




Paper Type: Original Article

Upside-Down Logics: Falsification of the Truth and Truthification of the False

Florentin Smarandache ^{1,*} 

¹ Department of Mathematics & Sciences, University of New Mexico, Gallup, NM 87301, USA; smarand@unm.edu.

Received: 22 Sep 2023

Revised: 15 Dec 2023

Accepted: 13 Jan 2024

Published: 17 Jan 2024

Abstract

This paper is about funny science, recreational mathematics, upside-down thinking, or contradictory reasoning (to think backward). Since a statement in some conditions may be true, in other conditions false, and a third type of conditions partially true and partially false. The paper presents for the first time two types of Upside-Down Logic, the first one is falsification of the Truth (when a true statement is transformed into a false one), and the second one is the opposite: Truthification of the False (when a false statement is transformed into a true one) - within the frame of Recreational Neutrosophy. All transformations from $\langle A \rangle$ to $\langle \text{anti}A \rangle$ or vice versa should be real, making sense in our real world. Kind of magic logic! Falsification and Truthification are mostly used in the Social Sciences (Anthropology, Archaeology, Economics, Geography, History, Law, Linguistics, Politics, Psychology, Sociology), Philosophy, etc. excelling in Politics:

Falsifying the Truth of Enemies

[We seek to diminish the enemy's positive side to the point of cancellation and to increase the enemy's negative side to the point of exaggeration;] and

Truthifying the False of the Friends

[The opposite: We seek to decrease the friend's negative side to the point of cancellation, and to increase the friend's positive side to the point of exaggeration.].

Keywords: Neutrosophy, Contradictory Reasoning, Upside-Down Thinking, Recreational Neutrosophy, Recreational Mathematics.

1 | Neutrosophy

Neutrosophy is a philosophical framework and logic-based system introduced by Florentin Smarandache in 1998 [1, 2], which studies the relationship between opposites, contradictions, and their neutral or indeterminate parts, with an aim to explore and understand the ambiguity, inconsistency, and indeterminacy inherent in many concepts and systems.

Neutrosophy's emphasis on neutrality, paradoxes, and indeterminacy makes it relevant for exploring real-world scenarios where truth is complex and multifaceted. It has applications in fields like artificial intelligence, decision-making, and problem-solving, offering a way to handle uncertainty and contradiction.

Neutrosophy is based on the dynamics between the opposites $\langle A \rangle$, $\langle \text{anti}A \rangle$, and their neutralities $\langle \text{neut}A \rangle$, where $\langle A \rangle$ is an item (concept, attribute, idea, theory, etc.) and $\langle \text{anti}A \rangle$ its opposite, while $\langle \text{neut}A \rangle$ is the neutrals or indeterminacies between them.



Corresponding Author: smarand@unm.edu



<https://doi.org/10.61356/j.saem.2024.1248>



Licensee **Systems Assessment and Engineering Management**. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0>).

For example: $\langle A \rangle = \text{truth}$, $\langle \text{anti}A \rangle = \text{false}$, and $\langle \text{neut}A \rangle = \text{neutral}$, or indeterminacy between truth and false (for example 70% truth and 30% false).

Neutrosophy can be seen as a generalization of dualism, Yin Yang in Ancient Chinese philosophy or dialectics, offering a broader and more flexible framework for understanding contradictions and relationships among opposites.

The neutral part $\langle \text{neut}A \rangle$ may be, for example, partially $\langle A \rangle$, and partially $\langle \text{anti}A \rangle$. Some neutrality may have a higher degree of truth than falsehood, others a higher degree of falsehood than truth. In the worst scenario, as indeterminacy in between the opposite one may have a partial degree of $\langle A \rangle$, partial degree of $\langle \text{neut}A \rangle$, and partial degree of $\langle \text{anti}A \rangle$.

2 | Procedures and Transformations Used in Upside-Down Logics [4-6]

Neutrosophy is a philosophical framework and logic-based system introduced by Florentin Smarandache in 1998 [1, 2], which studies the relationship between opposites, contradictions, and their neutral or indeterminate parts, to explore and understand the ambiguity, inconsistency, and indeterminacy inherent in many concepts and systems.

Truthification (Truth-ification) means: to make something true; we introduce this word. Both, Falsification of the Truth & Truthification of the False, are carried out through the same strategies:

- By changing the space or the time of the problem;
- By changing the attributes of the elements in the space;
- By changing the logic (procedure, tactic, method) of approaching the problem;
- By interpreting the opposite meaning;
- Reversed logic;
- By transforming the linguist expressions from the figurative sense to the proper sense, or vice-versa;
- By finding the sense of the non-sense, or the non-sense of the sense;
- Word games, puzzles;
- Riddles;
- Jokes;
- Etc.

Of course, these methods and practical strategies should be real, they should make sense in our everyday life.

2.1 | Changing the Space or Time of a Problem

This involves shifting the context or perspective to gain new insights. Let us exercise an example of changing the timeframe: Problems can often seem daunting because of time constraints. By imagining the problem in a different timeframe, you can explore new approaches. For example, if you're working on a project with a tight deadline, imagine how you'd tackle it with more time. This exercise can reveal shortcuts or techniques that can be applied even within a limited timeframe.

Changing the space or time of the problem involves manipulating the context or setting of an issue to create a different narrative. By altering where or when an event is said to have occurred, one can shift its perceived truth.

2.2 | Changing Attributes of Elements in a Space

This technique involves altering certain characteristics to create a different outcome. For example, if you're solving a puzzle involving color-coded items, changing the color scheme could lead to a new solution.

Changing the attributes or characteristics of the problem involves modifying certain elements or traits of an issue to make it seem more plausible or to cast doubt on its accuracy. For example, changing key details about a person or event can make a fabricated story seem more credible, or make a true story appear dubious.

2.3 | Interpreting in Reverse

This method involves taking a concept and flipping it, often leading to humorous or unexpected outcomes.

- (i) An example could be the classic double-sense of a word, "What has keys but can't open locks?" The answer is a piano, interpreting the word "keys" in a non-traditional way.

Changing the Logic (Procedure, Tactic, Method) of Approaching the Problem. This strategy focuses on altering the reasoning or method used to analyze an issue. By introducing different logic or misusing data, one can create confusion or lead to false conclusions.

- (ii) Another logic: How can we have ten divided by two equals to zero?

Answer:

Ten cookies divided by two kids are eaten and nothing has remained!

2.4 | Literal and Figurative Interpretations

This technique involves taking figurative language literally or vice versa. A joke that uses this is, "I told my friend to break a leg, and he actually fell!" Here, the phrase "break a leg," which usually means "good luck," is taken literally.

2.5 | Riddles

Riddles often rely on misleading information or double meanings to challenge the solver.

- (i) A classic example is, "What has to be broken before you can use it?" The answer is "an egg," where the word "broken" is used in a different context.
- (ii) Spell out the number NINE.

Solution:

| | | | | | | | | |

(In this case "spell" means to list all little (vertical, oblique, and horizontal) bars that compose the word NINE, or eleven bars!)

- (iii) I am invisible but can be measured. I affect everyone and everything that is anything. I span the universe and change from place to place. What am I?

Solution:

I am "gravity".

2.6 | Jokes

Jokes use a variety of techniques to create humor, including wordplay, puns, or unexpected twists.

- (i) An example of a pun-based joke is, "Why don't scientists trust atoms? Because they make up everything!" This plays on the double meaning of "make up."
- (ii) How would a mathematician measure the intensity of an earthquake on a meteor as in the movie Armageddon?

Solution:

It is impossible to have an earthquake on a meteor!

- (iii) 15 Hunters Went Bear Hunting. One Killed 2 Bears. How Many Bears Have One Killed?

Solution:

Two. (“One” is the name of one of the hunters.)

(iv) $\frac{w}{2} = u$. Find a logic for this equality.

Solution:

The letter “w” is double “u”, or “uu”, then dividing “uu” by 2 one gets one “u”.

2.7 | Funny Problems

(i) Calculate the volume of a square (!)

Solution:

Volume = Area of the Base \times Height = Side² \times 0 = 0! We look at the square as an extreme case of a parallelepiped whose height is null.

(ii) $? \times 7 = 2$ (?)

Solution:

Of course, $\frac{2}{7} \times 7 = 2$ (!)

(iii) If you have a couple of threes and divide them in half, why do you end up with 4 pieces?

Solution: $\exists\exists$

2.8 | The Lucky Mathematics! [3]

If, by apparently a wrong calculation (method, algorithm, operation, etc.) one arrives at the right answer, that is called a Lucky Calculation (Method, Algorithm, Operation, etc.)!

The apparently wrong calculation (method, algorithm, operation, etc.) should be funny (somehow similar to a correct one, producing confusion and a smile)!

(i) What is a hungry man's multiplication factor?

Solution:

8×8 , because “eight times eight” is pronounced the same as “ate time ate”!

(ii) How can you add 3 with 3 and get 8?

Solution:

$\in\exists = 8$

{Let's laugh: ha, ha, ha!}

2.9 | Falsification and Truthification in Soft Sciences

They are mostly used in the Social Sciences (Anthropology, Archaeology, Economics, Geography, History, Law, Linguistics, Politics, Psychology, Sociology), but also in Philosophy, etc.

Excelling in Politics:

- Falsifying the Truth of enemies; and
- Truthifying the False of the Friends.

Real Examples frequently broadcasted on the TV:

Let's assume a project of law is proposed to Congress to be approved. People who oppose it are labeled as enemies by the leaders, while those who support it are labeled as friends.

- (i) Let's assume that there is a demonstration of several thousand people in the city center against this project of law.

Falsification of the Truth:

The TV station broadcast: A few dozen people demonstrate in the city center against this project of law.

- (ii) Let's assume that there is a counterdemonstration of a few people in the city center in support of this project of law.

Truthification of the False:

The TV station broadcast: Thousands of people demonstrate in the city center in support of this project of law.

2.10 | More Methods and Strategies the Readers may Design Themselves

3 | Real Examples of Falsification of the Truth

Neutrosophy is a philosophical framework and logic-based system introduced by Florentin Smarandache in 1998 [1, 2], which studies the relationship between opposites, contradictions, and their neutral or indeterminate parts, with an aim to explore and understand the ambiguity, inconsistency, and indeterminacy inherent in many concepts and systems.

- 1) $1 = 1$ (True)

Falsification of the above:

1 meter = 1 kilometer {*False*, by introducing the elements' attributes (measurement units)}

- 2) $2 + 3 = 5$ (True)

Falsification of the above:

$2 + 3 = 5$ in base 10, but changing the base to 5 one gets:

$2 + 3 = 10$ in base 5, or $2_5 + 3_5 = 10_5$.

- 3) Ten birds are flying up in the sky. A hunter shoots three of them. How many birds remain?

Answer:

$10 - 3 = 7$ birds, those who are still flying [the space is the sky].

Three falsifications of the above [by changing the space of the elements (birds)].

- 3.1 Ten birds are on a fence. A hunter shoots three of them. How many birds remain?

Answer: The space is the fence.

None, because the three dead birds fell off the fence and the other seven flew away!

- 3.2 Ten birds are in a meadow. A hunter shoots three of them. How many birds remain?

Answer: The space is the meadow.

Three birds, the dead birds remaining on the meadow, because the other seven flew away!

- 3.3 Ten birds are in a cage. A hunter shoots three of them. How many birds remain?

Answer: The space is the cage.

Ten birds, dead and alive, because none could get out of the cage!

4 | Real Examples of Truthification of the False

- 1) $2 = 1$ (False)

Solution (Truthification of the above):

2 pints = 1 quart {True, by introducing the elements' attributes (measurement units)}

- 2) A man weights the following weights on the following dates.

6/1/70	150 lbs.
6/3/70	0 lbs.
6/5/70	25 lbs.
6/7/70	0 lbs.
6/9/70	145 lbs.

How is it possible?

Solution (Truthification):

Man is an astronaut who went to the Moon and back.

Outer-space weightlessness: 0 lbs.

$\frac{1}{6}$ of his Earth Gravity (150 lbs), or Gravity of Moon: 25 lbs.

- 3) From two false hypotheses get a true statement.

Grass is edible. False

Edible things are green. False

Therefore, grass is green. True

- 4) “When a cup of milk is added to a cup of popcorn then only one cup of mixture will result because the cup of popcorn will very nearly absorb a whole cup of milk without spillage. So, in the last case, we have $1 + 1 = 1$. It is impossible in the conventional arithmetic but it is true for some non-Diophantine arithmetic.” [7].

- 5) Prove that the equation $x = x + 2$ has two distinct solutions.

Answer: This is an inconsistent equation in the set of finite real numbers, but in the set of infinities it is not: the solutions are $x = \pm\infty$.

5 | Conclusion

This paper presented for the first time two types of Upside-Down Logic, the first one: Falsification of the Truth (when a true statement is transformed into a false one), and the second one is the opposite: Truthification of the False (when a false statement is transformed into a true one) - within the frame of Recreational Neutrosophy. All transformations from $\langle A \rangle$ to $\langle \text{anti}A \rangle$ or vice versa should be real, making sense in our real world. Kind of magic logic!

Acknowledgments

The author is grateful to the editorial and reviewers, as well as the correspondent author, who offered assistance in the form of advice, assessment, and checking during the study period.

Funding

This research has no funding source.

Data Availability

The datasets generated during and/or analyzed during the current study are not publicly available due to the privacy-preserving nature of the data but are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that there is no conflict of interest in the research.

Ethical Approval

This article does not contain any studies with human participants or animals performed by any of the authors.

References

- [1] Florentin Smarandache, Neutrosophy, A New Branch of Philosophy, Multiple Valued Logic/An International Journal, USA, Vol. 8, No. 3, pp. 297-384, 2002.
- [2] F. Smarandache, A Unifying Field in Logics: Neutrosophic Logic, Multiple Valued Logic/An International Journal, USA, Vol. 8, No. 3, pp. 385-438, 2002. The whole issue of this journal is dedicated to Neutrosophy and Neutrosophic Logic/Set/Probability/Statistics.
- [3] Charles Ashbacher, Smarandache Lucky Math, in <Sm. Not. J.>, Vol. 9, p. 155, 1998.
- [4] F. Smarandache, Amusing Problems, in his book Collected Papers, Vol. I, second edition, translated from Romanian and French into English, p. 213, ProQuest Information and Learning, Ann Arbor, MI, USA, 2007, <https://fs.unm.edu/CP1.pdf>
- [5] F. Smarandache, Collected Papers, Vol. II, University of Kishinev Press, Kishinev, 200 p., 1997.
- [6] Florentin Smarandache, Funny Problems, in his book Collected Papers, Vol. 3, Ed. Abaddaba, Oradea, Romania, pp. 137-142, 2000, <https://fs.unm.edu/CP3.pdf>
- [7] Mark Burgin, Diophantine and Non-Diophantine Arithmetics: Operations with Numbers in Science and Everyday Life, arXiv, <https://arxiv.org/pdf/math/0108149#:~:text=A%20non%2DDiophantine%20arithmetic%20A,All%20dual%20arithmetics%20are%20Archimedean>, accessed on 24 April 2024.

Disclaimer/Publisher's Note: The perspectives, opinions, and data shared in all publications are the sole responsibility of the individual authors and contributors, and do not necessarily reflect the views of Sciences Force or the editorial team. Sciences Force and the editorial team disclaim any liability for potential harm to individuals or property resulting from the ideas, methods, instructions, or products referenced in the content.