

УДК 81'42

DOI: [https://doi.org/10.18524/2307-4604.2018.2\(41\).146315](https://doi.org/10.18524/2307-4604.2018.2(41).146315)

CHARACTERISTICS OF PSEUDOSCIENTIFIC TEXTS

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“Science is basically an inoculation against charlatans”

Neil de Grasse Tyson

The article deals with the exposure of examples of pseudoscientific discourse, as well as the investigation of its linguistic features (like use of weasel words, technical jargon and neuro-linguistic programming). Science is a complex concept. Everyday scientists explore phenomena that are beyond the understanding of the layman. Science is a set of methods designed for testing hypotheses and constructing theories. If the community of scientists actively accepts a new idea, which is distributed in different directions, is included in the study and provides useful knowledge, reflected in presentations/publications; if it opens up new areas of research, this is most likely a true science. It uses terms and hypotheses, the meaning of which can be understood only by a narrow circle of specialists. Consequently, an amateur is not able to assess the veracity or falsity of certain scientific theories. Pseudoscience, in its turn, abounds with science-like terms, complex and confusing system of reasoning/conclusions. In pseudoscience it is usual to find the appropriation of well-known scientific terms in a distorted form, and a discussion on objects or phenomena, the existence of which has not yet been proven. Science accepts challenges and tries to examine various theories. Pseudoscience, on the other hand, tends to perceive with hostility any challenge to its dogma. The problem lies in the distinction between science and pseudoscience. Many scientists admit that the boundaries between them are rather blurred. Therefore, the purpose of this article is to identify the characteristic features which are peculiar to such a phenomenon as pseudoscience.

Key words: pseudoscience, weasel words, linguistic tools, advertising, framing, reframing.

ХАРАКТЕРИСТИКИ ПСЕВДОНАУКОВИХ ТЕКСТІВ

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У статті розглядаються приклади псевдонаукового дискурсу, а також дослідження його лінгвістичних характеристик, для яких властиве використання слів з розпливчавим змістом, технічного жаргону і застосування нейролінгвістичного програмування. Наука становить собою складну систему. Кожен день вчені досліджують явища, які не будуть зрозумілі обивателю. Наука - це набір методів, призначених для перевірки гіпотез і побудови теорій. Якщо спільнота вчених активно приймає нову ідею, і якщо ця ідея поширюється за різними напрямками і включена в дослідження, які приносять корисні знання, відображені в презентаціях, публікаціях і відкриває нові області досліджень, це, швидше за все, і є справжня наука. Вона використовує терміни і гіпотези, зміст яких буде зрозумілий тільки вузькому колу фахівців. Отже, звичайна людина не може оцінити достовірність або хибність деяких наукових теорій. Псевдонаука, в свою чергу, сповнена складною і заплутаною системою міркувань/висновків, а також безліччю наукоподібних термінів. У псевдонауці зазвичай можна зустріти привласнення відомих наукових термінів у спотвореному вигляді, і, крім того, обговорення об'єктів або явищ, існування яких ще навіть не доведено. Наука приймає виклики і намагається критично розглянути різні теорії. З іншого боку, псевдонаука схильна вороже сприймати будь-який виклик своїй догмі. Проблема полягає в розмежуванні науки і псевдонауки. Багато вчених визнають, що їхні межі досить розмиті. Тому метою даної статті є виявлення характерних особливостей, властивих такому феномену, як псевдонаука.

Ключові слова: псевдонаука, слова з розпливчастим змістом, лінгвістичні засоби, реклама, фреймінг, рефреймінг.

ХАРАКТЕРИСТИКИ ПСЕВДОНАУЧНИХ ТЕКСТОВ

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В статье рассматриваются примеры псевдонаучного дискурса, а также исследование его лингвистических характеристик, для которых свойственно использование слов с расплывчатым смыслом, технического жаргона и применение нейролингвистического программирования. Наука представляет собой сложную систему. Каждый день ученые исследуют явления, которые не будут понятны обывателю. Наука – это набор методов, предназначенных для проверки гипотез и построения теорий. Если сообщество ученых активно принимает новую идею, и если эта идея распространяется по разным направлениям и включена в исследования, которые приносят полезные знания, отраженные в презентациях, публикациях и открывает новые области исследований, это, скорее всего, и есть истинная наука. Она использует термины и гипотезы, смысл которых можно понять только узким кругом специалистов. Следовательно, обычный человек не может оценить достоверность или ложность некоторых научных теорий. Псевдонаука, в свою очередь, изобилует сложной и запутанной системой рассуждений/выводов, а также множеством наукообразных терминов. В псевдонауке обычно можно встретить присвоение известных научных терминов в искаженном виде, и, кроме того, обсуждение предполагаемых объектов или явлений, существование которых еще даже не доказано. Наука принимает вызовы и пытается критически рассмотреть различные теории. С другой стороны, псевдонаука склонна враждебно воспринимать любой вызов своей догме. Проблема заключается в разграничении науки и псевдонауки. Многие ученые признают, что границы между ними довольно размыты. Поэтому целью данной статьи является выявление характерных особенностей, свойственных такому феномену, как псевдонаука.

Ключевые слова: псевдонаука, слова с расплывчатым смыслом, лингвистические средства, реклама, фрейминг, рефрейминг.

Introduction

True science is an unquestionable mover of development and with its help people can solve many problems. However, society is not always able to build a harmonious relationship with it because of the certain contradictions. That is why we are dealing with the spread of pseudo-scientific theories. Parasitizing on the authority of real science, modern pseudoscience tries in every possible way to resemble it.

Nowadays there is a large number of examples of so-called pseudoscience: starting with astrology and finishing with spectacular (at first sight) shamanic rituals. American psychologist Jonathan Smith describes the practice of healers, which despite the dubious reputation remains popular and, therefore, profitable. This practice implies a procedure during which the “cause” of the disease is extracted from the patient’s body in a “surgical” way. At the same time healer himself/herself doesn’t even have medical education or necessary equipment. Pseudo-surgery is performed without anesthesia, and after it, as proof of the “problem”, the internal organs of the animals (liver, kidneys, etc.) are shown to an amazed patient.

Results and discussion

As for linguistic aspect of the phenomena of “healing” (in particular

concerning weasel words) the above mentioned scientist introduces us to his curious philological observation:

“Paranormalists sometimes engage in weaselizing by their use of the word “healing.” “Healing” generally means “return to physiological health.” When a broken leg is healed, you can walk again. Healing can also mean “return to psychological well-being.” Even if your leg is broken, you are “healed” if you have recovered from the initial distress of breaking your leg and are more or less happy. Because of these two meanings, faith healers can weasel out of promises. They may claim to “heal” your arthritis, take your “donation” (“healing” your wallet of excess weight), and then praise the Lord that your “spirit” has been healed. Who are you to challenge such a demonstration of piety? A similar and clever weasel word is the construction “dis-ease.” Of course, when spoken, it sounds like “disease,” a medical condition, whereas “dis-ease” should refer to something like “discomfort.” A healer can claim a worthless potion cures your “dis-ease” and convey the impression of offering a medical treatment when in fact he is simply making you feel good. What is clever about this weasel word is that the healer has a backup rationalization, the idea that psychological well-being (“ease”) is important for physical health, and that his nostrum removes obstacles to such good feelings (“dis-ease”)” (Smith 2010: 78).

Among the typical signs of pseudoscience are the following:

- incorporation of mythological, religious or political affirmations into research work;
- complete absence of any result (proving or refutation of the theory);
- impossibility to refute or confirm the verity of the theory;
- appealing to the “argument of the person”, a scientist or influential person in the society instead of using specific scientific facts;
- excessive use of scientific terminology;
- appealing to the media instead of the scientific community.

In order to prevent crossing the line between pseudoscience and real science, Smith gives the following recommendations:

“...when performing a reality check on an extraordinary claim, we need to be alert to sources of error and consider five fundamental alternative explanations:

- *oddities in nature and the world of statistics;*
- *perceptual error or trickery;*
- *memory error;*
- *the placebo effect;*
- *sensory anomalies and hallucinations.*

Together our reality-checking detective tools and questions constitute a broader view of the scientific method. Misused, they become pseudoscience. A scientist is a smart detective. A pseudoscientist is a bumbling detective, seduced by the flashy jewelry and intoxicating perfume of false leads. Good science appropriately uses sources, logic, and observation (texts and theory) and systematically considers alternative explanations. Pseudoscience is the claimed application of the scientific method in a way that misuses sources, logic, and observation (texts and theory) and fails to systematically consider alternative explanations” (Smith 2010: 38).

Another, not less interesting aspect of pseudoscience is its language, namely technical jargon, which is used for the purpose of fooling and influencing the masses. With its help, the text becomes more considerable and twisted, and this in turn leads to unconditional confidence of the average person to such kind of information. Speaking about pseudoscientific language it is necessary to mention its use in different types of advertisements. Here is an example of a text with technobabble terminology and commentary, which emphasizes the absurdity of the cited:

*“Spring Water straight from the spring is **magnetised, energised, mineralised**, even the molecules are smaller and are assimilated more rapidly by our bodies.*

The water would certainly be mineralised, but the claims that it’s energised and magnetised are nonsense. And if the molecules were really smaller than other water molecules, the entire scientific community would be flocking to the resort to obtain samples”.

The most “fertile ground” for using alike language is the sphere of cosmetic TV commercials. Seeking for beauty and compliance with its standards, women become vulnerable target for verbal manipulators. Advertisement of the well-known company L’Oréal about its product “Revitalift” is the best illustration of confrontation between the real science and the world of agitation:

*“In this commercial, 41-year old British actress Rachel Weisz expresses her devotion to L’Oréal’s Revitalift face cream, declaring confidently: “It works!” Sure it does, Rachel. But what is this product actually supposed to do? Well, according to the product’s website, it is “not a facelift” (I’m pretty sure we can say that Rachel is right and that Revitalift works at not being a facelift), but instead can be described using large-print terms like “**anti-wrinkle**” and “**firming**”. Now a casual observer might take these terms to imply a capacity to eliminate (or reduce) wrinkles and to firm the skin, yes? Well, not so fast: a close reading of the small print tells us that Revitalift...*

...reduces the appearance of wrinkles and leaves skin feeling firmer around the eye area [emphasis added].

You see? It affects “appearances” and “feelings” as opposed to, well, actual skin. The script for the TV commercial reinforces this equivocation: Rachel’s skin “feels” firmer, her lines “seem” to fade. And in a deft dodge of potential legalistic accusations, L’Oréal go on to invent their own verb: they tell us that the product will “revitalift your skin” (how do we know if they’re wrong?), an effect that L’Oréal says “makes all the difference” (to what, we’ll never know)” (Hughes 2011).

Considering that pseudoscience appeals, first of all, to emotions, there is a need in psychological, and as a consequence, linguistic tools, which are “the main body” of the discipline of neuro-linguistic programming (NLP). Speaking about NLP, it is necessary to mention its techniques, namely – **framing** and **reframing**. The concept of **framing** consists in psychological process of making conclusion about particular phenomena based on certain kind of informational presentation. This technique is popular in mass media due to concise manner of informing (since there is an opportunity to deliver your proposal in the most favorable light, while not overloading the addressee with unnecessary information).

According to modern definition, **reframe** means “to look at, present, or think of (beliefs, ideas, relationships, etc.) in a new or different way”. **Reframing**, simply speaking, is a special technique of “putting a picture in a new frame”, which allows you to change the perception. Aforementioned method is strongly connected with metaphor. Once again, it's widely used in the sphere of marketing, especially when we deal with pseudoscientific ads (like in case with New Balance):

“For spring 2010, New Balance is reframing the way women feel about exercise so they can embrace all that it can be: an indulgence for the mind, body and soul. New Balance Wellness, a mindset more than a category, will be a focus for the brand beginning this spring. Kicking off with the first footwear collection to support Wellness is the 1442 rock&tone toning shoe and toning sandal.

Designed for walking, rock&tone footwear tones the muscles from your legs to your glutes to your core and helps burn calories. Burning calories is the basis of weight loss, a goal for a healthy wellbeing. While rock&tone footwear provides similar benefits as competitive products, consumer testing has shown it to be the most wearable and most comfortable perception testing in New Balance's state of the art Sports Research Laboratory. Also, test consumers have responded positively to the lower profile sole unit and overall more stylish aesthetic.

A little bit later this “fairytale” was demolished and the company had to pay settlement as their hyped product didn't bring any result:

“In their complaint, filed in Massachusetts, where New Balance is headquartered, the plaintiffs called the company's advertising deceptive. “Wearing the Toning Shoes provides no additional activation to the gluteus, hamstring or calf muscles, and does not burn any additional calories,” lawyers wrote. “Moreover, scientists are concerned that wearing the Toning Shoes may lead to injury, a fact which New Balance deceptively omits from its advertising”.

The use of metaphorical frames helps representative of pseudoscience to manipulate people's consciousness. It's all because of human nature. When someone has his/her own frame or seeing of situation, he/she will always take into account facts that fit to it. Unfortunately, the new information will be ignored in most cases. That's why, when we are up against enthusiast (for example, from the sphere of ufology) we only deal with reports of witnesses and pure emotions:

“I was shocked to see the object traveled more or less directly over my home and continued on a due easterly direction at a speed that I also cannot say for certain however, again, if having to choose a speed I would say it maintained a speed of between 50-100 mph. Probably closer to the 50 side I believe. I had the presence of mind while it was directly over me to open up my camera app and start snapping in its now eastern reference to me at about 30 degrees where it passed behind some trees and I lost sight of it. I just aimed in the objects direction snapping two photographs as it was on its easterly course just before it passed out of view. Information embedded in the photos state the time of the photos at 7:32 PM establishing the exact time of the occurrence. I had approximately a 120 degree view of the sky and it completely passed through that view in that 20-30 seconds. The object in the pictures can be seen at just

above and to the right of the tree. Upon zooming in the flat sides of the object as well as its diamond shape can be discerned”.

When it is necessary scientists use specific language designed to convey certain ideas and knowledge that are not usually part of everyday life. Words like “energy”, “photon”, “vibration”, “electromagnetism” etc. are recognized by all, but recognition does not mean understanding. Some of these concepts are not the part of basic education and sometimes are extremely difficult to understand. As we have already noticed, pseudoscience is a great “fan” of metaphors and so that often overuses such words in an attempt to seem important, to ensure the credibility of their ideas, as well as confuse those who hear them:

“The Universal Ether, which is postulated by science without its nature being understood clearly, is held by the Hermetists to be but a higher manifestation of that which is erroneously called matter — that is to say, Matter at a higher degree of vibration — and is called by them “The Ethereal Substance.” The Hermetists teach that this Ethereal Substance is of extreme tenuity and elasticity, and pervades universal space, serving as a medium of transmission of waves of vibratory energy, such as heat, light, electricity, magnetism, etc. The Teachings are that The Ethereal Substance is a connecting link between the forms of vibratory energy known as “Matter” on the one hand, and “Energy or Force” on the other; and also that it manifests a degree of vibration, in rate and mode, entirely its own”.

The next example of framing use is noticed in the field connected with the theme of climate change. Nowadays this theme is on everyone’s lips and there are a lot of controversial points of view related to it. People have divided into two different groups – those, who believe in climate change (and “human factor” as the key reason of the process) and those, who deny climate change at all. The controversy started The Advancement of Sound Science Center (TASSC) in 1993, lobbied by tobacco industry, and had an aim to stand up against official science. By using popular worries as fear of passive smoke and climate change as well, TASSC set people against scientific evidence. Later on the center began to receive donations from different oil companies like Exxon Mobil and created site about “pseudoscience” – climatology (Hamilton: 2010).

According to recent investigation by O. Kapranov, framing is extensively utilized by the well-known Norwegian oil company – Statoil Corporation, in order to have a desirable effect on consumers:

“The frame “Renewable Energy” seems to be embedded into the frame “Corporate Responsibility”. By blending the frames “Renewable Energy” and “Corporate Responsibility”, Statoil portrays itself as an environmentally responsible corporation. The combination of these frames highlights Statoil’s environmentally conscious image, which the corporation projects onto its customers. As a responsible and environmentally conscious corporation, Statoil encourages customers to buy biofuels to reduce fossil fuels emissions, thus indirectly contributing to the issue of climate change mitigation:

(10) We try to encourage our customers to use more environmentally responsible transport fuels by raising their awareness of the benefits of biofuels and new fuel additives. An increasing number of our customers wish to contribute

to a more sustainable world by making reasonable, but considerate everyday choices. (Statoil, 2010, p.69)

In (10), the reference to “a more sustainable world” (Statoil, 2010, p.69) is indicative of Statoil’s self-image as an international corporation which is involved in consumers’ decision-making on the global energy market.” (Kapranov 2018: 63).

Conclusion

As we can see, pseudoscientific discourse penetrates every sphere of our life and has a wide range of admirers due to great number of undiscovered things in the world. Unfortunately, science can not immediately solve all problems of cognition and explain all the incomprehensible. Many phenomena of nature have not yet received a convincing scientific explanation and therefore remain mysterious. These phenomena are not scientifically explained because their ways of cognition have not been formed yet. However, human history proves that sooner or later, it will be investigated, when appropriate means of cognition will be found.

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Стаття надійшла до редакції 2.10.2018 р.