

A scientific paper shouldn't tell a good story but present a strong argument



A recent Impact Blog post extolled the benefits of using a storytelling approach when writing a scientific paper. However, while such an approach might well make for a compelling read, does providing an arresting narrative come at the expense of the reader's critical engagement with the paper? **Thomas Basbøll** argues that the essential "drama" of any scientific paper stems from the conversation that reader and writer are implicitly engaged in. It is more efficient to think of your paper as series of claims to be supported, elaborated or defended according to the difficulty a knowledgeable reader will experience when faced with them.

"Scientists and scholars are not writing to delight or even to persuade", I [tweeted](#) in reaction to [Anna Clemens's](#) post about [how to write a scientific paper as a story](#). "They are writing to open their ideas to the criticism of their peers." Now, I grant that [storytelling plays a role in the social sciences](#) (Andrew Gelman and I have written [a paper](#) about this) but I [worry](#) that good stories are coming to be valued above good arguments. Anna was kind enough to [respond](#). "When you follow the story structure", she suggested, "it makes it easier to spot weak arguments". There's some truth to this, but I think we need to be careful.

Anna is right about the power stories have over human cognition. In fact, that's exactly why I'm suspicious of storytelling as a means of conveying scientific ideas. The history of science is a history of *checking* our biases with logic and reason, as Francis Bacon famously suggested in his account of the "idols" of the mind. "The Idols of the Tribe have their origin in the production of false concepts due to human nature", the [Stanford Encyclopedia of Philosophy](#) tells us, "because the structure of human understanding is like a crooked mirror, which causes distorted reflections". Let's put this alongside Anna's celebration of human storytelling:

"Why are stories so powerful? To answer this, we have to go back at least 100,000 years. This is when humans started to speak. For the following roughly 94,000 years, we could only use spoken words to communicate. Stories helped us survive, so our brains evolved to love them.

[Paul Zak](#) of the Claremont Graduate University in California researches what stories do to our brain. He found that once hooked by a story, our brain releases oxytocin. The hormone affects our mood and social behaviour. You could say stories are a shortcut to our emotions.

There's more to it; stories also help us remember facts. [Gordon Bower and Michal Clark](#) from Stanford University in California let two groups of subjects remember random nouns. One group was instructed to create a narrative with the words, the other to rehearse them one by one. People in the story group recalled the nouns correctly about six to seven times more often than the other group."

Stories, it turns out, are the very medium through which the idols of the mind are propagated! Why would we encourage scientists to present their ideas in ways that key into 100,000 years of conditioned responses, hormonal stimulation, and emotional shortcuts? The Idols of the Market Place, the Stanford Encyclopedia again tells us, "are based on false conceptions which are derived from public human communication. They enter our minds quietly by a combination of words and names, so that it comes to pass that not only does reason govern words, but words react on our understanding".

And yet Anna would have us exploit precisely this weakness for narrative to implant ideas in our readers' minds from which they will have a harder time freeing their memory.

I'm trying to present my concern as starkly as possible. It seems to me that a paper that has been written to mimic the most compelling features of Hollywood blockbusters (which Anna explicitly invokes) are also, perhaps unintentionally, written to avoid critical engagement. Indeed, when Anna talks about "characters" she does not mention *the reader* as a character in the story, even though the essential "drama" of any scientific paper stems from the conversation that reader and writer are implicitly engaged in. The writer is not simply trying to implant an idea in the mind of the reader. In a research paper, we are often challenging ideas already held and, crucially, opening our own thinking to those ideas and the criticism they might engender.

I have no doubt that, working as an editor, Anna is able to impose better structure and clarity on a paper she's been given to edit by using her storytelling heuristic. I have no doubt that writers can improve a first draft by thinking along the lines she suggests. I will even grant that this might sometimes make the argument clearer and therefore its weaknesses more apparent to a trained eye. But I will insist that it is much more efficient to think of your paper as a series of claims that are [supported, elaborated or defended](#) according to the difficulty a knowledgeable reader will presumably experience when faced with them.

Anna promises that storytelling can produce papers that are "concise, compelling, and easy to understand". But I'm not sure that a scientific paper should actually be compelling. I agree with [Ezra Zuckerman](#) that the *null* should be compelling, but that's not the same thing. A scientific paper should be *vulnerable* to criticism; it should give its secrets away freely, unabashedly. And the best way to do that is, not to organise it with the aim of releasing oxytocin in the mind of the reader, but by clearly identifying your premises and your conclusions and the logic that connects them. You are not trying to bring your reader to a narrative climax. You are trying to be upfront about where your argument will collapse under the weight of whatever evidence the reader may bring to the conversation. Science, after all, is not so much about what Coleridge called "the suspension of disbelief" as what Merton called "organised skepticism". Or, as Billy Bragg astutely noted many years ago: scholarship is the enemy of romance.

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