the neutrosophic triplet is equal to 3.

Proof

T = truth

I = indeterminacy

F = falsehood

T is considered of *positive quality*, then $1-T$ is of *negative quality*.

I is of *negative quality*, hence $1-I$ is of *positive quality*.

Similarly, F is of *negative quality*, whence $1-F$ is of *positive quality*.

The positiveness P of the triplet is:

$$P(\langle T, I, F \rangle) = T + (1 - I) + (1 - F) = 2 + T - I - F.$$

The negativeness W of the triplet is:

$$W(\langle T, I, F \rangle) = (1 - T) + I + F = 1 - T + I + F.$$

Then:

$$\begin{aligned} P(\langle T, I, F \rangle) + W(\langle T, I, F \rangle) &= \\ &= (2 + T - I - F) + (1 - T + I + F) = 3. \end{aligned}$$

Subtraction of Triplets

$$\langle T_1, I_1, F_1 \rangle - \langle T_2, I_2, F_2 \rangle = \left\langle \frac{T_1 - T_2}{1 - T_2}, \frac{I_1}{I_2}, \frac{F_1}{F_2} \right\rangle,$$

for $T_2 \neq 1, I_2 \neq 0, F_2 \neq 0$.

Proof

$$\langle T_1, I_1, F_1 \rangle - \langle T_2, I_2, F_2 \rangle = \langle x, y, z \rangle.$$

We need to find $x, y,$ and z .

$$\langle T_1, I_1, F_1 \rangle = \langle x, y, z \rangle + \langle T_2, I_2, F_2 \rangle = \langle x + T_2 - xT_2, yI_2, zF_2 \rangle$$

Whence:

$$\begin{cases} T_1 = x + T_2 - xT_2 \\ I_1 = yI_2 \\ F_1 = zF_2 \end{cases}$$

Then:

$$y = \frac{I_1}{I_2}, \text{ for } I_2 \neq 0;$$

$$z = \frac{F_1}{F_2}, \text{ for } F_2 \neq 0;$$

$$T_1 = x(1 - T_2) + T_2, \text{ as such } T_1 - T_2 = x(1 - T_2),$$
$$\text{or } x = \frac{T_1 - T_2}{1 - T_2}, \text{ for } T_2 \neq 0.$$

Therefore:

$$\begin{cases} x = \frac{T_1 - T_2}{1 - T_2}, \text{ for } T_2 \neq 1 \\ y = \frac{I_1}{I_2}, \text{ for } I_2 \neq 0 \\ z = \frac{F_1}{F_2}, \text{ for } F_2 \neq 0 \end{cases}$$

Refined Neutrosophication

A space S is split into subspaces S_1, S_2, \dots, S_m , with $m \geq 2$, and $S_j \neq S_k$ for $j \neq k$, with $i, j \in \{1, 2, \dots, m\}$.

On each subspace S_j an operation (or axiom, or concept) has a degree of truth T_j , degree of indeterminacy I_j , and degree of falsehood F_j , for $j \in \{1, 2, \dots, m\}$.

Example of Refined Neutrosophic Probability

Let's roll a cubic die on a surface with cracks. Using frequency, the experts found out that the chance the die falls into a crack (indeterminacy) is 0.10.

The chance of each of the six die faces $\{1, 2, 3, 4, 5, 6\}$ to occur is then:

$$\frac{1 - 0.10}{6} = \frac{0.90}{6} = 0.15.$$

Question.

Rolling the die, what is the Neutrosophic Probability (NP) of getting a number which is greater than or equal to 5?

$NP(\text{number} \geq 5) = (T, I, F) =$ chance of getting 5 or 6, chance that the die falls into a crack, and chance of getting 1, 2, 3, 4) = $(0.15 + 0.15, 0.10, 0.15 + 0.15 + 0.15 + 0.15) = (0.30, 0.10, 0.60)$.

We may refine many ways. Let's consider the easiest Refined Neutrosophic Probability (RNP) for this example:

$$\begin{aligned} \text{RNP}(\text{number} \geq 5) &= (T_1, T_2; I, F_1, F_2, F_3, F_4) = \\ &= (0.15, 0.15; 0.10; 0.15, 0.15, 0.15, 0.15), \text{ where:} \end{aligned}$$

T was split/refined into T_1 and T_2 , and F was split into F_1, F_2, F_3, F_4

T_1 = chance of getting number 5;

T_2 = chance of getting number 6;

I = chance of the die to fall into a crack (indeterminacy);

F_1 = chance of getting number 1;

F_2 = chance of getting number 2;

F_3 = chance of getting number 3;

F_4 = chance of getting number 4.

"a" is cancellable

[to Mumtaz Ali]

Taking a look again at the version you uploaded into NCAA in our paper on Neutrosophic Triplet Group:

for Propositions and Theorems starting from 3.1 up to 4.1, in our paper on Neutrosophic Triplet Group, the elements we multiply with have to be CANCELLABLE.

See again my book, chapters VII-VIII.

"a" is cancellable to the left if: for any b, c in X , with $a * b = a * c$ one gets $b = c$;

"a" is cancellable to the right if: for any b, c in X , with $b * a = c * a$ one gets $b = c$;

"a" is cancellable, if "a" is both left and right cancellable.

Now more study for us since you used your excellent notation with $\{\}$.

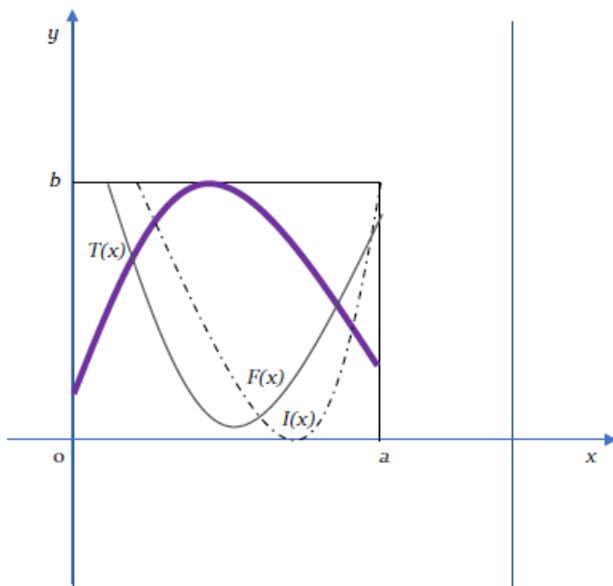
What about if in all our propositions and theorems we use {neut(a)} and {anti(a)}? For example:

$$\{\text{neut}(a)\} * \{\text{neut}(a)\} = \{\text{neut}(a)\}, \text{ and}$$

$$\{\text{anti}(a)\} * \{\text{anti}(a)\} = \{\text{anti}(a)\}, \text{ and so on.}$$

Three Curves of the Neutrosophic Probability Distribution

[Florentin Smarandache]



Neutral Geometry vs. Euclidean and Non- Euclidean Geometries vs. Anti-Geometry vs. NeutroGeometry

[Florentin Smarandache]

The *Euclidean Geometry* is based on five postulates defined by Euclid as below:

1. Two points can be connected by a straight line.

2. A straight line can be prolonged continuously to finite length.
3. A circle can be drawn around a point considering it as a center of defined radius.
4. All the right angles are equal.
5. There is one and only one straight line that can be drawn parallel to the straight line outside from the given point.

*

Definition 1.

Removing the Euclid's Fifth Postulate from the Euclid's axioms, one gets four axioms, called *Neutral Axioms*.

Definition 2.

A plane of points and lines that satisfy Euclid's neutral axioms is called Neutral Plane.

Definition 3.

The geometry of the neutral plane is called Neutral Geometry.

*

Let G be a neutral geometry on a neutral plane P .

Now, let's add the Euclid's Fifth Postulate on the plane P .

The geometry G may become:

1. *either Euclidean* (let's name it G_1) if the Euclid's Fifth Postulate is true for all points and lines of the plane P ;
2. or *non-Euclidean* (let's name it G_2) if the Euclid's Fifth Postulate is false for all points and lines of the plane P ; this non-Euclidean Geometry is also an *AntiGeometry*;
3. or *NeutroGeometry* (let's name it G_3) if the Euclid's Fifth Postulate is true for some exterior points and lines (degree T), false for other points and lines (degree F), and indeterminate for the others (degree I), where $(T, I, F) \in \{(1, 0, 0), (0, 0, 1)\}$.

Example of Neutrosophic Triplet Group
with Infinitely Many neut(x)'s and Infinitely Many anti(x)'s

[Florentin Smarandache]

Neutrosophic Triplet Group

Let \mathbb{R} be the set of all real numbers, $\mathbb{R} = (-\infty, \infty)$, and \mathbb{Z} the set of integers.

We use the modulo of real numbers (that we denote by mod_R), not of integer numbers denoted simply by mod), in the following way.

Let a, b be two real numbers, then $a = b (mod_R 6)$, if and only if $a - b = 6n$, where n is an integer. For examples, $14.73 = 2.73 (mod_R 6)$, since $14.73 - 2.73 = 12 = 6 \times 2$;

but $18 \neq 15 (mod_R 6)$, since $18 - 15 = 3 \neq 6 \times n$ with n integer.

*

The law $a \# b = 4ab (mod_R 6)$ is well-defined, commutative since $a \# b = b \# a = 4ab (mod_R 6)$, and associative because:

$$(a \# b) \# c = (4ab) \# c = 4(4ab)c = 16abc (mod_R 6),$$

$$\text{and } a \# (b \# c) = a \# (4bc) = 4a(4bc) = 16abc (mod_R 6).$$

*

Let $a \in \mathbb{R}$, and then let's compute the $x = neut(a) \in \mathbb{R}$:

$$a \# neut(a) = neut(a) \# a = a \# x = x \# a = 4ax = a (mod_R 6).$$

Or

$$4ax = a + 6n, \text{ where } n \in \mathbb{Z}.$$

Whence

$$neut(a) = x = \frac{a}{4a} + \frac{6n}{4a} = \frac{1}{4} + \frac{3n}{2a}, a \neq 0, n \in \mathbb{Z},$$

where \mathbb{Z} is the set of integer numbers.

Let $anti(a) = y \in \mathbb{R}$. Then

$$anti(a) \# a = a \# anti(a) = y \# a = a \# y = 4ay = neut(a) =$$

$$= \frac{1}{4} + \frac{3n}{2a} \pmod{6}, a \neq 0, n \in \mathbb{Z},$$

$$\text{or } 4a = \frac{1}{4} + \frac{3n}{2a} + 6m, a \neq 0, n \in \mathbb{Z}, m \in \mathbb{Z}.$$

We divide by $4a$ since we work in the set of real numbers, and we get:

$$\text{anti}(a) = y = \frac{1}{16a} + \frac{3n}{8a^2} + \frac{6m}{4a} = \frac{1}{16a} + \frac{3n}{8a^2} + \frac{3m}{2a}, a \neq 0, n \in \mathbb{Z}, m \in \mathbb{Z}.$$

We get the neutrosophic triplets:

$$\left(a, \frac{1}{4} + \frac{3n}{2a}, \frac{1}{16a} + \frac{3n}{8a^2} + \frac{3m}{2a} \right), a \neq 0, n \in \mathbb{Z}, m \in \mathbb{Z}.$$

Each element $a \in \mathbb{R}$, $a \neq 0$, has countably infinitely many neutrals, and countable double infinitely many inverses.

Or, each element $a \in \mathbb{R}$, $a \neq 0$, has infinitely many neutrals:

$$\text{neut}(a) = \frac{1}{4} + \frac{3n}{2a},$$

for each $n \in \mathbb{Z} = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$,

and for each particular neutral of the element a ,

$$\text{neut}_{n_0}(a) = \frac{1}{4} + \frac{3n_0}{2a},$$

where n_0 is a fixed integer in \mathbb{Z} ,

there are infinitely many inverses:

$$\text{anti}_{n_0}(a) = \frac{1}{16a} + \frac{3n_0}{8a^2} + \frac{3m}{2a}, \text{ for each } m \in \mathbb{Z} = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}.$$

If $a = 0$ and $\text{neut}(0) = x$, we get $4 \cdot 0 \cdot x = 0 \pmod{6}$, or $0 = 0 \pmod{6}$, which is true for all real numbers.

Whence $x = \text{neut}(0) = b \in \mathbb{R}$ (the neutral of 0 is any real number – so far).

Let $\text{anti}(0) = y$, $0 \# y = y \# 0 = 4 \cdot 0 \cdot y = b \pmod{6}$, or $0 = b \pmod{6}$ for all real numbers y (so $y = r \in \mathbb{R}$),

whence b has to be: $b = 6s$ with $s \in \mathbb{Z}$.

Then, the zero neutrosophic triplet is:

$(0, 6s, r)$, where $s \in \mathbb{Z}, r \in \mathbb{R}$.

The element $0 \in \mathbb{R}$ has countable infinitely many neutrals that have the form:

$neut(o) = 2s$ for each $s \in \mathbb{Z} = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$,

and unaccountably (power of continuum) infinitely many inverses of the form:

$anti(o) = r$, for each real number $r \in \mathbb{R}$.

Therefore $(\mathbb{R}, \#)$ is a commutative Neutrosophic Triplet Group (NTG), where each element $a \in \mathbb{R}$

has infinitely many neutrals $neut(x)$'s, and infinitely many inverses $anti(x)$'s.

Neutrosophic Triplet Group with Neutrosophic Nilpotent Elements and Neutrosophic Zero Divisors

Neutrosophic Triplet Group with

$\exists a = \sqrt{3} \in \mathbb{R}, \sqrt{3} \neq 0 \pmod{6}$, such that

$$(a_{\#})^2 = a \# a = 4\sqrt{3} \cdot \sqrt{3} = 12 = 0 \pmod{6}.$$

Therefore the element $a = \sqrt{3}$ is a neutrosophic nilpotent element in the NTG. This NTG has zero divisors, since, for example:

$\exists 0.3 \neq 0, 5 \neq 0$, where $0.3, 5 \in \mathbb{R}$, such that

$$4 \cdot 0.3 \cdot 5 = 6 = 0 \pmod{6}.$$

Neutrosophic Aggregation

[Florentin Smarandache]

Let's have two neutrosophic triplets whose components' sums is 1, $N_1=(0.5, 0.2, 0.3)$ and $N_2=(0.4, 0.00, 0.6)$. By using the neutrosophic operators to aggregate them, the resulting neutrosophic triplet N_3 may have the sum of the neutrosophic components: either <1 , or $=1$, or >1 .

a. For the neutrosophic disjunction (\vee_N), using the max/min/min fuzzy-norm, one gets:

$(0.5, 0.2, 0.3) \vee_N (0.4, 0.0, 0.6) = (\max\{0.5, 0.4\}, \min\{0.2, 0.0\}, \{0.3, 0.6\}) = (0.5, 0.0, 0.3)$, whose components' sum:

$$0.5 + 0.0 + 0.3 = 0.8 < 1.$$

b. For the neutrosophic conjunction:

$(0.5, 0.2, 0.3) \wedge_N (0.5, 0.2, 0.3) = (0.5, 0.2, 0.3)$, whose components' sum is $0.5 + 0.2 + 0.3 = 1$.

c. For the neutrosophic conjunction (\wedge_N), using the min/max/max fuzzy-norm, one gets:

$(0.5, 0.2, 0.3) \wedge_N (0.4, 0.0, 0.6) = (\min\{0.5, 0.4\}, \max\{0.2, 0.0\}, \max\{0.3, 0.6\}) = (0.4, 0.2, 0.6)$,

whose components' sum: $0.4 + 0.2 + 0.6 = 1.2 > 1$.

d. For the neutrosophic negation (complement) (\neg_N), using the neutrosophic negation operator $\neg_N(T, I, F) = (F, 1-I, T)$, one gets:

$$\neg_N(0.4, 0.0, 0.6) = (0.6, 1-0.0, 0.4) = (0.6, 1.0, 0.4),$$

whose components sum is: $0.6 + 1.0 + 0.4 = 2$.

Using other fuzzy t-norms and fuzzy t-conorms, into the composition of the neutrosophic operators, one similarly may construct examples of triplets whose sums are T_1 but after aggregation their sum may be <1 , $=1$, or >1 .

Applications of Neutrosophic Theory

[Florentin Smarandache]

Neutrosophic Theories that can be applied in any field of knowledge that deals with at least one of the following:

- a) *Neutrosophic Triplets* (Triads), ($\langle A \rangle$, $\langle \text{neut}A \rangle$, $\langle \text{anti}A \rangle$);
- b) or at least concepts $\langle A \rangle$ for which there exist some opposite $\langle \text{anti}A \rangle$;
- c) *Refined Neutrosophic Triplets* (Triads);

d) or at least refined concepts $\langle A_1 \rangle, \langle A_2 \rangle, \dots$ for which there exist some refined opposite $\langle \text{anti}A_1 \rangle, \langle \text{anti}A_2 \rangle, \dots$;

e) Indeterminacy.

*

a) Neutrosophic Science can be applied in any field where there exist *neutrosophic triads*, i.e. opposites and neutrality between them ($\langle A \rangle, \langle \text{neut}A \rangle, \langle \text{anti}A \rangle$), with respect to some aspects (attributes, properties, etc.) of the field. Neutrosophic Science studies the interactions between opposites and their neutrals in the field, mostly the blending between them ($p\%$ of $\langle A \rangle$ mixed with $r\%$ of $\langle \text{anti}A \rangle$) that becomes part of the neutral ($\langle \text{neut}A \rangle$).

b) The *duplet components* ($\langle A \rangle, \langle \text{anti}A \rangle$) are further, when possible, blended as $p\%$ of $\langle A \rangle$ and $q\%$ of $\langle \text{anti}A \rangle$, giving birth to some indeterminacy $\langle \text{neut}A \rangle$ in between.

c) Similarly if in the field there exist *refined neutrosophic triads*: ($\langle A_1 \rangle, \langle A_2 \rangle, \dots, \langle A_p \rangle; \langle \text{neut}A_1 \rangle, \langle \text{neut}A_2 \rangle, \dots, \langle \text{neut}A_r \rangle; \langle \text{anti}A_1 \rangle, \langle \text{anti}A_2 \rangle, \dots, \langle \text{anti}A_s \rangle$) where $p, r, s \geq 1$ are integers, and $p+r+s \geq 4$. In this case, the Neutrosophic Science studies the interactions between all sub-opposites and their sub-neutrals, plus the blendings between any of them.

d) The *refined duplet components*, similarly are further where possible blended as $P_1\%$ of $\langle A_1 \rangle, P_2\%$ of $\langle A_2 \rangle, \dots$, and $Q_1\%$ of $\langle \text{anti}A \rangle, Q_2\%$ of $\langle \text{anti}A_2 \rangle, \dots$, giving birth to several sub-indeterminacies $\langle \text{neut}A_1 \rangle, \langle \text{neut}A_2 \rangle, \dots$

e) In any field where there is *indeterminacy* (incomplete, inconsistent, vague, unclear, unknown, uncertain data), or we deal with triples of the form ($\langle A \rangle, \langle \text{neut}A \rangle, \langle \text{anti}A \rangle$) where $\langle A \rangle$ is an item, object, idea, concept, theory, proposition, etc., and $\langle \text{anti}A \rangle$ is the opposite of $\langle A \rangle$, while $\langle \text{neut}A \rangle$ is the neutral (or indeterminate) part between them.

PHYSICS TREKS

Coordinate Systems

[Florentin Smarandache]

Cum arată un sistem de coordonate în *spacetime*:

$$(t,x,y,z) \text{ sau } (ct,x,y,z) ?$$

Dacă în *time-like* $ds = 3$ m (rezultatul în metri) îl convertesc în energie?

Adică, distanța dintre două evenimente (de exemplu: între un accident de mașină într-un loc și nașterea unui copil în alt loc) să fie o cantitate de energie sau un număr de metri?

Dar invers, dacă în *space-like* $ds = \sqrt{-3}$ metri (iau *squareroot* de - 3 metri sau de +3)?

Cum să interpretez că distanța dintre două evenimente în acest caz?

[Ervin Goldfain]

În general se specifică întâi toate componentele lui "metric tensor". Ele determină complet geometria spațiu-timpului, în particular tensorul de curbură al geometriei riemanniene. După aceea se folosesc ecuațiile lui Einstein de unde se obțin componentele tensorului energie-impuls (*energy-momentum tensor*). În felul acesta, geometria spațiu-timpului într-un volum patru dimensional determină distribuția de materie și energie conținută în acel volum.

Exemple clasice sunt aproximația newtoniană a ecuațiilor lui Einstein, soluțiile cu simetrie sferică, metrica Robertson-Walker, metrica Kerr (*black holes*) și așa mai departe.

Ca să convertești "ct" în aceleași unități ca și "x", cel mai convenabil este să folosești sistemul de unități "naturale" în care $\hbar = c = 1$. În acest sistem se aplică următoarele relații de conversie:

$$[\text{spațiu}] = [x] = 1/eV = 1.97 \times 10^{(-7)} \text{ m} \dots\dots 1\text{m} = 0.51 \times 10^{(7)} eV^{(-1)}$$

$$[\text{timp}] = [t] = 1/eV = 6.58 \times 10^{(-16)} \text{ sec} \dots\dots 1 \text{ sec} = 0.15 \times 10^{(16)} eV^{(-1)}$$

unde "eV" reprezintă *electronvolts*, "m" metru și "sec" secundă.

Intervalul în "Minkowski spacetime" devine

$$\Delta s^2 = \Delta t^2 - (\Delta x^2 + \Delta y^2 + \Delta z^2)$$

și se măsoară în $[eV]^{(-2)}$. Nu îți rămâne decât să înlocuiești cu valorile numerice din exemplul tău și să aplici conversia de mai sus.

[Florentin Smarandache]

Dacă împart relațiile ce mi-ai dat: $1\text{m} = 0.51 \times 10^7 eV^{-1}$ la $1\text{s} = 0.15 \times 10^{16} eV^{-1}$ obțin: $3.4 \times 10^{-9} \text{ m/s}$ (ce viteză este aceasta? a luminii?).

De ce se pune *eV* la puterea -1 ci nu la +1?

$$\Delta x = 6-2=4 \text{ metri}$$

$$\Delta y = 7-3=4 \text{ metri}$$

$$\Delta z = 8-5=3 \text{ metri}$$

$$\Delta t = 9-8 = 1 \text{ h} = 3600 \text{ s.}$$

$$\Delta x^2 + \Delta y^2 + \Delta z^2 = 4^2+4^2+3^2 = 16+16+9=41 \text{ m}^2 =$$

$$= 41 \times [0.51 \times 10^7]^2 eV^{(-2)} = 1.06641 \times 10^{15} eV^{(-2)}$$

$$\Delta t^2 = 3600^2 = 12,960,000 \text{ sec}^2 = 12,960,000 \times [1.5 \times 10^{16}]^2 =$$

$$= 2.916 \times 10^{37} eV^{(-2)}$$

$$\Delta s^2 = 2.916 \times 10^{37} - 1.06641 \times 10^{15} =$$

$$= 29,159,999,999,999,999,999,999,998,933,590,000,000,000.$$

Apoi calculată rădăcina pătrată a rezultatului și obțin $eV^{(-1)}$, care apoi îl convertesc în metri ori în secunde? Ce conține rezultatul?

[Ervin Goldfain]

Rezultatul se exprimă în $[\text{delta } s] = eV^{(-1)}$ sau, dacă vrei, în $[\text{m}]$ sau, dacă vrei, în $[\text{sec}]$ folosind relațiile de conversie pe care le-am indicat.

Ăsta este unul dintre avantajele sistemului natural: distanțele spațiale se exprimă în aceleași unități ca timpul și în aceleași unități ca $[\text{energie}]^{(-1)}$, adică $eV^{(-1)}$.

Celălalt avantaj este ca rezultatul nu depinde de "c" pentru că "c" = 1 prin definiție în acest sistem de unități (de asemenea, $\hbar = 1$ în acest sistem).

[Florentin Smarandache]

De unde vine relația între lungimi, timp și energie?

[Ervin Goldfain]

Adu-ți aminte de formula lui Planck pentru oscilațiile cuantice:

$$E = h\nu = \frac{h}{2\pi}(2\pi\nu) = \hbar\omega$$

E este energia, $\nu = T^{-1}$ este frecvența (T este perioada oscilațiilor), iar ω este frecvența circulară (pulsția).

Deci vezi că energia și timpul sunt în relație de reciprocitate când $\hbar = 1$.

De asemenea, formula lui De Broglie este:

$$p = \frac{h}{\lambda} = \frac{h}{2\pi} \frac{2\pi}{\lambda} = \hbar \frac{2\pi}{\lambda}$$

p este impulsul și λ lungimea de undă a oscilațiilor. Energia și impulsul se măsoară amândouă în unități de energie (adu-ți aminte de relația lui Einstein $E^2 = p^2 + m_0^2$ unde $c = 1$ și unde m_0 este masa de repaos a oricărei particule). Deci vezi că energia și lungimea sunt de asemenea în relație de reciprocitate când $\hbar = 1$.

[Florentin Smarandache]

Acum o interpretare a rezultatului, păstrând aceeași distanță:

1) Dacă considerăm o particulă circulând din poziția A în poziția B, într-un timp mare încât ds^2 să fie pozitiv, avem deci un interval *time-like*.

2) Dacă avem aceeași particulă circulând de la A la B într-un timp mai mic așa încât ds^2 să fie negativ, avem un interval *space-like*.

Care-i explicația intuitivă? De ce?

Vreau să spun că A și B au aceleași coordonate spațiale.

Considerăm A ca apex. În primul caz, B este în conul de deasupra (fiindcă avem un interval *time-like*), iar în doilea caz B este în afara conului (fiindcă avem un interval *space-like*).

Deși A și B au aceleași coordonate spațiale (nu s-au schimbat), dar ele aparțin la regiuni diferite. Desigur timpul s-a schimbat, într-adevăr, de la cazul 1) la cazul 2). Cum să înțeleg asta?

[Ervin Goldfain]

Dacă intervalul este pozitiv înseamnă că $c^2 \times t^2 > x^2$ adică $c > x/t = v$, ceea ce înseamnă că viteza luminii în vid este viteza limită și te afli în interiorul conului de lumină. Dacă mărești timpul obții o viteză din ce în ce mai mică, iar dacă micșorezi timpul obții o viteză din ce în ce mai mare care poate depăși "c". Ajungi la un moment dat să ai $v > c$ și te afli în afara conului de lumină. Putem considera și invers, păstrând același timp.

[Florentin Smarandache]

3) O particulă circulă în linie dreaptă pornind de la poziția A până la poziția B într-un interval de timp Δt astfel încât $ds^2 > 0$, deci avem un interval *time-like*.

4) Aceeași particulă circulă în linie dreaptă de la poziția A până la C (mai departe decât B) astfel încât $ds^2 < 0$, deci avem un interval *space-like*.

Care-i explicația practică, justificăția?

5) Putem include în fiecare din aceste două categorii și cazul când $ds^2 = 0$.

Metrica lui Minkowski

[Florentin Smarandache]

Se poate lucra și cu $\Delta s^2 = c^2(\Delta t^2) - (\Delta x^2 + \Delta y^2 + \Delta z^2)$ considerând c în m/s, t în secunde, iar x, y, z în metri. E adevărat? (Deci c nu mai este înlocuit cu 1, dar cum este atunci \hbar (\hbar)?)

Se obține un rezultat în metri. Trebuie apoi convertit în eV (energie)?

Unii autori folosesc metrica lui Minkowski cu "semnătura" (-, +, +, +) în loc de (+, -, -, -). Totuși cel mai des se folosește semnătura a doua $ds^2 = c^2 \times dt^2 - dl^2$ care este cea mai populară în textele de referință consacrate Teoriei Relativității. Dar văd că se poate obține Δs^2 și negativ și zero și pozitiv (indiferent cum lucrăm, cu c ori cu $c=1=\hbar$). Cum se explică Δs^2 ca negativ, sau ca zero?

Nu-mi pot explica practic de ce dacă $\Delta s^2 > 0$, adică $c^2(dt^2) > dx^2+dy^2+dz^2$, avem cauzalitate (evenimentul A are loc înaintea evenimentului B)?

Și de ce dacă $ds^2 < 0$, adică $c^2(dt^2) < dx^2+dy^2+dz^2$, nu avem cauzalitate (evenimentul B are loc înaintea lui A)?

Cred că are sens cazul $ds^2=0$, adică $c^2(dt^2) = dx^2+dy^2+dz^2$, adică $c(dt) = \text{squareroot}(dx^2+dy^2+dz^2)$, adică dt este timpul necesar luminii să străbată distanța $\text{squareroot}(dx^2+dy^2+dz^2)$, deci avem de-a face cu fotonul.

Altă întrebare: am văzut că $ds^2 = dx^2 + dy^2 + dz^2 - c^2t^2$ (deci spațiul pus înainte). Ele sunt de fapt cam echivalente, dar care ar fi folosite mai mult?

Absolute Theory of Relativity

I do not work in the Minkowski spacetime in my Absolute Theory of Relativity, but in the normal classical 3D-Euclidean space + 1D-time.

I consider Minkowski spacetime as artificial, I mean not reflecting the reality but an imaginary space in order to validate the Special Theory of Relativity.

In my opinion, since I don't work in the Minkowski spacetime, I don't need to have any Poincaré group or Poincaré symmetry properties.

A System of Coordinates in Spacetime

[Florentin Smarandache]

How is a system of coordinates in spacetime: (t,x,y,z) or (ct,x,y,z) ?

[Dmitri Rabounski]

The first system is incorrect, because all four coordinates should be count in terms of length. Correct is the system (ct, x, y, z) .

[Florentin Smarandache]

If the time-like $ds = 2$ meters, do I convert it in energy? What is the distance between two events measured, in meters or in energy?

[Dmitri Rabounski]

Space (or space-time) intervals cannot be converted into energy because space (or space-time) does not bear energy "per se".

[Florentin Smarandache]

But reciprocally: if the space-like $ds = \sqrt{(-3)}$ metters, do I take squareroot, of -3 or of +3? The result will be in what units? Meters, eV ?

[Dmitri Rabounski]

Space-time intervals within our world of sublight speeds are positive. The case you point out, $ds = \sqrt{(-3)}$ for instance, is attributed to the world of superluminal speeds: in this case the three-dimensional (spatial) interval exceeds the time interval ct because $v > c$ in the case.

In any case, the space-time interval is count in terms of length (centimeters, feet, meters...).

[Florentin Smarandache]

What I meant: if there is an event at $x=2, y=3, z=4$ and time $t=5$ am today, how can I write it in Minkowsky spacetime: do I write $(5c,2,3,4)$ or $(5,2,3,4)$?

[Dmitri Rabounski]

$(5c,2,3,4)$ should be correct. Also, 5h should be in meters (terms of length).

[Florentin Smarandache]

If event E_1 (= at time t_1 and location L_1 it rains) and event E_2 (= at time t_2 and location L_2 John reads) occur. I compute the ds^2 and I get $ds^2 = 9 \text{ m}^2$, thus $ds = 3 \text{ m}$.

How should I interpret practically "3 meters" as the distance between two events E_1 and E_2 ?

[Dmitri Rabounski]

This is a space-time distance. Impossible to interpret in the 3-dimensional space. Also, I sure there should not be only 3 meters, because the light speed, $3 \times 10^8 \text{ m/sec}$, is so large that gives 3×10^8 meters of the distance in each single second of duration between the events.

Spacetime Interval

[Florentin Smarandache]

A car C is at the position $(x=2, y=3, z=5)$ and time $t=8:00 \text{ am}$ (I don't know how to express 8:00 am in terms of " ct "; can you tell me?).

Then the car C moves at the position $(6,7,8)$ and time $t=9:00 \text{ am}$.

How do you compute the metric according to Minkowski from these two spacetime coordinates?

[Dmitri Rabounski]

The spacetime interval is given by

$$ds^2 = c^2 dt^2 - dx^2 - dy^2 - dz^2.$$

So the answer to your question is:

$$ds^2 = c^2(9:00 - 8:00)^2 - (6-2)^2 - (7-3)^2 - (8-5)^2,$$

where c is in km/hr since you have given time in hours. Otherwise change the hour between 8:00am and 9:00am to seconds and keep c in km/s .

[Florentin Smarandache]

If there is an event at $x=2, y=3, z=4$ and time $t=5 \text{ am}$ today, how can I write it in Minkowsky spacetime? $(5c,2,3,4)$?

[Dmitri Rabounski]

This is in the case where you count time from the midnight. I mean that the origin of time coordinate has meaning. If you count time from the midnight, 5am today, then you should count time on 10am tomorrow as 24h + 10h. I mean that in all your calculations, the same time origin should be used. If changing the time origin, to the next midnight for instance, you change all the reference frame: you move from the one Minkowski frame to another Minkowski frame connected to the tomorrow.

Also, important, time should be count in seconds, of course, not hours.

[Florentin Smarandache]

Also, how should I interpret the different between an even E_1 (One child is born today at 5 am at location $x=2, y=3, z=4$) and event E_2 (One airplane takes off at 6 am at location $x=5, y=6, z=7$)? Suppose we use the metric ds and we get $ds = 6$ meters.

What 6 meters means in Minkovski spacetime as distance (in time and space) between E_1 and E_2 ?

[Dmitri Rabounski]

The space-time distance between the events E_2 and E_1 in the Minkowski reference frame is:

$$\begin{aligned} ds(E_2-E_1) &= \text{sqrt}\{(5-2)^2 + (6-3)^2 + (7-4)^2 + (c \times 3600 \text{ sec})^2\} = \\ &= \text{sqrt}\{3^2 + 3^2 + 3^2 + (3 \times 10^8 \text{ m/sec} \times 3600 \text{ sec})^2\} = \\ &= \text{sqrt}\{9 + 9 + 9 + 1.1664 \times 10^{24}\} \text{ m} = 1.08 \times 10^{12} \text{ m}. \end{aligned}$$

In this case, because the airplane travels very slow to light, its spatial three-dimensional path is actually discounted. Only the time travel has a meaning: it is 1.08×10^{12} m while the spatial travel is $\text{sqrt}\{9+9+9\} = 5.2$ m.

An example to prove that the General Theory of Relativity
is a nonsense using the Minkowsky spacetime

[Florentin Smarandache]

Suppose a child John is born today at time $t_1 = 8:00$ am at the location $x_1=2$ m, $y_1=3$ m, $z_1=4$ m, but he survives only 1 minute (=60 seconds) and he dies at the exact same location, i.e. at time $t_2 = 8:05$, and $x_2=2$ m, $y_2 = 3$ m, $z_2 = 4$.

Time is measured in seconds, space in meters for all x,y,z , and c is measured in meters per second.

Then the spacetime interval is given as you said by

$$\begin{aligned} ds^2 &= c^2 dt^2 - dx^2 - dy^2 - dz^2 = c^2(60)^2 - 0^2 - 0^2 - 0^2 \\ &= 3600 \text{ seconds}^2 (c^2 \text{ m}^2/\text{s}^2) = 3600c^2 \text{ m}^2 \end{aligned}$$

Computing squareroot we get:

$$ds = 60c \text{ meters.}$$

Speed of light in vacuum is 299,792,458 meters per second \approx 300,000 km/s.

It does not make sense to me that the distance between the event E_1 (= Child John was born at *location* L) and event E_2 (= Child John dies after 1 minute after birth at the same location L without having moved) is equal to $60c = 60 \cdot 299,792,458$ meters \approx 18,000,000 km!

Normally the distance should be in time units (since the child didn't change his location at all), not in length units!

Normally the distance should be 1 minute, not... 18,000,000 kilometers!

Relativity invented the absurd theater, or maybe the playwright Eugène Ionesco got inspired from the Theory of Relativity!

What is your opinion? How would the relativists respond to this simple example?

[Dmitri Rabounski]

Yes, 18,000,000 kilometers! It is absolutely correct. To understand this distance, consider just a simplified example that below.

The Earth, the planet — a spherical body travelling around the Sun with the velocity 30 km/sec, and around the centre of our Galaxy at 250 km/sec. Two events in your room: two light bulbs switched on one second after each other; thus the time interval between the events is only 1 second. The distance on the 2-dimensional surface of the Earth between them is just 1 meter. However in the 3-dimensional space the distance between the events is 250 kilometers: the second lightbulb when switched on travelled from the first event (the first lightbulb switched on) in common with the Earth, at 250 kilometers!

Why the energy should depend on the SPEED (of light)?

[Florentin Smarandache]

I mean, why on the speed?

This formula is also disputed as valid or not? ($E=mc^2$)

What other versions of this formula are?

I feel that the speed of light is not constant even in vacuum. I think that a stronger source of light could emit light with a faster speed than a weaker source if light.

What is the opinion of other people?

I proposed a new domain in physics, superluminal physics and instantaneous physics:

http://www.ams.org/meetings/calendar/2012_jul2-4_gallup.html .

I feel that Minkowski spacetime is an imaginary one, not realistic. What do you think?

I don't feel that Energy should depend on "c"; why? What is the explanation?

And why on the speed of light? I mean why on the SPEED?

[Victor Christianto]

Somehow things became absurd once you ponder it seriously.

The correct expression is Bakhoum's $E=mv^2$. And even though he has published his papers since 2002 only few agree with Bakhoum.

[Florentin Smarandache]

What about if the object is at rest, hence $v=0$?

[Victor Christianto]

If the object is at rest, we take the speed of electrons inside the atom. let say hidrogen only has 1 electron, then the speed is near to c , therefore $E\sim m*c^2$. But for larger atom then the speed of electrons will be different.

[Florentin Smarandache]

But if the speed $v=3$ meters/s, then $E=m*3^2 = 9m$, while the Energy at rest of something $E=m*c^2$ is bigger than the energy of moving of the same thing?

It does not look normal to me.

I feel the same object in traveling should produce more energy than at rest. Am I wrong?

I've read elsewhere that the expression of general relativity can be made simpler through the use of de Rham electromagnetic theory.

Velocity of Light

[Florentin Smarandache]

Did somebody checked the case when " c " is replaced by another speed in the Minkowsky spacetime?

[Dmitri Rabounski]

Such a substitution would be nonsense in our world wherein we synchronize references frames by light signals. The Theory of Relativity is a theory of observable quantities. Einstein's theory assumes that reference frames are synchronized by light signals – electromagnetic

signals. Therefore $x^0 = ct$ therein. If someone else would imagine a world of blind people who percept everything with sound signals, these persons would have the same mathematical theory of relativity (with the same mathematical effects), but their time coordinate would be expressed as $x^0 = vt$ wherein v is the sound speed in the air. And so on, concerning the worlds of other observers whose perception of reality (the picture of the "real world") is based on the other sort signals: sound waves in the water (dolphins and whales), and so forth.

Each of the sort people will have own theory of relativity, mathematically the same but with the respective speed substituted instead our velocity of light.

Electromagnetic Signals

[Dmitri Rabounski]

When talking about events, we mean not bodies (not the lightbulbs, for instance) but something that occurs with them. In this case, an event is switching on the lightbulb.

Therefore, the time duration and velocity of the motion of each event with respect to the other is taken into account.

In the 4-dimensional space, a similar example. The only difference is that the second event travels with the light speed from the first one.

[Florentin Smarandache]

In your example with light-bulbs, if we consider the Minkowski spacetime, we get the distance: $ds^2 = c^2(1 \text{ sec})^2 - 1^2 = 299,792,458^2 - 1$ = very huge number of meters, different from 250 km as you said.

So, which space should we use?

[Dmitri Rabounski]

I used an example of a 3-dimensional world, wherein two spatial axes (the Earth surface) while the 3rd axis is time directed along the Earth's orbit (and $v = 250 \text{ km/sec}$ as an example of time flow).

We use the 4-dimensional world, wherein the velocity of light multiplied by time means the time coordinate. This is because our world we precept as the "single true reality" is based on the information arrive with light signals – electromagnetic waves. We know the world due to *electromagnetic signals*, in other word. So, the speed of electromagnetic signals means our travel along the time axis. Therefore $x^0 = ct$, the huge distance per each second (as you said).

Converting meters into electron-volts

[Florentin Smarandache]

I read that it is possible a conversion between electronvolt, second, and nanometer, therefore one can convert from meters to inverse energy units in TR?

I mean instead of saying that the distance between two events is 2,000,000 meters, we can convert these meters into electron-volts (energy). So, better to say that the distance between two events is a quantity of energy, instead of a number of meters?

[Dmitri Rabounski]

Length "per se" cannot be transformed into energy or mass, but only in a field: for instance in a gravitational or electromagnetic field any distance means a potential difference.

Therefore, in atomic physic, in the field of an atom (which one? -- depending on the particular case) 1 nanometer means some energy. But quantity of the energy depends on the particular case (which atom, and distance from it). I mean that, generally speaking, terms of length do not mean any mass or energy.

Superluminal Phenomena

[Florentin Smarandache]

If there are superluminal particles of speed $K > c$, then can we take $x^0 = Kt$?

[Dmitri Rabounski]

They then will not be "superluminal". Consider: this is the theory of relativity. We percept the "truly real world" via light signals.

Therefore, we do not see superluminal phenomena "per se" but may register them as a sort of wisdom or enigma.

If you do as you said, I mean ordering $v > c$ as the proportional coefficient $x^0 = vt$, this is another (not our own) world wherein observers "see" the reality via the superluminal signals travelling at $v > c$.

That is, there are many worlds of many sort observers. They all will have the same mathematical scheme (geometry and effects) of the theory of relativity.

But these are not be parts of our space and universe. They are spaces from different universes, where observers percept the world via other signals, superluminal in the case you talked just now, or the sound-world of dolphins, etc.

Spacetime Distance

[Florentin Smarandache]

But then the distance between two events in TR, being in meters, means nothing?

[Dmitri Rabounski]

Yes, distance between regular bodies means nothing in terms of energy. Potential of the Earth gravitational field (or that between the cosmic bodies) is so neglected to convert it to eV .

Another case – distances among electrons in the atomic orbits: electromagnetic potential is high therein, therefore it is measured in electron-Volts.

But in a regular (or general case) such a conversion means nothing.

[Florentin Smarandache]

Then the spacetime is artificial? Or only partially connected to reality?

[Dmitri Rabounski]

Each spacetime is connected to each single kind observer. Light signal (eyesight) observer gets own spacetime. An undermarine get eve two spacetime: inside the submarine, based on light signals, and the "outer world" based on sound signals. This is the theory of relativity.

Solipsism is an ultimate approximation of the theory of relativity: according to solipsism, the world dies when the observer dies. According to Einstein's theory of relativity, the world and space-time die when no one observer exist who percepts the world (and space-time) by eyesight.

[Florentin Smarandache]

But even for a single observer who computes the distance between two events he gets the result in meters. And he cannot interpret the result. -- I agree with being many observers and many realities.

The problem is that we cannot interpret the results in meters between two events. Then what the spacetime distance serves at (since it is not interpretable)?

[Dmitri Rabounski]

In the space-time theory we have not other chance as to give terms of distance to the time duration. This is as I illustrated with the Earth travelling in the Galaxy (along its time-like axis). Thus, we have not any problem with interpretation space-time distances between two events in terms of length (meters).

A Relativity for the ultimate sound speed

[Florentin Smarandache]

Then, we can replace "c" by "s", where s = sound speed in water, and we study the underwater world.

[Dmitri Rabounski]

Exactly. Undermarines should do it. But no one sheep of the scientists did it for yet. This is a world "seen" from a submarine, because the underwater ship has not windows: the undermarines know that occurs around only due to the sonar (active or passive sonar, does not matter in this case; what is important is that by sound waves).

I know a research in the air medium conducted by the Russian officers in St. Petersburg in 1916-1917 (then the experiments were ended due to the revolution and red terror). They produced experiments with subsonic, sonic, and supersonic bullets shot from a special "rifle" (this is a scientific aggregates permitting to launch a bullet at a few kilometers per second in a lab, this is not a regular rifle). So, they registered travel durations by sound signals – by a system of clocks wherein time measurement was ruled by sound membranes so they manifested the "truly sound world". As a result, they obtained all known effects of Special Relativity, including the ultimate high speed of the bullet – the speed of sound waves in the air (~330 m/sec), despite the real bullets travelled at kilometers per second. They mere did not "see" the really supersonic bullets but only their imaginary position drawn by the sound wave arrived from. They also registered a "compression" of length and time "dilation" when shooting bullets at speeds close to the sound speed.

The same effect can be easily observed in a supersonic jet airplane. I observed this many times in childhood, because my village home was located near a suburb air base: we see a supersonic airplane at a

forward position in the sky to that wherein we hear sound of it. In other word, by light signals we observe the airplane imaginary to a sound-perception person.

Frankly speaking, "The Blind Pilot" and the respective chapter in my book "Particles Here and Beyond the Mirror" (it is the same as The Blind Pilot) was written by me on the basis of much information on such experiments of 1916/1917, and my own observations.

[Florentin Smarandache]

Therefore we can construct a Relativity for the ultimate sound speed in water (for submarines), or for ultimate sound speed in the air (for the bats, who see with their ears), just by replacing "c" with "s" (ultimate speed in that medium).

[Dmitri Rabounski]

Exactly!

[Florentin Smarandache]

Did other people study this, besides the St. Petersburg experiment?

[Dmitri Rabounski]

I think, not. I looked around the scientific community in the 1980's, then – in the 2000's when having the internet. Researchers are non-interested in this field. I was alone person. Also, the pro-scientists – aka "scientific workers" – will be very against such understanding reality and the theory of relativity. They are grey mass, the sheep herd focused on their own grants, job positions, etc. Therefore they will claim that all these is "not science".

Minkowski Spacetime

[Florentin Smarandache]

There might be possible to define a better spacetime than Minkowski, I mean a such space which better connects with reality.

Can we improve Minkowski spacetime? Or can we get a more exact, more accurate spacetime that approaches as best as possible the real world?

[Dmitri Rabounski]

Humans are not dolphins. They "build" own reality – the real world of humans – via eyesight. Therefore, synchronization by light signals gives the theory of relativity of humans. Consider: how do you imagine the world? Answer: as you see it. Therefore, the "light-speed" theory of relativity is that of humans. I mean that it is most accurate.

Inconsistencies in the arguments of the Relativists

[Steven Crothers]

It is meaningless to say that the spacetime interval is $60c$ metres when only time changes, not position. This highlights another inconsistency in the arguments of the relativists. When referring to only time changes they draw a spacetime diagram with the x -axis (in metres) and the time axis (in seconds) perpendicular to one another.

The y and z axes are suppressed. Then they draw a vertical line parallel to the time axis at the fixed x position and claim that there is motion through time, in seconds. This is not consistent with the definition of the spacetime interval of Minkowski. Clearly length and time are not on the same footing, contrary to the claims of the relativists.

As far as I know nobody has used a speed other than c in the Minkowski spacetime interval. This is because of the claim that c is a limiting speed and so the theory is based upon c .

According to the relativists there was nothing before the Big Bang, no matter and no spacetime. Spacetime itself is alleged to have come into existence from nothing along with matter. The Universe was created from nothing. The whole notion is ridiculous. It was developed

initially by Lemaître, who was a Belgian priest. The Big Bang is a quasi-religious creation event, not science. In this way Lemaître involved God as the creator via the Big Bang. One can only wonder then where God dwelt before the Big Bang!

Currently relativists claim that the Big Bang was due to a quantum fluctuation. This is meaningless babble. What is a quantum fluctuation and how can quantum fluctuations exist if the Universe did not exist before the Big Bang? Everything about the Big Bang is fantasy. But this stupidity appeals to the masses and sells books, making money for the establishment and gets research grants. This is in my opinion because most of the human race believes in some god or another and that there is life after death.

The Big Bang has even received Vatican ratification precisely because it is an alleged creation event, thereby involving God. The mainstream astrophysical scientific community does not do science. What they have done is commit scientific fraud. They routinely block all papers that question their 'theories' and ostracize everybody who challenges them.

Ajay Sharma has argued that $E = amc^2$ where a is a constant that varies with circumstances. I have however not studied his arguments for this relation.

Kohut has argued that $E = mc^2$ comes directly from Maxwell's electromagnetic theory and that Einstein's derivation of the relation is erroneous.

J. J. Thompson obtained an equivalent form of $E = mc^2$ from classical physics long before Einstein was on the scene with his relativity theory.

The relativists claim that light travels with speed c in vacuum irrespective of its intensity or frequency.

Some people have theorised that light speed is variable but their ideas have not been embraced by the mainstream, of course.

Some relativists have claimed that the speed of light varies in Einstein's gravitational field.

Hermann Weyl seems to have argued this as well. But it is my view that Einstein's gravitational field is nonsense.

As Oliver Heaviside said, Einstein's gravitational field is a twisted nothingness. Curved 4-dimensional spacetime is in my opinion just plain rubbish. In any event Einstein's field equations violate the usual conservation of energy and momentum and so are in conflict with experiment on a deep level, as I have shown in some of my papers.

I firmly believe that Einstein has made a mess of physics.

Object's Speed vs. Electron

[Victor Christianto]

To the best of my knowledge the expression $E=mv^2$ to replace $E=mc^2$ will not depend on the object's speed, but on the electron inside.

This is the same with $E=mc^2$ which is not dependent on the object's speed.

Furthermore, if one will consider object's speed, there is kinetic energy: $E=1/2.mv^2$, which has relativistic limit at $v \geq c$ as $E=1/2.mc^2$.

Universal Constants

[Florentin Smarandache]

The universal constants are not quite "universal". Or the "universal" has a restrained meaning, referred to as the "space under certain conditions".

Partial Refraction and Partial Reflection

[Florentin Smarandache]

The starlight suffers a partial refraction and partial reflection when travelling through the space.

Sorites Paradoxes

The *Sorites Paradoxes*, which are paradoxes such that between two opposite entities $\langle A \rangle$ and $\langle \text{anti}A \rangle$ there is not a clear frontier, can be interpreted neutrosophically in the following way:

we consider a buffer zone, $\langle \text{neut}A \rangle$, between $\langle A \rangle$ and $\langle \text{anti}A \rangle$, or indeterminacy.

*

There are three zones: a zone that for sure represents $\langle A \rangle$, a second zone that for sure represents $\langle \text{anti}A \rangle$, and an ambiguous / unclear / vague zone that represents $\langle \text{neut}A \rangle$, the neutral or indeterminate zone (neither $\langle A \rangle$, nor $\langle \text{anti}A \rangle$, or $\langle A \rangle$, and $\langle \text{anti}A \rangle$ simultaneously).

Therefore, a universe of discourse has a *neutrosophic partition* with respect to the frontier between $\langle A \rangle$ and $\langle \text{anti}A \rangle$.

*

There is not a clear distinction between some opposites $\langle A \rangle$ and $\langle \text{anti}A \rangle$, where $\langle A \rangle$ is a concept and $\langle \text{anti}A \rangle$ its opposite, but a buffer zone $\langle \text{neut}A \rangle$.

*

For Sorites paradoxes, one could try to solve these ones from quantum physics perspective using nonstandard analysis:

<http://fs.unm.edu/PP-01-02.pdf> .

A physicist tried to solve them this way:

<http://fs.unm.edu/ResolutionOfTheSmarandache.pdf> .

Neutrosophic Sorites Paradoxes (NSP)

Between $\langle A \rangle$ and $\langle \text{neut}A \rangle$ there is not a clear frontier – this is the first neutrosophic paradox (NSP₁).

Then, between $\langle \text{neut}A \rangle$ and $\langle \text{anti}A \rangle$ there is not a clear frontier – this is the second neutrosophic paradox (NSP₂).

DEZERT-SMARANDACHE THEORY (DSmT)

Importance of a Source

[Florentin Smarandache]

Aim: to increase the specificity of the importance of a source.

For example for reliability we decrease all masses with a given percentage and increase with that missing mass the total ignorance.

For importance of a source we can do the opposite of reliability:

→increase the masses of the most specific elements with a given percentage,

→and decrease the masses of non-specific elements with that missing mass.

[Jean Dezert]

Oui on peut faire cela pour accroître la spécificité, je suis d'accord, mais je ne sais pas si cela correspond vraiment à la notion d'importance en fait telle qu'elle est utilisée dans la fusion multi-critères.

[Florentin Smarandache]

Alors on peut faire ça: augmenter les masses des certains éléments du cadre de discernment selon celui qui prend la décision (en dépendent de ce qu'il veut/considère), et diminuer les masses d'autres éléments (selon celui qui prend la décision). On pourrait considérer une troisième group d'éléments tels que leurs masses ne sont pas modifiées.

Les Masses Bayésiennes

[Florentin Smarandache]

Dans les BetP, DSMP, et HDSMP le transfert a été fait d'une manière différente, cvd on a transféré toute la masse des ignorances aux singletons. Mais on pourra transférer seulement un pourcentage (qui dépend du coefficient d'importance) de la masse des ignorances aux éléments plus spécifiques.

Bien sûr, il faut aussi bien définir qu'est que c'est un "element plus spécifique qu'un autre element".

Et s'il n'y a pas des masses non-vidés sur les ignorances, alors les BetP BetP, DSMP, et HDSMP ne font aucun transfer; mais dans ce cas-là (pour les masses Bayésiennes), pour l'importance des sources, on pourrait transferer un pourcentage des masses des elements moins spécifiques (qui sont singletons) aux elements plus spécifiques (qui sont aussi singletons), donc c'est different.

[Jean Dezert]

Je ne comprends pas ce que tu veux dire si on considère uniquement des masses bayésiennes (when focal elements are singletons only) alors tous les elements ont la même specificité (same cardinality equals to one). Donc pourquoi transferer un pourcentage de masse de certains singletons sur d'autres singletons. L'importance concerne une caractéristique (un poids relatif) d'une source par rapport à une autre, mais pas forcément d'un élément particulier. Bien sûr, on peut faire la modification que tu dis, et aussi faire du reliability discounting plus raffiné (Denoeux a déjà fait cela aussi dans le passé). Mais il faut trouver une justification solide pour faire cela que je ne vois pas clairement pour l'instant.

Une Hypothèse par rapport aux autres

[Florentin Smarandache]

Si on a une source $m(.)$ avec A,B,C singletons:

	A	B	C
m	0.5	0.3	0.2

on pourrait parler "d'importance des elements" aussi. C'est ça fait?

Car on pourrait augmenter la masse de A et diminuer celle de C (ou bien celles de B et C).

Mais il faut une justification. Dans quelles conditions?

[Jean Dezert]

Je n'ai pas de justification particulière, hormis le fait de dire que le décideur veut faire cela mais cette décision lui appartient. Ici tu interprètes le poids (la masse) comme une importance d'une hypothèse par rapport aux autres. Cela n'est pas la même chose que de considérer plusieurs sources avec différentes importances relatives les unes par rapport aux autres dans un problème de choix multi-critères.

[Florentin Smarandache]

Biensur, ce n'ai pas l'importance des sources.

Je t'ai dit s'il est pratique de développer une approche de cette façon, jvd de donner des poids aux hypothèses?

Encore: on ne pourrait pas dire que si une source S_1 est plus importante qu'une autre source S_2 , alors les hypothèses plus spécifiques de S_1 devraient avoir plus de poids que celles de S_2 ?

L'Importance d'une source et sa spécificité

[Florentin Smarandache]

Tu es ingénieur, donc peut-être tu en pourrais trouver une application qui ensuite sera une implication pour la justification. Pense à ça, car c'est nouveau en *information fusion*. Tu sais mieux que moi les demandes pratiques. [Il faut toujours apporter des nouvelles directions de recherche, des nouvelles notions, pour que la DSMT se distingue bien des autres.]

Par exemple: une source S_1 donne des masses $m_1(.)$ sur A, B, C (*singletons*).

Mais une autre source S_2 dit que A et B ont plus de chances que C (sans donner aucune masse sur les éléments). Donc S_2 pourrait considérer comme une source qui nous donne des poids seulement.

On n'a plus d'autres sources. (Il arrive d'avoir de telles sources qui ne peuvent pas donner des masses.)

Est cet exemple bon, ou est-ce-qu'il te fait penser à autre chose mieux (dans la pratique)?

[Jean Dezert]

Je ne vois aucun lien direct entre importance d'une source et sa spécificité.

Dans le cas de mon exemple précédent sur le choix d'un laptop ce n'est pas parce que les masses sont plus spécifiques exprimées vis-à-vis d'un critère, que ce critère doit avoir plus d'importance pour la prise de décision.

Par exemple si on considère:

A=Laptop₁=Apple

B=Laptop₂=Dell

C=Laptop₃=Asus

et que pour moi, je préfère Apple>Dell>Asus, alors je pourrai choisir:

$$m_1(A)=0.5 \quad m_1(B)=0.3 \quad \text{et} \quad m_1(C)=0.2.$$

Si le deuxième critère (le prix le moins élevé est le meilleur) est le prix des laptops et que

$$\text{Price}(A) > \text{Price}(B) > \text{Price}(C)$$

alors on aura par exemple:

$$m_2(C)=0.5 \quad m_2(B)=0.3 \quad \text{et} \quad m_2(A)=0.2 \quad (\text{masse spécifique})$$

ou bien pourquoi pas une masse $m_2(\cdot)$ choisie comme

$$m_2(C)=0.5 \quad m_2(CUB)=0.2 \quad \text{et} \quad m_2(CUA)=0.2 \quad m_2(AVB)=0.1$$

Mais si pour moi le critère le plus important est le critère 1 (le nom du fabricant), alors la spécificité de m_2 ne doit pas changer l'importance du critère 2 vis-à-vis du critère 1.

Pour moi, il n'y a pas de connection logique/intuitive entre les deux (entre la spécificité et l'importance des sources). Ce n'est pas parce que une source est plus spécifique qu'elle est nécessairement plus importante, ou plus fiable.

Increasing/Decreasing

[Florentin Smarandache]

Mais dans tous les cas d'utilisation des importances des sources (de nous, et des Chinois) on a augmenté/diminué la spécificité des sources, car en multipliant par un coefficient chaque masse, on diminue au début les masses donc on diminue la spécificité.

Ensuite on augmente les masses quand on transfère la masses de l'*empty set* (ou *indciveness set* pour les Chinois).

Peut-tu m'envoyer l'article de Denoeux dont tu m'as parlé?

Une Prémise pour introduire des poids sur les elements

[Florentin Smarandache]

Je pense que l'explication que je t'ai donne pourrait etre considerée une prémise pour introduire des poids sur les elements. Jvd, on a une source S_1 qui donne les masses $m_1(.)$ sur les elements, et une autre source S_2 qui ne peut/sait pas donner des masses sur les elements, mais elle dit qu'un element A par exemple a deux fois plus de chance d'être qu'un element B, et B trois fois plus que C. Alors on peut fusionner S_1 avec S_2 en trouvant une masse $m_{12}(.)$ qui est la masse de $m_1(.)$ modifiée avec les masses augmentees pour A et B, tandis qu'on diminue la masse de C. Comme ça l'on n'a pas fait dans la *fusion*.

L'Importance des sources ne se voit pas

[Florentin Smarandache]

J'ai revu l'article des Chinois, où ils utilisent la règle de Dempster, mais pour deux singletons leur approche ne marche pas:

	A	B
m_1	0.6	0.4
m_2	0.4	0.6

et l'importance de m_1 est 0.75 et de m_2 est 0,25.

Selon les Chinois on a:

	A	B	Indecisiveness	Empty
m_1	$0.6 \times 0.75 = 0.45$		$0.4 \times 0.75 = 0.30$	0.25
m_2	$0.4 \times 0.25 = 0.10$		$0.6 \times 0.25 = 0.15$	0.75

Utilisant la règle conjunctive:

0.045	0.045	0.1875	0.7227
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Utilisant Dempster's rule et ensuite la normalisation a cause de Indecisiveness we get

0.5	0.5
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donc l'importance des sources ne se voit pas.

Tandis que avec la PCR5₀ on trouve:

0.55	0.45
------	------

donc l'importance des sources se voit.

Nous avons spécifié dans l'article d'importance que Dempster ne marche pas...

J'ai recommandé la publication des Chinois, mais je n'ai pas vu que pour cet exemple-ci leur methode ne marche pas.

[Jean Dezert]

Oui, on peut essayer de faire cela, c'est mieux de présenter les choses de cette manière je pense. Mais il faut savoir si on peut aussi tenir compte de la reliabilité des 2 sources aussi.

Si S_2 n'est pas 100% fiable, alors comment on pourrait faire aussi. Il faut trouver des exemples simples d'abord, puis généraliser au cas avec des partielles ignorances.

Discounting

[Florentin Smarandache]

Pour le début on peut considérer les deux sources reliables - un exemple comme ça.

Ensuite, si les sources ne sont pas reliables 100% on peut faire le *discount* pour chaqu'un.

Une autre question: Shafer a fait le *discount* sur l'ignorance totale seulement.

Mais on pourrait faire le *discount* sur les ignorances partielles (comme tu dis). Mais Denoeux et ses co-auteurs l'ont fait.

Il faudrait faire ça aussi, car les autres ne l'ont pas fait.

Quelle sera la justification?

[Jean Dezert]

Je ne me rappelle, plus. Il faut que tu lise leur article. Il me semble qu'ils utilisaient des coefficients qui pouvaient être différents. Mais à ma connaissance ce genre de méthode n'est guère appliquée en pratique jusqu'à présent car il faudrait pouvoir choisir facilement les paramètres de discounting avec une bonne justification convainquante. Lis et essaie de comprendre leur article. Je me rappelle avoir assisté à la présentation de cette approche dans une conférence ou un *workshop* en France et n'avais pas été vraiment convaincu par l'utilité de ce qui avait été proposé à l'époque. Cela restait avant tout théorique ; et sans grand réel intérêt pour moi.

[Florentin Smarandache]

L'importance de la première source m_1 est trois fois plus grande que celle de m_2 .

Mais il faut que la somme des coefficients β_1 et β_2 soit 1, et que les *betas* soient positifs.

Donc $\beta_1 = 0.75$ et $\beta_2 = 0.25$.

Nous et les Chinois avons fait la même chose.

Parce que m_1 et m_2 sont anti-symmetriques

	A	B
m_1	0.6	0.4
m_2	0.4	0.6

le résultat normalement sera 0.5 0.5.

Mais parce que m_1 est plus important que m_2 , alors m_1 "impose" sa spécificité, donc m_1 impose A (il est intuitif à mon avis).

[Florentin Smarandache]

Si une source m_1 est plus importante que l'autre source m_2 , il est normal que le résultat de fusion entre les deux sources soit incliné/changé/biased vers m_1 , sinon alors comment m_1 serait plus important que m_2 ?

Dans m_1 on a $m_1(A) > m_1(B)$, ou $0.6 > 0.4$.

Après la fusion avec l'importance des sources on a $0.55 > 0.45$. Donc de $0.5 = 0.5$ dans une fusion sans l'importance des sources, ou $m_{12}(A) = m_{12}(B)$, l'importance plus grand de m_1 par rapport a m_2 a apporté/incliné la balance vers m_1 , jvd vers $m_{12}(A) > m_{12}(B)$.

C'est très normal comme ça.

Si m_2 était trois fois plus important que m_1 , alors on aurait $m_{12}(B) > m_{12}(A)$ car in m_2 on a $m_2(B) > m_2(A)$.

[Florentin Smarandache]

$$\theta = \{A, B, C\}$$

Une source S_2 qui ne peut/sait pas donner des masses sur les éléments, mais elle dit qu'un element A par exemple a deux fois plus de chance d'être qu'un élément B, et B trois fois plus que C.

One method would be to build a mass according to qualitative information given by S_2 . Let's consider $m_2(\cdot)$ its mass.

Let $m_2(C) = x$ in $[0,1]$, then $m_2(B) = 3m_2(C) = 3x$, and $m_2(A) = 2m_2(B) = 2(3x) = 6x$.

The total mass should be 1, i.e. $m_2(A) + m_2(B) + m_2(C) = 1$, or $6x + 3x + x = 1$, hence $10x = 1$, whence $x = 0.1$.

Therefore $m_2(A) = 6(0.1) = 0.6$, $m_2(B) = 3(0.1) = 0.3$, and $m_2(C) = 0.1$.

[Florentin Smarandache]

Une bonne chose est que leur projection pourrait s'appliquer à la probabilité conditionnée.

[Jean Dezert]

Oui, ce cas là est le cas le plus simple à résoudre bien sûr et ne pose pas véritablement de problème. Se donner directement les préférences totales (comme tu le fais dans ton exemple) et construire ensuite les masses, ou bien se donner d'abord les masses (sur les singletons) pour exprimer indirectement les préférences sont deux manières équivalentes d'exprimer l'information fournie par la source.

Degré de Préférence

[Jean Dezert]

Les cas plus intéressants en pratique (mais plus compliqués) sont ceux où les préférences sont incomplètes et/ou imprécises avec des informations du type

A est fortement préféré à B

B est moyennement préféré à C

ou bien encore

A est faiblement préféré à B/C

etc.

Généralement, les gens questionnés ne savent pas donner une évaluation précise (numérique) de leur degré de préférence. Les préférences exprimées peuvent être parfois contradictoires et l'ordre des préférences n'est pas toujours exprimé de manière totale ou complète.

[Florentin Smarandache]

Une idée simple serait d'approximer les qualitatives.

Par exemple "fortement" signifierait deux fois ou plusieurs fois plus grand.

"Moyennement préféré" = un peu plus grand (0.1 plus grand?).

"Faiblement préféré" = un peu plus petit...

Qu'est-ce qui a été fait dans ce domaine (par d'autres)?

[Jean Dezert]

Je ne sais pas, mais ce genre de problème a déjà dû être analysé (au moins partiellement) dans la littérature car c'est un problème assez classique je pense.

Normalized Conjunctive Rule

[Jean Dezert]

La première partie où tu décris les deux méthodes pour construire m_2 est très simple et ne pose aucune difficulté. Ton exemple de calcul de $m_{S_1 S_2}$ n'est rien d'autre que la normalized conjunctive rule (which equals to DS rule).

Il est arrivé que le résultat soit égal à celui de DS car les masses ont été Bayésiennes, sinon les résultats seront différents.

A mon sens, cela n'apporte donc aucun intérêt fondamental.

Partial Reliability of Some Hypotheses

La deuxième partie (on partial reliability of some hypotheses) est plus intéressante, mais il faut que tu t'assures que ce n'est pas ce qui a déjà été proposé dans la littérature. L'idée de contextual discounting (c'est à dire d'affaiblir différemment certaines hypothèses) avait déjà été introduite par Denoeux. Ton exemple est simple et je suis d'accord, mais il est peut être trop simple, car il n'y a pas d'ambiguïté de transfert de la masse vers $A \setminus B$

Mais dans les cas plus compliqués, il y a plusieurs solutions possibles
 $\theta = \{A, B, C, D\}$

Case 1

$m_1(A) = 0.4$ $m_1(B) = 0.3$ $m_1(C) = 0.2$ $m_1(D) = 0.1$

avec $\alpha_A = 0.7$ $\alpha_B = 0.6$ $\alpha_C = 1$ $\alpha_D = 0.5$

alors on peut décider de redistribuer le residu des masses affaiblies vers $A \setminus B \setminus D$ uniquement par exemple, ou bien vers $A \setminus B$, $A \setminus D$, $B \setminus D$ et $A \setminus B \setminus D$ (proportionnellement aussi), etc.

L'on peut faire plusieurs alternatives:

1) un transfer grosso-modo (pessimistique) a $A \setminus B \setminus D$ de toutes les masses manquantes. Deuxiement: la masse manquant de $m_1(A)$, jvd $0.4 - 0.7(0.4) = 0.12$, sera transferée.

2) $A \setminus B$ et $A \setminus D$ moitié a chaqu'un; similairement pour les autres masses manquantes des autres elements B et D;

3) la masse manquant de A sera transferee a $A \setminus B$ et $A \setminus D$ proportionelement avec les masses de B et respectivement de D.

Case 2 (much more interesting)

$$m_1(A)=0.2 \quad m_1(B)=0.3 \quad m_1(C)=0.2 \quad m_1(D)=0.1, \quad m(A \setminus B \setminus C)=0.2$$

$$\text{avec } \alpha_A=0.7 \quad \alpha_B=0.6 \quad \alpha_C=1 \quad \alpha_D=0.5$$

comment alors doit-on affaiblir $m(A \setminus B \setminus C)=0.2$, sachant que $\alpha_A=0.7$ $\alpha_B=0.6$ et $\alpha_C=1$?

On fait la meme chose qu'avant. On n'affaibli $A \setminus B \setminus C$.

Un solution triviale ad-hoc est de normaliser et considerer que

$$\alpha_{ABC}=(0.7+0.6+1)/3=0.76666$$

mais je ne suis pas certain que cela soit le mieux ...

Case 3 (interesting)

$$m_1(A)=0.2 \quad m_1(B)=0.3 \quad m_1(C)=0.2 \quad m_1(D)=0.1, \quad m(A \setminus B \setminus C)=0.2$$

$$\text{avec } \alpha_A = 0.7 \quad \alpha_B = 0.6 \quad \alpha_C = 1 \quad \alpha_D = 0.5 \quad \alpha_{AB} = 0.3$$

Doit-on envisager ces cas où l'on a des coefficients d'affaiblissements inférieurs à 1 aussi sur les ignorances partielles. Comme $A \setminus B \setminus C$ includes $A \setminus B$ alors la masse $m(A \setminus B \setminus C)=0.2$ devrait peut-être être aussi légèrement affaiblie aussi en tenant compte de $\alpha_{AB}=0.3$.

Si l'on n'a pas $A \setminus B$, ou bien $m_1(A \setminus B)=0$, alors $0.3(0) = 0$.

Et pour les autres il sera qu'avant.

[Florentin Smarandache]

Case 2 (much more interesting)

$$m_1(A)=0.2 \quad m_1(B)=0.3 \quad m_1(C)=0.2 \quad m_1(D)=0.1, \quad m(A \setminus B \setminus C)=0.2$$

avec $\alpha_A=0.7$ $\alpha_B=0.6$ $\alpha_C=1$ $\alpha_D=0.5$,

comment alors doit-on affaiblir $m(A \setminus B \setminus C)=0.2$, sachant que $\alpha_A=0.7$ $\alpha_B=0.6$ et $\alpha_C=1$?

[Jean Dezert]

On fait la meme chose qu'avant. On n'affaibli $A \setminus B \setminus C$.

Si on a des coefficients d'affaiblissement $\alpha_A = 0.7$ $\alpha_B = 0.6$ $\alpha_C = 1$ alors pourquoi ne pas les utiliser pour affaiblir aussi n'importe quelle masses des disjonctions $A \setminus B$, $A \setminus C$, $B \setminus C$ et $A \setminus B \setminus C$ puisque ces disjonctions incluent A, B et/ou C.

Il ne me parait pas très logique, par exemple si on a $\alpha_A = 0.7$ et $\alpha_B = 0.6$, d'affaiblir uniquement que $m(A)$ et $m(B)$, sans affaiblir aussi $m(A \setminus B)$ puisque A et B sont inclus dans $A \setminus B$. La question est de savoir si on doit aussi définir et utiliser des coefficients d'affaiblissements spécifiques aux disjonctions (et conjonctions if hybrid models are used), ou uniquement des coefficients d'affaiblissement sur les singletons. Il faut revoir ce qu'a proposé Denoeux et ses justifications.

Dans l'affaiblissement/reliability discounting, on affaiblit toutes les masses d'un même poids alpha, et on transfère la masse résiduelle vers l'ignorance totale.

Parce que $\alpha_C=1$ signifie que C n'ai pas affaiblit.

L'affaiblissement se fait seulement quand $\alpha < 1$.

Mais parce que $\alpha_A < 1$ et $\alpha_B < 1$ et $\alpha_D < 1$ on affaiblit seulement les ignorances formées par A, B, et D.

[Florentin Smarandache]

Pour affaiblir $A \setminus B \setminus C$? Oui, on pourrait faire ca aussi. Quelle sera la justification?

Alors, si $\alpha_A < 1$, donc il faut affaiblir toutes les ignorances qui contient A, cvd $A \setminus B$, $A \setminus C$, $A \setminus D$, $A \setminus B \setminus C$, $A \setminus C \setminus D$, $A \setminus B \setminus C \setminus D$?

Ça deviendrait compliqué si l'on a plusieurs éléments.

Total Conflicting Mass

[Florentin Smarandache]

In PCR5 the conflict is a refined conflict, i.e. the conflict is split into partial conflicts, so in PCR5 the total conflicting mass is more accurately computed than in Dempster's rule, where it is a brut (less accurate) conflict.

In PCR5 the conflicting mass is redistributed ONLY to the elements involved into the conflict – which is fair,

while in Dempster's rule the conflicting mass is redistributed to ALL focal elements,

therefore even the elements that were not involved in the conflict receive conflicting mass – which is inaccurate.

NOTES, COMMENTS, REMARKS

[Florentin Smarandache]

“Happiness is for the one who makes others happy”

“The Gathas/The Sublime Book of Zarathustra”, by Khosro Khazzi (Pardis), translated from Persian to English by Dr. Parviz Koupai (songs 4-17), reviewed and corrected by Havovi Patel-Panek, Sheila Sylvester, European Centre for Zoroastrian Studies, Brussels, Belgium, 2007. 17 songs (named Gathas) form the doctrine of existential philosophy of Zarathustra. The songs were created 3700 years ago in a language similar to Sanskrit.

New religions emerged from Zarathustra’s ideas, such as the Manicheism (in the third century AD) and Mazdekism – the first communist doctrine (in the fifth century AD). An alphabet (Avesta) formed of 53 signs was developed in the third century for reproducing any sound in that language.

Zarathustra was named Zoroaster by the Greeks. He was born in 1767 BC in the region between the North East of Iran, the South of Tajikistan and the West of Afghanistan, in the Aryan’s land. He had six children. His wife was Havovi. He lived 77 years. He passed years of meditation in high mountains.

Zarathustra wrote 17 songs (called “Gathas”) with meters and poetic rhythm: “happiness is for the one who makes others happy” - Zarathustra, Gathas, song 8, stanza 1.

Zarathustra (recollections)

→Zarathustra’s religion was called Zoroastrian;

→Material world and spiritual word; the material world is ephemeral, the spiritual world is eternal;

→God is neither “omniscient” nor omnipotent; God has created a dynamic universe in which everything is in progression towards perfection;

→People are responsible for their own happiness or misery;

→Wisdom “khratu” means the power that enables people to distinguish between “good” and “bad”;

→Wisdom is better than any knowledge;

→Harmonize your thoughts, words and deeds with the creative forces;

→People have to decide between opposite forces of good and evil;

→Stimulate the thought, awake your brain, widen and refresh your outlook (=prospect) on life;

→ “I realize that You (the God) are the start and the end of existence...”;

→ “The truth does not solely belong to any people, any country, and any race”.

Zarathustra’s God is neutrosophic

Zarathustra’s God is both masculine and feminine; and in general between <A> and <antiA>, as in neutrosophy.

The six attributes of Ahura Mazda (Zarathustra’s God)

Righteousness: Everything has rhythm, Everything follows a ceaseless succession of changes; Fight deception and lies; Don’t stop progress, since without progress, one causes stagnation and creates misery.

Good thought.

Serenity.

Self-Dominance is the power to master the negative and the destructive emotions in one's inner world.

Evolution and Perfection: nothing is static. Everything is in the process of moving and becoming.

Immortality does not mean "forever", but "behind time".

Mithraism

Mithraism was a Persian religion that glorified the Sun (Mithra) and was adopted by the Roman Empire. Mithraism was a religion of mystery, consisting of seven degrees of spiritual elevation. Christianity got inspired from it. Mithra's date of birth (25th of December, the longest night) became that of Christ's. Sunday, which is the day of Sun and holiday in Mithraism, became the holiday of the Christians. Similarly, concepts from Zarathustra were incorporated into Christianity.

Cyrus the Great

→Cyrus the Great, in the 6th century BC, formalized the first *Declaration of Human Rights* (on the Cyrus Cylinder);

→Isaiah 45:1 of the Hebrew Bible says God anointed Cyrus for authorizing the return of the Israelites to Zion, ending the Babylonian captivity; it refers to Cyrus as a *messiah*, being the only non-Jewish figure to be referred as such;

→The empire he created was the largest in the world by then;

→Freedom of faith, languages, customs, owning property, and choice of their place of abode;

→People, animals and plants should be happy and flourish;

→Inner peace;

→The two worlds (material and spiritual) are inter-related.

On the margin of *Thus spoke Zarathustra*

Friedrich Nietzsche, “Thus spoke Zarathustra”, 1883-1885; Translated with an introduction by R.J. Hollingdale, Penguin Books, England, 1972.

→ when you have an enemy, prove that he has done something good for you;

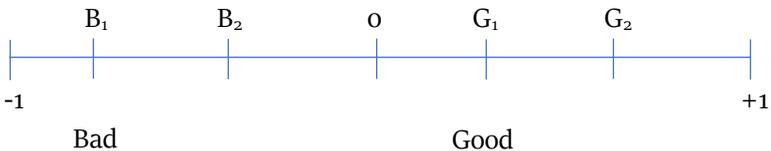
→ when you are cursed, curse back a little;

→ when a great injustice is done to you, then quickly do five little injustices besides; shared injustice is half justice; a little revenge is more human than no revenge at all;

→ metaphores; poetry; much rhetoric; repetitions; short stories; auto-interrogation; comments.

The concepts of **evil** and **good** are used in religions. But pure evil or pure good rarely exist. Most things and events are a blend of evil and good, as in neutrosophy the mixture of $\langle A \rangle$, $\langle \text{neut}A \rangle$, and $\langle \text{anti}A \rangle$, or a degree of $\langle A \rangle$ and a degree of $\langle \text{anti}A \rangle$. In Zarathustra’s Zoroastrian existential philosophy, wisdom (“khratu”) means the power that enables people to distinguish between “bad” and “good”.

In a neutrosophic way one has:



→ B₁ is the badness threshold;

→ G₁ is the goodness threshold;

→ B₂ is the indeterminacy threshold from the badness side;

→ G₂ is the indeterminacy threshold from the goodness side;

where:

$B_1, B_2 \in [-1, 0]$ and $G_1, G_2 \in [0, 1]$,

with $B_1 < B_2$ and $G_1 > G_2$.

Ideas on the Neutrosophic Theory of Evolution as extension
of the Theory of Evolution (compiled or modified from
various scientific literature)

- natural selection and artificial selection
- random mutation, sexual selection, fecundity selection
- microevolution and macroevolution
- Darwin evolution + classical genetics
= modern evolutionary synthesis
- partial evolution and partial involution
- spontaneity and non-spontaneity
- action for an end is present in things (Aristotle)
- struggle for existence (an Islamic man)
- partial variation and partial constancy
- adaptive and inadaptive traits
- specialization (Darwin) and limitation
- evolution by genetic drift
- natural and artificial preservations
- characteristics of living organisms
- survival of the fittest (H. Spencer) and the opportunist
- functionally superior and structurally inferior
- modern evolutionary synthesis (mid 20th century)
- natural selection relies on the idea of heredity
- Mendel's laws of inheritance
- cost of natural selection
- selection and adaptation, reselection and readaptation
(continuous cycle)
- reproductive isolation
- natural selection - the foundation of evolutionary theory
- evolution and involution at the molecular level

- natural selection and deselection operate on heritable traits
- chances of screwing and reproducing
- reproductive rate increases, leaving more offsprings
- heritable (passing from parents to offsprings) and inheritable
- even tiny advantage or disadvantage over many generations become dominant in the population
- natural and artificial environment
- fitness, competition
- camouflage
- individuals that are more fit have better potential for survival
- natural selection acts on individuals and on collectivities
- direct or indirect competition
- the fitness of one is lowered or uppered by the presence of another
- competition within species; competition between species
- species that can't compete either adapt or die;
- room to roam theory: competition may be less important than expansion among larger clades.
- disruptive selection, partial selection
- probability of offsprings for surviving to adulthood
- from many variants, the less fit are eliminated;
- there are different types of selection
- de novo mutation induces new variation
- kin selection
- evolutionary arms race
- changes of environment induces change of temperament
- preadaptation, adaptation, postadaptation

- functionality and dysfunctionality
- some variations are preserved over time, others deteriorate
- *genotype* = having the same type of genes
- a *trait* is governed by a single gene or by the interactions of many genes;
- an *allele* is a version of a gene for a certain trait
- *phenotype* is an organism's genetic make-up (genotype) and the environment in which the organism lives
- competition of limited resources
- gradual change or indeterminate change over time
- the missing link between various species
- isolated or collective life
- theory of regular gradation (William Chilton)
- biological changes through hybridization = transmutation (J.G. Koelreuter)

Neutrosophic Behavior

- Intuition
- Premonition
- Precognition

Left and Right Brain

Although the brain tells you it is not good to do something, you do it anyway – as something else inside you is more powerful than you and leads you. You cannot control yourself, someone else controls you. In psychology it is said that the *emotional brain* is stronger than the *rational brain*.

- addictions and phobias
- “emotional thoughts sound logical”
- a voice speaks something inside of you, other voice inside of you speaks the opposite
- “your internal dialogue, your silent thoughts”
- “the conversation you are having with yourself inside”
- “what you say and think becomes real”
- your inside spirit becomes outside real
- “noise in your head from fear and doubt”
- “orchestra of self-damaging thoughts, feelings inside me”
- internal fights between doing or not doing something
- I feel something in my head that it is not good to do a thing, but something inside me pushes me to do it anyway; a part of me stops me, the other one moves me forward.
- criminals hearing voices in their head ordering them to kill somebody.

Types of Probabilities

- **Objective Probability** $(\mathcal{P}_o(1) = \frac{1}{6})$
- **Frequentist Probability** $(\mathcal{P}_F(1) = \frac{1}{7})$
- **Subjective Probability** $(\mathcal{P}_S(1) = \frac{1}{8})$
- All three types of probabilities related to the casino player John Doe, who rolls the die.
- Examples with personality traits (2 or 3 orthogonal traits).
- Attributes: types of parties, MDCM.
- But today he had a bad day, he’s out of luck, and thus $\mathcal{P}_S(1) = \frac{1}{8}$

Solving a double absolute-value equation
algebraically and graphically

1. Algebraically:

$$|x + 1| + |2x - 3| = 4$$

a) $x + 1 + 2x - 3 = 4$

$$3x - 2 = 4$$

$$3x = 6$$

$$\boxed{x = 2} \text{ valid because } |2 + 1| + |2 \cdot 2 - 3| = 4$$

b) $x + 1 + (-2x + 3) = 4$

$$x + 1 - 2x + 3 = 4$$

$$x + 1 - 2x + 3 = 4$$

$$-x + 4 = 4$$

$$-x = 0$$

$$\boxed{x = 0} \text{ valid because } |0 + 1| + |2 \cdot 0 - 3| = 4$$

c) $-x - 1 + 2x - 3 = 4$

$$4 - 4 = 4$$

$$x = 8 \text{ invalid because}$$

$$|8 + 1| + |2 \cdot 8 - 4| = 9 + 12 = 21 \neq 4$$

d) $-x - 1 - 2x + 3 = 4$

$$-3x + 2 = 4$$

$$-3x = 2$$

$$x = -\frac{2}{3} \text{ invalid because}$$

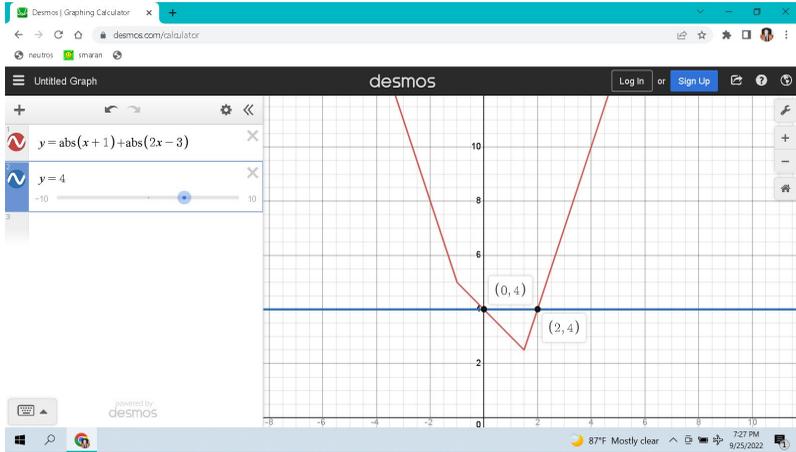
$$\left| -\frac{2}{3} + 1 \right| + \left| 2 \cdot \left(-\frac{2}{3} \right) - 3 \right| = 4$$

$$\frac{1}{3} + \left| \frac{-4}{3} - \frac{3}{1} \right| = 4$$

$$\frac{1}{3} + \left| \frac{-4}{3} - \frac{9}{1} \right| = 4$$

$$\frac{1}{3} + \frac{5}{3} = \frac{6}{2} = 3 \neq 4$$

2. Graphically:



Spargerea codului *Enigmei*

Am citit un articol de Joanne Baker în *Nature* (2018) despre criptologii polonezi uitați de istorie: Maksymilian Ciężki, Guido Langer, Antoni Palluth, Marian Rejewski, Jerzy Różycki, care în timpul celui de-Al Doilea Război Mondial au contribuit la decriptarea *Enigmei* germane.

Este foarte cunoscut Alan Turing, matematician englez, care s-a bazat pe cercetările polonezilor. Există și noțiunea de *Touring Machine*.

Mi-aduc aminte, am învățat la Universitatea din Craiova (1975-1979), la un curs de *Limbaje Formule*, predat de prof. dr. Alexandru Dincă, despre *Touring Machine*, conectat astăzi cu *Machine Learning*.

Desigur, serviciile secrete britanice, americane, franceze și poloneze au lucrat mână în mână cu matematicienii și crypto/decripto-grafii.

n-Independent-Dependent Sources

$S_1, S_2, \dots, S_n, n \geq 2$, each one providing information about an event (or an object, a concept, an idea, a theory, etc.) called *E*.

Some provide degrees of truth from various points of view, others degree of neutrality (or indeterminacy) from various points of view, and the remainder degrees of falsehood also from many points of view.

That's how in our real world everything is evaluated. If some sources are dependent in some degree, then this fact should be taken into consideration when fusing the information they provide.

On dense, rare and nowhere dense sets in anti-topological spaces

[by Tomasz Witczak]

Anti-topological spaces have been defined by Şahin, Kargın and Yücel in 2021. They investigated some relationships and connections between these structures and so-called neutro topological spaces which they introduced. Recently, we have extended their research by analysing the notions of interior, closure, continuity, doorness, density and nowhere density in anti-topological setting. We attempt to compile previous information on density and to add some statements on rare sets. Moreover, we give some new examples of anti-topological spaces.

Encourage Inclusion in the Workplace

→encourage inclusion = fairness, collaboration, respecting the cultural differences, job satisfaction, using diverse skills and experiences;

→long-term strategic relationships;

→we might be wrong (not understanding the customer);

→new knowledge learning;

→continuous learning;

→extenics;

→responsibility and satisfaction;

- personal satisfaction;
- encourage diversity (as a minority myself);
- speak with partners, customers, community;
- flexibility;
- have clear policies;
- training policies;
- see what are customers' need, what are employers' needs;
- respect for all employees;
- cultural learning;
- employee forum;
- if there are underrepresented groups, redress this balance;
- reward employees dedicated to their job;
- aptitude for leaning;
- building networks;
- lead exit interviews;
- volunteer work;
- disseminate equality information;
- review policies, practics and working cultures on a regular basis;
- measure the impact of your actions;
- celebrate achievement;
- build respect.

China's neutrosophic approach

→Analysts always come back to the "Chinese model", a unique phenomenon in the world, thanks to which China, today, is a world power economically, politically and militarily - {inspired and translated from [1]}.

→ Deng Xiaoping combined a communist economy with a market economy. A state controlled economy with an economy dictated by the market. And it worked. Great time.

A Neutrosophic Ideology?

→ "There is no fundamental contradiction between socialism and a market economy", said Deng Xiaoping.

→ "The problem is the following: how to develop production in the most efficient way known to man. We had a planned economy, but our experience proved that having a planned economy in all areas can have a negative effect on the development of production, to some extent. If we combine a planned economy with a market economy, we will be in a more favorable position to liberalize the means of production and to speed up economic growth." (23 October, 1985).

→ "It matters so little whether a cat is black or white. If it catches mice, it's a good cat." [Deng Xiaoping]

The four modernizations

"The four modernizations" (四个现代化) were the pillars on the path to being a great power:

- agriculture
- industry
- science and technology
- national defense.

Poverty doesn't mean socialism!

→ "Poverty doesn't mean socialism. It is glorious to be rich";
→ "Before all else, let us allow a few people to become rich...".
→ ""When the thousands of Chinese students studying abroad return home, you will see how China will begin to transform."

Reference

[1] Cristian Unteanu: "Fabuloasa poveste cu pisici a lui Deng Xiaoping, arhitectul succesului chinez", 2017-2022, <https://adevarul.ro/blogurile-adevarul/fabuloasa-poveste-cu-pisici-a-lui-deng-xiaoping-1768101.html>

China, <neutA>

The Chinese model represents one of the options proposed to the world at this moment of change.

Deng Xiaoping systematically followed the "policy of small steps". If something went wrong, then that part of the experiment could be shut down without harming the others.

As it stands, we can say that China is employing a neutrosophic system: <A>, communist policy. <antiA>, its capitalist economy, and <neutA>, where China finds itself, with all the prospects for the future and victories of the past.

Trei porunci

→Să observi *uncommon features* în *common things*; si viceversa: *common features* în *uncommon things*;

→Să te identifici cu ceea ce vezi intens;

→Să comunici cu lucruri și vietăți prin imagini în mintea ta și prin emoții care se vor transforma în cuvinte.

Between <A> and <neutA> there is not a clear frontier – this is the first Neutrosophic Sorites Paradox (NSP₁). Then, between <neutA> and <antiA> there is not a clear frontier too – this is the second Neutrosophic Sorites Paradox (NSP₂).

The starlight suffers a partial refraction and partial reflection when travelling through the space.

We can construct a Relativity for the ultimate sound speed in water (for submarines), or for ultimate sound speed in the air (for the bats, who see with their ears), just by replacing "c" with "s" (ultimate speed in that medium).

Alors on peut faire ça: augmenter les masses des certains éléments du cadre de discernment selon celui qui prend la decision (en dependent de ce qu'il veut/considère), et diminuer les masses d'autres éléments (selon celui qui prend la decision). On pourrait considérer une troisième group d'éléments tels que leurs masses ne sont pas modifiées.

Zarathustra's God is both masculine and feminine; and in general between <A> and <antiA>, as in neutrosophy.

The Chinese model represents one of the options proposed to the world at this moment of change. Deng Xiaoping systematically followed the "policy of small steps". If something went wrong, then that part of the experiment could be shut down without harming the others.

As it stands, we can say that China is employing a neutrosophic system: <A>, communist policy; <antiA>, its capitalist economy; and <neutA>, where China finds itself, with all the prospects for the future and victories of the past.

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