**Stylish Academic Writing - Steven Pinker**

STEVEN PINKER: Thank you. The invitation to this conference summarized its theme in words that I think that Helen wrote, "Pick up any guide to effective writing and what will you find? Probably some version of the same advice that Strunk and White offered in the 1950s," which I think actually dates back to the 19-teens from course lectures from Professor Strunk.

"Engage your reader's attention through examples, illustrations, and anecdotes. Use clear, precise language to express complex ideas. Avoid obfuscating jargon. Favor active verbs and concrete nouns. Write with conviction, passion, and verve. Pick up a peer-reviewed journal in just about any academic discipline and what will you find? Impersonal, stodgy, jargon-laden prose that ignores or defies most, if not all, of the principles listed above."

Absolutely. And I'm going to follow the implicit advice in that passage by engaging my listeners' attention through some examples. To define the problem that we are dealing with, here are just a half a dozen examples that I have collected from papers of students and colleagues. All of us have read passages like this. Some of us have written passages like this.

Quote, "Most importantly, there is a lot of variability in this population regarding the level of linguistic difficulty that is being exhibited," which means children differ a lot in their language problems.

"In fact, it is most likely impossible to prove causality between violence in media and violent behavior in children, and only a small amount of correlation has been shown through studies." That is, it's impossible to prove that violence in the media causes violence in children. The two are not even strongly correlated.

"Genetic influences are implied when non-adoptive siblings who share approximately 50% of their segregating genes are more similar than adoptive siblings." Translation, if biological siblings who share half their variable genes are more similar than adoptive siblings who share none of their variable genes, then genes must matter.

"Comprehension checks were used as exclusion criteria." Translation, we excluded participants who did not understand the task.

Finally, "Gilbert, et al, asked subjects to learn a fictitious vocabulary by reading assertions, e.g. A [? manishna ?] is an armadillo, whose veracity was either affirmed or denied by the subsequent presentation of an assessment word." Which means that people in this experiment looked at a computer screen, the computer screen said a [? manishna ?] is an armadillo, it disappeared, and then the word True or False appeared on the screen.

Now, by the way, the locution, the subsequent presentation of an assessment word is a wonderful example of what Helen has dubbed a zombie noun. That is, a nominalization, the conversion of a verb to a noun that reifies or thingifies a process, and which we, academics, are all too fond of.

So the question is, why are we so prone to passives, abstractions, and zombie nouns, all of these sins that we point out over and over again, but that so many of us can't avoid using? Now, the most common explanation appeals to motives, to nefarious motives. That academics, and bureaucrats, and legal scholars, and so on, want to affect an impression of expertise, they want to sound sophisticated and [INAUDIBLE], and so they try to bamboozle their readers with highfalutin verbiage.

And I think there's no doubt that this happens, but I don't think that it is the principal explanation for why so much academic writing stinks. For one thing, I think it's just not all that plausible for so many mediocre writers. These are perfectly unpretentious, ordinary people. You can have a beer with them. And I think it's probably unfair to accuse them of trying to impress others.

Also, it gets us off the hook. It's like, it makes it too easy for us to say, well, I wouldn't just try to use opaque language just to impress. I'm a regular person. And it makes it easy to overlook the mental habits that lead us, for completely innocent reasons, to write so poorly.

I think a more complete explanation would appeal to a mismatch between ordinary thinking and speaking and what we have to do as academics. And I'll illustrate this with three principles, which I call your inner primate, the curse of knowledge, and the difference between naive realism and postmodernist self-consciousness. So let me go through each one of them.

To begin with, we are primates. This is a zoological fact, but it is also an important principle to remember as we compose writing. Our minds did not evolve to think thoughts about sociology or literary analysis or cosmology.

Our minds evolved to deal with-- to understand the world through vision, through space, through force, through motion. Things get pushed. They go clunk. They move from one place to another. Everything else is a learned abstraction.

Now, we are-- the mind is capable of making those abstractions, but it requires a particular history, which we can see, we can reverse engineer, through the ubiquitous metaphors in our language.

We say, inflation rose in July. What exactly do we see or experience or feel when we use that sentence? Well, it's highly abstract. We all understand it, thanks to two concrete metaphors, inflation, increase in size, and rise, change in position.

These distributions have thick tails. That is a way of describing a mathematical property of a power-law distribution. To distribute, of course, is to scatter, to put in numerous places. A tail is a concrete object. They can be thick or thin.

Ethnic tensions are flaring up. Again, you could walk down the street and never actually see an ethnic tension, let alone it flaring up, but we understand that, because we have the metaphor of tension, of, say, two people pulling on a rope, and another metaphor of something that is cool suddenly bursting into flame.

And by the way, notice that each one of these has a mixed metaphor, which shows that although there were historical origins in these locutions in terms of concrete experience, we have packaged them so well that we forget what the original metaphor is, allowing us to mix our metaphors.

So this is an encapsulation of what we do as, not just as academics, but as thinkers, as citizens, as people who read Newsweek magazine. We take a concrete event, so ethnic tension might be the Irish kid throws a rock at the window of the Italian store, but then we take that event and hundreds like it, and we package it into a single cognitive unit-- cognitive psychologists call this process, chunking-- and then we build more complex chunks out of assemblies of simpler chunks.

We abstract away from the concrete particulars, so that a rise in emotion can be analogized to arise in a physical flame. And then we pick a noun and we label the chunk.

We do this so often, we don't realize how much of our vocabulary consists of applying nouns to highly abstract ideas, which, fortunately, we can then manipulate. We can feed them into still more abstract ideas with things like causality, variability, difficulty, genetic influences, comprehension checks, exclusion criteria, criteria, presentation of an assessment word. Each one of those particular expert in a discipline or, for that matter, even a literate adult, has already mastered as a simple unit in their mental vocabulary.

Now, the power from that comes from the fact that you don't have to work backwards every time and remind yourself of what exactly has to take place in the world for something to count as an ethnic tension. The problem is that this leads to the opposite of ideal prose, particularly when your reader or your listener may not have packaged a complicated series of events into the same chunks.

You might use a chunk that is overlearned, perfectly clear to you, but if someone else hasn't recapitulated the process of packaging their experience into that abstraction, they, in the worst case, may have no idea what you're talking about, in the best case, be expending so much cognitive effort to reconstruct what went into that chunk, they have little left over to understand the rest of the passage.

This brings me to the second principle for why academic prose is so systematically bad and it is another psychological phenomenon sometimes called the curse of knowledge. That is, it is very difficult to imagine what it's like not to know something that you do know.

Now, the curse of knowledge was actually first discovered in children, where it goes by the name of, sometimes, deficient theory of mind or difficulty in mentalizing. That is, in knowing about someone else's mental state, acting as an intuitive psychologist or a folk psychologist and trying to figure out what's going on in someone else's minds.

Children are bad at that when the content of someone else's mind differs from the content of their own mind. Classic experiment. You show children a box of M&M's. They open it up. There are pencils inside. The child is surprised. You say, well, Jason is going to come into the room. What does he think is in the box? And the child will say, pencils.

Now, Jason, of course, had no way of knowing that the M&M box has pencils in it. The child, himself or herself, didn't know until a minute ago that the box had pencils instead of M&M's. But the child, now knowing it, can't imagine that someone else doesn't know it, even if they had no way of figuring that out.

Now, we can't get too smug, because we adults are prone to exactly the same shortcoming. We're apt to forget that our own chunks, our own abstractions, which we laboriously learned in our intellectual autobiography, not everyone else may have learned.

There's an old joke about the joke tellers convention. Stop me if you've heard this. But a comedian invites a friend along to the annual convention of comedians and sits in the audience, anticipating an evening of rip-roaring hilarity.

And what happens is that each comedian gets on the stage and says, 347. Uproarious laughter. Then someone else gets up and says, 212. Everyone giggles hysterically.

Friend says to the comedian, what is this? This doesn't seem funny. And he says, well, you see, we've heard these jokes so many times that we save the trouble of actually telling the joke by just referring to them by their number.

And so the punchline actually is not relevant to my point. But anyway, the friend goes up and he tries. And he goes up and he says, 417. Silence. 512. Nothing.

He sort of slinks off in humiliation. He said, I was dying up there. What happened? And the friend says, well, it's all in the way you tell it.

Now, that isn't the point of the anecdote. The point is that all of us are a bit like the comedians at the comedian convention. That is, we refer to things by abbreviations, forgetting that other people have not learned them.

Finally, there's a third reason for bad academic prose and that is that there's a mismatch between the optimal mental model of prose communication, what you ought to have in mind as you communicate, and what we actually do as academics.

Writing is a highly unnatural human activity and academic writing is more unnatural still. There is an unknown audience. They are distant in time and space. Talking about things that none of us have experienced in common.

And I think the problem is all the more acute for graduate students, who I-- people often ask me, you must see a lot of awful writing among your undergraduates. And the answer is, no. The answer is that the truly horrendous writing comes from graduate students.

The reason being, I think, that they are suddenly immersed in this world in which everyone knows so much. Everyone seems to know everything and so you just don't know who you're informing of what, since everyone just seems so knowledgeable except you. And it's very hard to gauge, and in fact, easy to overestimate how much knowledge your reader has.

But just getting back to the third reason for the awfulness of academic prose. Given this inherent difficulty that you're not really engaging in any natural form of communication, you have to have a model, a fictitious model, of how you should be pretending to communicate. And my favorite model of this comes from a wonderful book by Mark Turner and Francis-Noel Thomas called Clear and Simple as the Truth, which outlines what they call classic style, a tacit model of the prose communication process that they recommend as an ideal.

The model, that is, the fictitious, pretend kind of communication that you aspire to in this style is joint attention. That is, the writer orients the reader to something in the world which the reader can see with his or her own eyes. The goal is to help the reader see reality. The style is conversation.

The classic style model has in it a number of assumptions. The assumptions are that truth can be known. That prose is a window into an objectively existing world. That the thought can stand alone and precedes the word. Writing is not thinking. That thoughts are concrete images. An agent applies force to an object, an object moves or stays put.

In that sense, classic prose is the opposite of anything that is relativist, ironic, romantic, post-modern, or self-conscious. It's a model of communication that is realist, indeed, naive realist. There is an external world. Anyone can see it. The purpose of prose communication is to get someone else to see something that is objectively out there.

Now, this is highly congenial to the worldview of a scientist and it is pretty much the worst nightmare to a post-modernist. And this might even help explain why, I think, so much of the clearest prose from academics is often from science popularizers. I know Helen did a survey of academic journals. I don't think science came out so well.

But I think our clearest prose stylists nowadays are people like Richard Dawkins and Brian Greene, who try to convey science to the public. And I think there's a systematic reason for that. Namely, the mental model of the scientist is pretty close to the ideal model for good prose, at least according to the theory of Turner and Thomas.

So let me just give you an example. Again, always illustrate your abstract ideas with concrete examples. This is from an article by the cosmologist Brian Greene and I'll just read it to you.

"In 1915, Einstein published the general theory of relativity, which was the culmination of a 10-year search to understand the force of gravity. The theory was a marvel of mathematical beauty, providing equations that could explain everything from the motion of planets to the trajectory of starlight with stupendous accuracy.

Within a few short years, additional mathematical analyses concluded that space itself is expanding, dragging each galaxy away from every other. Though Einstein at first strongly resisted the startling implication of his own theory, observations of deep space made by the great American astronomer Edwin Hubble in 1929 confirmed it.

And before long, scientists reasoned that if space is now expanding, then at ever earlier times, the universe must have been smaller. At some moment in the distant past, everything we now see, the ingredients responsible for every planet, every star, every galaxy, even space itself, must have been compressed to an infinitesimal speck that then swelled outward, evolving into the universe as we know it. The Big Bang Theory was born.

During the decades that followed, the theory would receive overwhelming observational support. Yet scientists were aware that the Big Bang Theory suffered from a significant shortcoming. Of all things, it leaves out the bang.

Einstein's equations do a wonderful job of describing how the universe evolved from a split second after the bang, but the equations break down, similar to the error message returned by a calculator when you try to divide 1 by 0, when applied to the extreme environment of the universe's earliest moment. The Big Bang thus provides no insight into what might have powered the bang itself."

Now, this is not fancy prose. It's not poetic. It's not inspiring. But it is quite astonishing in conveying highly abstract ideas, nothing less than the history of the universe, and the history of the last 50 years of theoretical cosmology, what the problem with the theory is now that scientists are attempting to deal with, in utterly transparent prose.

Now, despite that built-in advantage that I think science has, even scientists have to be a bit post-modern. That is, when you do science-- although notice how Greene conveyed the history of cosmology in classic style. There was a great deal of confidence in the way he described things. There was very little hedging or uncertainty. And you really feel, when you read that prose, like you're standing next to him and he's saying, look at that, look at that, look at that, look at that.

Now, of course, this is entirely fictitious, because even the most realist scientist has something in common with a post-modernist. Namely, convictions such as, it's hard to know the truth. The world doesn't just reveal itself to us. None of us is objective. Objectivity, in fact, is elusive. We understand the world through our own theories and constructs. They are not just pictures or images, but sets of verbal propositions. And our ways of trying to understand the world must be constantly scrutinized, examined, and purged of error and bias.

Now, these precepts are what any scholar has to always have in mind, but even though they are the reality, they are all poisonous to clear prose style. That is, many sins of academic writing are actually accurate reflections of this self-conscious, ironic, meta aware, post-modernist stance that even the most realist scientist has to live with.

And I'll just give you-- again, I'm going to follow Helen's advice, and all of our advice, and I'm going to be concrete by what I mean. So for example, what makes academic prose so turgid? Well, one part is, one ingredient, is the focus on the activity of studying something, of the writer's job or clique or peer group or daily activities, as opposed to the thing in the world that you are writing about.

I'll give you an example from my own field. Paper-- that all too familiar opening. "In recent years, an increasing number of researchers have turned their attention to the problem of child language acquisition. In this article, recent theories of this process will be reviewed." We've all heard that, but notice it has nothing to do with the actual phenomenon of interest. It's all about what the people who study child language do.

A much better beginning would be, "All children acquire the ability to speak and understand a language. How do they accomplish this feat?"

A second sin of academic writing, and again, this comes from the necessary self-consciousness of a scholar, but again, is poisonous to clear prose, is metadiscourse, writing about the writing. My first book for Harvard University Press, I had a copy editor who warned me about the academician's habit of metadiscourse and excessive signposting.

We tend to mistakenly think that to help orient the reader, we keep having to place signposts, telling the reader what we're going to do, what we just did, what we're going to do next, such as, and again, this ought to sound familiar. "We have just reviewed structuralist theories. Next, it will be necessary to summarize functionalist theories. But first, constructionist theories must be discussed." The problem being that the reader has to expend so much effort understanding the signposting that they have totally lost track of the actual narrative.

Yet another problem is excessive apologizing. "The problem of language acquisition is extremely complex. It is difficult to give precise definitions of the concept of language and the concept of acquisition and the concept of children. There is much uncertainty about the interpretation of experimental data and a great deal of controversy surrounding the theories. More research needs to be done." Sound familiar?

And finally, compulsive hedging. Somewhat, fairly, nearly, almost, partially, relatively, comparatively, predominately, to some extent, to a certain degree. And for me, what crystallized this bad habit was an anecdote where a fellow academic pulled out a photograph of her four-year-old daughter and she said, "We virtually adore her." Now, this shows that the academic's habit of hedging has gone too far.

Well, the question-- I think that one of the main challenges in stylish academic writing is how do we resolve the inherent discrepancy between the demands of clear prose, which basically invoke an implicit theory of naive realism-- the truth is out there, it's objective, all you have to do is look and you'll see it with your own eyes-- and the demands of reflective scholarship-- objectivity is elusive, we understand the world through our theories, and so on.

And these are not, in fact, contradictory. Because you don't have to believe that all the canons of classic prose are literally true, that the truth can be known and so on, but rather the art is to write as if they are true and to count on the reader to fill in the missing hedges, apologies, qualifications, self-conscious remarks, and so on.

That is, you can pretty much take for granted that anyone who is reading your academic article knows that what you're writing about probably has some controversy, otherwise you wouldn't have anything to say, knows that it's difficult to draw conclusions from data. That's kind of the ground rules. You don't have to state it in every sentence.

And in fact, human language is only possible because the reader or the listener naturally fills in the lines, connects the propositions, a process sometimes called conversational implicature. That's a fancy jargon word for reading between the lines, for supplying what was not explicitly stated using common sense and shared expectations to fill in what was not stated in so many words.

My favorite example comes from the little bit of poetry on the shampoo bottle, wet hair, lather, rinse, repeat. Now, when you read those instructions, you naturally know that you don't have to try to wet your hair when you repeat it, because your hair's already wet. And the author of those words didn't actually state, oh, the first time, wet your hair. The second time, you don't have to. You know that.

And also, when it says repeat, you know that means repeat once. You don't go into an infinite loop, repeat over and over again. But if an academic had written those words.

So just to summarize, the sins of academic writing, as Helen so expertly pointed out, include zombie nouns, that is, abstract nominalizations, excessive abstraction in general, passive constructions, hedging, apologizing, excessive signposting.

The reasons that these sins are so tempting are not just the attempt to affect expertise, but also because of an inherent mismatch between the demands of clear prose and the activities of scholarship. Namely, the human mind is inherently concrete and abstraction requires a laborious process of chunking, which a reader may not have replicated, that the curse of knowledge makes us forget our own history of abstract chunking, and that the mental model underlying clear prose communication, a kind of naive realism or joint attention, are incompatible with the actual demands of scholarship, which depends on a certain degree of self-consciousness, skepticism, and irony.

Thanks very much.

[APPLAUSE]