How to write about science for a general audience

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Why bother writing for a general audience?

Translating your science is important for:
- broadening your audience
- poster presentations
- grant proposals
- interviews with reporters
- job interviews
- a career as a science writer
- social media
- improving your research

Science Writing 101

Objective:

Equip you with the tools to effectively write about science for the general public.

Today's agenda:

- What makes a good story?
- Anatomy of a news article
- Practice: reverse-outline a news article
- 4 other story styles
- Deliverable: Choose the right article style for your subject, and start writing your first piece.

What makes a good story?

DREAMERS
CREATIVE WRITING
www.dreamerswriting.com

Elements of a Story

Theme
Character
Plot
Conflict
Setting

Style
Point-of-view
Tone

Conflict or tension
What problem that needs solving?

Characters - The subject of your story.

Setting - What's known or unknown in the field?

Plot - All of these elements combine to form a narrative arc.

Word Choice

Jargon

"Starting in college, scientists get accustomed to using scientific jargon. It's how they impress their professors. It's how they get taken seriously. Pretty soon, they start thinking that everybody knows what interferometry is."

– Carl Zimmer

Words - Jargon – check your meaning

Terms that have different meanings for scientists and the public

Scientific term	Public meaning	Better choice
enhance	improve	intensify, increase
aerosol	spray can	tiny atmospheric particle
positive trend	good trend	upward trend
positive feedback	good response, praise	vicious cycle, self-reinforcing cycle
theory	hunch, speculation	scientific understanding
uncertainty	ignorance	range
error	mistake, wrong, incorrect	difference from exact true number
bias	distortion, political motive	offset from an observation
sign	indication, astrological sign	plus or minus sign
values	ethics, monetary value	numbers, quantity
manipulation	illicit tampering	scientific data processing
scheme	devious plot	systematic plan
anomaly	abnormal occurrence	change from long-term average

Source: Physics Today, October 2011, Resource: Zimmer's Index of banned words

Who are your characters?

- Is your researcher a character?

- Are the molecules the characters? (a technical name is ok, when it's developed/explained.)

- What does the character do?

  - a) How does this character (protein, gene, molecule, disease type, etc) fit within the broader context of the story?

  - b) How does this character behave, why is it important?
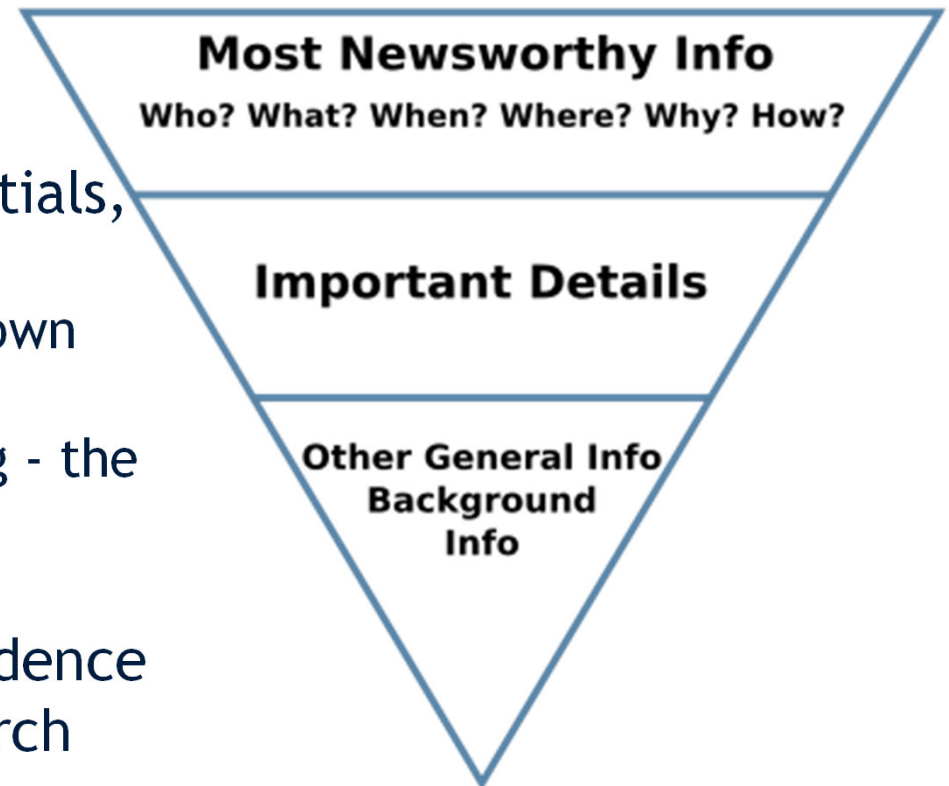
  - c) limit cast of characters

Types or styles of story

- News/brief
- Tips/Myths/Listicle
- Q&A
- Portrait or profile
- Feature article/narrative short
- (Op-Ed, or opinion)

Anatomy of a news story

Structure:

- Headline, subheadline
- Lede (nut graf) - the essentials, in broad strokes.
  - 1 sentence for what's known
  - 1 sentence for problem
  - 1 sentence for the finding - the solution to that problem
- Quote
- More background / the evidence
- What's next - future research

Length: usually 400-700 words

Most Newsworthy Info
Who? What? When? Where? Why? How?

Important Details

Other General Info
Background
Info

Headlines

Exposure to the synthetic progestin, 17α-hydroxyprogesterone caproate, during development impairs cognitive flexibility in adulthood

Headline: Hormone Hangover

Subhead: Medication to prevent prematurity in humans harms cognitive flexibility in rats.

A lede (lead), or first paragraph

- "A lead is a promise. It promises that the piece of writing is going to be like this…"

- "A lead is good not because it dances, fires cannons or whistles like a train, but because it is absolute to what follows."

- Source – John McPhee, Pulitzer Prize winning author, Wall Street Journal

Lede - example

Hormone Hangover
Medication to prevent prematurity in humans harms cognitive flexibility in rats.

Expectant moms at risk of premature delivery may receive a steroid hormone boost in the form of a synthetic progesterone, which lengthens gestation. The developing brain is sensitive to steroid hormones, <u>but few studies have looked at whether these drugs affect cognition</u>. So Jari Willing and Christine Wagner of the University at Albany-SUNY exposed newborn rats to 17-OHPC to model a human fetal phase when cognitive flexibility develops.

Source: The Scientist, Jyoti Madhusoodanan, Feb1, 2016

A note on explanation - how much?

From Carl Zimmer (NYT writer, science blogger):

"Imagine you're a crime reporter writing a story about a shooting at a nightclub. Now imagine that none of your readers know what a gun is."

Body of the news piece: choose evidence wisely

To prevent oversimplification, be sure to connect the dots. An overly simple story isn't satisfying.

- What did researchers think was happening before their finding?
- What were the most convincing experiments?
- What are the biggest most illustrative numbers?
- How do they connect to each other in a logical progression of ideas?

The take home message

Hormone Hangover//Medication to prevent prematurity in humans harms cognitive flexibility in rats.

"They show that exposure to these synthetic hormones during certain critical periods can have long-term consequences on cognitive development,"

Try it - reverse outline a story

Take the article and reverse-outline it. On your own or with a neighbor.

1. Context - what's already known in the field
2. Problem/solution
3. Main characters? Supporting characters?
4. Impact - why should we care?
5. Next steps or kicker?
6. Jargon
7. Other elements?

Story styles

If there are stories that inspire you. Print them out, and deconstruct them - reverse outline. Find the main points, find the pivots and transitions.

This can be a great way to continue self-study.

Plan your story

What's next?

- Go over 4 story types/styles
- start thinking about the style that interests you

Tips/Myths and other listicles

- Easy-to-read bulleted content

- Tight prose, with well-researched and cited (linked) answers.

- Very short intro 2-3 paragraphs intro. Why should we care?

- Tips/myth headers should be specific and non-obvious.

- Should reference Jefferson Research study in at least one tip.

Tips example

8 Natural Remedies to Fight Kidney Stones at Home

Kidney stones are a common health problem.

Passing these stones can be incredibly painful, and unfortunately, people who have experienced kidney stones are more likely to get them again (1)

However, there are a few things you can do to reduce this risk.

This article explains what kidney stones are and outlines 8 dietary ways to fight them.

What are kidney stones?

Also known as renal stones or nephrolithiasis, kidney stones are composed of hard, solid waste materials that build up in the kidneys and form crystals.

Four main types exist, but about 80% of all stones are calcium oxalate stones. Less common forms include struvite, uric acid, and cysteine (2, 3)

While smaller stones are usually not a problem, larger stones may cause a blockage in part of your urinary system as they leave your body.

This can lead to severe pain, vomiting, and bleeding.

Kidney stones are a common health problem. In fact, about 12% of men and 5% of women in the United States will develop a kidney stone during their lifetime (3)

What's more, if you get a kidney stone once, studies suggest you are up to 50% more likely to form another stone within 5 to 10 years (4, 5, 6)

Below are 8 natural ways you can reduce the risk of forming another kidney stone.

SUMMARY
Kidney stones are firm lumps formed from crystallized waste products in the kidneys. They are a common health problem and passing large stones can be very painful.

1. Stay hydrated

When it comes to kidney stone prevention, drinking plenty of fluids is generally recommended.

Fluids dilute and increase the volume of the stone-forming substances in urine, which makes them less likely to crystallize (3)

Q&A with an expert

- Choose a compelling topic or compelling person.

- 2-3 paragraphs of short intro, plus 4-5 headers of Q&A. Should not exceed 1500 words.

- Conduct an interview with your subject, transcribe.
  - Prepare more interview questions than you plan to use.
  - Include a silly question or two, if appropriate (what's the strangest thing people thought you did for work/ what's your favorite X).

- Edit heavily - choose your best questions/answers and edit for flow, clarity, and repetition. Don't edit personality out!

Narrative - Portrait or profile

- Plan to have at least one, long interview with subject.
  - Ask about chronology of events

- Probe for details that will help bring the major points to life.

- Do additional interviews with mentors, mentees, and others who can verify and strengthen the points you're making.

- Start article with the most engaging anecdote, rather than the chronological beginning.

Narrative feature, short or long

- These are more flexible, more deeply reported pieces (including multiple interviews)

- Start with an the most intriguing anecdote or story to capture the reader's attention

- Layer in additional points of tension/release (first, then) in narrative style.

- This can be a good form especially when the process of discovery is as interesting, or more interesting than the finding itself.

A note on editing

Hannah Yoest @ruthyoest · 1h
The pitch vs the first draft

💬 18   ↻ 150   ❤ 891   ⬆ ⌄

A note on editing

- Being good at getting edits and answering edits is a skill.
  - not always easy
  - there are many ways to solve for a question/edit

- Editors are a second set of eyes. They aren't as attached to the material or words as the writer.

- Confusion and frustration are your friends. They are part of the process.
  - Get words onto the page, then take a break, look again tomorrow
  - Confusion of a reader is a valuable contribution

Deliverable

- Write your first piece in a style of choice. We can help you choose.

- You get 3 points for submitting. On submission, let us know if you'd like your work to be considered for publication (and are open to working on edits).

- Write about Jeff research - yours or someone else's

- If you have a compelling narrative to tell, consider a narrative short or profile.

Practice

Send to: Edyta Zielinska, edyta.zielinska@jefferson.edu
OR
ResearchNews@Jefferson.edu

And Follow us on Twitter!
@ResearchAtJeff

Submit your work by **January 30**th for 3 points

Thing Explainer

The beauty of descriptive language

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