

## **BOOK**

*Don't Be Such a Scientist: Talking Substance in an Age of Style*

## **AUTHOR**

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## **SYNOPSIS/APPLICATION**

A Harvard PhD who pursued a cinema degree realized that scientists did an incredibly poor job relaying their ideas to the non-academic public. In this book intended for scientists, Olson helps people attempting to communicate complex topics to make their content more accessible.

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“With the knowledge of science we can solve resource limitations, cure diseases, and make society work happily – but only if people can figure out what in the world scientists are talking about and why they should care.”

“Because if you gather scientific knowledge but are unable to convey it to others in a correct and compelling form, you might as well not even have bothered to gather the information.”

“So my message, that science communication is extremely important, is not particularly novel, but my approach to it is, to say the least, unique. I say this because I undertook a journey, starting in 1989, that few (if any) tenured science professors have ever attempted. It's been a journey to the epicenter of the most powerful mass communications machine on the planet – Hollywood.”

“Effective communication is an essential part of science, for at least two reasons. First, if nobody hears about your work, you might as well have never done it. And second, especially in today's world, if you don't communicate your research effectively, there are many people around who will communicate it for you, and when they do, it will probably be skewed in order to support whatever agenda they have.”

“That's the difference: what = substance; how = style. Most teachers of science communication are still at square one, working primarily on the substance. And the idea of asking scientists to take lessons in comedy sounds rather absurd.”

“This is an element of style that's difficult to teach in workshops and can be elusive to scientists who feel they owe their first allegiance to accuracy and the facts. But there's more to life than just accuracy. Yes, that's a very touchy subject for scientists. Some might even disagree with that statement – saying that accuracy is all that's important . . . take your pick which you'd rather have. Given that for television your one-hour interview will probably get cut down to thirty seconds, you begin to see the value of scoring that one great moment versus a solid hour of boring (but accurate) details.”

“Let's just say, in simpler terms, intuition is the act of knowing or sensing without the use of rational processes. Again, pretty much the opposite of what goes on in the brain. Intuition is very important to the world of science because so much great science begins with it. There are countless famous examples.

Descartes supposedly thought up the idea of Cartesian coordinates by lying on his back while sick, watching spiders spin their webs on the ceiling. Newton saw an apple fall from a tree. Kekulé dreamed of a snake biting its tail and came up with the circular molecular structure of the benzene ring."

"What happened? Science-think. The heavily academic/cerebral/scientific makeup of the commission (most members had advanced degrees) led them to believe the information in the study would be so immediately compelling, so jaw-droppingly profound, that it would sell itself by word of mouth. They believed that journalists would sit down, read the entire thirty-five-page document, and feel their world had been shattered, causing them to stay up all night producing urgent and compelling media. Instead, what they got was a collective yawn."

"It came from Tom Hollihan, a communications professor, who said simply and elegantly, 'When it comes to mass communication, it's as simple as two things: arouse and fulfill. You need to first arouse your audience and get them interested in what you have to say; then you need to fulfill their expectations.' And that's about it. Motivate, then educate."

"Nevertheless, there exists this term "educational film," which I have concluded is largely a contradiction in terms. For starters, film is not effective for education because education revolves around one key trait—inculcation—the repetition of information as the brain creates the proper structure to retain it over time (do you need me to repeat this point?). We all recall having to repeat after the teacher in grade school. And much of the reason I learned so much in my acting class is that the teacher repeated the basic principles over and over and over again. But this is anathema to film. And even to storytelling."

"And this takes you back to my simple calculation. If a picture tells a thousand words, and there are thirty frames per second in video (twenty-four in film), just do the math. You get 1.8 million words per minute, or 108 million words per hour. A typical novel has about 100,000 words. So, presto, in an hour you're reading the equivalent of 1080 books! Okay, that's total nonsense, because most of those thirty frames in a second look virtually identical. But the point is, you are indeed being given a great deal of information when watching a film, and most of it you don't really perceive or comprehend."

"In our first semester we were taught a simple old adage, 'If it ain't on the page, it ain't on the stage,' which means that if you haven't invested immense time and energy in the writing of a really good script, which gives everyone involved with the movie a clear picture of the finished product, you probably aren't going to end up with a very good movie."

"In harsh and severe contrast, creative writing is exactly the opposite. For creative writing to be good—for it to reach inside people as it's supposed to do—the writer has to infuse every sentence with the energy, vitality, and life of the writer's personality. Creative writing draws on all four of the organs, in a big way. As a result, the entire process is massively personal. It has to be. People tell you, 'Don't take it personally,' but that doesn't work for art. If you're creating true art, you have to take it all personally because it's your personality you're seeding the work with."

"So here's where it gets interesting for communication. We see the same two types of errors for storytelling (errors of accuracy versus boredom). The choice must be made which of the two errors is most important. Yes, I know, you're thinking, "I want both—a story that's accurate and interesting." That's ideal, but in the real world you still have to choose one, just as you do with the two errors in statistics."

"You Choose: Accurate but Not Popular, or Popular but Not Accurate."

The entire profession of science has at its core a single word, and that word is "no." Science is a process not of affirming ideas but of attempting to falsify ideas in the search for truth. This is what a hypothesis is—an idea that can be tested and possibly falsified and rejected. When you give a scientist a paper, he or

she reads it with the assumption that the writer is guilty of being wrong until proven innocent. The writer proves his or her innocence by either presenting data or citing sources. With each statement made in the paper, the scientist reading it says, "I'm not sure I believe this." As the author presents graphs and tables of data and cites sources, the good critical scientist attempts to falsify what is being said. Eventually, after the scientist has examined the data, looked up the cited sources, and found that in fact, despite considerable effort, the hypothesis presented cannot be falsified – only then does the scientist finally start to relax a bit and say, "Well, okay, I think I can probably live with this." It's a problem. It's at the core of the entire world of science. And it can, and frequently does, run amok. You meet scientists who have lost control of this negating approach to the world and seem to sit and stew in their overly critical, festering juices of negativity, which can reduce down into a thick, gooey paste of cynicism.

"Science, like art and most other professions, requires a mixture of two elements – creativity and discipline. Science without creativity is dull, but science without discipline is dangerous. And here we are again, back to these two key elements – the objective and subjective parts. Discipline is the rigid, regimented, more robotic objective component that has to be brought to bear for science to work properly. Wild ideas are fine, but without discipline they become a waste of time and energy. Creativity is the more human, liberated, unrestrained element that must be let loose for it to work. Science without at least a little bit of creativity is just plodding detail that does not expand our understanding of the world. But at the ends of the spectrum – at the far ends – lies darkness. Creativity, unleashed with no restraints and allowed to shoot too far out on that end of the spectrum, eventually results in sloppiness. This is the classic mad scientist stereotype. You see it in the real world of science. You can usually spot it in the scientist's office – you walk in and there's junk piled everywhere, hundreds of cartoons and meeting badges and photos plastered all over the walls with no organization whatsoever. And you ask for a copy of a paper by the scientist and he spends the next fifteen minutes exploring stacks of papers while talking to himself and discovering manuscripts that have been lost for weeks. Just like Doc Emmett Brown (Christopher Lloyd) in Back to the Future."