

Week 03 Lecture Notes
Journal Articles as Storytelling
June 11, 2019

This week

- Abstract rough draft due¹
- Storytelling
- Structure of journal articles
- “The Forgotten Female”²
- “What is a Scientific Paper?”³

Friday

- Peer reviews due

Next Week

- Abstract final draft due
- No reading

Attendance

- **Pass attendance sheet around**

Course business

Questions about abstracts due tonight?

It seems like students have a grasp of this assignment, but it’s good to field questions anyway.

“The Forgotten Female”⁴

Last week, you may recall, we talked about the ever growing body of human knowledge and how abstracts help scientists and medical professionals search this literature and keep up with it.

¹ For a full description of this assignment, see: <http://hdl.handle.net/1969.1/175371>

² Rosenthal E. The Forgotten Female. In: Anton T, McCourt R, eds. *The New Science Journalists*. New York: Ballentine Books; 1995:297-310.

³ Gastel B, Day RA. What Is a Scientific Paper? *How to Write and Publish a Scientific Paper*. Eighth ed. Santa Barbara, CA: Greenwood; 2016:18-23.

⁴ Scholarly journals often come across to students as strange, foreign forms of communication. I’ve found over the years that students’ introduction to the scientific literature is often easier if they can relate it to something they already understand. I’ve designed this reading discussion to relate journal articles to the far more familiar realm of storytelling.

We also talked about how abstracts are like mini-journal articles.

Today we're going to take a bit of a side trip into the world of story. This might seem a bit odd, but I hope by the end of class you'll appreciate that it's not as much of a detour as it first appears.

With that in mind, let's turn our attention for a moment to "The Forgotten Female."

What is this story about?

- The trials and tribulations of Barbara Smuts
- Deficiencies in the fields of primatology and evolutionary theory that Dr. Smuts has tried to redress⁵

What were some of Smuts' motivations to do her research?

What were problems or questions that she started asking?

What was new about her research that no one else was really asking?

Note that this is going to be a huge part of your capstone project. As part of your literature reviews, you will be summarizing what we know about a given topic and then, most importantly, highlight what we don't yet know. In other words, you're going to be asking questions that no one else is asking, following in the footsteps of Dr. Smuts and countless other scholars.

What were some of the obstacles Dr. Smuts had to overcome?

- Professionally?
- Personally?

So Dr. Smuts had some new questions about primate behavior and evolution. What were some of the experimental approaches she took? What were some of the methods that she used?

What were some of the things she learned along the way? What were some of her discoveries?

Finally, in what way has her findings changed the way science understands the world around us?

Story Structure

This will be a refresher for those of you who have taken my VIBS 311 course. For those of you who might be thinking of taking my VIBS 311 course, this will be a small preview.

For most of human evolutionary history, we did not have the internet. We did not have broadcast media. We didn't have books, newspapers, or magazines. Indeed, we didn't have writing of any kind.

⁵ This point reinforces a key learning objective of the course, that science is fundamentally about knowledge production, and that the only way to produce new knowledge is to outline where the boundaries of our current understanding are. I return to this point repeatedly throughout the semester because it's absolutely essential to students' ability to succeed with their capstone project, the literature review.

Nevertheless, we important cultural information that we needed to transmit from one generation to the next, information that helped our ancestors survive in whatever environments they happened to find themselves in and that helped us to navigate our social worlds.

How did we accomplish these important tasks without writing?

Largely through story!

In fact, stories have been such a regular part of receiving and transmitting cultural information that our brains are wired to respond to stories. We attend to them. We remember them. We tell them. It's just second nature.

It stands to reason, then, that stories themselves should have evolved to follow certain regular, predictable patterns that are matched to our evolved psychology.

So, what is a story?

A story involves (write the bullet points on left side of the white board):

- A sympathetic character who
- Encounters some kind of complication or conflict and
- By taking action overcomes a series of obstacles until
- The character reaches some kind of resolution to the complication
- And is changed in some way

If you thought about it hard enough, you could all probably think of stories that violate this structure. However, you'd have to think about it pretty hard and:

- You'd have to admit that such exceptions are extremely rare
- Many of the stories that violate this structure aren't very good

Structure of Journal Articles/Scientific Papers

Okay, let's set that aside for just a minute and focus on Barbara Gastel's discussion of scientific papers. For those of you who don't know, Dr. Gastel is a senior member of the VIBS faculty, a medical doctor turned science journalist, who, among many other things, is the head of the Science and Technology Journalism program here at Texas A&M.

Dr. Gastel starts her book chapter with a discussion of what constitutes primary literature.⁶ We're going to talk later in the semester about the differences between primary and secondary literature. However, it does make sense to talk a little bit now about what we mean when we talk about primary literature because that's what science papers are and their function largely dictates their form.

⁶ I go into the differences between primary and secondary literature in a later lecture. However, it's a concept that some students struggle with, so I find it useful to build some repetition into the course on this subject. Introducing the idea in this lecture helps set the stage for later lectures.

What does Dr. Gastel say are the characteristics of primary literature?

- The first publication of scientific research
- Published with sufficient detail so a competent researcher could repeat the experiment.
 - Note that this rarely happens, at least not directly. Nevertheless, having that level of detail makes it possible for peers, both before and after publication, to evaluate the results and conclusions.
- Presented in a form that is readily (not freely) available to members of the scientific community.

After making this discussion, Dr. Gastel talks about the structure of scientific papers. There are, of course, variations and, as she points out, the highly stylized format we expect today hasn't always been the standard. Nevertheless, she says that most papers follow a particular format that she calls IMRAD. What did she mean by that? (Write on whiteboard)

- Introduction
 - Reviews existing model of the universe in some specific domain
 - Reveals how that model is flawed
- Methods (or material and methods)
- Results
- Discussion (what we called in abstracts the conclusions)

Now, this basic structure is similar to what we talked about with regard to abstracts. However, does it look similar to anything else we've discussed?

Story!

| | |
|------------------------------------|---|
| Story | Science Paper |
| Sympathetic character | Model of the way the world works (Introduction) |
| Encounters complication | Has a problem or gap (Introduction) |
| Takes action to overcome obstacles | Methods |
| To reach resolution | Results |
| And is changed | Discussion |

Scientific papers are heavily stilted, dry, usually passive, highly formulaic, and often dull. Nevertheless, hidden beneath all their fancy trappings, they are, at their heart, stories, the stories that scientists tell one another.

Knowing that and keeping it in mind will make your efforts at technical writing much easier. It will also make it easier to consume scientific information.

When you find yourself feeling lost, ask yourself:

- What's the model that the paper engages?
- What are the problems with that model that the authors uncovered?
- What actions did they take to overcome those problems?
- What did they discover?
- How do their discoveries change the way scientists should understand the original model?

Keeping these things will also help you with the capstone project for this class, the literature review, which we'll begin talking about soon.

Peer Review

Tomorrow morning (12:00 am) you will find another Turnitin.com assignment, this time what Turnitin calls a PeerMark assignment. Assuming I've set it up correctly, each of you will be given three of your peers' abstracts to review. These are not anonymous. You will need to complete these before 11:59 pm on Friday.⁷

To help you structure your feedback, I've created a rubric (pass out).⁸ I revised this rubric for this semester so it's possible that there are some things that aren't as clear as I intended or that there are some mistakes in it. Nevertheless, it's detailed enough that I don't think you'll have much trouble following it. Note that after answering these questions for each abstract, you'll also need to provide some general comments. As always, email me or Rachel if you have any questions.

- **Go over peer review questions and grading rubric.**

If time permits

Rachel has finished grading your Great Paper Chases.

Turn stage over to Rachel to discuss common issues she had.

Next week

I will try to remember to send an email reminder. However, I would like all of you to bring whatever device you use to access Turnitin.⁹

Please don't forget that the final draft of your abstract is due next week!

Questions?

Have a great week!

⁷ In many long semesters, I give students a full week to complete their first peer review assignment. The faster pace of a 10 week course means I can't give them that much time.

⁸ For a copy of the peer review questions and the rubric used to assess their comments to their peers, see: <http://hdl.handle.net/1969.1/175469>.

⁹ Students often have no idea where to find their peers' or their teaching assistant's feedback on Turnitin, so I go over that in class. If they can follow along on their devices, this demonstration goes more smoothly.