

# Communicating Science As Story: Don't Let Your Research Be Eclipsed

In the spring of 1970, I watched the innocuous moon gradually blot out the sun using a makeshift safe-watching camera (that is, a pinhole punched into a cardboard box) blanketing the East Coast in eerie twilight darkness.

Forty-seven years later, the hype for the 2017 'Eclipse of the Century' reached a fevered pitch as countless fascinated throngs crammed their way into a 70-mile-wide sliver of the country across 14 states to experience the sun's disappearance once again, the first cross-country eclipse to occur since 1918. Campgrounds and solar events sold out a year ahead of time, while those ubiquitous solar glasses were selling out of stores by the thousands in the final days before the eclipse. A 5K/10K virtual race offered runners a finisher's medal sporting a rotating lunar cover.



*The Great American Eclipse 2017 - Photo by NASA*

The "Great American Eclipse" spawned alien costumes, marriage proposals, and eclipse onesies for infants born on the day of the event. According to NASA, this eclipse was the most observed, photographed, and documented eclipse in human history.

Millions of us watched transfixed as the moon gradually dimmed the sun, silenced birds, and turned down the temperature until it smudged out the sun entirely, briefly throwing the earth into

an eerie twilight wreathed in a soft pink 360-degree sunset before releasing it from its dark imprisonment.

The Eclipse's rise to rock star and dare I say, cult status in an era of strong political pushback against science and research is significant. The evening news is filled with examples of scientific ignorance in the high reaches of our government. Long-forgotten conspiracies of ages past, such as the belief in a flat earth, are experiencing a comeback, and 16.4 million American adults, equal to the population of Pennsylvania, believe that chocolate milk comes from brown cows.

## The Moon as a Character

So why the massive migration to witness pure science in action, for a mere one to two minutes of totality? I venture to say that it had a lot to do with the way the story of the eclipse was presented in the weeks and months beforehand. Billed as 'breathtaking,' 'phenomenal,' and 'the celestial event of the century' (a title bestowed on the 1970 eclipse as well), the eclipse created its own microcosmic story, with a distinct beginning, dramatic arc, and resolution. Take this excerpt, for example, from an article posted on [fivethirtyeight.com](http://fivethirtyeight.com).

*"The moon will slowly and inexorably slide in front of the sun, and our star's light will slowly grow dimmer. Filtered through foliage, sunlight will appear on the ground as a smattering of crescents."*

*As more of the sun's disk disappears, ripples of light and darkness called "shadow bands" will wiggle across the ground, the way sunlight seems to shimmy on the bottom of a swimming pool. They are a harbinger of the coming total eclipse. Birds will hasten back to roosts.*

*Then, at 10:15 a.m., in one of the most unusual coincidences in all of celestial mechanics, the moon will completely block the sun's disk. In the final seconds, a dazzling ray of light, known as the diamond ring, will remain: It is sunlight filtering through valleys on the moon. Insects will thrum and chirp as if it's dusk. The temperature will drop.*

*At once, the Oregon landscape will be drained of color. Only the sun's atmosphere called the corona, will be visible, appearing as a ghostly wreath of light licked by flames of pink and red."*

As told here, the moon is the main character that drives a compelling story of fast-moving mystery, spectacular images, increasing darkness, and even animal trauma, then returns the earth to business as usual in the end. Such a vivid, brain-stimulating narrative will stick with us far longer than the more familiar "the moon passes between the earth and sun" description of what happens during a solar eclipse.

## Turning Language Into Experience

Our brains are hardwired to respond to story—depending on the language used, our sensory and motor cortices ‘light up’ when we hear content told as narrative—the same regions that would become active if we were to experience what is being communicated. Think of the contrast between saying ‘Her hands were dried out from the cold’ vs. ‘Her hands felt like prickly pine cones in the bitter cold.’

This is why metaphors are such a powerful tool for communicating scientific concepts. In [an article](#) discussing the molecular editor, CRISPR, Ian Haydon speaks of CRISPR as ‘molecular scissors’ ... that will ‘snip target DNA only where you want them to.’ Because the concept of using scissors to snip thread is familiar to us, our brain (in particular, an emotional region known as the insula) immediately bridges the gap from abstract concepts to personal experiences.

Thinking as a child would help explain difficult concepts—during the final stages of the eclipse, I overheard one youngster sadly proclaim that the moon was turning back into the sun.

Yet, metaphorical language and story arcs are not typical features of scientific papers or content. Research scientists are trained not to inject personal opinion, politics, or emotion into their writings. While these rules may guard against scientific bias, our researched discoveries may never find their way to either policymakers or the general public.

## SciComm on Steroids

In light of the current scientific pushback and cuts in funding the science communication community, or SciComm, has stepped up efforts to make science more palatable to the average layperson by helping scientists tell the story of their scientific passion to the non-science world. Scientists, in turn, are discovering the need to communicate how their research benefits the public to keep their funding stream flowing in.

Alan Alda, most famously known as the wisecracking doctor “Hawkeye” on the hit series, M.A.S.H., has established the Alan Alda Center for Communicating Science. The Center helps scientists learn how to connect with their audience and discern whether the audience can understand what they are trying to convey—a dynamic that is key for helping policymakers make sound decisions rooted in evidence-based science.

Sara ElShafie, a doctoral candidate in integrative biology, has developed a series of writing workshops for scientists based on storytelling strategies used by Disney’s Pixar Animation Studios. Randy Olson, a marine biologist turned filmmaker, helps clients learn how to use visual media to communicate science in the ‘and...but...therefore’ (ABT) framework of storytelling.

These and other SciComm visionaries have tapped into the reality that science as story sells—that is, it sells the ideas and knowledge that boost public awareness, generates funding, and influences policy decisions on all levels.

## Putting It Into Practice

But how do you turn non-subjective, detailed, and complex research into a conversational narrative? I have included some references and resources to guide you through your storytelling journey. Here are some key points to keep in mind:

- Organize your content in an arc of introduction, conflict, and resolution using the ABT framework mentioned earlier or another storytelling structure such as a [story spine](#). Above all, be clear on the one main concept you want to communicate to your audience.
- Use your introduction or opening to connect with your audience emotionally, something that as a scientist may be difficult to do at first. Share with them what has made you passionate about your research. What inspired you to research your subject matter in the first place? What answers are you hoping to find? How would your findings and data help a member of the audience you are trying to reach? Once you've done that, then you can back up your story with facts and stats.
- And do not worry if your research did not produce conclusive results—after all, the nature of science is continual exploration and discovery. Research findings can often lead to new questions and the continuation of the scientific journey ... take your audience on that journey with you.

## An Eclipse to Remember

Because of its cross-country trajectory, more Americans viewed the 2017 eclipse than any other. The startling image of the sun's corona flaring out from behind the moon is a visual that will stay with us for a long time to come ... and a story that will be passed down to the next generations, inspiring the next crop of future scientists.

But if nothing else, the great eclipse of 2017 will live on as a reminder that science is a story that can be told to all.