University of Theatre and Film Arts, Budapest
Doctoral School

DLA doctoral dissertation thesis booklet

The technique, language and methods of scientific short films

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The aim of the thesis is to give a comprehensive picture of the technique, formal language and methods of the natural science short film, which plays a key role in the communication of scientific results, based on the latest research results. With this thesis, I would like to provide useful reference material and a reference base to researchers who are active in the field of scientific filmmaking, who are interested in literature and who are open-minded, to those researchers who are interested in the moving image communication of scientific results, and who, as researchers, actively publish their scientific communications not only as written text, but also in short films, videos. In the dissertation, I do not forget the definition of the science short film, I analyze the history of the genre and I touch on the new format that appeared after the pictorial boom on online platforms, namely the scientific video abstract.

The backbone of the dissertation is the history of natural science filmmaking in Hungary and the life story and filmography of Ágoston Kollányi, the defining figure of the genre. I introduce the artist's professional biography, the main steps of his life and his defining works. I briefly describe the current availability of these films in Hungary, and then analyze the structural structure of the films in detail. I discuss the visual and acoustic means of expression used in Kollányi's films, and I compare them with the scientific video abstracts that are considered to be the determining factor of the genre in an international context. Through the comparison of international examples, I draw attention to the importance of Kollányi's oeuvre in film history and science history, and within the framework allowed by the doctoral thesis, I try to keep in mind the aspects of value preservation and legacy care.

The structure of the dissertation reflects the structure of the Popular Science Video Workshop, a multi-day international training course created for contemporary researchers together with brain researcher Dr. Attila Andics. An important aspect of the dissertation is that, with the increase in digital literacy, more and more people are not only able to watch and consume film, but are also more proficient in the field of film writing and videography. Research data supports that the number of video abstracts created by researchers that are classified as scientific educational films has tripled in 5 years, and the number of publications accompanied by such videos has also increased. It is important that this knowledge be made aware of and spread further among the practitioners of science, because, as I will touch on briefly, indirect

pseudo-scientific communication, increasingly popular conspiracy theories and misconceptions clearly indicate that the dissemination of scientific knowledge is facing difficult challenges.

I analyze in detail the domestic history of the natural science film, the division of the genre into film historical eras is one of the added values of the thesis. I briefly touch on the current situation of Hungarian science and nature films, as well as the history of the centuries-old Uránia phenomenon, which plays the role of a flagship in the dissemination of knowledge in Hungary, and the history of DELTA Science News, which has a decades-long history. I point out that systemically supported information dissemination via screens and displays is on hold, and its effectiveness and reach are a fraction of the data of a century ago. I am making a proposal to preserve the Kollányi legacy and make it widely available free of charge.

The dissertation is divided into four main chapters and twenty-four subsections.

A four main chapters are:

I. Basic concepts
II. Main questions
III. Historical review
IV. Research

The main theses of the dissertation:

Chapter One:
According to my thesis, there is a need for a precise Hungarian definition of the discussed motion picture genre, namely the natural science short film, due to the shortcomings found in the Hungarian literature. In the dissertation, I clarify what these shortcomings are and how the specialists in the field of documentary film and scientific informative film managed to create comprehensive and valuable definitions. I analyze the relationship of the natural science short film, which is the subject of this thesis, with other well-defined moving image genres, summarize and outline the attempts to define it so far, and then present my own definition, which was made taking them into account. I introduce the existing

English definition of scientific video abstract belonging to online science short films, and then I derive the Hungarian definition from it. When defining the basic concepts, I briefly refer to the international literature and to the key creators in the field of scientific filmmaking. I summarize and outline the international trends and draw attention to the fact that in international science communication, moving images are beginning to push the boundaries of illustration and are approaching the status of an independent publication.

Chapter Two:
In the second chapter, I describe the advantages and disadvantages of scientific communication in the form of a written text. I briefly compare the possibilities of creative artists skilled in communicating with visual and acoustic means of communication with the possibilities of authors specialized in writing and experienced in the textual communication of scientific announcements when the parties strive to obtain a scientific degree. I note that the current system of rules governing teaching, research and degree-making favors the written text. I briefly touch on the current trends, and I discuss the formal solutions of scientific knowledge dissemination in detail, in a century-long perspective. I compare the role of written texts, the living word, the performance, acoustic and visual means of expression in the communication of scientific knowledge. I examine what means were used to reach the target audience when it came to the transfer of natural science knowledge. Using the specific example of the Urania phenomenon, I briefly examine the formal solutions of scientific knowledge dissemination in an international context, and in more detail in a domestic context, and I set up the most important image and acoustic categories, which will later play a role in the research part.

Chapter Three:
According to my thesis, there is a need for further research into the history of Hungarian scientific film, the basic condition of which is the era definition based on objective criteria. In the third chapter, I analyze in detail the era definitions currently available in the literature, and then, taking them into account, I propose a new, objective era division of Hungarian natural science film history. I explain in detail the significance of Ágoston Kollányi in the moving image communication of scientific results, I describe the activities of contemporary artists active in the genre as an example. I briefly compare Kollányi's life path with other domestic and international artists. I am

supplementing Kollányi's biography with new details from sources found in the personal estate, interviews with family members, online archives, print media and the archives of the National Film Institute, and I am making 19 original Kollányi films available for research purposes. According to my thesis, Kollányi's oeuvre has significance beyond itself, and as an inseparable part of the domestic film stock, Kollányi's works need to be further shared and communicated on online platforms.

Chapter Four:
According to my thesis, the formal language and methods of scientific informative short films have changed little over time, but the technique used, the conditions of reception, and the medium of transmission have changed a lot. I analyze in detail the structural structure of the works found in the Kollányi legacy, which correspond to the definition of a scientific informative short film, and the visual and acoustic means of expression used. I analyze in detail the formal solutions, structural structure, and visual and acoustic means of expression of modern scientific abstracts created after 2008. In order to achieve the goals, I analyze the image and sound track of the examined film material with an accuracy of one second and determine the percentage ratio of each expressive means in relation to the total playing time, and then their average within the examined set. I compare Kollányi's film heritage with the group of modern international video abstracts, and based on the numerical results, I draw conclusions stimulating further research. As an example, I present the work Musica Prehumana, which projects the formal solutions of modern video abstracts decades ahead of its time.

The self-produced natural science video abstracts, which I made during my doctoral studies between 2016 and 2023, are part of the appendices of the thesis. The online film library, which can be viewed for research purposes after an individual access request, is also included in the appendix of the thesis. Kollányi's filmography consists of 47 films according to the IMDb database, 68 according to the Wikipedia article about the director, and at least 70 according to my research. From this rich film heritage, only 2 films are available to the general public on social video-sharing platforms, and those only after detailed keyword searches. In the course of my work started with the purpose of value preservation, I managed to collect, convert and upload a total of 19 low-resolution copies of films to a closed online database that can be viewed

with special access for research purposes. I got access to most of the titles with the help of the Kollányi family and by paying a transcription fee from the National Film Institute. I continued to collect, transcribe and digitize the films from various media for 10 months. If we compare the number of film titles in the entire film heritage with the number of digitized films, the ratio is 27%. However, if we examine the total playing time of the entire Kollányi legacy, the result is better. The entire film legacy of Ágoston Kollányi would be at least 39,475 meters long if strung together into a single imaginary filmtape. As part of my doctoral studies, I managed to collect, archive and use 44% of this, i.e. 17,398 meters of film material, for research purposes. Complete films can be viewed on an online interface, after requesting separate access, for educational and research purposes.

Previous publications related to the topic:

- 2016 MOLNAR, A.D., Andics, A. How to turn an abstract into a video abstract. Zenodo. https://doi.org/10.5281/zenodo.60709 URL
- 2016 MOLNÁR, A.D., MARÍN-ARRAIZA, Paloma, PLANK Margaret. Video abstract - definition on Wikipedia, az angol eredeti szócikk, aminek alapján a magyar fordítás készült
- 2016 OLÁH, G. Ecological and socio-economic factors affecting extinction risk in parrots, Biodiversity and Conservation, 2016, ALTMETRIC SCORES URL
- 2016 OLAH, George; Smith, Annabel; Asner, Gregory; Brightsmith, Donald J.; Heinsohn, Robert G.; Peakall, Rod: Exploring dispersal barriers using landscape genetic resistance modelling in scarlet macaws of the Peruvian Amazon. Filmjungle Society et al., 2016. https://doi.org/10.5446/32196
- 2017 MOLNÁR, A.D. The macaw kingdom, 4K (53m10s) URL
- 2017 MOLNAR, A.D., Olah, Gy.. Video abstract. The application of non-invasive genetic tagging reveals new insights into the clay lick use by macaws in the Peruvian Amazon UR

Intellectual outputs:

2016.

How dogs brain process speech, 426,000 megtekintés
https://youtu.be/N9QQxa6eLPc
https://av.tib.eu/media/32195

Ecological and socio-economic factors affecting extinction risk in parrots [Video Abstract]
https://youtu.be/7Ab1ESyTmFs
https://av.tib.eu/media/47153

Landscape genetics of scarlet macaws in the Peruvian Amazon [Video Abstract]
https://youtu.be/eE8yY7Mpnkc
https://av.tib.eu/media/32196

2017.

The drumming cockatoo
https://youtu.be/fyX8DuBKPZc

Counting macaws on clay licks
https://youtu.be/knjkWi-Ftww

Ecology and population genetics of two large macaw species in the Peruvian Amazon | George Olah
https://youtu.be/StxhouWgwys
https://av.tib.eu/media/32193

Voice-Sensitive Regions in the Dog and Human Brain Are Revealed by Comparative fMRI
https://av.tib.eu/media/32194

2018.

The wisdom of the flock
https://youtu.be/1vThlEkmOgE

2020.

Infravörös-érzékelés a kutya orrában
https://youtu.be/sxn0KSG2Juc
Infrared sensors in dogs' nose
https://youtu.be/gmDp_AaTFcM

Mit szól a kutyaagy az arcokhoz?
https://youtu.be/8wip5ROZqVk
Are dog brains into human faces?
https://youtu.be/wlW_czsZSwM

Beszélők megkülönböztetése a kutyák agyában
https://youtu.be/d-EJ-xgpmHs
Dog brains detect who is talking
https://youtu.be/IAPQYtvjHqU

Malacok és kutyák kommunikációja az emberrel
https://youtu.be/gMTL2xa1uag
Pigs turn to humans as dogs do, unless they have a problem to solve

https://youtu.be/PfMeP2rHmV4

Beszédfeldolgozási hierarchia a kutyaagyban
https://youtu.be/grdmnzILmsk
Speech processing hierarchy in the dog brain
https://youtu.be/9EhI80fdEbw

Not always the face – how humans and dogs see each other
https://youtu.be/VO3YxGQ3P5M
Hogyan látják egymást a kutyák és az emberek?
https://youtu.be/6SA40_VKRcc

A kutya az embernek, a törpemalac csak gazdájának legjobb barátja?
https://youtu.be/3V5toM-04ps
Dogs are man's, while pigs are only their owner's best friend?
https://youtu.be/-srppJ6UupY

A kutya-gazda kapcsolat agyi mechanizmusai
https://youtu.be/_OFq9fCUGcY
Brain scans show the dog-owner bond
https://youtu.be/7ba01ggFUXg

2021.

Dogs learn about word boundaries as human infants do
https://youtu.be/xIoZSDUzGog
A kutyák a csecsemőkhöz hasonlóan fedezik fel a szóhatárokat
https://youtu.be/jTQSsygbyEI

2022.

Kun-kun utazása, amely segített felfedezni, hogyan különbözteti meg a kutyaagy a nyelveket
https://youtu.be/lnciBThWH7Q
The story of Kun-kun's journey that helped discover how dog brains distinguish languages
https://youtu.be/wgv6ywyFJEg
How do dogs recognize human voices?
https://youtu.be/-IvMIITG9Ts
Hogyan ismerik fel a kutyák az emberi hangokat?
https://youtu.be/rBIRw1V8SC4

2023.

Dogs show things to humans but pigs do not
https://youtu.be/cFmxEMBoG_0
A kutyák meg tudják mutatni nekünk, amit akarnak, a malacok nem

https://youtu.be/2KT-TKq8K5s
The wilderness is calling – will your dog answer?
https://youtu.be/oRERzmvTbyw
Hív a vadon szava – vajon a kutyád válaszol rá?
https://youtu.be/pc6v-deGxbU