UDC 81'27-811.111
DOI https://doi.org/10.32447/2663-340X-2025-17.9

SOCIOLINGUISTIC FUNCTIONS OF SCIENTIFIC AND TECHNICAL TERMINOLOGY IN ENGLISH DOCUMENTARY FILM DISCOURSE

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The article focuses on specific scientific and technical terminology in English documentary film discourse. It is pointed out that scientific and technical terms function as linguistic signs that reflect the concepts of a particular field of science or technology and form an integral part of professional texts. Their ambiguity, the lack of established translation equivalents, especially in the case of neologisms, and national variability complicate the translation process. All terminology is systematised within terminological systems representing relevant scientific and technical concepts. Translation difficulties are mainly due to the imperfection of existing terminology systems. The sociolinguistic approach to using scientific and technical terminology in documentary films strikes a balance between the accuracy of information and its comprehensibility for a broad audience. The terms perform not only a cognitive function, transmitting specialised knowledge, but also contribute to the image of the film as a reliable and authoritative source. The use of analogies, explanatory comments, and visual support helps overcome difficulties in perceiving scientific concepts, which contributes to integrating scientific knowledge into viewers' everyday experiences. The adaptation of scientific terminology in documentaries is determined not only by the target audience's training level but also by the cultural context within which the information is being conveyed. The carefully selected examples and explanations contribute to the film's comprehensibility and accessibility, regardless of cultural or linguistic barriers. This approach contributes to a deeper integration of scientific knowledge into the everyday life of various socio-cultural groups and actively supports the global popularisation of science.

Keywords: *scientific and technical terms, film discourse, documentary film, sociolinguistic functions of terminology.*

The statement of the problem. In today's globalised world, scientific and technical translation is leading in ensuring effective international knowledge exchange. The main criteria for the quality of translation of such texts are accuracy, consistency and semantic adequacy. The high standardisation of the language of science and technology and the widespread use of terminology necessitate the use of specialised translation strategies to maintain professional accuracy and uniformity.

The recent development of advanced technologies and numerous opportunities provide a wide range of means for obtaining the required information and knowledge. One of the most used resources in this context is the Internet, which allows today's consumers to communicate, receive, perceive and transmit information through various means of communication.

Filmmaking has become a multifaceted source of up-to-date information for modern society. By the existing legislation and established language quotas, audiovisual content broadcast on national television must be localised in the state language. In particular, this requirement is relevant for documentaries, as fiction films with a broad audience are usually subtitled or dubbed in Ukrainian. On the other hand, documentaries are more often broadcast in foreign languages on international channels or purchased by Ukrainian media that are already dubbed in foreign languages. Considering the high financial costs of dubbing and subtitling, the proportion of documentary content dubbed in Ukrainian remains insignificant. This problem is reflected in the field of scientific research on audiovisual translation (Боднар, 2011, pp. 233–243). The peculiarities of scientific and technical translation have been the subject of attention of such researchers as O. Kliuchnyk, H. Hrytsyk, T. Kyiak, S. Baranova, E. Susidenko, L. Chernovaty, V. Karaban, I. Nosenko, M. Vakulenko, H. Korbut and O. Petrenko. However, most scientific works focus on analysing fiction and animation films, while the translation of documentaries remains an under-researched area. In particular, the problem of translating scientific and technical documentaries into Ukrainian has not yet received sufficient scholarly attention.

The relevance of this study is due to the insufficient attention of the translation community to the problems of audiovisual translation in general, as well as to the translation of scientific and technical foreign documentaries, in particular, in English. Documentaries on scientific and technical fields have specific linguistic and contextual features, requiring an in-depth study of effective means of their adequate reproduction in translation.

The research aims is to determine the sociolinguistic functions of scientific and technical terminology in English documentaries.

Presentation of the main material. Scientific and technical terminology has long been integrated into the language of modern science and technology, significantly influencing the formation of the general linguistic space. At the same time, when these terms go beyond professional circles and are used in public discourse, particularly in documentaries, they acquire a sociolinguistic colouring. In documentary films, scientific and technical terms not only serve to convey specialised information, but also act as a means of communication between the specialist community and a broader audience, which raises a series of sociolinguistic challenges (Бецько, 2010).

According to Franco E., the functioning of scientific and technical terminology in English documentaries is due to the need to adapt complex information to perceive different categories of viewers. Documentaries aim to reach a broad audience, challenging them to ensure their comprehensibility (Franco, 2001). Scientific and technical terms in such films perform not only an informational function but also influence the formation of public perception of science, its accessibility and prestige. Therefore, it is important to balance scientific concepts' accuracy and ensure their comprehensibility for a wide range of viewers.

According to T. Kiyak, there are different levels of adaptation of scientific and technical terminology when translating English documentaries (Кияк, 2008). The simplification of terms is one of these levels: replacing complex scientific concepts with more accessible analogues or simplified explanations. If the target audience does not have in-depth knowledge in the relevant field, documentaries attempt to make information more understandable through lexical simplification. For example, "photosynthesis" is explained as "plants receive sunlight to convert it into energy", and "gravitational waves" can be presented as "ripples in space-time caused by the motion of massive objects such as stars or black holes". Such simplifications help avoid the audience's cognitive overload while maintaining the main content of scientific information.

1) explanatory inserts: Terms are often introduced with simple metaphors or real-life examples to enhance understanding and provide explanations immediately after use. For example, in the documentary, you can hear the following explanation: "Quantum entanglement is a phenomenon where two parts behave in the same way even when they are far apart". This explanation aims to provide the audience with an immediate understanding of a complex concept without the need for additional information.

2) visual assistance: Graphs, animations and diagrams are often used to complement verbal content in documentaries visually. Many films use graphics, animations or authentic images to illustrate scientific and technical terms. For example, when explaining the mechanism of a water molecule, a model showing the relationship between hydrogen and oxygen atoms may be shown on screen. Such visual assistance contributes to better perception and assimilation of complex information by the audience.

3) use of metaphors and analogies: Metaphors and analogies are crucial in explaining complex scientific terms, as they allow you to convey abstract concepts through familiar images, which helps the audience to understand and internalise the information. For example, in a documentary on quantum physics, the term "quantum superposition" is explained using the example of Schrödinger's cat experiment: "Imagine that the cat is both alive and dead at the same time until we open the box and look inside". This explanation allows viewers to grasp a complex physical principle through a metaphor already part of the cultural context.

Metaphors and analogies are effective instruments for explaining complicated scientific concepts. For example, a 'black hole' is often described as 'a vacuum cleaner in space that sucks in everything around it, even light', and the genetic code is compared to a recipe for cooking: "DNA is the recipe book that your body uses to make cells". By creating such images, sophisticated terminology becomes more understandable and new concepts are made more accessible by placing them in a context familiar to the audience.

Documentaries are focused on a broad audience, which includes both experts with academic backgrounds and the public without specialised knowledge in this field (Бондар, 2011). This raises a dilemma: on the one hand, the film must maintain sufficient accuracy to maintain scientific credibility, and on the other hand, it must be understandable to the general public. For example, the term 'antimatter' in the film can be explained as 'a mirror image of an ordinary substance with opposite properties'.

Such an explanation helps to balance scientific accuracy and accessibility of information for viewers of different backgrounds.

4) balance between scientific accuracy and accessibility. Successful documentaries balance accuracy and accessibility, making it possible to keep scientific and technical terminology understandable for a broad audience without losing their scientific value. A striking example is the BBC and National Geographic products, where complex scientific concepts are presented in clear language, but with the support of expert comments, which ensures a high level of accuracy (Matamala, 2009). Thus, the adaptation of scientific terms in documentaries contributes to the effective communication of knowledge, making science accessible and attractive to different categories of viewers.

Scientific and technical terminology in documentaries has several key functions that influence the perception of information by a broad audience and provide a communicative bridge between specialised knowledge and everyday experience (Дячук, Білюк, 2023). The main sociolinguistic functions of terminology are the following:

1) Identification function: Scientific and technical terms specific to a particular field of knowledge position a documentary as an authoritative and scientifically grounded source of information. Specific terminology indicates that the content belongs to the relevant scientific area, forming the viewer's image of the film as a professional and reliable resource. Appropriately using such terms ensures the credibility of communication, emphasising the expertise and accuracy of the information presented. For example, in a documentary about space, the term 'black hole' is accompanied by an explanation: 'an astronomical object whose gravitational field is so strong that even light cannot leave it'. This explanation not only makes the concept clear to the audience but also confirms the scientific credibility of the film, demonstrating a focus on the accurate presentation of complex astrophysical concepts.

2) Integrative function: Using scientific and technical terms in documentaries contributes to integrating science into everyday life, making it an integral part of public discourse. Scientific and technical vocabulary helps viewers feel involved in scientific progress by making complex concepts more accessible. Using commonly used terms or adapted explanations ensures that science is understandable and accessible to a broad audience. For example, in a film about climate change, the term 'greenhouse effect' is explained through a simple illustration: "The greenhouse effect works like a greenhouse that keeps heat inside. In the Earth's atmosphere, gases such as carbon dioxide and methane play this role". This explanation makes the term easier to understand and promotes a deeper understanding of environmental issues among viewers.

3) The function of legitimising knowledge: The use of accurate scientific and technical terms gives statements an official and scientific sound, which increases the legitimacy of the documentary and strengthens the audience's trust in the information presented. The use of specific terminology helps to build the viewers' confidence in the scientific validity of the material and confirms that the content is based on current research. For example, a documentary on pandemics uses the terms 'incubation period', 'immune response' and 'antigen'. Using such specialised terms indicates the authenticity and scientific rigour of the material presented, increasing the audience's trust in the information the film's authors provided.

4) Barrier function: challenges of adaptation. Scientific and technical terms are indispensable for ensuring accuracy, but they can create specific barriers to understanding for audiences who do not have the relevant specialised knowledge. Highly specialised terminology can sometimes make it difficult to understand the information, leading to the need for additional explanations or simplifications to ensure accessibility. For example, the term 'postsynaptic plasticity' is used in a neuroscience documentary. Since this term is difficult for non-specialists, it is explained with a simple comparison: 'It is a process where the brain adapts and changes the connections between neurons, just as a person improves skills through daily training.' This explanation helps viewers grasp the phenomenon's essence without losing scientific accuracy.

At the same time, challenging scientific terminology can increase the sense of elitism in science and create a language barrier between experts and the general audience. As a result, it is necessary to use socially adapted broadcasting strategies that make scientific terms more understandable and accessible to different categories of viewers.

5) The emotional function of scientific and technical terms, in combination with simple, clear explanations, helps to build trust in the documentary and its authors. By demonstrating that complicated concepts can be presented in an accessible way, the communication between the audience and the scientific community is strengthened, which increases the level of perception and interest of the audience. For example, in a medical documentary, 'immunomodulators' are 'medicines that help your immune system fight off diseases better by increasing its activity according to the body's needs'. This

approach reduces the psychological barrier of using complex medical terminology and makes the information accessible even to a non-expert audience.

The genre characteristics of documentaries also have a significant impact on the choice of strategy for using scientific and technical terminology (Верховцева, Куценко, 2017). Science fiction films are dominated by simplified and metaphorical forms of presentation, which not only inform but also entertain the audience, focusing on interesting examples and clear explanations.

In specialised documentaries aimed at a narrow circle of specialists, scientific and technical terminology is kept as accurate as possible and meets professional communication standards in the scientific environment. This approach involves minimal language adaptation, as the audience usually has the necessary terminological competence to understand specific content without additional explanations.

At the same time, documentaries in English take into account the cultural characteristics of the target audience. Terms with different meanings in different linguistic and cultural communities are explained in detail or accompanied by additional comments. This emphasises the importance of intercultural communication in scientific and technical discourse, where it is necessary to ensure the comprehensibility and relevance of scientific knowledge in different cultural contexts (Карабан, 2004).

The role of scientific and technical terminology in documentaries extends beyond the mere presentation of information. It popularises science, facilitates dialogue between experts and the general audience, and forms a positive attitude towards scientific activity. Effective adaptation of terminology in such films provides an accessible explanation of complex scientific concepts, integrating science into the everyday life of viewers (Кононенко, 2023).

Cultural characteristics of the audience and different contexts of perceiving scientific information require documentary filmmakers to adopt a flexible approach in using scientific terminology. Scientific and technical terms can be interpreted ambiguously across various cultural environments, which necessitates linguistic and contextual adaptation of language to ensure the comprehensibility of scientific ideas on a global scale.

Adapting scientific and technical terminology in translating documentaries for foreign audiences is a necessary aspect, due to the absence of direct equivalents in target languages. Often, specific terms do not have a counterpart, requiring additional explanations or linguistic adaptation to maintain both accuracy and clarity (Сливка, 2023).

For example, the English term “carbon footprint” often requires a more detailed explanation in many languages, as the concept of a “footprint” may not be immediately clear to speakers of other languages. In the Ukrainian translation, it is advisable to add an explanation such as: *“the amount of carbon emissions generated by the activities of an individual or organisation”*, which helps the target audience to understand the concept properly.

Documentaries often adapt their case studies to the cultural realities of the target audience to enhance the comprehension of scientific concepts. For example, documentaries about climate change for audiences in Northern Europe focus on melting glaciers and the impact of this process on rising sea levels. In contrast, African audiences are more likely to focus on drought and freshwater shortages.

In addition, some scientific and technical terms commonly used in one language may require additional explanation in another context. For example, in American documentaries, the term ’FDA-approved’ refers to drugs or products that have been officially certified. In countries with no similar regulatory bodies, it is advisable to add explanatory remarks, for example: ’The Food and Drug Administration (FDA) is a government agency that ensures the safety and effectiveness of medicines’. This approach ensures that terminology is adequately understood in a cross-cultural context and contributes to the accuracy of information.

Documentaries often adapt their content and emphasis to their target audience’s current environmental and social issues. For example, in environmental series such as Our Planet, European editions may focus on reducing plastic consumption, while Asian editions may focus on air pollution in large cities.

Cultural specifics also influence the choice between subtitling and dubbing audiovisual content. In translation, specific scientific terms may lose their accuracy or cultural relevance, which necessitates leaving them in the original language with explanations in the form of subtitles or notes. For example, in films about physics, the term ’quark’ is usually not translated, as it is a widely recognised and universal concept, but an explanation is added to the subtitles: ’(an elementary particle that is the main constituent of protons and neutrons)’. This approach helps maintain the accuracy of scientific information and improves its comprehension by different language groups.

Conclusions. The sociolinguistic approach to using scientific and technical terminology in documentaries facilitates an optimal balance between the accuracy of information transmission and its accessibility for different categories of viewers. Scientific terms not only serve as carriers of specialised knowledge, but also form the image of the

film as an authoritative, reliable and informative source. Using analogies, detailed explanations, and visuals (graphs, animations, diagrams) helps overcome cognitive barriers to understanding complex scientific concepts. It makes science more integrated into the audience's everyday experience.

The process of using scientific and technical terminology in English-language documentaries is complex and requires considering the needs of experts and non-specialists. The sociolinguistic approach allows for a deeper understanding of the role of the language of science in shaping the public perception of knowledge and identifying the best strategies for adapting scientific concepts for a broad audience, while ensuring scientific accuracy and ease of perception.

The adaptation of scientific and technical terminology in documentaries is determined by the level of audience training and the cultural and social context of its perception. A rational selection of examples and explanations helps to increase the accessibility of the content, ensuring its comprehensibility for viewers of different linguistic and cultural communities. This approach strengthens the integration of scientific knowledge into societies' everyday life and contributes to its effective promotion at the global level.

Prospects for further research in this area will be scientific research in English-language film discourse, particularly the study of strategies and tactics for translating scientific and technical terminology.

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СОЦІОЛІНГВІСТИЧНІ ФУНКЦІЇ НАУКОВО-ТЕХНІЧНОЇ ТЕРМІНОЛОГІЇ В АНГЛОМОВНОМУ ДОКУМЕНТАЛЬНОМУ КІНОДИСКУРСІ

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Стаття присвячена комплексному аналізу функціонування науково-технічної термінології в межах англомовного документального кінодискурсу, що розглядається як особливий різновид аудіовізуального наративу, орієнтованого на трансляцію спеціалізованих знань широкій аудиторії. Акцентовано на статусі науково-технічних термінів як знаків мови спеціальних галузей знання, які вербалізують відповідні концепти та становлять структурний елемент професійної комунікації. Аргументовано, що багатозначність термінологічних одиниць, нестача усталених перекладацьких відповідників – зокрема щодо неологізмів – та культурно-національна варіативність їх використання детермінують численні ускладнення в процесі міжмовної трансмісії наукової інформації. Термінологія розглядається як складова впорядкованих терміносистем, які концептуалізують специфічні предметні області. Встановлено, що обмежена системність та неповна стандартизація наявних терміносистем значною мірою ускладнюють якісне відтворення науково-технічного змісту в аудіовізуальному форматі. У межах дослідження проаналізовано соціолінгвістичний аспект функціонування термінів у документальному кіно, що передбачає реалізацію комунікативного балансу між термінологічною точністю та доступністю для неспеціалізованої аудиторії. Визначено, що терміни в структурі кінодискурсу виконують не лише когнітивну, але й прагматично-репрезентативну функцію, сприяючи легітимації фільму як достовірного джерела інформації. Засоби лінгвістичної адаптації (аналогії, пояснювальні коментарі) та візуальна підтримка істотно підвищують рівень сприйняття складних наукових понять. Продемонстровано, що ефективність термінологічної інтерпретації корелює не лише з когнітивними характеристиками реципієнтів, але й із культурно-комунікативним контекстом трансляції наукової інформації. У результаті доведено, що стратегічна адаптація терміносистем у документальному кінематографі сприяє інкультурації наукового знання та інтенсифікації процесів глобальної наукової популяризації.

Ключові слова: *науково-технічні терміни, кінодискурс, документальне кіно, соціолінгвістичні функції термінології.*