Story Telling

in Teaching Mathematics, Scientific Talks, etc.

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Outline

King Shirham—a Victim of Overwhelming Numbers

A classic tale related to mathematics.

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The Morale of the Story:

- Exponential growth is very fast

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The Morale of the Story:

- Exponential growth is very fast
- Stories can be used to illustrate technical facts/theories

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From *Oxford Advanced Learner's Dictionary*

- **Story**: An account of past/imagined events, incidents, *etc.*

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- Story: An account of past/imagined events, incidents, *etc.*
- Narrative: The telling of a story
- Tale:
    - a story, often one that is simple to understand
    - a series of real events, told in the manner of a story
    - a rumour, a piece of gossip or an excuse, often false or invented

Resistance to Story Telling

People claim:

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Weakness of only using analysis tools:

> *"Analysis might excite the mind, but it hardly offers a route to the heart."*

Why Should We Tell Stories?

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The strength of stories:

- Before human beings learned how to read and write, story telling was the medium for collective memory
- Children learn from stories
- The human brain finds stories user-friendly

Why Stories Work

Using stories will:

- grab people's attention
- expand the range of perspective on an issue
- generate creativity

Stories are:

- memorable (their structure is life-like)
- economical
- entertaining
- centered on people

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And they:

- encourage creativity (add life to a set of rules/theories)
- help in handling emotion
- help to make sense of puzzling situations (sense-making)

The Zambia Story—an example

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Goal/Aim: Get department directors to support efforts at knowledge management at World Bank.

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The "Zambia story":

- is motivating
- is anecdotal and short
- lacks detail and texture (leaves mental space)

What Your Story Should Be

Stories must be:

- Entertaining (not nec. amusing or diverting)
- Art and its teller an artist (not nec. great art)

Types of Stories

How you should construct your story depends on your aim.
Different aims require different types of stories.
Stories can be classified as:

- Fragmentary or Comprehensive (ranging from remarks to histories)

- Real or unreal (Factual account, legend, myth, fiction, fantasy — but never true/untrue)

- Positive or negative.

Aims of Stories

Stories can be used to:

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Stories can be used to:

- Sparkle action
- Transmitting values
- Taming rumours
- Sharing knowledge
- Leading people into the future

Tools To Make a Succesful Story

Some guidelines:

- Do not assume anything: Tell all that is required
- Give enough small and precise details such that the listner can paint his/her own picture
- Build up a suspension, but let the listner work to figure out the ending before you reveal it
- Change your body language and voice (may improve performance)
- Include smells, personal experience (with common interest), a sense of adventure (departure, incident, surprise / action leads to a transition to a new state (the morale))
- Practice

Exercises and the Great Competition

Plan:

- Form four groups
- Solve the problem. Rules: A groupmember other than the inventor of the story presents in plenum.

Comment: The handout may be used as a point of departure for creating a good story.

Status

Can Ph.D.-Students Use/benefit from Storytelling?

Possible areas of use

- Teaching
- Conferences / Workshops
- Everyday use
  Conversations with...
    - supervisor, colleagues
    - friends / laymen

Suggestions / Examples of Use 1
About my project; the creative process

Tell a story about...

- how I got this great idea
- how I got inspired (to my invention) by...
  - watching a play/ a movie
  - walking in nature (architecture, nautilus shell)
  - reading/leaning about something completely different
- how I learned from my mistakes

Suggestions / Examples of Use 2
The theory behind my project

Tell a story about...

- an anecdote about how the theory originally was conceived
- historical use/application in this or other fields
- biographical on the inventor

Suggestions / Examples of Use 3
Storytelling in teaching

[Tell a story that...]

- illustrates a concept

- graphic terminology (traveling salesman,...)

- what will happen if you do it wrong

- variation, entertainment, surprising

- motivate students, transfer enthusiasm

- collaboration among students

- memorable

- real-life applications

Suggestions / Examples of Use 4

Your examples...

Suggestions from the class...

Scientific Talks

- Read the handout "Giving Good Talks" (it is self-explanatory)
- Remember to incorporate a story in your talk.
- Listener will wake up and remember you afterwards.

And the winner is . . .

Summary

- Use story telling whenever you find it an option.
- Story telling may be more relevant in your field than you thought.

Further Reading I

📕 J. Allan, G. Fairtlough, and B. Heinzen.
The Power of the Tale.
John Wiley & Sons, 2002.

📄 C. H. Papadimitriou
Mythematics: In praise of storytelling in the teaching of computer science and mathematics.
Inroads, 2003.

📄 S. Denning
Telling Tales.
Harvard buisness review, 2004.