Video-abstracts for peer-reviewed publications
Challenges and Chances for Researchers
Ludwig-Maximillians Universität München; 30.10.18

Jeanine Reutemann
DIGITAL MEDIA PRODUCER | FILMMAKER
ETH Zurich; University of Zurich; Swiss National Science Foundation
RESULTS?
protein basics

Outline:
- Polymers of amino acids
- Order specified by bases in mRNA
- Fold spontaneously into catalytic structures, driven by hydrophobic effects and hydrogen bonds

Learning Objectives:
- Describe protein 1° and 2° structure
- Relate to gene structure

What Does Scalable Mean?

- Operationally:
  - In the past: “Works even if data doesn’t fit in main memory”
  - Now: “Can make use of thousands of cheap computers”

- Algorithmically:
  - In the past: If you have N data items, you must do no more than N operations — “polynomial time algorithms”
  - Now: If you have N data items, you must do no more than \( N \log(N) \) operations
  - As data sizes go up, you may only get one pass at the data
  - The data is streaming — you better make that one pass count
  - Ex: Large Synoptic Survey Telescope (30TB / night)
VIDEO-ABSTRACTS
VIDEO-ABSTRACTS

«Movie trailer of research.»

«Video abstracts drive readers to the full-text article.»

«Hundreds of journals allow authors to submit a video abstract, i.e., a short video describing their research, along with their article. Consequently, results of scientific experiments are now appearing on YouTube and attracting a larger audience.»
Galerkins Lösungsnäherungen bei monotonen Abbildungen

Friedrich Wille

§ 1. Approximation bei stark monotonen Operatoren


$X$ sei reeller Banachraum, der außerdem, sonst klapp es kaum, in unserer mathematischen Fabel ist reflexiv und separabel. Die Dimension ist endlich nicht, sonst wäre zu einfach dies Gedicht. Mit $X^*$ wird, wie wohl bekannt, der konjugierte Raum benannt.

Aus diesem folgern wir nun schon: Zu jedem $n$ als Dimension gibt’s einen Raum $E_n$ in $X$ mit folgenden erlaubten Tricks:

\[ E_1 \subset E_2 \subset E_3 \subset \cdots, \quad \bigcup_{n=1}^{\infty} E_n = X. \]

Nun sei der Operator $T$,

\[ T : X \to X^*, \]

den ich als "stetigen" verstehe, im Folgenden stets monoton, das heißt (wir kennen dieses schon):

\[ \forall x_1, x_2 \in X : \langle T(x_1) - T(x_2), x_1 - x_2 \rangle \geq 0. \]

Wir wissen dabei aus Erfahrung: die Winkelklammern sind die Paarung:

\[ \forall y \in X^* \forall x \in X : \langle y, x \rangle = y(x). \]

Stark monoton ist unser $T$, wenn Folgendes erfüllt ich seh’:

\[ \exists \alpha > 0 \forall x_1, x_2 \in X : \langle T(x_1) - T(x_2), x_1 - x_2 \rangle \geq \alpha \| x_1 - x_2 \|. \]
Stories to tell – Storytelling
Introduction  Pro/Con’s  Further Thoughts

> Examples
Results
Galerkins Lösungsnäherungen
bei monotonen Abbildungen

Friedrich Wille

§ 1. Approximation bei stark monotonen Operatoren

Gar mancher hatte Mühe schon
mit seiner Lösungskonstruktion.
Drum haben wir uns ausgedacht
wie man es mit Galerkin macht.

\( X \) sei reeller Banachraum,
der außerdem, sonst klapp es
kaum,
in unserer mathematischen Fabel
ist reflexiv und separabel.
Die Dimension ist endlich nicht,
sonst wäre zu einfach dies Gedicht.
Mit \( X^* \) wird, wie wohlbekannt,
der *konjugierte Raum* benannt.

Aus diesem folgern wir nun schon:
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mit folgenden erlaubten Tricks:

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Nun sei der Operator \( T \),
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Den ich als *stetig* verstehe,
im Folgenden stets *monoton*,
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die Winkelkammern sind die
*Paarung*:

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\forall y \in X^* \forall x \in X:
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\]

*Stark monotone* ist unser \( T \),
 wenn Folgendes erfüllt ich seh':

\[
\exists x > 0 \forall x_1, x_2 \in X:
\langle T(x_1) - T(x_2), x_1 - x_2 \rangle > 0.
\]
FIVE MEDIA PRINCIPLES FOR RESEARCH VIDEOS

1. Body of Knowledge
Re-formatting written texts;
condense; interweave; contextualize;
adaptation; rewrite; show, don’t tell;
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Re-formatting written texts;
condense; interweave; contextualize;
adaptation; rewrite; show, don’t tell;

2. Structural Logic
Structure of moving images;
characteristics; epistemic power;
multimodality;
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2. Structural Logic
Structure of moving images; characteristics; epistemic power; multimodality;

3. (Audiovisual) Rhetorics
Performance; characters; surrounding spaces; image-sound rhetoric's; visual argumentation; but also ambiguity of images;
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Performance; characters; surrounding spaces; image-sound rhetoric's; visual argumentation; but also ambiguity of images;

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Storytelling; narration; time-space element; rhythm; film = conflict;
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5. Playful Approach
   Filmmaking is such an intense work; you have to enjoy it!
TRADITIONAL ACADEMIC PUBLICATIONS
VIDEO-ABSTRACTS OF VIDEO-ABSTRACTS

SCOTT SPICER: EXPLORING VIDEO ABSTRACTS IN SCIENCE JOURNALS. 2014.
TRADITIONAL ACADEMIC PUBLICATIONS

Who’s your target group?
- Peers (closed circle)
- Wider discipline
- Inter- or transdisciplinary range
- Professionals
- Popular science
- All ages
VISUAL (LANGUAGE)
David Attenborough emphasised the epistemic power of film-making [...] ‘We were able, for instance, to put together views of living amphibians which no one had been able to see in that range of time ever. No zoo could show you that amount. The visual effect was devastating’

For scientific video-abstracts:

Not only visualization, but epistemic qualities of the audiovisual medium
Signs, Arguments, Examples (Aristoteles)
#demonstrate #visualize
#document #visualproof
VISUAL

1. Standard Moving Images
2. Slow-Motion / Time Lapse / Macro
3. (Moving) Photographs
4. Animations: Stop-Motion, Drawings, 3D, Motion Tracking, ...
5. Written Text: In the image / Part of the image / Overlay / Subtitles
Camera Technology

AND

Image Aesthetics
Camera Technology

AND

Image Aesthetics
Object creation: basics

Bertrand Meyer
Closed Innovation Model

- Recruit top talent for internal R&D
- Innovate only within firm’s boundaries
- Filter internal ideas for defined market
VISUAL

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5. Written Text: In the image / Part of the image / Overlay / Subtitles
Written Text in Video ≠ Written Text in Video
Surviving Disruptive Technologies

Morph business model to accommodate competition and new opportunities

Abandon existing business model and adopt a new one

Failure: merger, buyout, liquidate

Information Technology

Innovator
Products
Services
Business models

The incumbent’s dilemma

Denial
History
Resistance to change
Mind set
Brand
Sunk costs
Profitability
Lack of imagination

A Survivor Model
TELEVISION REVIEW

Plant Lore for Those Who Lack Patience

By WALTER GOODMAN

Time-lapse photography is the star of David Attenborough's new six-hour series, the first half of which will be shown tonight at 8 on TBS. By speeding up the workings of nature, packing into brief seconds long months of change, "The Private Life of Plants" reveals the ingenious ways that growing things go about spreading their seed. The unfolding of a flower, which takes months, occurs in a beautiful few moments. Rooted though the plants are, they do an astounding amount of traveling.

In the opening hour, "Branching Out," an understandably breathless Mr. Attenborough zips around the world on the track of the gliding, rolling, diving, swooping, whirling, squinting, bouncing, parachuting, exploding plants. Hitching rides by wind and water, the plants travel for miles. Watch that agitated bramble

about sending forth and protecting their leaves, and the third, "The Birds and the Bees," goes into the vigorous and sometimes predatory sex life of apparently innocent flora. In the concluding three hours tomorrow night, Mr. Attenborough tells of the ways plants deal with disasters like fires and hurricanes, the symbiotic liaisons of plants and animals, and the ability of plants to survive in the most off-putting conditions, from Arctic wastes to desert sands. The foe that gives them the most trouble, Mr. Attenborough notes, is, of course, the human being.

David Attenborough in a pond along the Virginia-North Carolina border, in
- 20 Nov 2016
Why does this hummingbird look like CGI?? 😊 #planetearth2

- 22 Nov 2016
Is the Humming Bird scene on @PlanetEarthBBC CGI? If it's not 😮 😮 😮 😮 😮 👏 UNREAL! #planetearth2 #pleasebereal

- 20 Nov 2016
Are these birds real or CGI? 😤 #planetearth2 #hummingbird
Benjamin Short
Head of Graduate Placement and Recruitment
Tata Steel
Synchrese
«forging of an immediate and necessary relationship between something one sees and something one hears at the same time.»

AUDIOTOSUAL
(LANGUAGE)
AUDIO

1. Voices: On-Screen, Off-Screen, Voice-over
1. Voices: On-Screen, Off-Screen, Voice-over
2. Sound Elements: Foley, Sound Elements
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2. Sound Elements: Foley, Sound Elements
3. Atmosphere: Surroundings Spaces
Oxford University;
Himalayan Wolf Project
Geraldine Werhahn
1. Voices: On-Screen, Off-Screen, Voice-over
2. Sound Elements: Foley, Sound Elements
3. Atmosphere: Surroundings Spaces
4. The Power of Music
Focus on the message, not the messenger.

Be generous.

Kill your darlings.

Film making is never a oneman show

If you do not want to collaborate, go run a marathon.
KEY TAKEAWAYS

1. Practice. Start to use/re-use/produce re-produce/remix audiovisual data for your research
2. Find your personal style: design can support or hinder your videocontent
3. Video ≠ Copy. Media design knowledge meets scientific knowledge: Transformation!
Manifesto Videos in Higher Education

The manifesto is published under a CC-BY-SA Licence.
Presentation available on: audiovisualresearch.org

Manifesto Videos in Higher Education: medium.com

Jeanine Reutemann
jeanine@audiovisualresearch.org
WORKSHOP:
Video-Abstract
15:00 Q & A
15:15 How to start? (incl. group task)
16:15 Individual Meetings
Why video?
Why video-abstracts?
LEARNING EXPERIENCES AS STORYTELLING

Stories create a more immersive learning experience. Spend more time on creating a narrative storyboard and script based on the content, examples or argumentations. There are few good videos without a (at least decent) storyboard.
Script (yes and no)
Yes: helps with a clear red thread
No: you’re the expert, embodied knowledge
> Script (yes and no)
Yes: helps with a clear red thread
No: you’re the expert, embodied knowledge

> Storyboard (yes!)
> supports the development of a narration, choice of images, creative design...
Preproduction
Definition of target audience, genre, format, technical equipment, workplan (times, deadlines, work steps, tasks), roles, organization of production, script writing, production plan, research on similar films, access to existing material, search for copyright-free material and historical material.

Production
The actual production process

Postproduction
Montage, titles, translations, subtitles, ‘lower thirds’, (maybe) animations, visual effects, color grading, voice-over texts and recording, sound design, music, sound mix, end credits, rendering.
Preproduction
Definition of target audience, genre, format, technical equipment, workplan (times, deadlines, work steps, tasks), roles, organization of production, script writing, production plan, research on similar films, access to existing material, search for copyright-free material and historical material.
VIDEO-ABSTRACT
HOW TO START?
Welcome...
In this study...
Exploring Video Abstracts in Science Journals: An Overview and Case Study


THE FIRST 5 SECONDS
Create an audio/visual hook
PROOF OF EXPERTISE?

Authorship; Affiliation; Team; Discipline
PROOF OF EXPERTISE?
Authorship; Affiliation; Team; Discipline
WHY IS IT IMPORTANT?
DATA COLLECTION
Expert Interviews; Field Work, Laboratory Shots, Experiment Documentation
DATA COLLECTION
Expert Interviews; Field Work, Laboratory Shots, Experiment Documentation
KNOWLEDGE GENERATION PROCESS

Raw Observations; Prototypes; Notations; Sketches, Drafts; Thought Experiments
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Raw Observations; Prototypes; Notations; Sketches, Sketches; Drafts; Thought Experiments
RESULTS
Data Visualization; Statistics – Speaker (Aesthetic Difference?)
Chair of Ecosystem Management, ETH Zurich
Prof. Dr. Jaboury Ghazoul

Case Study: Scottish Highlands

DISCUSSION
Show arguments; make visual connections; use soundscapes
PROBLEM: TECHNOLOGY

Sustainability of Production
AVOID IMAGE/SOUND REDUNDANCE

Human perception is multimodal!
Week 3

- This is the last week of module 1—which has focused on the nonprofit sector, nonprofit organizations and organizational governance.
- The focus this week is on the role and responsibilities of boards of directors in organizational governance.
- As in other weeks, the course wiki page contains the content, resources, and homework to complete by the end of the week.
- We will be drawing primarily from our SUNY Open Textbook, *Guidelines for Improving the Effectiveness of Boards of Directors of Nonprofit Organizations*. By now, you should have downloaded it for free from SUNY Open and iTunes.

February 16-22
IN THE END

Thank you for
Filmmaking is decision-making...
Decision criteria:

- Talking Head, voice-over (who?)
Decision criteria:

- Talking Head, voice-over (who?)
- Visual Styles (archive, photos, diagrams, animations, presentation slides, screencaptures...
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- Talking Head, voice-over (who?)
- Visual Styles (archive, photos, diagrams, animations, presentation slides, screencaptures...)
- CI of University? Institution? (Typography, Colours)
Decision criteria:

- Talking Head, voice-over (who?)
- Visual Styles (archive, photos, diagrams, animations, presentation slides, screencaptures...)
- CI of University? Institution? (Typography, Colours)
- Sound Design, Atmosphere, Music
Team-up with colleague
> 10min discuss about potential own approach
> write down visualization styles
Decision criteria:

- Talking Head, voice-over (who?)
- Visual Styles (archive, photos, diagrams, animations, presentation slides, screencaptures...)
- CI of University? Institution? (Typography, Colours)
- Sound Design, Atmosphere, Music
- Script (who writes it, who performs?)
Decision criteria:

- Talking Head, voice-over (who?)
- Visual Styles (archive, photos, diagrams, animations, presentation slides, screencaptures...)
- CI of University? Institution? (Typography, Colours)
- Sound Design, Atmosphere, Music
- Script (who writes it, who performs?)
- Storyboard
Decision criteria:

- Talking Head, voice-over (who?)
- Visual Styles (archive, photos, diagrams, animations, presentation slides, screencaptures...)
- CI of University? Institution? (Typography, Colours)
- Sound Design, Atmosphere, Music
- Script (who writes it, who performs?)
- Storyboard
- Technical Equipment
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<thead>
<tr>
<th>Scene</th>
<th>Content / Text</th>
<th>Surrounding Space / Props</th>
<th>Other sounds</th>
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Fill-out production sheet and start storyboard
Individual Meetings