florentin smarandache

nidus idearum

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Florentin Smarandache

Nidus idearum.
Scilogs, II: de rerum consectatione
(second edition)

Brussels, 2016

Exchanging ideas with Valentin Boju, Victor Christianto, Octavian Cira, Ervin Goldfain, Madad Khan, Yale Landsberg, Marcella Lucchetta, Dan Mitruț, Mircea Monu, Tudor Păroiu, Ion Pătrașcu, Valeriu Perianu, Paul Pistea, Gunn Quznetsov, Dmitri Rabounski, Belo Riecan, Juan Rodriguez, Ovidiu Ilie Șandru, Raj Singh, Mircea Eugen Șelariu, Haibin Wang

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Peer-Reviewers:

Dr. Mumtaz Ali

University of Southern Queensland, Australia.

Prof. Ion Pătrașcu

Fratii Buzesti National College, Craiova, Romania.

Prof. Ștefan Smărăndoiu

Tache Ionescu School, Rm Valcea, Valcea, Romania

Prof. Octavian Cira

Aurel Vlaicu University of Arad, Arad, Romania.

FOREWORD

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 – 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 *second book of scilogs* collected from my nest of ideas, one may find new and old questions and solutions, some of them already put at work, others dead or waiting, referring to many topics (see *Topics*) in different fields of research – email messages to research colleagues, or replies, notes about authors, articles, or books, so on – in an eager pursuit (*consectatio*) for meanings, reasons, and purports of (scientific) things (*res*).

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

F.S.

Special thanks to all my peer colleagues for incitant and pertinent instances of discussing.

CONTENTS

TOPICS

1 wholeness vs. oneness

Email from Yale Landsberg:

Up until now, I have been trying to see neutrosophy in terms of my *Templix going away from* and *coming towards* perspective. And its unit square face side of your neutrosphic cube. About a year ago, independently of the *Templix*, I began to think about the nature of *wholeness* versus *oneness*, and as I did so I began to notice some curious aspects not normally paid much attention to by academics, let alone lay folks.

That said, I am at the beginning to see some possible inklings of applying some kind of wholeness and/versus perspective to some of your neutrosophic ideas. However, all this is very preliminary. So, I was curious to know if you or other *neutrosophs* had as yet done any work in that perhaps fruitful area?

2 thesis-antithesis-neutrothesis, neutrosynthesis

Reply:

Tell me more about your *Templix*. So far, no such work has been done involving neutrosophy.

Also, see my work on generalizing the classical dynamic *Thesis, Antithesis, Synthesis* to *Thesis-Antithesis-Neutrothesis*, and *Neutrosynthesis*:

http://www.gallup.unm.edu/~smarandache/NSS/ThesisAntithesisNeutrothesis.pdf.

3 templix puzzle, Mobius-ity

New Email from Yale Landsberg:

While I have a math minor, and an M.S. in Operations Research, I am in no way a mathematician, at least in no normal sense of that term. Instead I am what I like to call myself, a rational mystic. E.g., if you visit http://truetyme.org/TheBigWhy.html you will find a clock that I got patented & the circumstances in which it came. Another discover that is now patent-pending is found at http://mobius-ity.us. And since then, I have been able to extend that to now include a way of strategically creasing a Mobius Strip which can end up being a cube-like 3D enclosure whose inside is its outside and vice versa, thus having only one side. I have also figured out a simple way to mathematically represent wholeness and oneness as two distinct concept united at a common point of unity, such that infinitesimals are seen as the reciprocals of numbers greater than 1 in a very self-educating way. One that shows a property of infinity not normally appreciated, also a way of very palpably distinguishing measuring from counting. And last, but not least, I have over some forty years re-discovered what I think both Newton and Leibniz used to create their calculi.

As for the *Templix*, I think the best way to introduce it to you is via what I call the *Templix Puzzle*... Imagine being in a room *x* that is suddenly on fire. You quickly notice a door to hopeful safety, *y*. Thus, that emergency circumstance engenders both a need to be going away from *x* & a complementary intention to be coming towards *y*.

That need can be seen as a “going away from" operator working on *x*, and that intention can be seen as a "coming towards" operator working on *y*, yes? If so, why not try to see what may be meant by the operators combinatorially operating on what they are already operating on? E.g., if the going away from *x* need is represented as *0x* & if the coming towards *y* intention is represented as *1y*, can we not use combinatorials to explore the meanings of "going away from going away from *x*", *00x*, versus "coming towards going away from *x*", *10x*, versus "coming towards coming towards *y*", *11y*, versus "going away from coming towards *y*", *01y*? There is no reason other than cognitive inertia.

And if we can, which of these, *00x*, *10x*, *11y*, and 01y for that circumstantial need to be going away from *x*, and want to be coming towards *y*, is a must, which a must not, which a should, and which a should not? That question took me three weeks to solve correctly, but some people I have been able to meet over the past 25 years or so have solved it in a little as 12 seconds.

It is a question that no professional mathematician I have yet met has ever even been willing to consider worthy of thought -- and even the former Chief Architect of the IBM 360, a Physics Ph.D., whom I worked for, many years after he left IBM, (he was the one who solved the puzzle in 12 seconds) had no interest in discussing the answer further. It seems to greatly unnerve lots of smart and well-educated people, the way you, e.g., use partial axioms the way others use partial derivatives.

But I am hoping that you will quickly see its dynamic fractal-like potential and its decision-making and guidance & control and many other possibilities. And how it might be used with my unity of wholeness and oneness method to advance the appreciation & boundaries of neutrosophy.

Time will tell.

4 ideas in neutrosophy

Email from Yale Landsberg:

If we can continue our correspondence, have ever heard of something called a *fexpr*, something that was in the original LISP programming language. The reason I ask is that I just came across some interesting, uncoventionally ideas about it, very much ignored by the computer language establishment, but to me potentially very neutrosophic.

New Email from Yale Landsberg:

Is there anything Neutrosophic about Mobius Strips and/or Mobius about Neutrosophy? E.g., as there can be partially Euclidean partially non-Euclidean geometries, can there also be partially Mobius partially non-Mobius strips?

The reason I ask, Prof. S.,[1] is that I think I may have stumbled on a way to construct the latter hybrid.

Maybe.

[1] See *Proceedings of the Introduction to Neutrosophic Physics: Unmatter ...* by editor Florentin Smarandache. *Neutrosophic Physics* means about physical notions and ideas of the form <A>, <antiA> and <neutA>, as in neutrosophy (contradictory and neutral notions and ideas in physics) - *n. ed.*

5 neuplosion

New Email from Yale Landsberg:

I have just reached out to Indranu Suhendro per his interesting Subjective Monad Reality which seems to me to be very Neutrosophic. Can you point me to more about him?

Also: I have been corresponding with a retired Professor of QM who discovered a quantum angle to go with a chronon and hodon.

He asked me to better describe the construction of my Mobelisk method of creating a Mobius Strip, which I am also passing along to you. As you cb see mine has the 180 degree twist concentrated at the pointed tip rather than giving the twist uniformly distributed across the strip. That said, a neutrosophic notion just popped into my he'd that I thought you might want to comment on...

If one goes through a process of first creasing and the uncreasing a Mobelisk derived Mobius strip, does that, Prof. S., not bring to mind a kind of "neuplosion", i.e., something that is simultaneously both imploding and exploding? And thus, a kind of neutrosophic process of constant renewal?

6 neutrosophic epistemology

Florentin Smarandache to Victor Christianto:

Prof. Hidezumi Terazawa said that Pauli principle was superficially violated. What do you think about the strong assertion that any theoretical physical law is less than 100% true?

Victor Christianto's answer:

Please note that Prof. Terazawa wrote "superficially" with a purpose, apparently, he would like to say that there is underlying cause for it. Yes, I agree that no theory is 100% true. Even general relativity or quantum mechanics have their own problems. Another way to put it is that Godel's incompleteness theorem applies to any scientific theory, the meaning is that no theory is fully complete or fully consistent. As I wrote few months ago, I think you should write a paper on this issue of application of Neutrosophic logic to epistemology of science.

7 God and science

Florentin Smarandache to Victor Christianto:

By the way, let's have a dialogue about theology and science. You're very smart in both.

I want to ask you about the possible connection between God and Science:

- Are the scientific laws (in physics, chemistry, biology, etc.) designed by God or not?

For example, let's consider the standard model of the atom, where the electrons orbits the nucleus. Did God impose the electrons to orbit the nucleus?

- Spinoza, a philosopher, said that "God = Nature". What can you say about this?
- Take the gravity. Did God impose that each cosmic body has a gravity?
- Was the universe created by God? If so, why did he create it this way and not in a different way?

8 God's role in the universe

Reply from Victor Christianto:

There are many different ways that people can imagine for the role the God played in the universe:

1. He is the designer, although the actual process may take place billions of years according to evolution theory (*intelligent design*).

2. He created the physical laws, and these physical laws govern evolution and big bang, etc.

3. He created the vacuum sea, and the primordial vacuum spontaneously created the Universe

4. Or He is the Creator and Originator of the Universe and all life included. This choice can be interpreted as literally 6 days creation (young earth) or evolutionary creation.

You may wish to choose other options, but to me option number 4 is what Bible told us. The problem is to reconcile the Creation belief with actual astronomy data. That is why I wrote in several papers that *John 1:1-5* told us that Jesus Christ (*Logos*) was the originator and agent of creation of the universe. My interpretation is that *Logos* acts as cosmic sound, and this cosmic sound match perfectly with Cosmic Microwave background data.

5. Another possibility is that the primordial fluid was there before the Universe was created, and God reconfigured this primordial fluid through *bara* (act of creation), according to *Genesis 1:1-2*. And it seems to me also possible to develop a model based on Navier-Stokes turbulence to explain this primordial fluid.

I can send you my recent papers discussing this subject. Of course, many details are still missing, that is why I continue doing research. If you wish, this topic may be developed as a philosophy paper, or as introduction to young students.

Other dialogues with Victor Christianto

Florentin Smarandache:

Another question: Did God predestine us: when to die, where, how should be our life? Or, does God knows all these (when and where we'll die, how our life will be)?

Victor Christianto:

That is a delicate question. There is a tension between predestination and free will. I believe *yes*, God knows everything that will happen in our lives, regardless of free will that He gives to us.

Let us compare it with chess game, no matter how we play the chess, God can read ten or twenty steps ahead our moves. But the good news is He play the chess not to defeat us, but for the sake of our happiness.

Florentin Smarandache:

If God known everything what will happen in our life, then for Him it is alike looking at an old movie. Then He cannot change anything into it (because if he does, the old movie will not be the same) ...

Victor Christianto:

I think it is not like an old movie, but like an interactive television. God with His goodness can intervene

a situation when things go out of hand. By intervention, He returns stability to entire system. I believe that God does not like chaos.

Chaos can happen because 7 billion men and women try desperately to fulfill all their needs.

Since the beginning, God returns order from chaos. That is why I do not like chaos theory.

10 trends in human society

Are there patterns in history, sociology, social sciences, philosophy, etc.? Yes, indeed. For example, I observed that the family is disintegrating and becomes more a single-person family… The human family tends towards the animal style sexuality…

These conjectures are deduced from my traveling through more than 50 countries in six of the seven continents Asia, Africa, North America, South America, Europe, Australia, and these conjectures try to synthesize the behavior of society and people who live in. (One can complete with examples and original new ideas, or original new patterns.)

- Socio-political experiments, medical experiments.
- Conspiracies, plots.

Will there be a universal (unique) religion in the future? Will there be a unique language? Will there be the whole globe as a single country?

- What for some countries are insurgents, for other countries are heroes.
  And reciprocally.

- The system of alliances of countries enters in the game.
- A conquering over other conquering over other conquering as the earth lays over lays...
- In a war, every belligerent part wants peace, but each one wants that the peace be as it pleases.
- Any empire increases and then decreases.
- The strongest one is right and imposes its laws, customs, culture, religion.
- Everybody hates dictators but when he / she comes to power he / she likes to lead as a dictator.
- Everybody is against corruption, but when he / she has the possibility of gain by being corrupted, he / she likes corruption.
- Denaturalization of the defeated country history.
- The war defeated is always wrong; the war winner is always right.

How the World and History would have been evolved if in some main wars the defeated would have been winners? (for example, if the ottomans have won at Vienna in 1529, or the Germans and Japanese would have won the Second World War, etc.).

- Today we have a mixture of religions, ideologies, philosophies.
- History is written by the leading class on the shoulder of the lower classes.

History is full of blood, of battles, of dead.
What for? And why?
For power, glory, and riches.

- Oculte maneovres.
- History is written by vaincers in their interest, but unrealistically. The vaincers accuse the defeated of war crimes, but they „forget" theirs!
- The primary goal of Mass-media is to manipulate, do a propaganda, and disinform.
- Corruption can not be eliminated since society is lead by humans.
- The more society advances, the more democracy we have, but paradoxically the more surveillance of the population (electronically!)...
- Religions will become more liberal (less faith constraints) in the future.

Yes, religion spectrum becomes more complex: more and more sects, religions split in various ideatical (devine) branches and so on.

- Always it is imposed (sometimes by military force) the society of the most powerful.

No domination is for ever, but a domination overlaps on another domination, and so on. Similarly, no empire, or dictatorship, or totalitarianism lasts infinitely and their out-laws and abuses will later be revealed.

- Always there will be a conflict between individual and collective, or between particular and general. And, as in neutrosophic logic, we'll see a degree of particular, a degree of general, and a degree of uncertainty.

- Big cultures ignore and shadow small cultures. Big cultures swallow small cultures.
- Interest is the measure of all things (paraphrasing an Antic aphorism)
- Always there will be a fluctuation between the degree of state intervention and the degree of state nonintervention in private business. And a buffer of indeterminacy degree in between them.
- Family will mostly tend towards single individuals changing sex partners, changing friends and accumulating enemies.
- Always we'll have contradictions and conflicts between countries, cultures, individuals, economies etc.
- A conflict between patriotism and cosmopolitism. A varying degree between nationalism and cosmopolitism, independence and imperialism.
- History repeats itself at different levels, in spiral.
- How today's species would look over 1000 years?

11 family / familia

Is family converging towards singles (or sexual group)?

Disappearance of the marriage. People will live more and more alone. Family disintegrates to singles with multi-sex partners. Hybrids of cultures, ideas, religions, life styles (home-hybrids) by globalization.

*

Am crescut pe vremea „puritană", aș zice, într-un exces de zel. Fetele se măritau virgine, familiile erau unite

(mic procentaj de divorţuri). Astăzi, nevestele fac copii şi soţii nici nu ştiu dacă ei sunt taţii biologici. Familia viitorului va fi un talmeş-balmeş: fie sex în grup, fie fiecare cu partenerii lui sexuali, fie singuri, fie homo, lesbi...

E mai bine? E mai rău? Schimbările sociale devin radicale, iar generaţia mea – învechită.

Nesiguranţa e maximă. Se divorţează astăzi după 20-30 de ani de căsnicie normală, chiar fericită, aş zice. Oameni au devenit mai individualişti. Un membru al familiei cere prea mult de la celălalt.

Musulmanii ţin cu dinţii de societatea lor în care femeia e subordonată bărbatului, altfel ar ajunge şi ei la haosul familial din vest. Oare femeile care trăiesc singure în vest sunt mai fericite decât cele cu *hajib* în ţările musulmane?

Mă îndoiesc, dacă mă gândesc la procentul de sinucigaşe şi sinucigaşi din vest – incomparabil ridicat faţă de ţările islamice.

12 microscopic paradoxist world

A microscopic world is characterized by paradoxism:

a) a particle being in two distinct places in the same time;
b) a particle being and not being in one place simultaneously
c) two particles being in the same place simultaneously.

13 equilibrium and disequilibrium

Every empire grows, grows until it reaches the level of breaking down. The Ottomam Empire was very close to conquer Vienna too in 1529, as it happened in 1453 when Constantinople fell and The Eastern Roman Empire (the Bezants) disintegrated.

How the World would be today if Vienna fell?

It is interesting to studying how the world would developed if in some wars or revolutions the defeated people would have won?

Mixtures of various religious ideas from different faiths gave birth to new religions. For example, Sikhism in India, founded by Guru Nanak in the 16th century, who combined Hindus with Islamic elements.

Emperor Mughal Akbar (1556-1605) tried to synthesize Hindus, Muslim, Jainism, Sikhism and Jesuit ideas.

All system, could be human or not, are in a continuous movement between equilibrium and disequilibrium.

14 sociological neutrosophic interpretations

Each society will oscillate between a smaller or bigger degree of totalitarianism (meaning smaller or bigger control by the leading power of the freedom of speech etc.) It also has degrees of development, of auto-destruction, and of uncertainty respectively - as in neutrosophic logic.

Axiological value is “imposed” by a leading clan; it is not natural. It is an oscillating degree between value and

non-value. Small countries are ping pong balls for the big countries! Small countries are passed from under a big country under another big country, and so on – depending on the international political conjuncture.

Big countries install puppet presidents and puppet governments in small countries.

Always the fight and hate among nations, unfortunately. The fights and propagandas of powers and superpowers against underdeveloped countries.

There are historical cycles, each new cycle at a superior level with respect to the precedent.

There is a percentage of social programs, s %, which fluctuates from a period to another in history. Too many social programs may create a category of people that tries to take advantage of them, while too few social programs may create a category of neglected people by the society.

The winners write history, but it is not correct. Both should write history: the winners and the defeated for the truth be impartial.

Conflict between individual and society: they attract and reject each other. The further they are from each other, the more they attract each other, the closer they are to each other, the more they reject each other.

Always a fight of great powers for re-dividing the spheres of influences will be in the world.

15 dynamic social categories

In any society, there are three categories of people: those who like the society, those who don't like it, and the third category who neither like nor dislike it.

The first category supports the society, the second category revolt / fight / protest against it in order to change it, while the third one (which is a kind of ignorants) slides partially to the first, partially to the second category, and partially still remain ignorant people.

These three categories are dynamic, in a continuous movement from a category to another.

16 is history deterministic or random?

Let's suppose that if Hitler was not born, would the Second World War haven't occurred? Or another "Hitler" would have been born (in order to start the Second World War)? Was the Second World War a historical accident or a historical necessity?

Similar question for other historical events, or for interpreting events.

> History is interpreted from the point of interest of those in power. When the power changes, the interpretation of history changes accordingly. Criminals in history are celebrated as... heroes. Why did they kill others? For their glory and for capturing foreign resources.

If an historic event H didn't occur, would had been an alternative to H which would occur?

A Historic Event is interpreted upon its result:

a) if it is victorious, the persons that started it are considered heroes and those which opposed it retrogrades;

b) and if it is a failure, then the opposite.

Later on, it counts what people re-interpret it, since they give it a significance according to their interests.

17 *regulation, buffer, non-regulation*

How much should the state interfere in the private business? How much regulation?

The thesis that the market regulates itself does not always work. See, for example, the 2008 great banking crisis. If *r%* is the percentage of regulation, *n%* the percentage of non-regulation, then there is a buffer between them, *b %,* of ambiguity, as in neutrosophic logic. Normally, $r + b + n = 100\%$. The triple (*r, b, n*) is continuously adjusting / changing.

18 *domination*

Always the fighting for domination: one group of people to dominate another one.

- a country to dominate other countries;
- a culture to dominate other cultures;
- a religion to dominate other religions.

19 *societal patterns*

- Mass-media is a great power in the world. Those who control mass-media, control people's consciousness.
- The percentages of liberty *(l %)* and of non-liberty *(n %),* and of indeterminacy (*i%,* neither liberty nor non-liberty) are in continuous fluctuation.
- The stress increases as modernization increases.

- Freedom is relative, a mixture of liberty and nonliberty (slavery).
- The true bank rubbers are the bank CEO's themselves.
- The Law of the Strongest applies in nature for survival.
- The Law of the Minimum Effort applies in the working places!
- All problems in the world are because of the attempt of some to dominate others.
- Always the fight for supremacy within a group, within a society, within a country, within the globe, and in the future within star systems, galaxies, universe.

  When n countries $C_1, C_2, \ldots, C_n$ are in (military or economic or political or ideological or financial etc.) Controversy, every country would like Peace, but each country wants the peace in its way $P_1, P_2, \ldots,$ or P_n respectively.

  How to find a grey area between all peace conditions $P_1 \cap P_2 \cap \ldots \cap P_n$ in order to reconcile they all?
- By wars or sanctions or embargos the stronger countries impose / enforce their peace conditions to the weaker countries.
- World's map is frequently changing. Some countries are breaking down, others unite.
- Laws are made in the advantage of some people, and in disadvantage of others.

- The media always will have a degree of information and a degree of disinformation, besides its aim of propaganda.
- Everybody interprets history upon his own interest!
- Intelligentsia chooses between safety and freedom, when having too much of one, dreams of the other.

20 the power

- The most powerful imposes his will as "natural" order.
- That who gets in power creates the regulations that favor him.
- People get tired of the same individual who stays too much in power, no matter how good he is!
- The law of the strongest one applies on the planet.
- Always some people would try to (militarily, politically, ideologically, culturally, economically, scientifically etc.) conquer others.
- Always the wish of power countries to dominate weaker countries.
- Always the contradiction between individual and society.
- *The history is alternative.* History is presented in a way by an establishment, and in another way by the people.
- Let C1 and C2 be two countries with adversary regimes. If a political event PE occurs in country C1 against its government, it is saluted by the C2 government and people involved in this event are

declared heroes. But, if C1 and C2 are countries with friendly regimes, the political event PE occurring in country C1 against its government is ignored or condemned by the C2 government and people involved are declared traitors.

- What happens at a big scale also happens (has an equivalent) at a small scale.
- Different cultural patterns yield different thought patterns, paraphrasing the Sapiro-Whorf hypothesis referred to language.
- There are many artists, writers, and scientists of high caliber. The quality difference between them is mostly negligible. Yet, only a trifling part of them get international acclamation. Who are those who succeed? Mass-media is the biggest power in the society.
- If an event *E* occurs, media presents it through the prism of those who control the media. It is inflated or deflated according to the interest of the media owner.
- *Dominance.* Always there is an attempt of the Powers to dominate others.
- *Rivalry.* Always there will be rivalry among Powers.
- *Justice.* Always one applies the Law of the Strongest one.

21 adaptation

The Romanians have the quality of surviving for thousands of years. Migrators and occupants passed over their territory. This people would re-adapt in any hostile situation.

22 regulation and deregulation

The regulation and deregulation, centralization and descentralization are permanently to be in a balance. When one is going too high, the other is pushing to bring it down. A percentage of regulation and a percentage of deregulation characterize each field.

The more totalitarian is a system, the higher regulation. Yet, a system with no regulation is an anarchy.

A steady percentage of regulation would not work either, but it should be flexible – changing according with the new needs. The centralization imposes more regulation.

23 clans

The effect of clans is alike a democratic institution, but they are on the negative side, which is they can deteriorate democratic institutions, which is why: neoliberalism proponents who always think that less state-regulation is better, actually make those clans can grow bigger. That is how neoliberalism is very wrong, but I don't investigate yet if they do that by purpose (less state regulation, in order those clans really can stir things to their advantages).

Neoliberalism has to be controlled. Regulation has also to be controlled. What happens is that regulation will

limit the neoliberalism, but if regulation is too harsh then neoliberalism should fight. So, always a mutual fight between the opposites. The truth should be in between.

So, each economy should have a percentage $n\%$ of neoliberalism and another percentage of regulation $r\%$, where $n+r = 100$.

They are flexible and vary from a period to another, I mean when one increases a little the other decreases a little.

Actually the fluctuation of neoliberalism percentage should vary between $[n_1, n_2]\%$ and the regulation between $[r_1, r_2]\%$.

I think it should be our economical mathematical theory. Of course, the question is: how to find n_1, n_2 and r_1, r_2?

There should always be an equilibrium between neoliberalism and regulation - as if one increases too much, the other should fight for re-balancing.

Then, like in neutrosophic logic: three components: we should also include anticlan (ac) law, so:

$$n + r + ac = 100.$$

24 pluri-economics

Florentin Smarandache:

Pluri-economics (including financial markets) is a new idea and it should work in the real world. Pluri-economics is like multi-space with its multi-structure, each economic space works two ways: *independently* as internal market, and *dependently* as global market.

See also the neutrosophic transdisciplinarity, which might inspire you for trans-economics.

Marcella Lucchetta:

It would be interesting to apply the theory with micro-macro foundations.

25 oligopoly, multipoly

Victor Christianto:

In my opinon, multipoly theory as 'extended' form of duo-poly theory is not quite new, because economists have talked about oligopoly (in opposed to 'free market'). To make this chapter in 'tune' with the previous chapters, perhaps you can add more notes on its link with 'city growth pattern'. Thanks for this new chapter.

I think it is true that today City development is affected by the forces of capitalism (large industries) rather than for the benefits of the people itself.

Florentin Smarandache:

I'll do more research about oligopoly.

Yet multi-poly sometimes can converge towards oligopoly, but other times does not. So they are different.

If you have more critics to multipoly please tell it to me so I can see if I have an answer.

26 synonymity test

In a similar way to, and an extension of, the Antonym Test in psychology, it would be a verbal test where the subject must supply as many as possible synonyms of a given word within a as short as possible period of time.

How to measure it?

The spectrum of supplied synonyms *(s),* within the measured period of time *(t),* shows the subject's level of linguistic neutrosophy: *s/t.*

27 probleme deschise în fizică

Email către Paul Pistea.

Am găsit în *Zbl* recenzată o lucrare de-a dvs. despre formula $E=mc^2$, independentă de timp [Pistea, Paul; Postolică, Vasile, *About constancy of natural constants and the universe models*. (English) Zbl 1199.83001, Stud. Cercet. Ştiinţ., Ser. Mat., Univ. Bacău 18, 221-232 (2008)].

Unii zic că această formulă relativistă nu reflectă realitatea. Eu cred la fel. Energia ar trebui să depindă şi de viteza de mişcare a obiectului, nu doar de viteza luminii. Şi m-am întrebat: de ce să depindă energia unui obiect de viteza luminii?

Idei nastrușnice aveți:

- dacă există vid, atunci viteza luminii în vid nu poate fi masurată deoarece vidul cu lumina în el nu mai e vid; intrebarea mea: atunci vidul este negru?
- constantele naturii nu sunt constante; foarte probabil (să existe parametri nedescoperiți de care ele să depindă), deci, constantele nu sunt universale;
- dacă o gaură neagră nu lasă nici lumina să iasă din ea, înseamnă că ar trebui să fie foarte luminoasă!... aici se naște paradoxul că: o gaură neagră este... albă!

- teorema lui Gödel nu este corectă ; parcă am citit ceva primit prin email ; era de la Dvs.?

Nici legile fizicii nu sunt universale (cum susțin unii).

http://fs.gallup.unm.edu/ScienceLibrary.htm.

Vă rog să apăsați în acest link de mai sus să vedeți dacă îl puteți accesa din Germania, deoarece din Romania situl meu nu poate fi accesat de ceva vreme.

Multe legi ale fizicii sunt valabile în spații ideale, perfecte... dar în realitate nu avem asemenea spații exacte, perfecte. Deci, multe legi ale fizicii funcționează doar aproximativ și nu-s universale.

Ce demonstrație ați avea pentru acest lucru?

*

Pentru că spuneți despre folosirea logicilor multivalente în fizică, v-aș propune să utilizăm logica neutrosofică:

http://fs.gallup.unm.edu/neutrosophy.htm

și chiar am putea publica un articol comun, dacă vă interesează.

În logica neutrosofică, o propoziție are un procent de adevăr, un procent de fals și un procent de nedeterminare.

Am interpreta acest lucru astfel: de exemplu, în legătură cu constantele:

O constantă este adevarată în procent de t%, nedeterminată în procent de i% și falsă în procent de f%.

Ca la fotbal: probabilitate de câștig, probabilitate de meci egal și probabilitate de a fi înfrânt.

Sau am putea considera multispațiile mele: într-un spațiu constanta este adevărată, în alt spațiu constanta este nedeterminată, iar în alt spațiu, constanta este falsă.

28 dialectică & neutrosofie

Mircea Monu întreabă:

Cum s-ar traduce *universal absolute main body?*

Răspuns:

În traducere liberă: "întregul univers absolut."

Mircea Monu continuă:

...care, dacă am înţeles bine, este o premisă a Dialecticii neutrosofic-taoiste?!

Parcă Neutrosofia era altceva decât Dialectica, deci, scum putem vorbi despre Dialectică neutrosofică-taoistă?...

Răspuns:

Dialectica este unitatea/combinarea contrariilor. Neutrosofia este o generalizare a dialecticii și înseamnă combinarea contrariilor împreună și cu neutrariile dintre ele.

Taoismul (sau daoismul) a apărut înaintea dialecticii și studiază, de asemenea, opozitele, dar și ordinea și armonia din univers. Deci, e ceva mai general decât dialectica.

Filozofia naturală studiază esența universului (în concepția chineză). "Dialectica neutrosofică-taoistă", de fapt, înseamnă combinarea dintre neutrosofie și taoism, adică studierea contrariilor și a neutralelor dintre ele, dar și a ordinei și armoniei din univers. Deci, noțiunea de dialectică este aici în sens general, nu strict filozofic.

29 neutrosophy and empathy

Short review of a book by Victor Christianto.

This book is written by one of my colleagues, Victor Christianto. I know him since 2005, and our friendship has resulted in more than seven books, published between 2006-2013.

This book discusses, among other things, about how to find a common ground for dialogue with Muslim people. This is a crucial issue to maintain peace, since the Christian and Islam adherents comprise of around 50% of total population of this world. Therefore, unless there is peace between Christian and Muslim people then there is no meaningful peace in this world.

In my theory of Neutrosophy, then one can find neutrality between two opposite ideas. Similarly, one can also expect to find neutrality between Christianity and Islam, and also between Christianity and Jewish religion.

In Neutrosophy, the opposites <A> and <antiA>, together with their neutralities <neutA>, can live together in harmony.

The Neutrosophy cultivates the empathy. Therefore, there is hope to work for religious peace in the world.

I wish that this book will be found useful not only for many Christian people, but also for scholars alike.

30 bine & anti-bine

Comentariul lui Dan Mitruț în grupul Yahoo ro_filosofia, 22 mai 2003.

De ce să fie greu de explicat existența simultană a binelui și a răului?! Daca se merge pe ipoteza *rău* = o defecțiune a lui, pervertirea acestuia, nu văd de ce nu ar coabita, în fond suntem în dualitate, iar aparențele contrarii sunt complementare.

Și aici vă invit în logica neutrosofică, s-ar putea să fie mai puțin enigmatic pentru căutatorii de certitudini științifice: http://fs.gallup.unm.edu/neutrosophy.htm.

31 classification des paradoxes

J'ai étudié une classification des paradoxes en fonction de l'endroit où ceux-ci apparaissent lors de la formulation/résolution d'un problème.

Je crois qu'il serait intéressant de faire un parallèle avec la neutrosophie afin de montrer sa généralité.

Exemples :

- *Paracosmie* (paradoxe dû à une représentation du monde inadéquate). Dans le cas de raisonnement sous incertitude, plutôt que de modéliser sur les réels et l'ensemble puissance, on modélise dans le cadre de DSmT, avec hyper-réels et hyperpower set.
- *Paralogisme* (paradoxe dû à un défaut ou impossibilité de raisonnement). Résoudre les problèmes de type "Sorite", "Zadeh", "Twenty birds" avec les règles de type DSmT ou raisonnment neutrosophique.

- *Dilemme* (paradoxe dû à une impossibilité de répondre vrai ou faux). En logique neutrosophique on rend indépendantes les valeurs de vérité et on prévois une (des) dimension supplémentaire pour les indéterminations.

32 paradoxism & neutrosofie

Florentin Smarandache:

Dilema în logica neutrosofică poate fi reprezentată prin valorile logice: adevăr=0.5, fals=0.5, nedeterminare=1, adică adevărul și falsul sunt egale, dar nedeterminarea 100%!

Puteți accesa cartea mea despre neutrosofice (prima parte este filosofie; de la filosofie am ajuns la logică, matematică, și acum la aplicații inginerești ale prelucrării informațiilor contradictorii în cibernetică fiind invitat la NASA și NATO - cercetări spațiale și militare pornind de la... filosofie!):

http://fs.gallup.unm.edu/eBook-Neutrosophics6.pdf

Cartea a fost tradusă în chineză deoarece are legatură cu daoismul, budhhismul.

Împreuna cu un profesor chinez, Feng Liu, am scos o carte de Dialoguri Neutrosofice:

http://fs.gallup.unm.edu/neutrosophicDialogues.pdf.

Oricum, văd că sunteți exact în tema care mă obsedează pe mine și-n care-mi continui cercetările - însă aplicate în cibernetică (asta se caută mai mult în occident).

Paradoxul imposibilității: "Dacă orice este posibil, urmează că și imposibilul este posibil".[2]

Mai atașez un fișier cu paradoxuri cuantice. Am și niște paradoxuri semantice/lingvistice; în site-ul: http://fs.gallup.unm.edu/mathematics.htm.

Valeriu Perianu:

Mai puțin însă exaltarea nejustificată pe marginea mișcării paradoxiste în artă, care, după cum veți constata în cartea mea, frumosul este în firescul lui ca paradox și, deci, nu mai are sens o mișcare de a releva ceea ce este un truism deja.

Florentin Smarandache:

De acord cu Dvs. că frumosul este în firescul său un paradox, dar nu întotdeauna. Frumosul poate fi și în neparadox. Paradoxismul, spre surprinderea multora, și mai ales a mea!, se manifestă în prezent în... știință![3]

Cu paradoxismul am fost invitat la NASA în noiembrie trecut, iar în luna mai voi merge la NATO. Surprinzător, nu-i așa?

Detractorii paradoxismului nu mai au nimic de zis acum, sau, oricum, nu mai contează, lumea nu-i mai ia în

[2] Acest paradox este denumit în Enciclopedia de Matematică "Paradoxul Smarandache" (publicată în 1998 pe hârtie); se poate accesa și pe Internet: Eric W. Weisstein, "Smarandache Paradox", în CRC Concise Encyclopedia of Mathematics, CRC Press, Boca Raton, Florida, p. 1661, 1998 - *n. ed.* http://mathworld.wolfram.com/SmarandacheParadox.html.

[3] Vezi Dezert-Smarandache Theory: http://fs.gallup.unm.edu/DSmT.htm - *n. ed.*

seamă. Despre reputația organismelor internaționale precum NASA și NATO nu mai este discuție!

Paradoxismul este folosit la prelucrarea informațiilor contradictorii: în medicină (pentru determinarea diagnosticelor), procesarea imaginilor contradictorii din satelit, în militărie la tragerea la țintă (dirijarea proiectilelor folosind multi-sensori), în robotică.

Paradoxismul în filosofie l-am surprins parțial în cartea mea de neutrosofice (partea întâi).

Valeriu Perianu:

Arta este paradoxismul manifestat în toate speciile sale, de la poezie la arhitectură.

Florentin Smarandache:

Nu toate artele se bazează pe paradoxism.

Există și arta tautologică, bazată desigur pe tautologii - eu am scris "distihuri tautologice", dar și distihuri paradoxiste, etc.

Valeriu Perianu:

Eu sunt filosof și poet și totdeauna am încercat să-mi înțeleg atât rațiunea cât și simțirea. Constatând că separat ajung inevitabil la contradicții, am încercat să construiesc o logică sensibilă pe structura unei teorii a ființei universal paradoxale ce se consumă și împacă finalmente într-o neființă estetică.

Florentin Smarandache:

Da, ființa, dar și neființa, au un dram mai mare sau mai mic de paradoxism.

Paradoxismul cuprinde frumosul urâtului și urâtul frumosului deopotrivă.

Insolubilitatea problemelor solubile, și reciproc.

Interiorul își atinge exteriorul, și invers.

<A> și <AntiA> au puncte comune.

În neutrosofie se reconciliază contrariile, se neutralizează: subiectivismul obiectivismnului, or obiectivismul subiectivismului, de pildă.

Astea țin și de paradoxism. Paradoxismul prezintă contrariile în sens pozitiv, nu negativ.

Valeriu Perianu:

În primul mesaj spuneați că Dilema în logica neutrosofică poate fi reprezentată prin valorile logice: adevar=0.5, fals=0.5, nedeterminare=1, adică adevărul și falsul sunt egale, dar nedeterminarea 100% !, iar în ultimul mesaj ca în neutrosofie se reconciliază contrariile, se neutralizează, deci faceți două afirmații contrare.

Florentin Smarandache:

Nu sunt contrare, <logica neutrosofică> are mai mult aspect tehnic, pe când <neutrosofia> aspect filosofic.

În primul rând, logica neutrosofică, NL, măsoară valoarea de adevăr a unei idei ori propoziții la un anumit moment.

NL(dilema)=(0.5,1.0.5), ceea ce în logica fuzzy nu poate fi măsurat (fiindcă acolo suma componentelor trebuie să fie 1). În dilemă indeterminarea este maximă.

Neutrosofia este dinamica logicii neutrosofice. De pildă, când măgarul lui Buridan vrea s-o ia, sa zicem, spre stânga în primul moment valoarea neutrosofică de adevăr este NL (dilema1)=(1,0,0), în al doilea moment, ezită și vrea s-o ia spre dreapta, NL(dilema2)=(1,0,1), pe urmă începe să

fie nedecis, NL(dilema3)=(0.8,0.2,0.8) [indeterminarea apare], nedecis și, mai mult, indeterminarea crește iar valorile de adevăr/fals scad, NL(dilema4)=(0.6,0.4,0.6), și tot așa, NL(dilema_n)=(0.5,1,0.5), iar în final poate ajunge la NL(0,1,0) - i.e. adevărul și falsul s-au neutralizat, iar indeterminarea a triumfat total.

Valeriu Perianu:

Ori indeterminarea se menține 100%, ori se neutralizează. Cum rămâne?

Florentin Smarandache:

Este vorba de valorile de adevăr și fals care se neutralizează reciproc, nu de indeterminare. Indeterminarea nu se neutralizează, ci crește la maxim.

*

The Medieval paradox, called Buridans Ass after Jean Buridan (near 1295-1356), is a perfect example of complete indeterminacy. An ass, equidistantly from two quantitatively and qualitatively heaps of grain, starves to death because there is no ground for preferring one heap to another. The neutrosophic value of ass decision, NL = (0.5, 1, 0.5).

Valeriu Perianu:

Dilema, așa cum ați prezentat-o, este clasică, nu neutrosofică.

Florentin Smarandache:

"Valoarea de adevăr" a dilemei este neutrosofică, nu clasică, pentru că nici în logica Booleană, nici în cea fuzzy, ori fuzzy intuiționistică, nu se acceptă ca suma componentelor să depășească 1. Pe când aici, 0.5+1+0.5=2>1. În logicile clasică, fuzzy și intuiționistică fuzzy nu există

'nedeterminare', ci doar adevar și fals. M-am referit la "valoarea de adevăr a dilemei", nu la "dilema" însăși.

Valeriu Perianu:

Indeterminarea este completă în toate cazurile, iar soluția este suspendarea judecății. Eu văd în conceptul dvs. o filosofie și o logică neutră, plasată în intervalul neutru dintre conceptele opuse (acolo unde, așa cum spuneați, exteriorul atinge interiorul și invers).

În cartea mea sugerez că între conceptele contrarii trebuie să existe un spațiu de grație care permite coexistența formală și materială.

Florentin Smarandache:

Desigur. În neutrosofie este denumit <NeutA>, adică nici <A>, nici <AntiA>.

Valeriu Perianu:

Sensibil, armonia este asigurată de frumos prin artă.

Florentin Smarandache:

Există și armonia contrariilor.

Valeriu Perianu:

Dar dacă părăsim experiența esteticului, antagonismul se reia ca efect al revenirii la logica implicației materiale. Oricât ar părea de straniu, gândirea obișnuită (nespecializată) sesizează greșelile culte ale logicii formale pentru care nu are drept calificare decât intuiția.

În fine, aștept deci clarificări și tema eseului pe care să vi-l trimit, eventual, mărimea lui.

Dialog cu Tudor Păroiu.
Florentin Smarandache:

Vorbiți de convențional și neconvențional. Sunt de acord cu aceste două concepte opuse.

V-ați gândit la cazul de ambiguitate, adică atunci când nu știm dacă este convențional sau neconvențional? Sau, la cazul când este o combinare de convențional și neconvențional?

Am citit email-ul dvs. anterior unde chestionați particulele fără masă: dacă sunt particule sau nu? Depinde de convenție. La fel cum s-a procedat cu planeta Pluto (a fost considerată planetă conform unei definiții anterioare a noțiunii de "planetă", dar când Asociația Internațională de Astronomie a schimbat definiția planetei (a schimbat, deci, convențonalul), Pluto a fost scoasă din cadrul plenetelor (deși Pluto e tot acolo pe cer, în sistemul nostru solar).

Tudor Păroiu:

Convenționalul și neconvenționalul sau orice contrarii pot fi separate, simultane, limitate și opuse cu sau fără neutrul lor în raport de convenții și cel care face convențiile, ca realitate ele sunt simultane, dar noi și nimeni nu poate decât să le reflecte în raport de capacitatea noastră sau a celui care reflectă, iar în neconvențional ele sunt identice, simultane, opuse, existente și inexistente, etc. și neapărat nelimitate.

Florentin Smarandache:

Există simultaneitate infinită a aceleiași entități? Sub diferite stări (pentru a ne referi la o entitate fizică)?

Tudor Păroiu:

Orice entitate-univers respectă legea simultaneității care spune că orice entitate-univers este sumă finit-infinită de entități-univers în convențional, infinit de infinit ca realitate și nelimitată neconvențional.

Florentin Smarandache:

Extensica înseamnă rezolvarea problemelor contradictorii în orice domenii.

S-ar putea vorbi despre Rezolvarea Contradicțiilor (dintr-un domeniu oarecare) fie în Convențional.

Fiindcă unele contradicții în Convențional nu sunt contradicții în Neconvențional.

*

Către Tudor Păroiu:

Ați discutat mai mult combinația <A> și <antiA> în convențional și neconvențional.

Ce-ar fi să studiați numai <A> și <neutA>, sau numai <antiA> și <neutA, sau toate trei împreună <A> și <neutA> și <antiA>?

V-aș propune, dacă vă interesează, să scoatem o lucrare comună (vezi paradoxismul și neutrosofia - pe care le-am dezvoltat): *existența* și *neexistența* (simultan):

- spirit + material = ?
- entitate + nonentitate = ?
- infinit + finit + nedeterminat (necunoscut dacă este finit sau infinit);

- în general <A> + <antiA> + <neutA>, unde <A> este un concept, <antiA> este opusul său, iar <neutA> este intermediar între <A> și <antiA>.

Am putea scoate o broșurică pe aceste analize. [Eu am făcut de pildă, în fizică, materie+antimaterie = nematerie.]

34 t, i, f *components*

Florentin Smarandache:

Why did I considered three components, *T, I, F,* in Neutrosophic Logic? Simply, from practice: at a sport game: you win, you loose, you may get a tied game. At voting: there are people who vote PRO, vote CONTRA, or BLANK vote (vote for all candidates on the list - they don't choose anyone) / BLACK vote (vote against all candidates on the list) or don't even vote. Neutrosophic Logic came from practice. Clearly, *I* is split in the voting process into uncertainty (blank vote), paradox (black vote), and completely unknown/undefined (absentees from voting).

Also, *I* is connected with the law of included middle (the opposite of classical law of excluded middle), something which is neither true nor false, but in between.

35 *Lupasco logic vs. neutrosophic logic*

Filokratos:

I see better what you mean about dynamic NL, but there is still a fundamental difference with Lupasco's dynamics. I believe measuring truth values at different times and places means that you are using modal operators

with NL, such that it can be temporal, deontic, "dynamic" in the sense of van Benthem for up-dating beliefs, etc. Modal versions of NL are thus perfectly valid.

Florentin Smarandache:

These logics depend on the type of operators defined on their field of action.

In temporal logic the truth values depend on time.

In deontic logic the operators are "it ought to be that" and "it is permissible that", or versions of these, to see if a proposition is obligated or permitted.

In modal logic the operators are "it is possible that" and "it is necessary that" to see if a proposition is possible or necessary.

Similarly, in temporal neutrosophic logic the truth values of a proposition depend on time, i.e. *T(t), I(t), F(t),* where *T, I, F* are now functions of time.

In special neutrosophic logic the truth values of a proposition depend on space, i.e. *T(s), I(s), F(s),* where *T, I, F* are now functions of space (place), because a proposition, say "It is raining", can be true in Lausanne, but false in New Mexico at the same time.

There can be deontic neutrosophic logic and modal neutrosophic logic respectively if one constructs similar operators but adjusted to the neutrosophic field (i.e. three infinite-components). In such a way, one can define all kind of operators in each logic, obtaining a new logic.

Filokratos:

But Lupasco does not do this. What happens if instead of "measures the truth values of <A>, <Anti-A> and

<Neut-A>" you write simply "measures <A> and <Anti-A>". You would find, if you did, the degree to which A and Anti-A were actual and potential, and the reciprocal relationship between actualization and potentialization. The value of Indeterminacy would reflect the overall dynamics.

Florentin Smarandache:

For the class of propositions with unknown, imprecise, vague, subjective, conflicting variables this principle works: more indeterminacy less dynamicity, and reciprocally, less indeterminacy more dynamicity.

For the class of exact, scientific propositions - there is no dynamicity and no indeterminacy.

Filokratos:

But it would not "add" to the Lupasco logical values, which remain in the standard interval, since greater than 100% actualization, or less than 0% is not possible.

Florentin Smarandache:

Lupasco logic and neutrosophic logic are like two intersecting circles.

They have a common part but also each one has a part which the other doesn't.

If you take only one source of information (because more sources of information could bring inconsistency among them), a good/precise measurement tool, and complete infor-mation, then the sum might add up to 100%. In neutrosophic logic I let it open (depending on the proposition and the sources of information about it, the sum of components can be less, equal, or greater than 100%).

Filokratos:

In the epistemological world, truth, falsity, and indeterminacy can add to 300% because they are unreal, Meinongian objects of thought.

Florentin Smarandache:

Not because they are unreal, neither they are Meinongian objects of thought (every psychological state contains an intended object toward which the mental event is semantically directed), but because of subjectivity, of multiple (sometimes contradictory) sources of information, of different (sometimes conflicting) tools of measuring an idea, of various points of view an idea is analyzed from.

See an example: Suppose a new kind of chocolate is selling on the market. Florentin, Joseph, and Mark taste it. According to Florentin this new kind of chocolate is 70% delicious, but according to Joseph it could be 70% not delicious, while for Mark it could be 70% ignorant (not caring about it much). Various sources of information, which are subjective, that's why the sum of the three components can add up to 300%.

Filokratos:

It is probably not even proper, as I once suggested, to apply mathematical renormalization techniques to them (you never replied to me on this point!), but I would appreciate hearing from you on this.

Florentin Smarandache:

I feel that I answered it to you. It is similar to your other question that there are cases where there is no

indeterminacy, and I said yes, but in those case, we say I = empty set (if I was a set) or zero (if I was a single element).

I did not say to apply or not to apply it. For example, the normalization is always done in fuzzy logic. Similar answer, yes, it is possible to do (re)normalization in neutrosophic logic (one divides each component by the sum of all three) to have the sum 100%; it depends on the proposition we study. If the proposition is not para-consistent neither intuitionistic, then we can apply the normalization; otherwise we don't.

Filokratos:

These last comments are NOT meant to criticize your achievement in any way. If anything, they show that your work, more honestly than others, shows that all logics except Lupasco are Aristotelian metalogics.

Florentin Smarandache:

Non-Aristotelian logics are logics that do not consider a two-valued logic system (true and false only, as Aristotle). Fuzzy logic, neutrosophic logic, paraconsistent logic and others are non-Aristotelian.

Filokratos:

The fact that people are spending a lot of time in these epistemological, binary worlds is thus very true, but it may be very bad for them and the rest of us.

Neutrosophic logic is not neutral in this sense. If it were, we would have stopped talking long ago. There is an "opening" to the Lupasco logic.

Florentin Smarandache:

Yes, it can be on opening for Lupasco's, seeing how the truth values of <A> and <Anti-A> are varying during the dynamicity they are involved in.

36 included multiple-middle

Filokratos:

But now is the point at which I need another statement from you about your view of Lupasco, based on the above. In this way, the true "included middle" may in fact emerge.

Florentin Smarandache:

Many times, the "included middle" emerges, but still there are enough cases when it doesn't, as we discussed previously.

37 dynamic opposition

Filokratos:

Your note started me thinking again about your True-Indeterminate-False formulation. I was sure you had captured something essential with your concept of Indeterminacy, but I had difficulty reconciling it with the Lupasco principle of dynamic opposition (with which I am comfortable as an onto-logic of energy.)

Florentin Smarandache:

We, everybody probably analyze the same thing from different perspectives/angles - that's why these cuts into an idea are somehow incompatible (horizontally versus vertically) ...

But we have common points as well.

Filokratos:

Now, I had identified your True and False with the degree of actualization (A) and potentialization (P) of a pair of contradictory phenomena, but what then would be the reference for Indeterminacy?

Florentin Smarandache:

Indeterminacy would be the neutral part (in between actualization and potentialization), i.e. the ideas neither actualized nor potentialized.

Because, when an idea arises, we don't get only potentialization (opposition) to that idea, but also ignorance (neutralities... which simply don't care about it, *n'est-ce pas*?!). By indeterminacy I also understand the distance between (A) and (P).

Filokratos:

I also asked, why does Smarandache need non-standard intervals?

Florentin Smarandache:

I use the non-standard subsets (not necessarily intervals - for being more general) in order to catch the absolute truth {NP(absolute truth) = 1+ , where 1+ = 1+epsilon} as well, and to distinguish the absolute truth from relative truth {NP(relative truth) = 1}; of course 1+ > 1.

Filokratos:

Come again, why does Smarandache need non-standard intervals for the sum of his 3 variables, leading to values between 0 and 3?

Florentin Smarandache:

Because I leave room to contradictory sources of information, I mean somebody (source S1) may asserts that the truth (or say degree of actualization in Lupasco's system) of an idea could be for example 0.7, source S2 can percept the falsehood of this idea as 0.8, source S3 believes from certain parameters that the indeterminacy of this idea may could be 0.4 [in many situations we don't have precise tools to measure the degree of truth, or of falsehood; here it is again needed the indeterminacy component].

Filokratos:

Why not renormalize them to the interval 0 to 1?

Florentin Smarandache:

In the case when there are not contradictory sources of information (or of analysis) we can normalize the sum of the three components to 1. Actually, I did not say that $t+i+f=3$, but $t+i+f\leq 3$ (which means the sum can be 1 too).

But the sum can be less than 1 as well for incomplete information/analysis on that idea: $t+i+f<1$.

Filokratos:

Lupasco and alia have stated that the logic of the included middle applies to complex, dynamic systems whereas simple ones obey either Aristotelian logic or a simple paraconsistent logic (e.g., of paradox).

Florentin Smarandache:

Lupasco, Nicolescu extend and re-interpret Hegel's and Marx's dialectics. In fact, my neutrosophy goes on and also generalizes the dialectics. Paraconsistent logic and the dialetheism (which says that some contradictions are true)

use paradoxes, right. Modern logics do not obey the Aristotelian logic, and in neutrosophic logic almost all classical principles (I believe all, but I did not check) are denied - not only the excluded middle!

By the way, the "Multiple-Valued Logic" international journal has dedicated the whole issue of June 2002 (Vol. 8, No. 3) to the neutrosophy and neutrosophic logic (about 200 pages): two papers by me, one by an American, and another one by a French. This means an international recognition of these new emerging terms.

Filokratos:

This implies that there must be a more or less continuous gradient of complexity between types of systems which requires some sort of metric.

Let us define for this purpose an interaction tensor which measures the degree of dynamic opposition from (almost) zero to (almost) 1.

Florentin Smarandache:

I forgot to tell you that the neutrosophic operators are not fixed, but defined differently according to the problem of study.

In conclusion, the negation operator (that one which brings Lupasco's potentialization of an actualized idea) may vary. Therefore, even the contradiction (Lupasco's dynamic opposition) can be measured differently.

See an example: Let M be an idea, we can say that NP(M) = (t, i, f) in an easy way. Then, the opposite of M, let's note it by Anti-M, will be evaluated as NP(Anti-M) = (f, i, t) in one negation operator, but using another

negation operator NP(Anti-M) = (1-t, i, 1-f) which can be normalized or not (the sum of components equal 1) according to the idea we study.

Thus, there are more types of contradictions for the same idea.

Filokratos:

At any point on this scale, the reciprocally determined values of actualization and potentialization will apply, and when each is equal to the other (= 1/2 interaction tensor), a T-state (included middle) may emerge from this point of relative maximum contradiction.

Florentin Smarandache:

I see these reciprocally determined values of actualization and potentialization as converging towards each other and meeting in a limit point between 0 and 1, but the maximum contradiction is when actualization is closer to 1 and potentialization closer to 0 (the father they are from each other, the higher contradiction).

When they approach each other the degree of contradiction diminishes and disappears when they encounter (and formed a new idea). Dynamics result from a continuous change of the degree of contradiction between actualization and potentialization - from a continuous oscillation of (A) and (P), which approach and go far from each other permanently (but finally they converge towards a limit point in between 0 and 1; of course, they more approach than go far from each other).

The limit (A) and (P) converge to (as two sequences on numbers in mathematics) is not necessarily 1/2, but a

number in the interval [0, 1], and this is because one idea (actualization) may balance/weight more or less than its opposition (potentialization). The limit depends on each specific idea. I see this limit as an organic (not mechanic) mixture of (A) and (P).

If (A) is stronger, has a lot of evidence, then the limit point will be closer to (A); if (A) doesn't have enough evidence and the percentage of truth is not that high, then the limit point is closer to (P).

There are cases in science when these dynamics of oppositions don't work as in Lupasco's logic. For example:

Suppose a conjecture <C> arises in mathematics, "Conjecture <C> is correct". This may be true or false. The opposite of this would be <Anti-C>, or "Conjecture <C> is incorrect".

Researchers try to solve it, believing it is either true or false (oscillations, study = dynamics). If somebody proves it is true, then the limit point of <C> and <Anti-C> is actually <C>, not a point in between [0, 1] and in particular not 1/2. Similarly if it is proved that <C> is false then the limit point of the dynamics of <C> and <Anti-C> is <Anti-C> (these are cases of extreme right or extreme left limit points).

In other situations, it may be no limit point at all (therefore no T-state) resulting from the dynamics between <M> and <Anti-M>. This occurs for undecidable ideas/propositions (see the proof theory, Godel's Theorem of Undecidability), where one can not say much (or

nothing) about the truth value of <M> neither about the truth value of <Anti-M>.

Filokratos:

The new principle postulates that indeterminacy is inversely proportional to dynamics!

Florentin Smarandache:

Dynamics mean movement/change and speed. The bigger speed and the bigger the movement, the bigger dynamics. Because by indeterminacy I understand the distance between (A) and (P), I would define the following new principle:

INDETERMINACY VARIATION IS DIRECTLY PROPORTIONAL TO DYNAMICS!

The more dynamics {oscillations/movements between (A) and (P)}, the more variation of indeterminacy. When (A) and (P) are approaching each other, the indeterminacy is decreasing, and reciprocally. When (A) and (P) meet in their limit point, the indeterminacy is zero. When (A) and (P) converge (contradiction decreases), indeterminacy decreases; and when (A) and (P) diverge (go far from each other, therefore contradiction increases), indeterminacy increases. The following principles result:

1) Indeterminacy is directly proportional with contradiction.
2) Indeterminacy dynamics are directly proportional with Lupasco's dynamics of oppositions.
3) Indeterminacy converges to zero when Lupasco actualization and potentialization converge to their limit point.

How can I explain this principle?

The indeterminacy forms the neutral part, the part which is neither (A) nor (P), i.e, what is in between. When an idea M arises (it's truth value is 1 or close to 1) (actualization), then its opposition has the truth value 0 OR close to 0 (potentialization).

The distance between (A) and (P) is big, therefore indeterminacy is big (because the idea is not well known, there are many ignorant or neutral ideas in between). Then little by little the potentialization increases (more opposition) and thus (P) is moving towards a limit point in between 0 ad 1, in the same time the novelty of this idea (actualization) decreases (thus moving towards that limit point).

Because the distance between (A) and (P) decreases, the indeterminacy decreases too. Of course, the idea M which arises, may sometimes be not close to 1, but its opposition Anti-A is kind the symmetric of this with respect to the middle point of the interval [0, 1]. But the distance between M and Anti-M is bigger at the beginning than later (whe they approach little by little). I am pretty sure that not any particular idea M and its opposite Anti-A converge towards a limit point, they might never converge.

Filokratos:

This means that where there is no dynamics, just an ideal or abstract yes-no.

Florentin Smarandache:

By dynamics I understand the permanent moving or oscillations of (A) and (P).

Filokratos:

Your Indeterminacy is maximum.

Florentin Smarandache:

I would say that where is no dynamics the indeterminacy is constant.

Filokratos:

There is no basis for deciding where one is in the "oscillation" between the two independent terms.

Where the dynamics is essentially complete, as in a quantum particle or a real human conflict, Indeterminacy is essentially nil.

Recall that the Heisenberg Principle is one of (epistemological) uncertainty, but nothing is undetermined.

Florentin Smarandache:

Indeterminacy comprises the uncertain, the vague, imprecise, unknown, unclear, ambiguous, undecided, hidden parameters from quantum theory, etc.

Filokratos:

Thus, Indeterminacy = 1 - Interaction.

Then I have a COROLLARY. The less the dynamics, the lower the absolute probability of the emergence of a T-state, simply because the "degree" of overall oppositional energy is low.

38 inconsistency

Let's consider two axioms A, which is true scientific proposition [for example 1=1 in base 10], and B, which is a false proposition from a scientific point of view [for

example 1+1=3 in base 10]. Then, the axiomatic system resulting from them, say S1, will be inconsistent because:

a) "A is deducible in S1" because "A->A" is true,

b) and "non-A" is also deducible in S1 {because B is false and the falsehood involves anything in classical logic, i.e. B->non-A is true};

thus, in the same axiomatic system one has propositions "A" and "non-A" that are both deducible, therefore a contradiction, hence the system is inconsistent.

Similarly, the other two axiomatic systems: S2 (formed by non-A and B), S3 (formed by non-A and non-B) will be inconsistent, while S4 (formed by A and non-B) will be consistent. My long way question was: what about propositions from neutrosophic logic that form an axiomatic system? For example: suppose axiom "A" is a proposition which is only 0.3 true, 0.6 false, and 0.1 indeterminate, while axiom "B" is a proposition which is only 0.5 true, 0.4 false, and 0.1 indeterminate. What kind of axiomatic system one gets?

One gets a neutrosophic axiomatic system.

39 inconsistent systems

Juan Rodriguez:

I have a question of a more conservative nature, which I've been thinking about for some time, involving the search of absolute truth, may it be mathematical, physical, or metaphysical.

It is possible to have 2 consistent systems of axioms with only one axiom (or a few) that are different from each

other (non Euclidean geometries, ZF set theories, different foundations for analysis, etc.). Both may be said to be equally "true" from say, a mathematical point of view - i.e. they are consistent. But in reality, only one can be true (I know interesting structures arise if you don't pay attention to this idea, i.e. nonconsistent mathematics, but for my purposes, we will say that only one must be true).

Florentin Smarandache:

For a high school student it looks to be a high level of fundamental math that you know...

Juan Rodriguez:

I wonder if it is possible to find absolute truth about a certain set of axioms in the following way (for simplicity, I will use 2 axioms, though more can be used and may even be necessary):

find axioms A and B, and complete 4 axiom systems:

1) A and B

2) A and notB

3) notA and B

4) notA and notB.

Make sure, then, that 3 of these axiom systems are inconsistent or contradictory (in other words, they must be false).

The remaining system is then consistent, and therefore, only 2 alternatives are possible: either this "special system" is true in an absolute sense, or non of the axiom systems (or axioms) are possible, and therefore the symbols introduced do not exist (this seems unlikely). This would assure absolute truth! And the symbols and

relationships could represent scientific, or metaphysical entities such as God.

Florentin Smarandache:

Let's consider two axioms A, which is true, and B, which is false.

Then, the axiomatic system resulting from them, say S1, will be inconsistent because: if A->M is true, thus M is true, but also B->non-M is true since B is false (false involves everything in Boolean logic), therefore in the same axiomatic system one gets M and non-M.

Similarly, the other two axiomatic systems: S2 (formed by non-A and B), S3 (formed by non-A and non-B) will be inconsistent, while S4 (formed by A and non-B) will be consistent.

40 exemple de geometrii mixte / hibride

Știu că Ion Pătrașcu și Claudiu Coandă lucrează în coordonate baricentrice în Geometria Euclidiană (printr-un punct exterior unei drepte se poate duce numai o singură paralelă la acea dreaptă).

În Geometria Hiperbolică (printr-un punct exterior unei drepte se pot duce mai multe paralele la acea dreaptă) se folosesc, de asemenea, coordonate baricentrice.

Geometria Eliptică: printr-un punct exterior unei drepte nu se poate duce nici o paralelă la acea dreaptă.

Există și aceste geometrii hibride[4] (s-au scris cărți și articole): http://fs.gallup.unm.edu//geometry.htm, adică o combinație a geometriilor dinainte: printr-un punct

[4] Geometrii Smarandache - *n. ed.*

exterior unei drepte se pot duce mai multe paralele la acea dreaptă, iar prin alt punct exterior nici o paralelă la acea dreaptă. Sau, printr-un punct exterior unei drepte se poate duce numai o paralelă la acea dreaptă, iar prin alt punct nici o paralelă, și prin un al treilea punct mai multe paralele la acea dreaptă; etc. (și alte combinări de acest tip referitoare la una sau mai mai multe axiome geometrice).

Am putea studia doar un caz particular numai, de exemplu: un subspațiu geometric (puncte și drepte) euclidean, și alt subspațiu geometric hiperbolic - vreau să zic, Geometria Hibridă.

În acest exemplu este formată dintr-o parte euclideană și o parte hiperbolică [te gândești la un model euclidean, de pildă planul real R^2, și sfera lui Riemann (geometria hiperbolică, unde linii sunt cercurile mari ale sferei, iar "parallel" înseamnă că nu au puncte comune); apoi, investigăm cazul când planul este tangent sferei, ori când planul este secant sferei; sunt interesante de studiat punctele comune celor doua subspații.

41 orto-omologie

Ion Pătrașcu:

Problemele deschise, conjecturile ar trebui să contribuie la dezvoltarea domeniului orto-omologiei. Am putea generaliza din 2D in 3D (spațiul cu trei dimensiuni)?

Adică, trebuie să propunem un spațiu nou de cercetare pe aceeași temă.

42 triunghiuri omologice

Ceea ce este interesant în această carte, *Triunghiuri Omologice,* pe lângă faptul că aduce multe lucruri noi, este ca pe unii să-i facă să se îndrăgostească de demodata geometrie plană. Aceste filtre: omologie, ortologie, și ortoomologie sperăm să facă o interesantă incursiune în geometria elementară și mai mult decât elementară a triunghiului.

43 excentricitate

Email către Mircea Eugen Șelariu.

Frumoasă această umplere continua! Nu se poate generaliza în 2D la: transformarea continuă a oricărei curbe închisă C1 la o altă curbă închisă C2 care o conține pe prima în interior, având punctul excentric E în interiorul lui C1? Sau mai general, de la o suprafață S1 la alta S2, sau de la un corp în 3D: transformarea continuă a unui corp limitat K1 la un alt corp limitat K2 care îl include pe primul, iar punctul excentric E să fie în K1?

Și în 3D ori nD.

S-ar defini drepte trecând prin E și îndreptate în toate direcțiile, să zicem dreapta d1 intersectează cele două corpuri în două puncte A1 și respectiv B1 pentru o specifică direcție, dreapta d2 intersectează cele două corpuri în punctele A2 și respectiv B2, ș.a.m.d., apoi extinzând/ construind un alt corp trecând prin fiecare punct intermediar dintre Ai și Bi, precum și dintre A2 și B2, foarte aproape de A1 (segmentele A1B1, A2B2, ..., AiBi se împart în părți proporționale).

44 fractional calculus

Întrebare:

În mod clasic, avem funcția *f* derivată de 2 ori, de 5 ori, de 5.74 ori (*fracționar*). Dar funcția *f* derivată de -2 ori, sau de -5 ori, sau de -5.74 ori (*fracționar negativ*)?

Ervin Goldfain răspunde:

În mod clasic, vorbești de "n-fold" integrals și "n-fold" derivatives, unde "n" este natural. "Fractional calculus" lucrează cu operatori de integrare sau diferențiere generalizați la ordine arbitrare. Așadar, ordinul de integrare sau diferențiere poate fi orice număr real pozitiv sau negativ.

45 factorials

Generalizări ale Factorialului. Un exemplu:

(5/2)! = (5/2)(5/2-1)(5/2-2) = (5/2)(3/2)(1/2).

Alt exemplu: 4.37! = (4.37)(3.37)(2.37)(1.37)(0.37)

Adică scădem 1 din numărul inițial, apoi iar scădem 1, și tot așa până nu se mai poate scădea 1; apoi înmulțim numerele obținute.

Mai general:

4.37!(0.82) = (4.37)(4.37-0.82)(4.37-0.82x2)(4.37-0.82x3)...

și tot așa până nu mai putem scădea, că ajungem la numere negative, apoi înmulțim acele numere.

Și mai general: putem înainta și la numere negative, până la o limită dată:

(-3.25):4.37!(0.82)(-3.25) = (4.37)(4.37-0.82)(4.37-0.82x2)(4.37-0.82x3) ... (4.37-0.82x9)

46 *neutrosophic degrees*

In the Cognitive Science, there is a degree of going away from *x* (degree of negation), a degree of coming towards *x* (positiveness), and also a degree of undecidedness (neither going away from *x*, nor coming towards *x*) - as in neutrosophic logic (or, philosophically, in neutrosophy).

And so on, one can define the Sm-*n*-acci Function, where *n*-acci Sequence is 1, 2, ..., F_n, where F_i are the Fibonacci numbers, and $N_{(n+k)}$ = the sum of the previous *n* terms. Then, the number $m = SN(n)$ is the smallest *m* such that $n \mid N_m$.

47 *unmatter and unparticle*

The connection between 'unmatter' and 'unparticle' is explained in details in this paper: "On Emergent Physics, 'Unparticles' and Exotic 'Unmatter' States," by E. Goldfain and F. Smarandache, Prog. Phys., Vol. 4, 10-15, 2008.[5]

Unparticles have very odd properties which result from the fact that they represent fractional field quanta. Unparticles are manifested as mixed states that contain arbitrary mixtures of particles and antiparticles (therefore they simultaneously evolve "forward" and "backward" in time). From this, the connection with unmatter.

Using the fractal operators of differentiation and integration we get the connection between unparticle and unmatter.

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[5] 'Unmatter' was coined by F. Smarandache in 2004, who published three papers on the subject. (n. ed.)

48 dark matter

Q: Isn't dark matter only speculative in order to support the STR at the cosmic level?

A: It is like the tale of the Emperor who had no clothes on him, but he believed he was dressed in the finest clothes and nobody dared to tell him the truth. Until an innocent child exclaimed: the Emperor is naked!

49 binary stars

Binary stars [two stars that revolve around a common center of gravity] on the same orbit, held at a constant speed by their gravity: how would it be the so-called curved space herein according to the General Theory of Relativity?

50 superposition principle

The Superposition Principle, that in a linear system at any point traversed by two sets of waves the resultant disturbance is the sum of the two component disturbances, does not apply in the General Theory of Relativity.

51 SC-potential

A new type of potential for nucleus, which is different from Coulomb potential or Yukawa potential, is introduced. This new potential[6] may have effect for radius range within $r = 5\text{-}10$ fm. For experimental verification of this potential, we find possible applications in the context of Condensed Matter Nuclear Reaction.

[6] Smarandache-Christianto – *n. ed.*

According to Takahashi's research, it is more likely to get condensed matter nuclear reaction using cluster of deuterium (4D) rather than using D+D reaction (as in hot-fusion, in this process Coulomb barrier is very high).

In recent work, Takahashi shows that in the TSC framework it is also possible to do CMNR not only with DDDD, but also with DDDH, DDHH, DHHH, or HHHH, where the reaction can be different. In other words, TSC can be a mixture of heavy and light water (as in neutrosophic logic). More interestingly, his EQPET/TSC (tetrahedra symmetric condensate) model, Takahashi can predict a new potential called STTBA (sudden-tall thin barrier approximate) which includes negative potential (reverse potential) and differs from Coulomb potential.

The SC-potential, which has sinusoidal form, can be viewed as a generalization of Takahashi's TSC/STTBA potential.

52 S-denying in quantum mechanics

Email to Dr. Gunn Quznetsov, Chelyabinsk State University, Ural, Russia.

Dmitri Rabounski and I did S-denying in relativity and got various signatures. What about doing S-denying in Quantum Mechanics?

If the statement <A> is "through a point exterior to a line there is only one parallel line passing through that point" (Euclid's fifth axiom), then <nonA> is surely a statement which is a negation of the previous one, i.e. <nonA> is "it is not true that through a point exterior to a

line there is only on parallel line passing through that point".

<nonA> is an invalidation of <A>, i.e. <nonA> = i(<A>); but there are many invalidations of <A>, e.g.:

1) "through a point exterior to a line there are infinitely many parallel lines passing through that point" (Lobacevsky);

2) "through a point exterior to a line there is no parallel line passing through that point" (Riemann);

3) "through a point exterior to a line there is a finite number of parallel lines passing through that point" (Smarandache).

But a statement may have a set of validations, and a set of invalidations (negations).

In QM there are strange behaviors, which gave me the idea of using this S-denying in QM, see hybrid or mixed geometries.[7]

53 scientific truth or metaphor?

The famous relativistic characterization "Spacetime tells matter how to move; matter tells spacetime how to curve" [John Archibald Wheeler, 2000] is very beautiful as a philosophical or poetical metaphor, but realistically it is untrue.

[7] See also: Ion Pătrașcu, A Model of Smarandache Geometry in Quantum Mechanics, Joint Fall 2010 Meeting of the American Physical Society Ohio Section and AAPT Appalachian and Southern Ohio Sections, Marietta College, Marietta, OH, USA, 8-9 October, 2010 – *n. ed.*

54 particle alpha

Another Email to Dr. Gunn Quznetsov.

The fact is that there exists this neutrosophic logic (NL) which accepts paraconsistent information as in QM. See: http://fs.gallup.unm.edu//neutrosophy.htm.

I wanted to say that you cannot use any other multi-valued logic, except NL, where to describe that particle alpha is detected, and particle alpha is not detected, or unsure/indetermination about the particle alpha.

Let's say that Φ = particle alpha is detected (in an observation), and we have NL("Φ") = (0.6 = detected, 0.3 = indeterminate, 0.7 = not detected); in fuzzy logic or in other logic the sum of components has to be 1, while in NL it can be up to 3.

If you have another observation about particle alpha, let's say: NL("Φ") = (0.9, 0.1, 0.8), then you can combine the two observations in order to fusion these two results using a NL operator.

This way of looking at QM from many observations helps in combining the values of all observations and getting a final result.

55 zero region energy?

Florentin Smarandache:

I read the Bo Lehnert's book "Revised Quantum Electrodynamics", Nova, 2013, and he supports the non-zero field energy in vacuum; can it be connected to the microwave background radiation?

Dmitri Rabounski:

No, this is another case which has a connection to neutrosophy. The microwave background is mere an electromagnetic field, not something of vacuum. A non-zero electric field of vacuum means the neutral state of energy and matter (vacuum) may not always be neutral but manifests itself through the interaction with another matter whose state is not neutral. In other word, the neutral state of vacuum is not a "point state" but a "region of states" which can vary depending on the particular conditions. I think this connects neutrosophy as that stating the neutral state to be a "region of states".

Florentin Smarandache:

Is then a non-zero electric field as background to the universe (not only to the vacuum)? I read that pure vacuum might not exist in the universe? Is it created in the lab? According to what you said before, can we consider a "zero region energy" instead of a "zero point energy"?

56 neutrosophic quantum theory

To Prof. Sapogin et al.:

I have generalized the quantum theory in a neutrosophic form. I know you proposed the Unitary Quantum Theory, and I'm thinking about the possibility of connecting your UQT with Neutrosophic Quantum Theory. The idea is the following (actually easy to follow): instead of discrete values of energy (as quanta) I proposed discrete series of intervals of quanta of energy. This might get closer to your UQT where the particle is also wave (dual form).

So, I introduced the imprecision, i.e. intervals that contain or approximate a discrete value.

What do you think?

About Bose-Einstein Statistics: I tried to extend even the "state" of a boson, or of a particle in general, to that of a "neutrosophic state" [i.e. the probability distribution that has some indeterminacy], etc.

I salute your paper published in Current Trends in Technology and Science about The Unitary Quantum Theory and Modern Quantum Picture of the World.

57 antimatter

An example of antimatter is the antihydrogen which has been confirmed in experiments by CERN.

And if there is a mixture of antihydrogen and hydogen than we can call that as unmatter hydrogen (or unhydrogen?).

According to Van Hooydonk, then antihydrogen indicates that Quantum Mechanics should be revised.

> *Reference:* http://arxiv.org/abs/physics/0511115
> *Proof that quantum mechanics is internally inconsistent on antihydrogen*
> *Author:* G. Van Hooydonk (Sub. on 13 Nov. 2005)
> *Abstract:* Quantum mechanics (QM) theoretically forbids natural H-antiH interactions because of annihilation in the Dirac sense. But in practice, ab initio QM relies explicitly on H-antiH attraction, which it theoretically forbids, to arrive at attractive forces in the molecular hydrogen cation, given away by the cusp in

its PEC (potential energy curve) at exactly 1,06 Angstrom. This internal inconsistency in QM is easily removed by lifting its irrational ban on natural antihydrogen.

58 microcosmos and macrocosmos

Florentin Smarandache:

The microcosmos and macrocosmos would have the same structure?

Victor Christianto:

There could be similar laws governing both brain, quantum mechanics and, in addition, the supercluster of galaxies.

There are different possible answers, for example:

- fractal theory says that there could be self-similarity between the small and the big structures. See Mandelbrot, Nottale etc.
- complex network says that brain, internet and universe may be ruled by similar laws. See paper by Dmitri Krioukov in *arxiv*.
- there can be spiral waves governing those problems at different scale. Spiral waves are predicted by complex Ginzburg-Landau eq.

59 spin & angular momentum

Email de la Ervin Goldfain.

În mecanica cuantică, spinul este o proprietate intrinsecă a particulelor elementare care nu se poate interpreta ca o rotație clasică în jurul axei proprii, așa cum am explicat mai înainte. Singurul motiv pentru care există

o analogie de termeni între "spin" și "angular momentum" (moment unghiular) este că amândouă satisfac aceeași algebră. În particular, atât spinul cât și angular momentum satisfac relații de comutare identice:

[Lx,Ly] = i(h/2*pi)Lz; [Sx,Sy] = i(h/2*pi)Sz, unde h este constanta lui Planck iar (h/2*pi) se notează frecevent ca h-bar. Atât spinul cât și angular momentum sunt operatori lineari O care acționează asupra stării cuantice |psi> în așa-numita "eigenvalue equation".

O|psi> = o|psi>, unde (o) reprezintă observabila asociată cu operatorul (O).

Operatorului spin (S) îi corespunde observabila spin (s) care este marimea fizică asociată cu (S). *Eigenvalue equation* produce un spectru de valori proprii (*eigenvalues*) pentru (s).

Atât operatorul de spin cât si operatorul de angular momentum se pot reprezenta ca VECTORI în 3-dimensiuni:

L^2 = (Lx)^2 + (Ly)^2 +(Lz)^2,

S^2 =(Sx)^2 +(Sy)^2+(Sz)^2.

Spinul (s) se masoară în unități de acțiune, ca și constanta lui Planck (h). Bosonii au spin zero sau multipli întregi de h-bar (= h/2*pi) adică 0, 1*h-bar, 2*h-bar,. și reprezintă cuantele care mediază interacțiune (fotoni, W, Z bosons, gluoni). Spinul fermionilor este un multiplu "odd" de (1/2)*h-bar adică (1/2)*h-bar, (3/2)*h-bar, (5/2)*h-bar,. și repezintă particulele de materie (leptoni si quarks).

Spinul fracțional reprezintă valori intermediare (arbitrare) între spin bosonic și spin fermionic în spațiu tri-dimensional.

Aceste stări sunt ca atare amestecuri "paradoxiste" între particulele care transmit forțele cuantice și particulele de materie în spațiu-tridimensional... deci, *unmatter*! Notează că spinul fracționar poate exista în spații bi-dimensioanale formând așa-numiții "anyons". Acești "anyons" apar în efectul Hall fracțional (Fractional Quantum Hall Effect) în fizica stării solide.

60 subspaces & dimensions

Mă gândeam la o porțiune/fracțiune dintr-un spațiu, care nu are proprietățile unui subspațiu.

Voiam să zic să luăm o fracțiune dintr-un spațiu cuantic și să o punem împreună cu o fracțiune dintr-un spațiu cu energie înaltă unde funcționează teoria lui Ervin Goldfain.

Cum s-ar uni aceste porțiuni de spații, cum s-ar face o punte între ele?

De pildă, o particulă în spațiul cuantic și o particulă dintr-un spațiu de energie înaltă puse împreună?

*

Știam de dimensiunea Hausdorff, dar credeam că e numai teoretică. Cum explici practic dimensiunea Hausdorff? Un exemplu unde s-ar aplica? Cum să ne imaginăm o dimensiune fracțională?

*

Pioneer spacecraft anomaly can be solved based on quaternion space relativity; it can also be considered as gravitation effect of Jupiter. The metrical/cosmology effect of quaternion group is that it leads to the Carmeli metric.

Carmeli metric can explain the Tully-Fisher law.

*

Theoretical physicists indeed make things too mathematical, too mysterious, too fantastic, too complicated, too... [Carel van der Togt].

*

Eu mă gândisem uneori că poate toate legile descoperite pe Terra ar putea fi cumva legate de "locality"... că poate-n alte sisteme astrale ar fi diferite (cumva contrare?) Ar putea exista sisteme fizice unde legea conservării energiei să nu se respecte, sau unde alte anormalități să existe?

61 energia gratuită

Email către Mircea Monu.

Au vorbit/scris mai mulți despre energia gratuită/ liberă. Deocamdată nu s-a descoperit sau inventat.

Modele matematice se pot crea, dar depinde dacă valabilitatea lor este în spațiul real sau imaginar.

De pildă, metrica lui Minkovski în Teoria Relativității merge într-un spațiu imaginar, nu în cel real.

> Sunt de acord cu Mircea Monu că energia este o proprietatea a materiei, deci nu poate exista fără aceasta, contrazicându-l pe Poponin.
>
> Același lucru cred și despre câmpul electromagnetic, că nu poate exista decât ca proprietate a materiei.
>
> Însă, cei din curentul principal (*mainstream*), datorită anomaliilor generate de teoria relativității, consideră că ar exista câmpuri electromagnetice în afara materiei...

62 teoria măsurii

Către Ovidiu Ilie Șandru:

Excelentă idee cu aplicarea în teoria măsurii (te referi la partea negativă a distanței în special pentru completarea teoriei măsurii?).

Eu mă refeream la articolul care generaliza și rezultatul tău și al meu (considerând inf/sup pe anumite subspații, nu neaparat pe întregul spațiul).

63 extensică

M-am gândit și la definirea unei distanțe extinse în sensul Extensicii: să calculăm distanța fiecarui punct a din A la mulțimea B, și apoi distanța fiecărui punct b din B la mulțimea A. Obținem niște valori (considerând A/\B = not empty); în primul caz [-a1, +a2], iar în al doilea caz [-b1, +b2]. Dar apoi, nu știu cum am utiliza aceste valori?

Să luam distanța ori măsura Hausdorff?

*

H(A,B) din articolul comun al doilea nu pare în stilul lui Cai, și nu obține o valoare negative niciodată.

De asemenea, nu are punct optimal.

Ma gândesc dacă ar fi posibil de manipulat valorile [-a1, +a2] (distanțele de la punctele a din A la mulțimea B) și [-b1, +b2] (distanțele de la punctele b din B la mulțimea A) cumva?

*

Email către Ovidiu Șandru.

Am citit articolul tău, unde folosești distanța euclideană (clasică) de la un punct la o mulțime.

Desigur, urmând calea Profesorului Cai, consideri ca negativă distanța unui punct interior mulțimii la acea mulțime.

Este o alternativă la distanța folosita de Cai, deoarece el utilizează și un punct optimal O al acelei mulțimi în raport cu care se calculează distanța de la un punct arbitrar P (de multe ori punctul optimal este chiar centrul de simetrie). De exemplu, pentru dimensiunea 1, la un interval [1, 5]:

```
A                    P   O      B
-------------------------------------------------------------
1                    3.5 4      5
```

Conform formulei tale, distanța de la punctul P(3.5) la intervalul [1, 5] este -1.5.

Deci formula ta nu ține cont de punctul optimal O {oriunde ar fi acesta, obții același răspuns: d(P, [1,5]) = -1.5}.

Daca O ar fi la mijloc, deci O(3), atunci s-ar obține exact raspunsul tău d(P, [1,5]) = -1.5 în Extensică.

Prof. Cai are o altă formulă pentru cazul când O nu este la mijloc, și obtine un rezultat diferit.

În articolul meu pe care-l citezi, distanța de la P la [1, 5] este -2.5, adică distanța euclideană (luată negativ) până la cea mai apropriată frontieră a mulțimii (sau cel mai apropiat punct al complementarei lui A, așa cum este formula ta), însă de aceeași parte cu punctul optimal.

Pentru dimensiuni mai mari de 1, distincția dintre aceste distanțe devine considerabilă.

Din punct de vedere științific articolul tău este corect (doar că nu urmează întocmai articolul Prof. Cai).

Dar, găsind aplicații în care punctul optimal (pe care eu l-am numit punct de atracție) nu contează, articolul tău devine important, util.

Reply from Ovidiu Șandru.

Acest lucru este bun pentru că în loc de o teorie acum sunt două care extind pe căi diferite, și cu profituri diferite, punctul de vedere al prof. Cai.

Extinderea la care m-am gândit eu vizează strict articolul domnului Cai citat de mine, în care punctul O reprezintă centrul segmentului [AB].

Aplicații există desigur și în cazul variantei propuse de mine. Mie cel mai tare îmi era frică să nu ți se pară o prea mare asemanare între punctul tău de vedere și cel al meu, dar acum m-am liniștit, constatând că ai remarcat deosebirile de finețe dintre cele două rezultate. Este exact cum am remarcat eu, cele doua teorii nici nu se contrazic, nici nu se exclud, dimpotrivă se completează reciproc: atunci când problema studiată dispune de centru de simetrie, sau de un punct de atracție. Fără nici un dubiu trebuie aplicată teoria ta, dar atunci când problema analizată nu prezintă similitudini fizico-materiale, de exemplu este o problemă cu caracter foarte abstract, astfel de probleme sunt cu nemiluita, atunci se poate apela la varianta propusă de mine.

Nou e-mail de la Ovidiu Șandru.

În teoria ta folosești pentru distanța extensică un minim [inf] global, pe cand eu folosesc un minim [inf] local, fiindcă în cazul tău se calculează inf pentru orice punct din mulțime, iar în cazul meu se calculează inf doar pentru

punctele așezate pe anumite geodezice din mulțime (curbe de atracție către centrul optimal). Deci, inf-ul tău (în valoare absolută) este mai mic sau egal cu al meu (în valoare absolută). Pentru funcția dependentă, sunt multe cazuri când rezultatele noastre coincid (de exemplu, când mulțimile A și B sunt dreptunghiuri în 2D, sau paralelipipede în 3D, mă gândii chiar acuma). Ar trebui verificate pe cazul general.

Cred că s-ar putea generaliza puțin (sau daca vrei uni rezultatele noastre), ma refer la formulele (1) și (2) din articolul "Indicatori de poziționare", punând sub delta în formula (1) că "x aparține lui M care e inclus sau egal cu X" (sub amândoi delta), unde desigur X este întreg spațiul metric notat de tine, iar M este un subspațiu al lui X.

În felul acesta, când M=X, se obțin formulele (1) și (2) ale tale; când M este diferit de X (dar bineînțeles M este inclus în X) se obțin formulele mele (distanța punct-mulțime, și distanța punct-două-mulțimi, cum zici).

Ba este chiar mai general, pentru ca M poate fi subspațiu format nu numai de puncte pe curbele de atracție către punctul optimal (ori punctul de atracție), dar și de alte puncte specific (puncte cu anumite proprietăți care s-ar necesita în practică: poate puncte pe soluțiile unor ecuații diferențiale, etc.).

Schimbând formula (1), pag. 2, se schimbă automat și rezultatul formulei (2), pag. 2.

Astea implică și generalizarea automată a indicatorului mulțime-mulțime S(A,B)=sup D(A,B)=sup D(B,A) cum ai găsit.

Chestiunea asta duce și la o alternativă a distanței Hausdorff (dacă "sup inf" sunt realizate pe submulțimi ale lui A și/sau ale lui B).

64 *extenics notes*

To use neutrosophic logic operators to infer contradictory data in Extenics!

*

Extenics in Onthologies in Information Fusion with contradictories structures.

Extenics in Information Fusion using DSmT, DST, TBM and various fusion rules for combining very conflicting data; or: <neutA> as a reconciliation between <A> and <antiA>; and: A-Discounting MCDM Method as Extension decision making when dealing with contradictory data (using the Degree of Contradiction).

*

Folosind geometria diferențiala, s-ar putea considera și alte distanțe, nu doar cea euclideană, sau poate chiar vreo normă special în Extensică.

*

La doua mulțimi incluse una în alta (*nested sets*) s-ar putea folosi distanța Hausdorff între ele (eu am folosit această distanță la mulțimile neutrosofice, generalizări ale mulțimii fuzzy).

Poate și o pseudo-normă ar merge la Extensică?

65 a new variance

Email to Raj Singh.

Regarding Pearson's Sample Correlation Coefficient *r*:

- in assessing the strength of any linear or nonlinear relationship between variables x and y, Spearman replaced (x, y) by (rank x, rank y) in the same formula and got Spearman's rank correlation coefficient r_s;
- what about replacing (x, y) by (deviation of x wrt mean(X), deviation of y wrt to mean(Y)) and getting a new formula;
- or replacing (x, y) by (differences between x and the median(X), differences between x and the median(y)) and getting another formula.

One question about the foundations of statistics: when computing the standard deviation for a discrete variable x, instead of squaring the deviations of x's, i.e. (x-mean(x))^2 why not taking absolute value of this: abs(x-mean(x))? So, a new variance (different from the classical one) would be: Summation of abs(x-mean(x))p(x) and standard deviation (different from the classical and well-known one) would be defined as: variance/dim(x).

Surely, these will be shocking the statistics community, but what is wrong with them?

66 decision making

So let me know the answers to conflicting information and I will work out on some solid examples in Finance.

For example: a director proposes an economic action (invest in a product) with a chance of say 70% of successful while his associate director in the same company say that this investment has a chance of successful of 40% only. What to do? For the same decision there are different expectations (= conflicting information) from the part of two decision makers.

*

Another example:

A director may say about the products in his company: we have 40% chance to succeed in producing product only A, 50% in producing product B, and 10% in producing both of them.

Another director says different: we have 20% chance to succeed in producing product only A, 65% in producing product B, and 15% in producing both of them.

What product should this company produce?

*

Also, there may be more decision makers, everyone with such percentages, etc. [We can use the DSm general rule to combining these conflicting informations.]

Your examples should be similar, but CONCRETE (a specific company, a specific/particular product or investment, a specific decision maker), in a more professional - economically speaking - way.

67 conflicting information

In Finance for example we have call (Buy) and put (Sell) now people want to buy low and sell high.

You use your meta-economics language, sure.

Although the information can be the same but people act different to the information they receive.It is called expectation. Please tell me how you want to shape this conflicting information so I can work on some solid examples in Finance.

I told you that we have a formula which combines these informations - don't worry I'll do this combination.

For the same decision there are different expectations (= conflicting information) from the part of two decision makers.

	I1	I2
D1	0.7	0.3
D2	0.4	0.6

Using the Dsm general rule one gets:

m(I1)=0.28, m(I2)=0.18, and m(I1 and I2) = 0.54,

where I1=investment 1, I2 = investment 2, D1=first director, D2 = second director, m(.) mean the result of combination.

m(I1) = 0.7x0.4 = 0.28

m(I2) = 0.3x0.6 = 0.18.

m(I1 /\ I2) = 0.7x0.6 + 0.4x0.3 = 0.54.

This is a very easy example.

But we can use the DSm formula for any number N of investments and any numbers D of directors.

*

From this result, we get that it is better (54%) in invest in both. Of course, now it will be a problem to decide how much in each case to invest? According to what we got before we should pay attention that 28% is for

first investment and 18% for the second investment, therefore here we can split the investment proportionally to these percentages between these two investment [but this is decision making, I am not sure because we did not study it yet; we'll do it later with your help; maybe Jean has an idea here as well, or you?].

68 fuzzy operators - colors

About associating the 256 trinary fuzzy operators with the 256 colors, we can do the following:

- the Venn diagram of three sets intersecting has 2^3=8 disjoint parts [see our paper on n-ary fuzzy/neutrosophic operators].
- each disjoint part can be shaded (black) or not shaded (white), which is similar to assigning 1 or 0 to each disjoint part.
- therefore, considering all possibilities, we write numbers in base 2, each number of 8 digits [because the whole Venn diagram has 8 disjoint parts: 00000000, 00000001, 00000010, 00000011, ..., 11111111].
- in total we can write 2^8 = 256 numbers in base 2, each one corresponding to a color. do you have the colors in base 16? if so, we then convert from base 2 to base 16.

69 image segmentation

M. Zhang, L. Zhang, and H. D. Cheng have used neutrosophic logic/set in image segmentation. The image description, classification, and recognition depend on the

image segmentation – which is used for image analysis/processing, computer vision, and pattern recognition.

Image segmentation means to find objects and boundaries such as curves, lines, etc. and partition a digital image into many regions. By image analysis one locate objects, one measures features, one makes interpretations of scenes. Image segmentation is done through several methods such as: histogram-based methods, region-based methods, edge-based methods, model-based methods, and watershed methods.

The watershed uses the gradients of an image to split the image into topological areas. It best applies for uniform background and blurred edge objects, whose blurred boundaries are defined in the indeterminacy I.

After removing the noise, the image becomes more uniform. The image is converted to a neutrosophic set in the following way.

Let $P_{NS}(i,j)$ be a pixel in the position (i,j).

T(i,j) =

$$0, if\ 0 \le g_{ij} \le a;$$

$$\frac{(g_{ij}-a)^2}{(b-a)(c-a)}, if\ a \le g_{ij} \le b;$$

$$1-\frac{(g_{ij}-c)^2}{(c-b)(c-a)}, if\ b \le g_{ij} \le c;$$

$$1, if\ g_{ij} \ge c;$$

and F(i,j) = 1-T(i,j), where g_{ij} is the intensity value of pixel P(i,j).

Then:

- Calculate the histogram of the image.
- Find the local maxima of the histogram.
- Then calculate the mean of local maxima.
- Find the peaks greater than the mean of local maxima.
- Define the low and high limits of the histogram.
- Calculate the parameters a, b, c by using the maximum entropy principle: the greater the entropy is the more information the system includes.
- Find two thresholds to separate the domains T and F.
- Define homogeneity in intensity domain by using the standard deviation and the discontinuity of the intensity function. Discontinuity measures the changes in gray levels.
- Convert the image to binary image based on T, I, F.

T(i,j) represents the degree of pixel P(i,j) to be an object pixel; I(i,j) represents the degree of pixel P(i,j) to be an edge pixel; F(i,j) represents the degree of pixel P(i,j) to be a background pixel.

One determines the sets of object pixels, edge pixels, and background pixels. Apply the watershed for converting the binary image in the following way:

a) Get the regions R_1, R_2, ..., R_n whose pixels are either object pixels, or edge pixels, or background pixels;
b) Dilate these regions by using the 3x3 structure element;
c) At the place where two regions merge, build a dam, until all regions merge together.

Watershed segmentation is good for uniform or nearly uniform images and the edges are connected very well. Yet, watershed method is sensitive to noise and makes over-segmentations.

References:

[1] Ming Zhang, Ling Zhang, H. D. Cheng, *A Neutrosophic Approach to Image Segmentation Based on Watershed Method*, Signal Processing, 2009.

[2] H. D. Cheng and Y. Guo, *A New Neutrosophic Approach to Image Thresholding*, in New Mathematics and Natural Computation, 2008.

[3] Yanhui Guo, H. D. Cheng, and Yingtao Zhang, *A New Neutrosophic Approach to Image Denoising*, in New Mathematics and Natural Computation, Vol. 5, No. 3, 653-662, 2009.

70 label intervals using the PCR5

Let $m_1(.)$ *and* $m_2(.)$ be two basic believe assignments on the frame of discernment $\Theta = \{\theta_1, \theta_2, \theta_3\}$, defined as follows:

	θ_1	θ_2	θ_3
m_1	$[L_{4.3}, L_{5.3}]$	$[L_{2.7}, L_{3.7}]$	$[L_{3.0}, L_{4.3}]$
m_2	$[L_{5.0}, L_{5.4}]$	$[L_{2.1}, L_{2.7}]$	$[L_{2.9}, L_{3.0}]$

.

All intersections of the elements of the frame of discernment are considered empty. We calculate the resulting mass of θ_1 only, using PCR5 and we get:

$$m_{12\,PCR5}(\theta_1) = m_1(\theta_1)\cdot m_2(\theta_1) + m_1(\theta_1)\cdot \frac{m_1(\theta_1)\cdot m_2(\theta_2)}{m_1(\theta_1)+m_2(\theta_2)} + m_2(\theta_1)\cdot \frac{m_2(\theta_1)\cdot m_1(\theta_2)}{m_2(\theta_1)+m_1(\theta_2)} +$$

$$+m_1(\theta_1)\cdot\frac{m_1(\theta_1)\cdot m_2(\theta_3)}{m_1(\theta_1)+m_2(\theta_3)}+m_2(\theta_1)\cdot\frac{m_2(\theta_1)\cdot m_1(\theta_3)}{m_2(\theta_1)+m_1(\theta_3)}=$$

$$=[L_{4.3},L_{5.3}]\odot[L_{5.0},L_{5.4}]\oplus[L_{4.3},L_{5.3}]\odot\frac{[L_{4.3},L_{5.3}]\odot[L_{2.1},L_{2.7}]}{[L_{4.3},L_{5.3}]\oplus[L_{2.1},L_{2.7}]}\oplus$$

$$\oplus[L_{5.0},L_{5.4}]\odot\frac{[L_{5.0},L_{5.4}]\odot[L_{2.7},L_{3.7}]}{[L_{5.0},L_{5.4}]\oplus[L_{2.7},L_{3.7}]}\oplus[L_{4.3},L_{5.3}]\odot\frac{[L_{4.3},L_{5.3}]\odot[L_{2.9},L_{3.0}]}{[L_{4.3},L_{5.3}]\oplus[L_{2.9},L_{3.0}]}\oplus$$

$$\oplus[L_{5.0},L_{5.4}]\odot\frac{[L_{5.0},L_{5.4}]\odot[L_{3.0},L_{4.3}]}{[L_{5.0},L_{5.4}]\oplus[L_{3.0},L_{4.3}]}=$$

$$=\Big[L_{4.3}\cdot L_{5.0}+\frac{L_{4.3}\cdot L_{4.3}\cdot L_{2.1}}{L_{5.3}+L_{2.7}}+\frac{L_{5.0}\cdot L_{5.0}\cdot L_{2.7}}{L_{5.4}+L_{3.7}}+\frac{L_{4.3}\cdot L_{4.3}\cdot L_{2.9}}{L_{5.3}+L_{3.0}}+\frac{L_{5.0}\cdot L_{5.0}\cdot L_{3.0}}{L_{5.4}+L_{4.3}},$$

$$L_{5.3}\cdot L_{5.4}+\frac{L_{5.3}\cdot L_{5.3}\cdot L_{2.7}}{L_{4.3}+L_{2.1}}+\frac{L_{5.4}\cdot L_{5.4}\cdot L_{3.7}}{L_{5.0}+L_{2.7}}+\frac{L_{5.3}\cdot L_{5.3}\cdot L_{3.0}}{L_{4.3}+L_{2.9}}+\frac{L_{5.4}\cdot L_{5.4}\cdot L_{4.3}}{L_{5.3}+L_{3.0}}\Big]=$$

$$=\Big[L_{\frac{4.3(5)}{10}}+\frac{L_{\underline{4.3(4.3)(2.1)}}}{L_{8.0}}+\frac{L_{\underline{5(5)(2.7)}}}{L_{9.1}}+\frac{L_{\underline{4.3(4.3)(2.9)}}}{L_{8.3}}+\frac{L_{\underline{5(5)(3)}}}{L_{9.7}},$$

$$L_{\frac{5.3(5.4)}{10}}+\frac{L_{\underline{5.3(5.3)(2.7)}}}{L_{6.4}}+\frac{L_{\underline{5.4(5.4)(3.7)}}}{L_{7.7}}+\frac{L_{\underline{5.3(5.3)(3)}}}{L_{7.2}}+\frac{L_{\underline{5.4(5.4)(4.3)}}}{L_{8}}\Big]=$$

$$=\Big[L_{2.15}+\frac{L_{0.38829}}{L_{8}}+\frac{L_{0.675}}{L_{9.1}}+\frac{L_{0.53621}}{L_{8.3}}+\frac{L_{0.75}}{L_{9.7}},L_{2.862}+\frac{L_{0.75843}}{L_{6.4}}+\frac{L_{1.07892}}{L_{7.7}}+\frac{L_{0.8427}}{L_{7.2}}+\frac{L_{1.25388}}{L_{8}}\Big]=$$

$$=\Big[L_{2.15}+L_{\frac{0.38829}{8}}+L_{\frac{0.675}{10}}+L_{\frac{0.53621}{8.3}}+L_{\frac{0.75}{9.7}},L_{2.862}+L_{\frac{0.75843}{6.4}}+L_{\frac{1.07892}{7.7}}+L_{\frac{0.8427}{7.2}}+L_{\frac{1.25388}{8}}\Big]=$$

$$=[L_{4.79635},L_{8.18601}]=[L_{5-0.20365},L_{8+0.18601}]=\Big[L_{5-\frac{0.20365}{10}},L_{8+\frac{0.18601}{10}}\Big]=\big(L_{5,-0.20365},L_{8,0.018601}\big).$$

For θ_2 and θ_3 we do a similar calculation.

For more details about this calculation see the definitions of *qualitative operators* from the article *DSm Field and Linear Algebra of Refined Labels (FLARL)* from [1].

Reference:

Smarandache Florentin, Dezert Jean, Li Xinde, *DSm Field and Linear Algebra of Refined Labels (FLARL)*, in the book "Advances and Applications of DSmT for Information Fusion", Am. Res. Press, Rehoboth, USA, Chapter 2 (pages 75-84), 2009; online at:
http://fs.gallup.unm.edu//DSmT-book3.pdf.

71 importance of sources

Three steps:

- to each source apply the beta coefficient for the importance of source;
- then combine the resulting sources with any rule; this combination made with the focal elements only (the empty element and its mass removed); hence with non-normalized masses.
- then normalize the final result.

72 split component

Haibin Wang:

In neutrosophic set, *I* is independent with *T* and *F*. But here, *U* and *P* is dependent on *T* and *F*. In real situation, *I* may be obtained directly from information source. How do you explain it?

Florentin Smarandache:

The sources are not sure, or they are not able to measure exactly, or using different measurement parameters they get different results. "I" can be confusion, ambiguity, unknown; but this confusion may be some mixture of truth and falsity. For example, if I'm asking you:

do you like this movie? You may answer: Yes and No. Yes because actor X performs very well, No because the action is bad. Thus "I" can be dependent of T and F, or can not - depending on the problem.

Haibin Wang:

Thanks! If T=0.7, F=0.5, then use your new idea, it can be expressed as: <0.7, 0.7 \/ 0.5, 0.7 /\ 0.5, 0.5>. Is that right?

Florentin Smarandache:

No. We only get from sources/experts the fourth components say NL(A)=(T=0.2, U=0.3, P=0.4, F=0.1), NL(B)=(...) and then we need to combine them.

Or, depending on the application we might be able to design an operator to compute from (T,F) the (U, P).

Haibin Wang:

What I wonder is under what application should we consider this framework? And what role does U and P play?

Florentin Smarandache:

In information fusion it may work very well.

But you are right, we need to look for a good REAL example/application.

73 Zhang's degree of intersection

The proof that Zhang's degree of intersection preserves the neutrality of vba mv(It)=1 for any rule.

Zhang's degree of intersection between any element X in G^Theta and It (total ignorance) is:

$$|X/\backslash It| \,/\, (|X|.|It|) = |X| \,/\, (|X|.|It|) = 1 \,/\, |It|.$$

So this degree of intersection is the same for any element.

*

Applying any rule, that has Zhang's degree of intersection in front of each intersection, for a mass m1() intersected with the vacuous mass vba mv() we get: m1v(X) = (1 / |It|)m1(X) for any X in G^Theta.

But when we normalize, we multiply all m1v(Y) with |It| (cardinal of the total ignorance) and we get: M1v(X) = m1(X) for any X in G^Theta, so vba keeps the neutrality.

The larger the cardinality of an element, the smaller mass is assigned to that element from the intersections.

So, Zhang's degree of intersection increases the specificity.

*

We can also consider a *weight for each focal element*, assigned by an expert, and then use it into some formulas of fusion. Denoeux did this.

Email from Jean Dezert:

J'ai l'idée de remplacer dans la distance de Jousselme, dans la matrice D, le degré de Jaccard d'intersection des elements: |A/\B|/|A\/B| par le degré de Zhang d'intersection des elements: |A/\B|/ (|A|.|B|), ou par un autre degré d'intersection des elements (s'il y a des autres), ou |X| signifie cardinal de l'element X.

Biensur, on doit verifier les axiomes de la distance dans chaque cas. J'ai l'impression que Fixsen et Mahler ont y fait quelque chose, mais j'en suis pas sur.

74 defining the input interface

Email from Albena Tchamova:

Thank you, Florentin, for your paper. For me, the most difficult thing here consists in the way of defining the input interface, according to the possible values of the input linguistic variable. I mean, if the linguistic variable == Radar Cross Section, and this variable has 2 possible values RCS={Small, Big}, which are desribed via some a priori defined functions, then how to define these values in terms of NS ? Maybe, according to the value: Small => we will have {Small, Not-Small, Indeterminacy}. However, there is a special function for modeling only the truth values of Small, Big. These functions resembles Gaussian distribution. I still have no idea how to define these values.

Reply to Albena Tchamova:

Could be possible to do similarly to the way you used the fuzzy logic in target tracking? There are operators which combine three-components inputs.

Reply from Albena Tchamova:

My question is not about combining three-components inputs (it will be as in fuzzy), but for the apriori defining the functions, describing the components for falsity and indeterminacy according to the variable's values.

In target tracking there are functions for defining only the truth value for Small, for example.

If this truth function resembles Gaussian, how to obtain the other 2 functions (F and Indeterminacy)?

75 image processing

Neutrosophic logic and set have the advantage of using a third component called "indeterminacy (neutral part)", which means neither true nor false for a logical proposition, respectively neither membership nor non-membership (but unknown, unsure) of an element with respect with a set. They are generalizations of fuzzy logic and fuzzy set, especially of intuitionistic fuzzy logic and set.

Neutrosophic logic and set have been applied in *image processing* thanks to their "indeterminacy" neutral component.

76 removing image noise

H. D. Cheng and Y. Guo proposed a thresholding algorithm based on neutrosophics that will automatically select the thresholds.

The thresholds are needed in order to separate the domains T and F in a neutrosophic value image.

Yanhui Guo, H. D. Cheng, and Yingtao Zhang introduced a Neutrosophic Set filter in order to denoise images.

Besides pattern recognition and image vision, denoising an image is highly investigated today.

The image is converted into a neutrosophic set and then one applies a filtering method (γ-median-filtering) in order to reduce the degree of indeterminacy degree of an image; the degree of indeterminacy is found by computing the entropy of the indeterminacy subset.

Afterwards the image noise is removed.

A neutrosophic image is composed of pixels, and each pixel P is characterized by three components, $P_{NS}(T,I,F)$, where

- ✓ T=degree/percentage of truth,
- ✓ I=degree/percentage of indeterminacy,
- ✓ F=degree/percentage of falsehood.

Then a pixel P_{NS} situated at the Cartesian coordinates (i,j) is denoted by $P_{NS}(i,j)$. So, we have $P_{NS}(T(i,j),I(i,j),F(i,j))$, where T(i,j) is the probability that pixel P_{NS} belongs to the white pixel set, I(i,j) is the probability that pixel P_{NS} belongs to the indeterminate pixel set, and F(i,j) is the probability that pixel P_{NS} belongs to the non-white pixel set. These are defined as follows:

$$T(i,\ j) = \frac{\bar{g}(i,\ j) - \bar{g}_{\min}}{\bar{g}_{\max} - \bar{g}_{\min}}$$

$$g(i,j) = \frac{1}{w \times w} \sum_{m=i-\frac{w}{2}}^{i+\frac{w}{2}} \sum_{n=j-\frac{w}{2}}^{j+\frac{w}{2}} g(m,n)$$

$$I(i,\ j) = \frac{\delta(i,\ j) - \delta_{\min}}{\delta_{\max} - \delta_{\min}}$$

$$\delta(i,\ j) = abs\left(g(i,\ j) - \bar{g}(i,\ j)\right)$$

$$F(i,\ j) = 1 - T(i,\ j)$$

where $\bar{g}(i,\ j)$ is the local mean value of the pixels of the window, while $\delta(i,\ j)$ is the absolute value of the difference between intensity $g(i,\ j)$ and its local mean value $\bar{g}(i,\ j)$.

77 neutrosophic image entropy

It is used – for a gray image - to evaluate the distribution of the gray levels. If the intensity distribution is non-uniform, the entropy is small; but, if the intensities have equal probabilities, the entropy is high.

Neutrosophic image entropy is defined as the sum of the entropies of the three subsets T, I, F:

$$En_{NS} = En_T + En_I + En_F$$

$$En_T = -\sum_{i=\min\{T\}}^{\max\{T\}} p_T(i) \ln p_T(i)$$

$$En_I = -\sum_{i=\min\{I\}}^{\max\{I\}} p_I(i) \ln p_I(i)$$

$$En_F = -\sum_{i=\min\{F\}}^{\max\{F\}} p_F(i) \ln p_F(i)$$

where En_T, En_I and En_F are the entropies of the sets T, I, F respectively, while $p_T(i)$, $p_I(i)$, and $p_F(i)$ are the probabilities of elements in T, I, F, respectively corresponding to i.

In general the median filter is known for removing the image noise in the gray level domain (Im). The changes in T and F influence and vary the entropy in I, which measures the indeterminacy degree of element $P_{NS}(i, j)$.

The result after median filtering, $\hat{\text{Im}}$, is defined as:

$$\hat{\text{Im}}(i, j) = \underset{(m,n)\in S_{ij}}{median}\{\text{Im}(m, n)\}$$

with S_{ij} as the neighborhood of the pixel (i, j).

*

Y. Guo et al. proposed the γ -median-filtering operation.

A γ *-median-filtering operation* for P_{NS} , $\hat{P}_{NS}(\gamma)$, is defined as:

$$\hat{I}_{NS}(\gamma) = P\left(\hat{T}(\gamma), \hat{\mathrm{I}}(\gamma), \hat{F}(\gamma)\right)$$

$$\hat{T}(\gamma) = \begin{cases} T & I < \gamma \\ \hat{T}_{\gamma} & I \geq \gamma \end{cases}$$

$$\hat{T}_{\gamma}(i,j) = \underset{(m,n)\in S_{ij}}{median}\{T(m,n)\}$$

$$\hat{F}(\gamma) = \begin{cases} F^{(m,n)\in S_{ij}} & I < \gamma \\ \hat{F}_{\gamma} & I \geq \gamma \end{cases}$$

$$\hat{F}_{\gamma}(i,j) = \underset{(m,n)\in S_{ij}}{median}\{F(m,n)\}$$

$$\hat{\mathrm{I}}_{\gamma}(i,j) = \frac{\delta_{\hat{T}}(i,j) - \delta_{\hat{T}\min}}{\delta_{\hat{T}\max} - \delta_{\hat{T}\min}}$$

$$\delta_{\hat{T}}(i,j) = abs\left(\hat{T}(i,j) - \overline{\hat{T}}(i,j)\right)$$

$$\overline{\hat{T}}(i,j) = \frac{1}{w \times w} \sum_{m=i-\frac{w}{2}}^{i+\frac{w}{2}} \sum_{n=j-\frac{w}{2}}^{j+\frac{w}{2}} \hat{T}(m,n)$$

where $\delta_{\hat{T}}(i,j)$ is the absolute value of the difference between intensity $\hat{T}(i,j)$ and its local mean value $\overline{\hat{T}}(i,j)$ at (i,j) after γ -median-filtering operation.

*

The new neutrosophic approach to image denoising is described as below:

Step1: Transform the image into NS domain;

Step2: Use γ -median-filtering operation on the true subset T to obtain $\hat{T_\gamma}$;

Step 3: Compute the entropy of the indeterminate subset $\hat{\mathrm{I}}_\gamma$, $En_{\hat{\mathrm{I}}_\gamma}(i)$;

Step 4: If $\dfrac{En_{\hat{\mathrm{I}}_\gamma}(i+1)-En_{\hat{\mathrm{I}}_\gamma}(i)}{En_{\hat{\mathrm{I}}_\gamma}(i)} < \delta$, go to Step 5;

Else $T = \hat{T_\gamma}$, go to Step 2;

Step 5: Transform subset $\hat{T}_\gamma$ from the neutrosophic domain into gray level domain.

The proposed method performs better for removing image noises for those noises whose types are knows but also for those noises whose types are unknown.

78 neutrosophic probability

Belo Riecan:

I had an opportunity to watch the discussion about terminology in Zittau and we have accepted IFS notation in our investigations concerning probability on IFS events.

Florentin Smarandache:

There is a more general probability, called Neutrosophic Probability, see its definition at:

http://planetmath.org/encyclopedia/NeutrosophicProbability.html

and this development starting in 1995 in my book on Neutrosophic Set, at:

www.gallup.unm.edu/~smarandache/ebook-neutrosophics4.pdf
(see the last part of the book; do a search for "neutrosophic probability").

Neutrosophic Probability is a probability on Neutrosophic Set, also having three components T, I, F, but not necessarily any connection between them.

79 fractali

Despre Prof. univ. dr. Valentin Boju.

A predat la Universitatea din Craiova ; a tratat un model de generare/stocare a energiei, și probleme de algoritmi, de scufundări SuperDimensionale, de HyperFractali Polidimensionali, de stabilitate a nivelelor și proceselor de generare/stocare de energie, de dimensiune procesuală etc.

S-a ocupat și de teoria măsurii pe nivele energetice, cu metoda mea MCI (măsuri combinatoriale de înfășurare), care apare și în cartea sa din Springer-Birkhauser (TMPN = The Math Problems NoteBook).

A creat și niște fractali, tot printr-o metoda de tip MCI.

80 incomplete models

After I read a paper about using the Intuitionistic Fuzzy Set in information fusion, I realized that there are cases when the models are indeterminate, i.e. we don't know if the intersections are empty or not. Therefore, we don't have neither a free model, nor a hybrid, or Shafer model, but a fourth category called "Indeterminate Model"

(when at least one intersection, let's say A/\B, is indeterminate).

Incomplete Models are a new trump (advantage) of DSmT over other theories which can not deal with them since Incomplete Models cannot be refined! In this case, we have to use the Neutrosophic Set, which allows for incomplete information, i.e. when the sum of components is less than 1 (IFS does not allow that).

The missing information is just caused by the indeterminate intersection(s): we don't know for example if A/\B = empty [i.e. to transfer the mass m12(A/\B) in this case] or if A/\B = nonempty [hence the mass m12(A/\B) should stay on A/\B, i.e. no transfer].

The missing information causes the sum of components to be less than 1.

What is very nice and consistent with the previous results is that in the dynamic fusion if we later find out about the indeterminate intersection if this is empty or not, the result approaches to the limit.

I know Arnaud Martin and Deqiang Han used the fuzzy set in information fusion.

Also, Jean Dezert used a neutrosophic cube in defining the neutrosophic components (in Multiple Valued-Logic Journal, long ago, which dedicated the whole issue to neutrosophics). A triangle of this cube (a small diagonal) was used in a paper on IFS by two Polish authors.

We can combine Jean Dezert's cube with these Polish authors in order to better do a geometric interpretation of neutrosophic set used in information fusion.

This new category of models -*indeterminate models*- upon my knowledge, is entirely new in information fusion, and we can do more research in this direction.

Reference:

Eulalia Szmidt, Janusz Kacprzyk, *Distances between intuitionistic fuzzy sets,* Fuzzy Sets and Systems, 114 (2000), 505-518.

81 special groupoids

Email to Dr. Madad Khan.

A question: Is it possible to construct a set S which is a groupoid (not semigroup, not loop, not group, not commutative) which has a proper subset which is a commutative group? By proper subset one understands a subset different from the empty set, from the whole original set, from the unit element, and from an idempotent element if any. This would be the maximum of my special groupoid type for one algebraic law.

Another question: Also, is it possible to have a set (S, *, #) such that (S, *) and (S, #) are both only groupoids (meaning no other axiom such as associativity, unit element, inverse element, commutativity occur), such that a proper subset M of S is a commutative field under * and # ? Again a maximum of my special groupoid type for two algebraic laws.

An alternative of Grassmann Groupoid. Instead of (ab)c = (cb)a, we may investigate this: (ab)(cd) = (dc)(ba).

Did somebody study this groupoid where (ab)(cd) = (dc)(ba) for all a,b,c,d in the groupoid?

Email către Octavian Cira.

Funcția |n- φ (n)| propusă este o generalizare a lui Kaprekar, fiindcă dacă φ este permutarea inversa a cifrelor, se obține algoritmul lui Kaprekar.

Pentru fiecare permutare phi se obține probabil o constantă diferită (puteți încerca programul dvs. de MathCad pe câteva numere, schimbând apoi permutarea) - menținând același număr de cifre ale numărului n.

*

Am văzut MathCad-urile cu Kaprekar. Mulțumesc. Pentru numere de cifre diferite, se obțin constante diferite.

Același lucru va fi și folosind în general o permutare φ (generalizarea lui Kaprekar).

*

Folosind programele dvs. putem lista rezultatele obținute, și apoi fie facem conjecturi privind posibilele constante, fie le lăsam ca probleme deschise/nerezolvate.

Calculați de exemplu primele 100 de valori - cum propuneți.

*

Secvențele de permutații de forma $n_1 = |n-\varphi(n)|$, $n_2 = |n_1 - \varphi(n_1)|$, și tot așa, unde n este un număr întreg pozitiv, iar φ (n) este o permutare a cifrelor numărului întreg pozitiv n, este de fapt o alternativă privitoare la algoritmul lui Kaprekar. Ele coincid cu Kaprekar doar pentru numere de o cifră și de două cifre. Altfel, ele sunt diferite.

De exemplu, dacă n = 312, și permutarea phi este {1, 2, 3} -> {2, 1, 3}, atunci:

$n_1 = |312-132| = 180$

$n_2 = |180-810| = 630$

$n_3 = |630-360| = 270$

$n_4 = |270-720| = 450$

$n_5 = |450-540| = 090$

$n_6 = |090-900| = 810$

$n_7 = |810-180| = 630 = n_2$, deci repetitive.

Așadar, obținem un ciclu care se repetă: 630, 270, 450, 090, 810, și tot așa.

Deci acest algoritm este diferit de algoritmul lui Kaprekar, care obține o constantă.

83 șiruri periodice

Alt e-mail către Octavian Cira:

Despre secvențele rezultate din permutări circulare.

Pentru numere de 3 cifre sau mai multe, n = abc (concatenate) de exemplu, nu mai avem constante de tip Kaprekar, deoarece dacă aplicăm o permutare phi lui n, avem $|n-\varphi(n)|$, pe când la Kaprekar se aplică o permutare și lui n ca să-i pună cifrele descrescătoare, de pildă s-o numim descr(n) și altă permutare ca să-i pună cifrele crescătoare, de pildă cresc(n), deci avem diferența absolută $|descr(n) - cresc(n)| = n_1$.

Apoi repetăm procedeul: $|descr(n_1) - cresc(n_1)| = n_2$.

La fel cum spuneți și Dvs.: "Prin urmare sortarea nu este echivalentă cu aplicarea unei singure permutări."

În vreme ce la permutarea noastră avem: $|n - \varphi(n)| = n_1$ {cum vedeți, la primul n nu se mai aplică nicio permutare}, apoi $|n_1 - \varphi(n_1)| = n_2$ {analog, la primul n1 nu se mai aplică nicio permutare}, etc.

Secvențele noastre periodice sunt diferite de ceea ce Kaprekar a propus, nu-s nici măcar generalizări.

[Desigur, pentru numere de o cifră - unde nu-i decât permutarea identică: {1} -> {1}, și numere de două cifre - unde avem numai două permutări: {1, 2} -> {1, 2} si {1, 2} -> {2, 1} se întâmplă să coincidă rezulatele cu Constanta lui Kaprekar, dar asta din cauză că nu avem mai mult de două permutări posibile.]

Kaprekar a obținut numai o singură constantă, nu un șir finit de numere care se repetă ciclic, ca în permutările noastre. Le putem numi "constant periodic sequences".

84 SuperHyperAlgebra &
Neutrosophic SuperHyperAlgebra

We introduce now for the first time the SuperHyperOperation and SuperHyperAlgebra and their corresponding Neutrosophic SuperHyperOperation and Neutrosophic SuperHyperAlgebra.

Definition of SuperHyperOperation (or a more accurate denomination *(m, n)*-SuperHyperOperation).
Let U be a universe of discourse and a non-empty set H, $H \subset U$. Then:

$$\circ_{(m,n)}: H^m \to P^n(H)$$

where the integers $m, n \geq 1$,

$$H^m = \underbrace{H \times H \times \ldots \times H}_{m \text{ times}},$$

and $P^n(H)$ is the n^{th}-power set of the set H,
i.e. $P^2(H) = P\big(P(H)\big)$, $P^3(H) = P\big(P^2(H)\big) = P\Big(P\big(P(H)\big)\Big)$, ...,
$P^n(H) = P\big(P^{n-1}(H)\big)$, where $P^0(H) \triangleq H$, and $P^1(H) \triangleq P(H)$.
This is a *m*-ary HyperOperation on the n^{th}-power set of the set H.

A SuperHyperAxiom or more accurately *(m-n)*-SuperHyperAxiom is an axiom based on the SuperHyperOperations.

A SuperHyperAlgebra or more accurately *(m-n)*-SuperHyperAlgebra is an algebra dealing with SuperHyperOperations and SuperHyperAxioms.

In general, we have SuperHyperStructures or *(m-n)*-SuperHyperStructures.

If all power sets $P^k(H)$, $1 \leq k \leq n$, do not include the empty set ϕ, then one has a classical type SuperHyperAlgebra;

If at least one power set, $P^i(H)$, $i \in \{1, 2, \ldots, n\}$, includes the empty set ϕ, then one has a Neutrosophic SuperHyperAlgebra.

85 Indeterminate Sample Size

A statistician wants to analyze the reaction of the spectators to a handball match, where team A plays against team B. Suppose that about 4,000 tickets have been sold. Spectators who attend the match form a sample, whose size cannot be exactly determined, because

there are also spectators who entered without tickets (as guests, or illegally), while others who had bought tickets could not come for various reasons.

Therefore, the sample size could be estimated between for example between 3,900 and 4,200.

To estimate how many people watched the game on TV is even more vague. Electronically one finds out that about 3 million people have watched it. But this is ambiguous as well, since many people could have been watched on the same TV, while some TVs would have been left on without anyone watching because the owners would have been busy with other things. Sample size was estimated between 2.9 – 3.2 million.

86 Mean of a Sample with partially belonging individuals

Let S = {a, b, c, d} be a sample set of four elements. In the classical statistics it is assumed that all elements belong 100% to the sample, therefore
S = {a(1), b(1), c(1), d(1)}.
Whence the classical mean: CA = (2 + 8 + 5 + 11)/4 = 6.5.

But in the real world, not all elements may totally (100%) belong to the sample, for example, let's assume the neutrosophic sample be:
NS = {a(1.1), b(0.4), c(0.6), d(0.3)}, which means that:
The element a belongs 110% (someone who works overtime, for example, as in the neutrosophic overset), b belongs only 40% to the sample, c belongs 60%, and d belongs 30%.
Whence the neutrosophic mean (NM) is:

$$NM = \frac{2\cdot(1.1)+8\cdot(0.4)+5\cdot(0.6)+11(0.3)}{1.1+0.4+0.6+0.3} = \frac{11.7}{2.4} = 4.875$$

Clearly, the classical mean and the neutrosophic mean are different, CM = 6.5 ≠ 4.875 = NM,

And consequently the variance, standard deviation, probability distribution function and other will be different as well.

But, the neutrosophic mean is more accurate since it reflects the real (not idealistic) mean because it takes into account the degree of membership of each element with respect to the set.

87 Literal and Numerical Neutrosophic Cognitive Maps

A neutrosophic cognitive maps takes values in the discrete set {-1,1,0, I}, where “I” represents the Indeterminacy between two elements, therefore “I” shows up into the connection matrix.

We consider indeterminacy "I" as a *Literal Indeterminacy* (which means we only know that the relationship is indeterminate, but we are not able to measure it),

or *Numerical Indeterminacy* "I", where we can measure the indeterminacy and it may be any value in [0, 1] depending on each application.

Also, we may consider the measuring of Indeterminacy by using *Labels*, such as: Low Indeterminacy (L1), Medium Indeterminacy (L2), Large Indeterminacy (L3) etc. as well, when we cannot, or we do not need exact numerical values.

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 – 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 second book of scilogs collected from my nest of ideas, one may find new and old questions and solutions, some of them already put at work, others dead or waiting, referring to many topics (see *Topics*) in different fields of research – email messages to research colleagues, or replies, notes about authors, articles, or books, so on – in an eager pursuit (*consectatio*) for meanings, reasons and purports of (scientific) things (*res*).

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

F. S.

From the Foreword

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