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Scientific experiment in popular science program «Rujnivnyky mifiv (Mythbusters)»: functions, specificity of presentation

Кузнецова М. О. Науковий експеримент у науково-популярній програмі «Руйнівники міфів»: функції, специфіка подання. У статті проаналізовані методи популяризації науки у вітчизняному телепросторі. Досліджено поняття «експеримент» у різних галузях науки, а також явище наукового експерименту і роль його візуалізації в науково-популярній тележурналістиці як засіб отримання глядачем опосередкованого емпіричного досвіду стосовно наукових явищ і процесів. Для ретельного аналізу було обрано американську телепрограму «Руйнівники міфів», оскільки вона є репрезентативним зразком саме науково-популярної телепрограми у форматі наукового експерименту. Були визначені популярні для візуалізації експериментів наукові напрямки, джерела отримання інформації для проведення експерименту, а також функції експерименту у науково-популярній програмі.

Ключові слова: вербалізація, візуалізація, довколонауковий міф, експеримент, емпіричний досвід, науковий експеримент, науковий скептицизм, науково-популярна програма, популяризація науки, псевдонауковий міф, «Руйнівники міфів».

Кузнецова М. А. Научный эксперимент в научно-популярной программе «Разрушители легенд»: функции, специфика представления. В статье проанализированы методы популяризации науки в отечественном телеэфире. Исследовано понятие «эксперимент» в различных областях науки, а также явление научного эксперимента и роль его визуализации в научно-популярной тележурналистике как средство получения зрителем опосредованного эмпирического опыта о научных явлениях и процессах. Для детального анализа была выбрана американская телепрограмма «Разрушители легенд», поскольку она является репрезентативным образцом именно научно-популярной телепрограммы в формате научного эксперимента. Были определены популярные для визуализации экспериментов научные направления, источники получения информации для проведения эксперимента, а также функции эксперимента в научно-популярной программе.

Ключевые слова: вербализация, визуализация, околонаучный миф, эксперимент, эмпирический опыт, научный эксперимент, научный скептицизм, научно-популярная программа, популяризация науки, псевдонаучный миф, «Разрушители легенд».

Kuznetsova M. Scientific experiment in popular science program «Rujnivnyky mifiv (Mythbusters)»: functions, specificity of presentation. The effective methods of influence on the audience and instruments of science popularization in domestic TV space have been analyzed in the article. The concept «experiment» in various fields of science and scientific experiment phenomenon and its role of visualization in scientific and popular TV-journalism have been explored as means of getting the viewer indirect empirical evidence regarding to scientific phenomena and processes. The American TV show «Mythbusters» is chosen for a thorough analysis because it is a representative sample of a popular TV format of a scientific experiment. It was investigated for the audience preferences regarding to sources of information for the experiment. Popular visualization experiment research areas, authoritative scientific experiment performers and functions of experiment in popular scientific program were identified. The role of popular programs presented in the format of a scientific experiment in shaping public opinion on science itself was researched.

Keywords: verbalization, visualization, around scientific myth, experiment, empirical experience, scientific experiment, scientific skepticism, popular sciense program, popularization of science, pseudoscientific myth, «Mythbusters».

The organic connection of words and images on television is a complex, but an essential element of creating a quality TV product. Some TV programs show events do not require a lengthy review: the picture speaks for itself and can be much more eloquently stated in the frame or behind the scenes with a lot of words. However, if we are talking about television programs on, for example, the exact Sciences, the situation is different, because to prove a certain theorem or explain the formula only with the help of the visual is extremely difficult or impossible. In such cases an effective method of impact on the viewer and a tool for the popularization of science on television is the visualization of the experiment.

For further studies it is expedient to emphasize that promoting science is «the process of disseminating scientific knowledge in modern and accessible form for a wide range of people. One of the most important challenges facing the popularization of science, the "translation" of expert knowledge in the language of a common

listener, reader and viewer» [9].

One of the main tools of popularization of science on television is a popular science program. To popularize science on TV, you can use almost all genres. For example, information regarding scientific discoveries we receive from the news. The news covers audience, and therefore, the number of viewers is one of the leading places in the ranking of instruments of popularization of science on television. To popularize science for children, for example, with the help of cartoons. A notable example of such a communication channel is the cartoon «Fixiki», which is broadcasted on Ukrainian television (at the time of December 2016 – TV «Pixel», «Plusplus»). To popularize science with the help of advertising, which attracts to the means of viewer exposure to the scientific facts. For example, in an advertising campaign of toothpaste «32 Norma» facts about the number of teeth of different animals (Panda – 26, shark – 1500 etc.) and of person were used .

In a modern TV one can popularize science in two ways: using mass or specialized channels. A latest or illuminate specific theme, for example, connected with the history or animal world, or is a platform for the broadcast of popular science programs of various subjects. Mass channels differ in the orientation to the mass audience, and accordingly, the proportion of popular science content on them, usually minimized, although the mass media cover a much wider audience, and thus has the ability to popularize science and to influence a massive audience [4]. In Ukraine there are no specialized scientific-popular channels, but there are mass channels, which pay much attention to popular scientific content. There are TV channels «MEGA», «TONIS», «ECO-TV» etc.

Scientific-popular program is commonly interpreted as «television genre, which task is to publish scientific information, facts and the results of studies to describe the level of General concepts (i.e. "popular language") scientific hypotheses, ideas, discoveries, insights that can apply to both already well-studied issues, and those that are in the process of development, "at the forefront" of science. Popular science films focus on the scientific side of thinking, on the achievements of science and develop a scientific approach to life» [7].

To issues of popular science content on television are devoted the works of a number of scholars, including A. Conovets, A. Makarova, S. Miller, N. Rugilsford, A. Tertychnyi, N. Zelinskaya, etc. Along with this, we note that the experiment as a method of influence on the audience of popular science content and the role of imaging remains insufficiently explored, in particular by Ukrainian scientists that causes the urgency of our work.

The aim of this work is to investigate the phenomenon of the experiment and its role in visualization and commenting in popular science journalism as a means of obtaining a spectator of mediated empirical evidence on scientific phenomena and processes.

First of all it is necessary to analyze the concept of the experiment. There are several definitions of this concept focus on those which are most representative in the context of our study.

In the broadest meaning of the word «Big dictionary of the Ukrainian language» treats «experiment» as «one of the main methods of scientific research, in which determination of phenomena occurs with appropriate elected or artificially created conditions», and as «active human action on nature and its artificial reproduction of various phenomena with the purpose of studying objective laws» [5:340].

Understanding of experiment in sociology is somewhat different from the General meaning of this concept. In particular, researchers M. Chepa and N. Bugaeva interpret the experiment as an «attempt, experience that require confirmation or refutation, in the form of knowledge, one of the main methods of scientific research in which the study of phenomena takes place in a suitably chosen or artificially created conditions for the emergence of those processes, the observation of which is necessary to establish logical relations between phenomena. Important characteristics of the experiment is its reliability and validity» [11].

But scientist L. Kopets in «Classic experiments in psychology» gives the following definition of experiment: «the research strategy that calls for targeted surveillance of a particular process in the context of regulatory changes in individual characteristics of the conditions of its flow. It is planned and managed a study in which the experimenter acts on the isolated object and detects changes in its state. The study is aimed at testing the hypothesis about a causal relationship between exposure to the independent variable and changed the object state (the dependent variable)» [6].

«The newest philosophical dictionary» interprets the experiment as a «method of empirical knowledge, by which controlled and managed conditions (often specially designed) gain knowledge about the relationship (often causal) between events and objects, or discover new properties of objects or phenomena. The experiment is the most complex and effective method of empirical knowledge, which is

associated with the formation of European experimental science and the assertion of the dominance of explanatory models in the natural Sciences as a whole» [8:1218].

Not paid attention to the concept of «experiment» and scientists of journalism. A. Tertychniy interprets the experiment as «the latest genre of journalism that emerged in the 90s of the twentieth century and focused on current information expectations of the media audience, which seeks to "live" sensational information» [10:35].

As you can see, all definitions, with the exception of the experiment in journalism, united by the concepts of «research» and «knowledge», and knowledge is the logical result of the research. In journalism, the experiment is a separate genre. We will consider the experiment not as a separate genre within which journalists create their own product, but as a tool to create a popular science TV program.

There are quite a number of television programs with popular science content, the hallmark of which is the experiment. Among them, for example, the American TV show «Smertelniy dvobiy» (eng. «Deadliest Warrior», at the time of Dec 2016 is broadcasted on the Ukrainian TV channel «MEGA»), each of the issues of which was devoted to the tactics of two soldiers and their weapons from different cultures. For each release tested weapon fighters to determine the more effective type of weapon (usually on mannequins that mimic the human body's physical characteristics), then experimentally derived indices are analyzed by a computer software simulator that simulates a duel, in which only one «survives». The experimental part of the program is testing weapons – is not indicative from the point of view of entertainment, but could replace a school textbook on human anatomy, so just something which demonstrates the anatomical features of the human body.

Another good example of television programs, in which popular scientific content presented in the format of the experiment, is the program «Zagadki planety» (eng. «Mysteries of the Planet», at the time of Dec 2016 is broadcasted on the Ukrainian TV channel «MEGA»). Each of the issues dedicated to a particular natural phenomenon, such as volcanic eruptions, tsunamis etc. Besides the usual tools for building a popular science television program is archival footage of the real tsunami, interview witnesses and experts, etc. – the authors of the program used as a method of getting the attention of the audience an experiment. In each edition of the program is demonstrated how something or other natural phenomenon, whether using 3D modeling, the subject of experiment in the laboratory on a reduced sample of necessary objects– besides all that is served is so unusual and interesting that even far from exact Sciences, the viewer understands the nature of complex physical or other scientific laws.

Note that in these examples, the experiment is one of many «bricks» used for construction «walls», however, our task is to explore experiment as the Foundation of a popular science TV product.

For a thorough analysis of selected American TV show «Rujnivnyky mifiv» (eng. «Mythbusters», at the time of Dec 2016 is broadcasted on the channel «Discovery Science»), because it is a representative sample of popular science television programs in the format of a scientific experiment. The idea of the project assumes that cogent episodes of the program are to dispel or to confirm experimentally the popular myths, tales, rumors and legends associated with the scientific phenomena and processes.

Note that «myth» in this study means not an ancient folk legend about natural phenomena, historical events or stories about the gods and imaginary beings. We will consider myth in two variations: as a fictional pseudo-scientific fact and as unproven by scientific experiment pseudo-scientific or scientific assumption.

For detailed analysis and calculation of quantitative indicators by source of myths in a TV program were studied at the seventh season of «Mythbusters». Sources of myths in the program are: about 35 % – history of life (for example, the myth that a woman died from a pathogenic organism that has infected a drink from the jar, the lid of which was contaminated with urine of rats (season 7, 3th series); the myth that if put a hand of a sleeping man in a container with a liquid, one will wet oneself in a dream (season 7, 4th series); another 35 % of myths from movies and cartoons (for example, the myth of the movie «Cannonball», that the car can «jump» on the lake like a thrown stone on the other side (season 7, 3th series); the myth of «Shrek», you can make a candle out of earwax (season 7, 4th series); and about 20 % myths with a scientific basis (for example, the myth that you can load your own limb in boiling metal without risk for health; the scientific basis of the myth – the Leidenfrost Effect (season 7, 4th series); the remaining about 10 % other sources (for example, telling the myth that household items dirtier than a toilet seat, the authors of the program refer to a nonexistent newspapers «The USA Post, The NY Courier» (season 7, 4th series).

The experiments conducted to verify dangerous to life and health myths that are performed on the mannequin with the name Buster. It boasts limbs with realistic movement angles, as well as the wooden «bones» that break from the same effort and bones. For example, in one of the programs the authors of the program destroyed the myth that in order to survive in a falling Elevator, you have to jump: they showed Master what would happen if a real person will jump in the Elevator when the latter will fall (season 2, 17th series). The results of the experiment were so disappointing that instead of repair of the mannequin would be easier to make a new Buster. Less threatening leading experiments were carried out on himself.

For the dispelling of a myth in the program were carried out experiments related to various branches of science. The vast majority of experiments appeal to exact and natural Sciences: physics, medicine, astronomy, biology and the like. For example, in the same experiment with falling elevator leading not only demonstrated on a mannequin, what would happen to a man, but based on the laws of physics, explained why the same person would not survive, and calculated, given the speed of the falling elevator, the speed with which you want to jump to, this situation did not end tragically.

Still more science experiments adds attraction to their carrying out of scientific workers and scientific institutions. For example, before the experiment for dispelling the myth about what household items use for dirtier than the toilet seat (season 7, 3th series), attracted leading expert in the field of Microbiology, Dr. Russell, who holds the frame part of the experiment. It transports pre-assembled leading samples on a Petri dish with agar, telling about the features of the analyses Microbiology: for example, powder-agar is necessary because it is the environment where microorganisms effectively grow in the laboratory; that for this and similar experiments Petri dishes with samples for 12 hours, placed in an incubator with a temperature of 37 degrees Celsius and the like. Next, Dr. Russell authoritatively announces the results of the experiment (and, incidentally, declares that through a quantitative analysis of a sample of ten it was discovered that the toilet seat was really clean, whereas the dirty was a sponge for dishes). For the next stage of the experiment – qualitative analysis of samples to determine which of them are dangerous to human microbial samples passed Dr. Vinci from UC Berkeley, where the second part of the experiment with his direct participation is. This approach to conducting experiments in the frame with the involvement of these scholars adds to the credibility of the experiments and, consequently, in the overall program.

Note that a feature of the format is based on the experiments of the program «Mythbusters» is that leading is not just debunk popular myths, based on authoritative sources, namely, demonstrate experiment and conduct it as long as the myth will not be able to dispel or permanently, or to prove that he has a right to exist, just with other source data. For example, the myth of the movie «Cannonball» that the car can «distribute» on water across the lake like a thrown stone (season 7, 3th series), the presenters conducted several times, changing the car's weight, its shape, its speed, height of jump, he managed to «distribute» on the lake and be on the other side. Likewise, a myth from the movie «Star trek» that you can take the powder and shoot it with a homemade bamboo Bazooka, as did the film's protagonist, James Kirk, debunked with the first attempt, however, presenters continued to experiment with the composition of a homemade gun powder and the quantity, shape and size of a homemade Bazooka until then, until I finally found that one of the combinations of myth has no right to exist. Then the presenters conducted several experiments using all of these combinations and adding experiments to a real Bazooka and real gunpowder, and only stopped after he demonstrated that false myth, even in such variations, involving objects that are generally not included in the original data of the experiment (season 7, 4th series).

The approach of «Mythbusters» to this experimental format, gives us reason to argue that the program successfully fit into the concept of scientific skepticism, is its pattern and means of dissemination in the mass media.

The concept of scientific skepticism is that all statements that do not have experimental evidence and reproducible results are worth questioning. Researchers claim that scientific skepticism «is part of the methodological research standards designed to ensure the growth of proven knowledge; it is also a social movement, standing on the positions and aimed at a critical study of the para- and pseudo-scientific exercise» [3].

For the verification of facts, phenomena and theories that are outside the main currents of science and have no experimental confirmation, scientific skeptics use critical thinking and deductive logic. Most often this position is shared by scientists, a relatively new pseudo-scientific claims or theories [2].

In the case of «Mythbusters» concepts, pseudo-scientific claims and theories are any pseudo-

scientific rumors, tales and legends. The format of the program so fit into the concept of scientific skepticism that in one of the rooms of the magazine «Skeptic Magazine» in an article «Are these guys inspiring the next generation of scientists?» «Mythbusters» is regarded as a program that «opened a new front in the fight for scientific literacy» [1].

According to the analyzed content it is revealed that a scientific experiment represented in popular science program in the symbiosis of verbal and visual components, performs a number of functions: communicative (establishes contact between the journalist and the audience, then possible to implement any other functions), informational (gives facts that are relevant to the target audience), educational (manifested in the transmission of the viewer's knowledge relating to various branches of science – from socio-humanitarian to exact and natural Sciences), entertainment (provides a pleasant and healthy time, the recovery of physical strength, mental unloading of the viewer). For example, if the program describes the methods by which to conducted the experiment on the capabilities of the bus fly over the gap length of 30 meters on the other side of the bridge / river Bank / slope of the mountain (classical myth of Hollywood action movies), then leading into the frame of verbal explains to the audience the procedure for test of the experiment. He explains that, not to beat a few of these buses will be used in their reduced model, however, the accuracy of the experiment, it would be appropriate to reduce the gravity, but it isn't. Then the presenter says: «We called NASA and asked if we could just experiment and throw a small bus to the Moon where gravity is lower, but they turned us down and advised to start the bus with more speed to compensate the force of gravity». Whilst driving it tells, the screen «splits» into several frames, one of which said lead and the other demonstrates the archival documentary footage of the first flight and landing a man on the Moon. Then leads directly to one of the parties to this bus marker paints formulas, which is necessary to calculate the exact data for the experiment described, substituting the real numbers, and explaining written.

Thus, in addition that the presenter verbally explained what needs to be done to conduct the experiment and what physical quantities have to work, he visualized said, writing everything on «the Board» which were made by bus. Note also that only this one bike about a telephone conversation with NASA (who knows, maybe they really called?..) combined with real archival footage of the man on the Moon is a good example of symbiosis of informational, educational and entertainment functions, because this scene not only gave the audience a little break from the seriousness of the experiment and physical formulas, but also filed in an entertaining way scientific data about gravity on the moon so that the information is easier to saves and is better remembered, and it requires extraordinary skill.

Conclusions. In the study, it was found that television journalism is the practice of using a scientific experiment as a crucial element in the production of high-quality scientific and popular TV product.

In the format of a scientific experiment in popular science TV programs do not have to test scientific research and facts; interesting to the viewer and closer to him is scientific experimentation on pseudo-scientific myths.

It was also revealed that the key role in the experimental format is to conduct the experiments in exact and natural Sciences (physics, astronomy, medicine, biology) and using authoritative sources in the experiment (scientists, representatives of research institutions), which ensures the trust of the audience.

The feature is based on experiments in the format of the program «Mythbusters» is that leading is not just debunk popular myths, based on authoritative sources, but visualize and comment on your own scientific experiments, conducting them as long as the myth will not be able to dispel or permanently, or to prove that he has a right to exist, prining other input data.

Visualization in symbiosis with the verbal component in popular science TV programs which were made in the format of scientific experiment is an effective method of attracting the attention of the viewer and a tool of entertainment and also perform a number of functions, constant of which is communicative, informative, educational and entertaining. Accordingly, it can be argued that the experimental format in the popular science TV program not only attracts the viewer's attention, but also gives to the viewer knowledge and experience of those scientific disciplines that were unattainable for him for certain reasons.

The experimental format of popular science TV programs gives reason to assert that this genre fits well into the concept of scientific skepticism, also it is a model and medium for the spread in the mass media.

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Selfie as a phenomenon of mass communication

Ревуцька М. І. Селфі як феномен масової комунікації. Селфі – це спосіб фіксації себе у цифровому вигляді. За допомогою селфі можна передавати інформацію. У наш час високих технологій селфі упевнено входить у світову культуру – через пресу, кіно, телебачення, музику. Селфі можна розглядати як хворобу інформаційного суспільства: коли навколо вирують величезні потоки інформації, селфі може бути способом довести оточуючим, а також самому собі, свою присутність у цьому світі. Також селфі може бути способом самоідентифікації; способом створити про себе хибне уявлення («маски»); досягти ідеалу у віртуальному світі; способом спілкування; як не дивно, селфі може бути об'єктом і предметом мистецтва. У пропонованій статті розглядається походження терміну «селфі», історія цього явища і явищ пра-селфі, досліджується вплив технічного прогресу на розвиток селфі; визначаються причини, з яких люди роблять селфі, а також чим є селфі за своєю суттю; проводяться паралелі між сучасними фото-селфі і культурними явищами, які з'явилися набагато раніше селфі, але мають багато спільних рис. Метою статті буде описати феномен селфі як важливу частину сучасної масової комунікації. Робота заснована на низці наукових публікацій російських і зарубіжних дослідників, що підтверджує загальну об'єктивність опублікованого матеріалу. Практична частина дослідження включає в себе аналіз найвідоміших у світі селфі, підкріплений коментарями психологів.

Ключові слова: селфі, фотографія, комунікація, масова комунікація, автопортрет, соціальні медіа, соціальні мережі.

Ревуцкая М. И. Селфи как феномен массовой коммуникации. Селфи – это способ фиксации себя в цифровом виде. С помощью селфи можно передавать информацию. В наше время высоких технологий селфи уверенно входит в мировую культуру – через прессу, кино, телевидение, музыку. Селфи можно рассматривать как болезнь информационного общества: когда вокруг бушуют огромные потоки информации, селфи может быть способом доказать окружающим, а также самому себе, свое присутствие