

Title

How to turn an abstract into a video abstract?

Subtitle

Teaching methods, techniques and experiences of the Popular Science Video Workshop

Keywords

Video abstract, online publishing, online editing, offline editing, visual techniques, smartphone applications, open source, intensive training, science communication, popular science, video workshop, tagging, sharing

Authors

Attila Dávid Molnár¹, Attila Andics²

¹ Attila Dávid Molnár, corresponding author, Filmjungle Society, H-1026 Budapest, Gábor Áron u. 62/B, f.12., attila@filmjungle.eu

² Attila Andics, author, MTA-ELTE Comparative Ethology Research Group, Pázmány Péter sétány 1/C, 1117 Budapest, Hungary

Abstract

Since publishers launched their own video channels on the internet, there is a growing demand toward short science videos explaining a given research. Studies have shown that such short videos aka video abstracts, have a positive feedback on the citation of the research paper they are associated with. To produce a video abstract, scientists often assign professional filmmakers. Other authors however choose the cost effective and quick way and produce the video by themselves. To encourage authors to choose the latter option, we combined the writing and editing skills of actively publishing authors and documentary filmmakers and created a special training. We found that in two countries - Germany, Hungary - scientists and university students learn to produce short science videos for the internet in a considerably short period of time, given that proper supervision is provided. These findings can contribute to a further increase in the numbers of citable scientific video abstracts.

Introduction

The use of graphic illustrations in scientific publications have a long history - starting as far back as the seventeenth century - and are important ever since for reasons such as to represent data, illuminate the verbal description, or to display items that readers may not have the means to see for themselves³. Studies suggest that pictures - combined with related text - lead to quicker and more comprehensive understanding than text or pictures alone⁴. The conventional layout of scientific articles derives from a delicate balance between text, graphs and diagrams. Photographs - being still images - did not change this co-existence of textual and visual elements, moving images, however, seem to tip the balance. Soon after the invention of film, motion picture cameras - film, and later video cameras - became indispensable research tools. But no matter how useful cameras were in qualitative and quantitative investigations, the integration of moving images into scientific articles remained technically impossible for a long time. Internet changed that: as scientific publications moved from paper to the screen, video became a powerful tool for representing visual data from the laboratory or field⁵. The usage of moving images for illustrative purposes alone did not change the conventional layout of scientific articles, but the video does not seem to follow the conventions of other graphic illustrations and seem to change the traditional ways scientists communicate with their audience

To supply latest articles with short scientific videos, *Cell Press* launched an experimental online video sharing channel as back as in 2009⁶. Firstly named as Paperflicks, later renamed as video abstracts⁷, these short pieces of scientific videos quickly became popular. The channel, called

³Meadows, A.J. (1991). *The evolution of graphics in scientific articles*, Publishing Research Quarterly, 7, 1: 23-32

⁴ Goldsmith, E. (1984). *Research into illustration: an approach and a review*, Cambridge University Press, Cambridge, U.K.

⁵ Kintisch, E (2015). *You are ready for a close up*, Science Magazine Online, DOI: 10.1126/science.caredit.a1500092

⁶ Caputo, J. (2015). *A guide to making and publicizing your video abstract*, The Scientific Communicator, <http://crosstalk.cell.com/blog/a-beginners-guide-to-making-and-publicizing-your-video-abstract>

⁷ https://en.wikipedia.org/wiki/Video_abstract

How to turn an abstract into a video abstract?

as Video Abstract Youtube channel, has 4000+ subscribers and 400+ videos generating more than 1M views to this date. The *New Journal of Physics* was among the firsts to follow, in 2011⁸ it launched a new content stream for video abstracts collecting 300+ videos from authors, whereas *Elsevier* collected and published 700+ video abstracts from authors (as of August, 2016). A recent case study showed that there is a positive correlation between video views and readership of the associated article⁹ but whether posting video abstracts raise the impact of associated articles, is still unknown¹⁰. However, as digital video and accompanying editing software solutions become more accessible for researchers in terms of use and cost, and more publishers choose this medium to communicate, video abstracts do seem to be the latest trend in scientific publishing¹¹.

The definition of a video abstract remains unclear. Some descriptions exist¹² for video abstracts, but even publishers are on a different page when it comes to the description of this fairly new genre. Some of them are open to videos produced by the authors of the given scientific paper and state that in video abstracts “authors take you (the viewer) on a personally guided tour of their exciting results...”¹³ or define video abstracts as a “multi-media author-created summary of the research article”¹⁴. Some publishers encourage authors to take a personal approach and target not only academic circles but the general public with their videos. Other publishers prefer to stay on the safe side by excluding any music from the videos, while others establish in-house production units in order to increase quality and popularity of video abstracts even further. There is a consensus however on how long video abstracts should be - most publishers prefer the 3 to 5 minutes-long duration, and they have similar if not identical requirements considering technical parameters such as resolution, bitrate and frame rate^{15,16,17}. Technical specifications alone offer little help for authors who are about to produce a video about their research. Video abstracts represent a new genre in science communication. The term ‘video abstract’ in itself marks an important step in the evolution of the illustration of scientific articles. We see a transformation when readers become viewers and moving images are no longer used solely for illustrative purposes but are about to supplement or even to substitute written abstracts. Being so new and evolving so quickly, video abstracts lack a conventional format which results in difficulties to make one compared to creating graphs or diagrams. To involve professional help is an option but this comes at a price: filmmakers are

8

<http://www.universityaffairs.ca/features/feature-article/video-abstracts-the-latest-trend-in-scientific-publishing/>

⁹ Spicer, S. (2014). *Exploring video abstracts in science journals*, Journal of Librarianship and Scholarly Communication,

¹⁰ <http://thescientistvideographer.com/wordpress/tag/science-publishing/>

¹¹ Berkowitz, J. (2013). *Video abstracts, the latest trend in scientific publishing*, University Affairs, <http://www.universityaffairs.ca/features/feature-article/video-abstracts-the-latest-trend-in-scientific-publishing/>

¹² https://en.wikipedia.org/wiki/Video_abstract

¹³ <https://www.youtube.com/user/cellvideoabstracts/about>

¹⁴ <http://www.nrcresearchpress.com/page/authors/services/videos>

¹⁵ <http://www.cell.com/video-abstract-guidelines>

¹⁶ <http://www.nrcresearchpress.com/page/authors/services/videos>

¹⁷ <http://iopscience.iop.org/journal/1367-2630/page/Video%20abstract%20guidelines>

How to turn an abstract into a video abstract?

often expensive and most cases they need considerable amount of time to deliver. Self-made videos provide another solution, especially when the budget is low and time pressure is high. With no background in filmmaking, however, authors face hard decisions and might fail to overcome technical difficulties in the production process.

We faced the same difficulties when we had to produce a video abstract for the release of a scientific paper¹⁸. With the supervision and minimum contribution of a professional filmmaker the video abstract was written and produced by the authors within 3 days - filming and editing included -, and was uploaded to Cell Press' own platform¹⁹ as well as to Youtube. The video published by Cell Press²⁰ generated 26K+ views and so it quickly made its way into the 10 most viewed videos of the video channel dedicated for video abstracts²¹. In this case study we reproduced the steps of the production of this reference video: we analyzed the top 10 most viewed video abstracts in terms of applied techniques and methods: we developed an intensive training protocol imitating real life scenarios: and we invited scientists and PhD students from two countries to see if they are able to produce a science video within a short period of time. This study shows that authors are capable of learning basic techniques in filmmaking, and given that proper supervision is provided by a professional filmmaker, they can form teams and make a video abstract about a research topic within a single day. Our results can be used to further develop a protocol by which scientists and university students can learn skills necessary to produce video abstracts on their own, which can help to highlight the given research and improve understanding.

Materials and methods

To determine preferred filming techniques applied in popular scientific video abstracts for the purpose of this case study, the 10 most viewed videos - among them, the reference video²² of this study - on the Video Abstract Youtube Channel were selected²³. Screening of the individual videos showed that the visual information in these videos can be easily divided into 4 main categories based on which techniques the creators of the video abstract applied:

- I. ON CAMERA: (scenes featuring the authors of the scientific article, category includes all kinds of author(s)' appearance on screen, author(s) talking to the camera, interviews)
- II. ANIMATIONS: (scenes generated with non-linear or analog animation techniques, category includes whiteboard-, stop motion-, 3D-, timelapse animations, as well as screen recordings)
- III. DOCUMENTARY: (scenes recorded with normal camera, showing the subject of the research acting, wildlife footage, animal-, plant behavior, reconstruction of experiments, footage demonstrating lab and/or fieldwork)

¹⁸ Andics, A. et al. (2014) *Voice-Sensitive Regions in the Dog and Human Brain Are Revealed by Comparative fMRI*, *Current Biology*, 24, 5. 574-57.

¹⁹ [http://www.cell.com/current-biology/abstract/S0960-9822\(14\)00123-7](http://www.cell.com/current-biology/abstract/S0960-9822(14)00123-7)

²⁰ https://www.youtube.com/watch?v=StUkD_ACT60

²¹ <https://www.youtube.com/user/cellvideoabstracts/videos?view=0&sort=p&flow=grid>

²² https://www.youtube.com/watch?v=StUkD_ACT60

²³ <https://www.youtube.com/user/cellvideoabstracts/videos?view=0&sort=p&flow=grid>

How to turn an abstract into a video abstract?

IV. STILL IMAGES: (application of still images, slides, graphs, diagrams, photos)

After setting up the 4 categories the duration and frequency of these categories were determined in the 10 most popular videos of the Video Abstract Youtube Channel. In this study we did not analyze the audio content of these videos. The duration and frequency of the 4 categories of visual techniques were determined by using a non-linear video editor with an accuracy of a second (Fig. 1.).

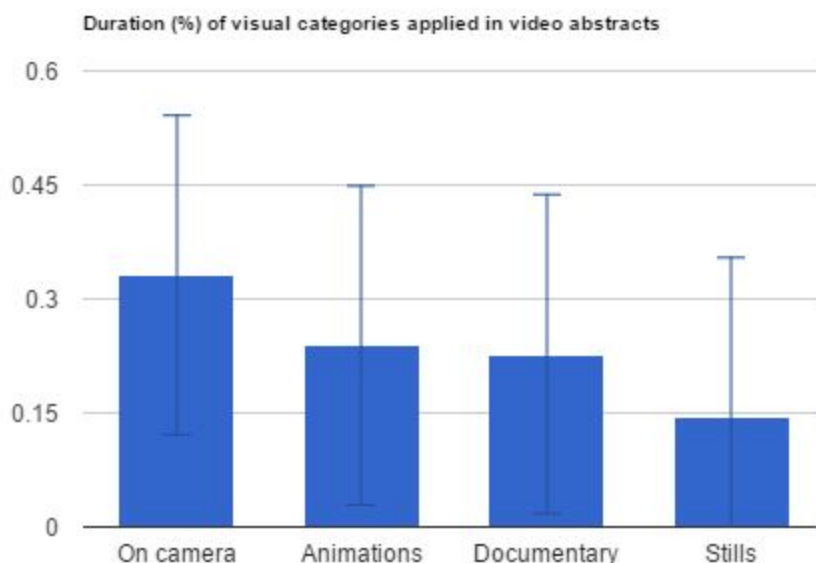


Fig. 1. *Duration (%) of visual techniques applied in video abstracts*

(analysis of the 10 'most popular' videos selection on Cell Press public Youtube channel, based on view counts, as per 08.2016, in order of duration on a second basis, with visual information divided into 4 categories: ON CAMERA, ANIMATIONS, DOCUMENTARY, STILL IMAGES)

Results showed that *on-camera* appearance and *animations* are among the most popular ways for authors to represent the results of their research to the viewer. *Documentary*-style scenes were the 3rd most popular way of storytelling, whereas the most conventional way of illustrating a study, namely the *still images* were less popular. These findings are in accordance with the structure of our reference video²⁴, which features mostly on-camera appearances (2 mins.): re-enactments from the lab (2 mins.): supplemented with animations such as on-screen recordings (1 min.).

²⁴ https://www.youtube.com/watch?v=StUkD_ACT60

How to turn an abstract into a video abstract?

To reconstruct the steps of the production of the reference video of this case study²⁵, we developed 4 consecutive sessions (writing, filming, editing, sharing), each 1.5 hours long, each consisting of a demo phase and then time for individual/teamwork. The four sessions were then organized into a one-day intensive workshop schedule. We assumed that the two authors of the reference video - one with a strong academic background, the other with extensive experience in documentary filmmaking - can teach researchers and PhD students to get familiar with all 4 major filmmaking techniques referred in *Fig. 1.* and make their videos from ground zero by following the same protocol to that applied during the production of the reference video. After setting up the list most popular filmmaking techniques applied in video abstracts, we checked the technical pre-conditions of the production process. As for recording devices, we found that not only broadcast cameras but latest edition smartphones meet the requirements set up by publishers for video and audio content alike²⁶. Checking the availability of recording and editing softwares for each of these visual categories referred in *Fig. 1.* revealed that applications are available and come with easy-to-understand tutorials not only in the desktop environment, but also for mobile devices. These findings led to the recognition that video abstracts can be created with as simple tools as one's own smartphone, laptop and/or tablet. We compiled a list of applications necessary for the creation of video abstracts, worked out training methods focusing on these 4 visual categories: then we invited 47 academic people to take part in a training called as the 'Popular Science Video Workshop' taking place in 2015 and 2016 in 3 different locations (Berlin²⁷, Hannover²⁸, Budapest²⁹).

To reconstruct the production process of the reference video, participants were first divided into working groups. Working groups were then introduced to the most popular visual techniques applied in video abstracts: taught how to write scripts for their videos: how to record the video and audio content: how to edit the footage into a video and finally, how to share it. The demonstration phase was followed by teamwork when - under a constant supervision provided by the authors of this paper - participants were required to produce videos and upload them to the internet so that we could screen the results.

Results and discussion

The results of this case study confirm our assumption that proper supervision enables scientists and PhD students to acquire all skills necessary to create a short science video - regardless of the topic or of the author's experience in filmmaking - within a single day. The 47 participants of this study were divided into 18 working groups, 15 of which was successful in uploading their self-made video by the end of the training (*Fig. 2.*).

²⁵ [http://www.cell.com/current-biology/abstract/S0960-9822\(14\)00123-7](http://www.cell.com/current-biology/abstract/S0960-9822(14)00123-7)

²⁶ <http://www.cell.com/video-abstract-guidelines>

²⁷ <http://www.izw-berlin.de/welcome.html>

²⁸ <https://www.tib.eu/en/>

²⁹ <https://www.elte.hu/karok/ttpk>

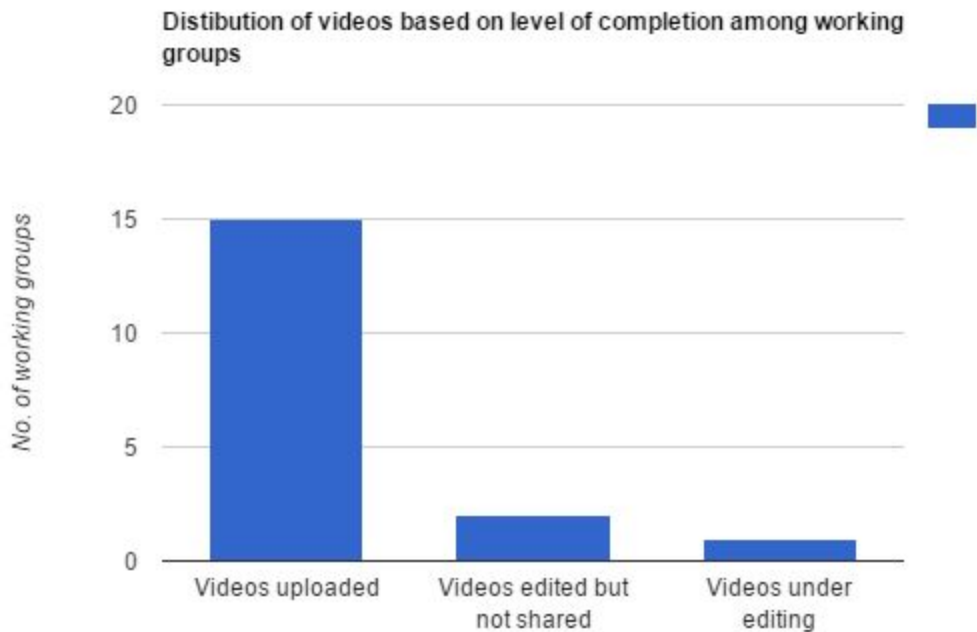


Fig. 2. *Distribution of videos based on level of completion among working groups*

(analysis of videos by the end of the training, no. of working groups (18), videos uploaded (15), videos in edit (3))

Since most of these videos do not represent a real study, and are only experimental, authors allowed us to publish only extracts of these self made videos³⁰³¹³². How many of the participants were later successful in producing public video abstracts is yet to be confirmed, still we found the effectiveness and inventive approach of the participants very impressive. Scientists and PhD students were confident when working with new applications, were free to ask questions from the supervisors when it was necessary, applied trial error and imitation as effective ways of learning and found teamwork appealing. In this case study we:

- identified some of the most popular visual techniques applied in present-time video abstracts:
- produced a reference video abstract:
- described the steps of the production process and worked out a training method accordingly:
- tested the training method on actively publishing scientists and PhD students.

We conclude that scientists' skills in writing and publishing form a very good basis when making video abstracts but to meet the standards and requirements of a publisher, or to target a wide audience, it is more than advisable to include a certain amount of external help. In this study we

³⁰ <https://www.youtube.com/watch?v=UG-mUCotHL0>

³¹ <https://www.youtube.com/watch?v=N-VebEarx80>

³² <https://www.youtube.com/watch?v=YhokEAKWXuM>

How to turn an abstract into a video abstract?

showed that scientists do not necessarily need to assign professional filmmakers. Enrolling a proper training can provide the skills and knowledge authors need and afterwards they are capable of producing a video abstract of their own.

Conclusion

Video abstracts represent a new visual component in scientific articles. With their development being driven by the application of the latest visual technologies they are changing constantly and so they remain hard to define or describe. Consequently opinions differ on the purpose and use of this new genre in science communication and further studies are necessary to find out exactly how video abstracts effect the impact of scientific papers.

Among the few certainties around video abstracts however is the fact that the overall number of published video abstracts increases, just like the number of publishers who choose to accept and share these short videos with the public. Authors tend to use this new form of publishing because videos allow them to present complex topics in ways that are not possible with text or still images³³ and video abstracts provide an opportunity to grab the attention of the general audience.

In circumstances like this, it is highly important to provide scholarly people with proper trainings, video tutorials and easy-to-follow protocols. We believe that with this support, more and more scientist will choose to make a video abstract when the opportunity arises.

Acknowledgement

This research was supported by Filmjungle Society's science communication program. We thank Adam Miklosi for inviting us to make the reference video abstract of this research, for Steven Seet for his continuous encouragement and for hosting the pilot training in Berlin, for Margret Plank and Paloma Marín Arraiza for their valuable assistance in continuing the training in Hannover. We are thankful for Eniko Kubinyi and Cintia Garai for their comments that improved the manuscript.

³³ <http://thescientistvideographer.com/wordpress/tag/science-publishing/>