

Hi everyone,

research on science videos is evolving dynamically. For issue #11 of our newsletter we sifted through recent research papers: They show that »optimized« videos can work better, explore videos' potential of storytelling, and study science channels on YouTube. Apart from that we have a lot of highly informative reading tips for you.

Stay healthy! And don't miss the videos from the German Leibniz research museums which we present at the end of this newsletter.

Thilo Körkel, Kerstin Hoppenhaus and Sibylle Grunze

What's going on

YouTube is not for amateurs any more

The pioneering times of YouTube are over, also in the field of science communication. That is the baseline of a qualitative study on 190 science videos, selected by their popularity, on 95 YouTube channels.

Jesús Muñoz Morcillo, a research associate at the Karlsruhe Institute of Technology, Germany, and currently a Volkswagen Foundation Fellow at the Getty Research Institute in Los Angeles, and his co-authors published their results in December 2019. The rough summary: To be successful as a YouTuber, you should adhere to professional standards in terms of frequency of production and audiovisual quality, among others. The term »user generated content« is no longer of much use: It's not amateurs, that make their way, but users, who adopt professional criteria.

Next insight: The field is dominated by male presenters. Women, some suspect with good reason, climb the stage less often, since there they become target of rafts of sexist comments. (We reported the identical phenomenon in newsletter #8: [»Mostly explainers: FastForwardScience-Finalists 2019«](#)).

The authors conclude, that science videos are mainstream now: »... it seems that even the production of popular science web videos is mutating into a new form of traditional mass media, with the irruption of small (or not so small) vices, and transgressions.«

Really? Aren't there still honorable individuals, who operate successful YouTube channels, just because they are excited by science and feel the desire to communicate this excitement? The research paper gives the answer: »Most non-profit channels ... belong to universities, NGOs or research institutions ... [in our sample] we have not even found even one individual video production which was defined as a non-profit activity.« Individuals are becoming a minority: 72 per cent of the selected channels are run by groups of two or more people. (tk)

Original paper:

Morcillo, J. M. et al.: [Producers of Popular Science Web Videos – Between New Professionalism and Old Gender Issues](#). International Journal of Marketing and New Media. Vol. 7, no. 13, 72-98, 2019.

Read more:

The presented paper has also [been discussed](#) on wissenschaftskommunikation.de (in German), February 18, 2020.

Two studies about videos in science communication explore the potential of storytelling and »experiencing scientific consensus«

We generally assume that communication is more effective when the audience can make an emotional connection with the content. Two recent studies explore whether this assumption holds true for conveying scientific results through video, especially when the film makers intend to change people's attitudes and behavior.

[The first paper](#), published in the »Journal of Science Communication«, focuses on visual rhetoric and storytelling. The authors produced a simple »SciCommercial« about responsible whale watching using an »and, but, therefore«-storyline. They deliberately concentrated on the emotional connection with viewers and chose not to be »heavy-handed with the science«. Still, they found that most participants »were prepared to accept the science findings that underpinned the video and alter their future whale watching intentions as a consequence.« The authors point out, however, that a further investigation of whether the change of intention was followed by an actual change of behavior was beyond the scope of the study.

[The second study](#), published in »Science Communication«, deals with the question whether video is a useful tool to communicate scientific consensus on climate change. The authors wanted to test »whether the scientific consensus communicated through experiential analogies in an engaging video is more persuasive than the same information conveyed in textual form«. They found that »conveying the 'experience' of scientific consensus using narrative and vivid imagery is effective«.

This result, however, is based on the comparison of reactions to a video with voice-over text, and the identical transcript as text only. And as anybody who has ever written a text for video can tell you, these texts almost never work on their own. They are made to accompany video and correspond with image and sound. When presented alone, they therefore lack important information. As encouraging the result of this study may sound: It should be read with some caution. (kh)

Optimize your video to optimize your impact!

To all practitioners in science communication: If you read one paper this year make it this one. It sheds light on a question we face day in, day out: How should we disseminate research findings in a way that lay people understand and then want to know more about?

In an experimental setup Italian psychologists from the Vita-Salute San Raffaele University together with researchers from the San Raffaele Hospital found highly interesting results. They compared the impact of a press release, a »normal« video, and a video »optimized for effective dissemination« on a test audience.

The clear winner among these formats which all reported on the same research topic was the »optimized« video: It resulted in a better comprehension of the science, a higher perceived pleasantness of the communication, and a stronger manifest interest in learning more about the reported findings, as reflected in participants' explicit requests to receive supplemental material.

The researchers also observed »that already existing professional communications – that is, (non-optimized) video and text communications specifically prepared to

disseminate ground-breaking scientific results – were not as effective as intended in disseminating those results. This is surprising, because such findings should be of interest – in and of themselves – to almost anyone ... This means that sub-optimal communication strategies can even impair the diffusion of such findings among lay persons.«

To optimize a video the authors followed the recommendations they found in the scientific literature: use of non-technical vocabulary, simplified speech structure, stylised images drawn from everyday experience, simple graphic illustrations, narrative structure with a clear beginning, middle, and end. To better understand how the researchers put them in practice I asked them to share their clips with me. As a filmmaker this is what I took from watching them: An optimized video is well structured, and the scientific content is broken down into comprehensible units. Graphics are not cluttered with information. The language used in the video is easy to understand right away, and the text is spoken in a suitable rhythm. Last but not least, optimized videos waive tootling background music.

The team found impressive differences between the effects of a press release, a non-optimized video and an optimized video. For example the mean number of correct responses to questions concerning the scientific content in the videos was more than 3.5 times higher for those having watched the optimized video rather than the non-optimized version. Engagement was also found to be higher: Viewers of the optimized videos wrote a significantly higher number of emails to the researchers requesting more information about the research in the videos.

Reading fees for the paper, which was published in »Applied Psychology«, start with 7 USD. Not too much for this highly relevant and interesting stuff. (sg)

Original paper:

E. Putorti, S. Sciara, N. Larocca, M. Crippa & G. Pantaleo: »[Communicating science effectively: When an optimized video communication enhances comprehension, pleasantness, and people's interest in knowing more about scientific findings](#)«. Applied Psychology. 10.1111/apps.12193, 2019.

Upcoming events

Postponed or cancelled due to COVID-19.

Reading material

»Identifizierung von Merkmalen wissenschaftlicher 360°-Videos«

[This work report](#) by Natalie Blaser, who has analyzed 360° science videos from the perspective of the science of science communication, was published in December 2019 in German. It's a shortened version of her bachelor thesis that she did within the project »[Science In Presentations](#)«, conducted by the Karlsruhe Institute of Technology together with the National Institute for Science Communication, both in Germany.

Especially her overview over the existing scientific literature in the field of 360° science videos is valuable for communication scientists who want to dig deep. (sg)

How to investigate neurotechnology by short fiction films

We didn't have the chance to visit the [BIO·FICTION Science Art Film Festival](#), which took place in Vienna in September 2019, but we found someone who did: Régine Debatty, an art critic and curator, who also writes an award-winning blog about the intersection between art, science and social issues.

In October and November 2019 she posted two comprehensive blog posts on the festival which screened both fiction films and documentaries. BIO·FICTION was also accompanied by a themed evening event which, according to Debatty, »anchored [the festival] into the current state of science.« Start reading with [post no. 1](#). (tk)

SciFi movies as entry into technology ethics

New technologies like facial recognition or gene editing bring new ethical challenges. One way for companies and consumers to navigate these challenges could be to watch more science-fiction movies, argues Andrew Maynard, director of the Arizona State University Risk Innovation Lab and author of the 2018 book »Films from the Future«. In this [post on medium.com](#) he put together a list of twelve science-fiction movies that are worth (re)watching if you want to get smarter about responsible innovation and be entertained on the way. (Personally, I'd recommend reading science-fiction novels, though.) (kh)

Learn from these climate videos!

In December 2019 the platform Generation R initiated a »[Channel Hunt: 10 Ways to Present Climate Change Science on YouTube](#)«. By offering a varied selection of relevant videos the editors want to »help scientists get to grips with how to engage with YouTube audiences«. Generation R is an online editorial platform for Open Science discourse across Europe, supported by the Leibniz Research Alliance Open Science. (tk)

Growing article collection about videos in science communication

This [collection of articles](#) about web videos in science communication – in German only – is regularly updated with new material. The science communication platform wissenschaftskommunikation.de is supported by, among others, Germany's ministry of science and the National Institute for Science Communication. (tk)

Science communication researchers not amused about YouTube

Worth reading: »In YouTube 'Edutainment,' Minimal Control for Scientific Accuracy – Misconduct by a self-described technology activist raises questions about science communication on YouTube«. Find the article [here in the Undark magazine](#), February 19, 2020. (tk)

Videos only look good if you watch them

Protecting and preserving for the future



A YouTube playlist by the Leibniz research museums
All films produced by [Libellulafilm](#)

The joy of this playlist is not only the diversity in objects chosen for the individual films, ranging from the encryption device »Cipher machine 41« over hoverflies to paintings from the middle ages, but in the pace and style of the films themselves.

The objects are part of the collections of the eight research museums in the German Leibniz Association, each of which contributed one item – and each item then became the center of one video. It's the conservationists themselves who lead through the films and take us directly into their research.

Told a bit slower than usual these documentations are very successful in unfolding the objects' story. Take for instance the Cipher 41 machine from the Second World War that two men found in the woods near Munich. The keys of the machine are made from nitrocellulose, which upon aging deteriorates quite suddenly at a certain point. It also causes corrosion of surrounding materials, making preservation an even more difficult task.

What also makes these films special are the animated artistic drawings. They are a beautiful analogy to the work portrayed in the films: The drawings are in layers, alternately covering and uncovering the underlying picture, putting the objects into their historical context and exposing their mysteries bit by bit. (sg)

»Science & Video« is a newsletter for science communicators. In »Science & Video« [Thilo Körkel](#) (tk), [Kerstin Hoppenhaus](#) (kh) und [Sibylle Grunze](#) (sg) pool their long-standing expertise in the field of science communication and moving images. We joyfully welcome the effects of digital disruption, are committed to defending high quality standards, and hope to be part of a future in which science communication via digital media has an increasingly powerful impact on society. Contact us at thilo.koerkel@nature.com, hoppenhaus@hgmedien.com, grunze@hgmedien.com.

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