DON'T BE SUCH A SCIENTIST

Talking Substance in an Age of Style

by

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Introduction

"You think too much! You motherf**king think too much! You're nothing but an arrogant, pointy-headed intellectual—I want you out of my classroom and off the premises in five minutes or I'm calling the police and having you arrested for trespassing. And I'm not f**king joking, you a**hole."

Well. That was my introduction to Hollywood, complete with the personalized profanity. Thirty-eight years old. Just resigned from my tenured professorship of marine biology. Invested every cent to move to Hollywood. Entered film school at the University of Southern California and signed up for an acting class with this crazy teacher, now blowing her lungs out at me in front of the class.

I'm looking at this beast and flashing back to Antarctica, 1985, Cape Byrd, getting chased out of the water by a ten-foot leopard seal. Thinking that the seal seemed less threatening than this teacher. Thinking that the seal was more predictable.

To make matters worse, I had been warned. A screenwriter buddy got me into the class. He was friends with the teacher. His warning went like this: "She has laser beams for eyes and can see into your soul. Don't even think
about questioning her. Just listen to every word she says and know she's always right. She's the best acting teacher in Hollywood—she's worked with everyone from Dustin Hoffman to Al Pacino. Don't think you're smarter than her.

He said that over a game of pool, along with a variety of tall tales involving his Hollywood adventures, some of which I felt certain were hugely exaggerated. The "laser beam eyes" bit made it seem like just more of his hype.

So here I am. Standing in front of two dozen kids—all twenty-something hipster/aspiring actors, now roaring with laughter as this version of Bette Midler-on-angel-dust tears apart "the old dude."

I stand before her, hands at my sides, palms open, saying, "I'm sorry, I'm just here to learn about acting." It's the first night of class. She teaches the Meisner technique—one of the most highly respected forms of training for actors. It revolves around repetition exercises: Two students stand in front of the class. One says, "That's a lovely blue sweater." The other replies, "This is a lovely blue sweater?" The first one repeats, "That's a lovely blue sweater." If the original statement is sincere, the repetitions take on a sweet tone until someone finally feels an emotion and expresses it by saying something like, "Thank you for the compliment." If the original statement is sarcastic, it doesn't take long for the sweater wearer to end the exchange with an insult.

So I'm in front of the class and my assigned partner, a gorgeous twenty-two-year-old Malibu party girl, stands opposite me and is told to begin the process with an observation. She could have commented on my shirt. She could have commented on my posture. But instead she looks me over and says... "You're going bald!"

Like a pack of wild hyenas, the entire class erupts with screaming, almost violent, laughter. The little sweetie looks to them with a smile and a gesture of "Boo-yah!" The teacher watches with fire in her eyes, and I'm supposed to answer.

"I'm going bald," I reply with a nervous, humiliated smile.

We trade the line twice more, and then it happens. The venom-spewing tirade begins with "How does that make you feel?" as the teacher jumps up from her chair and confronts me.

I shrug. I've been living in university settings for twenty years. Baldness has been a badge of legitimacy in that world. I've looked in the mirror. I can see it. No need to get mad at me. Everyone says I'm a nice guy. I'm just here to learn. "I don't know," I reply. "No big deal."

The fire escalates. "What do you mean you don't know? We want to hear what you're feeling. We want to see what you're feeling. Don't try to stand here and tell us you have no feelings. This beautiful young girl says you're going bald, like a pathetic limp-dick old man. She's insulted you. Now I'm asking you again, How does that make you feel?"

Again I shrug and smile—and even make the fatal mistake of saying, "I'm not feeling anything." To which I should have added, "Why should I? I'm a scientist."

Well, that's what triggered the final eruption.

The veins were bulging out of her wrinkled neck as she blasted forth. "You cannot, I repeat, cannot come into this classroom and have no feelings. You can be sad, you can be glad, you can be mad, but the one thing you cannot do is tell us you've thought things through and have no feelings. That's what intellectuals do. They intellectualize the world, They move it all into their heads. They suck the life out of life. And that's why nobody wants to watch an intellectual act. Actors act. They actually do things. Intellectuals don't act, they think and talk."

On and on.

And that's where this book begins—with the realization that as an academic I had been trained to think rather than act. I heard that, and a whole lot more, in this acting class in 1995.

I did leave the premises that night, and I was definitely rattled. They say
that fear of public speaking is one of the most widely shared phobias. I'm guessing that fear of public acting in front of a pack of attractive kids who are laughing at you has to rate right up there, too. I stayed up for hours that night talking on the phone to old friends, wondering what the hell I had gotten myself into and giving some thought to the possibility that the move to Hollywood was simply a bad idea. It wasn't too late to blink to New Hampshire and cancel my resignation, though I kept flashing back to the scene in An Officer and a Gentleman where Richard Gere is doing push-ups in the rain, crying and screaming at the sergeant, "I got nowhere else to go, sir?" That was kind of my predicament.

I spoke with my screenwriter buddy the next day. He called the teacher up. She didn't know I was his friend. Being pure Hollywood, she melodramatically apologized in front of the class the next night for having treated me so poorly, then told me to sit down and shut up, and continued to abuse me for the next year.

The class was of moderate interest then and for a while after. But it all changed in 2002, when I returned to working with academics. Suddenly the experiences of that course came raging back like a flood of suppressed memories.

I found myself listening to scientists and, even worse, science communicators and thinking back to that wretched woman screaming at me—"You're too cerebral! Stop thinking and act!" I began seeing all the worst traits from acting school played out instinctually by these folks.

The acting class was the pivotal moment in my life, causing my fragile intellectual noggins to crack wide open and the former professor to see his scientist's life in a new light. It gave me a 180-degree different perspective on my previous profession. For fleeting moments I could actually see and hear the consequences of so much education and development of the brain. All of which eventually led me at times to begin saying to old science friends and colleagues, in trying to help them communicate better, "Don't be such a scientist!"

A Scientist Turns Filmmaker
This may sound like a lot of silly fun, but guess what's at stake here—the entire fate of humanity. Let me explain.

What's the most important problem confronting humanity today? I think most people would agree it's the question of whether we're going to exceed the resources of the planet, destroy the environment, and end up in total chaos leading to the post-apocalyptic visions that centuries of science fiction writers have warned of. Science can avert such a nightmare.

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.

How bad is the situation with scientists and their communication skills? Well, I think it's at a crisis stage. Consider this: On June 23, 2008, James Hansen, head of NASA's Goddard Institute for Space Studies, gave a speech at the National Press Club in Washington, DC, in which he said, "CEOs of fossil energy companies know what they are doing and are aware of the long-term consequences of continued business as usual. In my opinion, these CEOs should be tried for high crimes against humanity and nature."

Now, don't get me wrong—James Hansen is a superstar of the science world and deserving of the Presidential Medal of Freedom for his efforts in speaking out against the George W. Bush administration's tampering with scientific studies. But this book isn't about making people think scientists are cool. If that's all you're looking for, you should go elsewhere. It's about examining the truth, which, by the way, is what science is supposed to be about.

And the truth is that the idea of trying energy executives for "crimes against humanity" is somewhere between laughable and insulting to the general public. This shows the extent to which scientists and the general public are not on the same wavelength. It's as simple as the words of the prison guard in Cool Hand Luke, spoken to inmate Paul Newman: "What we have here is . . . failure to ko-mune-eee-kate."
When the disconnect between the science community and the general public is this large, there's definitely a problem with communication. It's like an infant, not yet able to talk, screaming and crying at its parents, trying to tell them something is wrong. And the parents are just staring at the child, unable to understand.

It doesn't matter if the reality of the situation is that neglecting global warming could kill more people than a crime against humanity like the Holocaust. The only thing that matters in American society is perception (the old "perception is reality" bit). And, to the general public, accusing quiet businessmen of such crimes gives the impression that scientists have lost their minds.

I got to see how bad it all is when I was invited to take part in a special symposium in December 2006, at a meeting of the American Geophysical Union titled "Communicating Broadly: Perspectives and Tools for Ocean, Earth, and Atmospheric Scientists." It's the largest annual gathering of climate and ocean scientists, and that year it was in San Francisco, with nearly 15,000 in attendance. I don't like the meeting because of its enormity, so I initially declined, but the organizers made me an offer I couldn't refuse.

They put me in the middle of the opening session, amid the nation's top global warming scientists, including the very same James Hansen; Stephen Schneider, head of Stanford University's climate center; Michael Oppenheimer, head of Princeton University's climate center; and a half dozen other big names. Plus Al Gore was set to give the keynote address in the session. It was too huge an invitation to turn down.

I spent three months working on my presentation—I edited a ten-minute video for which I would provide the narration live, perfectly timed to weave in and out of the audio. It had both silly clips from my comic work and a very serious message about the role of likeability in the broad communication of science.

The experience turned out to be stunning, but in the worst way possible.

I sat there that morning in disbelief as the speakers—supposedly the best of the best when it comes to presenting science to the public—gave some of the dullest, most uninspiring presentations I've ever seen.

Worst of all was Hansen (again, a true scientific hero), who gave a tedious and disorganized presentation. This comes as no surprise to any major climate scientist. They all know Hansen's a nice guy but not a dynamic speaker.

Now, yes, I know that many in the science world feel that someone like him shouldn't be criticized. They're saying, "If you want to help the cause of science, just keep your mouth shut." But most scientists know that science is built on a tradition of honest, at times (as I will explore in chapter 4) harsh, critical evaluation. So I'm not about to just sit quiet on this issue.

Hansen spent the first five minutes showing a single graph of temperature versus atmospheric carbon dioxide. The audience was dutifully respectful of him, given his greatness. But all he was doing was talking "science" rather than "science communication," the supposed focus of the symposium. He finally looked at the crowd and said, "I guess you guys want to hear what it's like to testify to Congress." Everyone nodded yes.

He stumbled on, reading his talk haltingly from a laptop to the audience of five hundred. Then, after a total of twenty minutes, the moderator told him he was out of time. He turned to the crowd and simply said, "Well, I've got a bunch more slides. They're all on my Web site if you want to see them." Then he slapped shut his laptop and left the room, presumably headed for the airport. No conclusion, no summary, no overall point to what he said. Just "That's all, folks!" followed by the twenty-three skidoo, exit stage left.

The other speakers weren't much better. They tossed up one PowerPoint presentation after another. After a while it was just blue slide, blue slide, blue slide (by the way, don't miss "The Blue Slide Pioneers" in chapter 4). And yet all the while they were held up as experts on "communicating science broadly."
Now, as I discuss in chapter 3, two main errors can be made in presenting science to the public. The first is an error of accuracy. Had even one of the speakers made a significant mistake in accuracy—maybe stating that current atmospheric carbon dioxide levels are around 800 parts per million (ppm) rather than 385 ppm—the audience of experts would have torn the speaker to shreds.

But the second is an error of boredom, in which the speaker fails to make a presentation that holds anyone’s interest. Such mistakes are traditionally shrugged off as no big deal—“At least he got the facts right.” No harm. Well, I maintain that today there is in fact harm.

A New Priority for Science Communication
The time has come, in our new media environment, which is so cluttered with information that it is at times hard to tell fact from fiction, for new attention to be paid to this second type of error. The powerful and effective communication of science has to be a much higher priority than ever or the science community will lose its voice, drowned out by either the new antiscience movement or just the cacophony of society’s noise.

So I spoke with the organizers of the symposium the following week. They said they were disappointed. They had thought their cast would have done a better job. But they also said I was about the only person they’d heard any complaints from. Most of the people were so dazzled by the credentials of the speakers and excited to have Al Gore at the end of the session that they didn’t really consider whether the title of the symposium had been justified. I found that distressing, especially given the attacks that are under way against science these days.

A backlash has developed against science, in disciplines ranging from evolution to global warming to mainstream medicine. An entire antiscience movement has emerged that truly does threaten our quality of life. Large groups of people are fighting against hard, cold, rational data-based science and clinical medicine, simply saying they don’t care what the science says.

Major groups are now arguing against certain childhood vaccinations on the basis of fears that are grounded not in scientific data but in anecdotes and innuendo. These are vaccinations that have been responsible for eradicating terrible diseases. It is a genuine threat to society.

In the midst of this conflict, communication is not just one element in the struggle to make science relevant. It is the central element. 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.

Seeing Is Believing (That Communication Is Important)
As you read on, you will realize that much of this book focuses on filmmaking—making films, watching films, and understanding “the language of film.” Many scientists will say, “This is not for me; I’m not a filmmaker.” Well, guess what—if you aren’t yet, you probably will be soon.

I came to this realization in 1997, near the end of film school, when I met with Elizabeth Daley, dean of the USC School of Cinema-Television (now called the USC School of Cinematic Arts). She said that film is a language that everyone learns to “read” from a very early age. A young child has no problem watching a scene in a television program that changes from a man picking up his car keys to the man driving his car. The child doesn’t sit and wonder, “How did that man suddenly go from picking up keys to driving his car?” No, the child is able to fill in the missing scenes of the man leaving his house, starting the car, and driving off (called “ellipses” in the language of film).

But when it comes to “writing” the language of film, over the past hundred years only select individuals have mastered this technical medium. That is now changing rapidly.

Daley envisions a day in which everyone in every discipline will routinely communicate through the use of film—both writing and reading in the medium. And I have seen the beginnings of this in the science world since the
1980s—slowly at first, but quickly in more recent years as a result of new video technology.

Today, when I run a video-making workshop at Scripps Institution of Oceanography with graduate students, almost all of the students have already had some experience with shooting and editing their own videos. That’s a drastic change from just a few years ago.

So the fact is, the science world is in many ways converging on Hollywood. What?! Think that’s a heretical thing to say? Don’t believe it? Let me hit you with a little anecdote from my recent past.

I was helping a large science organization set up an evening event in Hollywood for which the organizers wanted a couple of scientists to talk, and they wanted them to be truly exceptional speakers. The communications director left me a phone message asking for help. I called back and told her about two scientists I know who are tremendous public speakers. She left me another message a few hours later, saying, “A bunch of us got together in my office and found clips on the Internet of one of the scientists, and you’re right, he’s amazing. But we couldn’t find anything on the other one. Could you send us some tape of him?”

When I heard that last phrase, I got a minor case of whiplash. I called her back and left her a message saying, “Do you know who traditionally says that phrase—‘Send us some tape on this person’? That’s what Hollywood casting directors say to agents when they want to consider an actor without having to trouble the actor to come in for an audition—‘Just send us some videotape of the actor’s best scenes’.”

So take a moment now to think about what this means. In the near future—maybe it’s already happening—prominent scientists who are good speakers are going to edit together their “demo reels” in the same way I’ve helped dozens of my actor friends in Hollywood edit their demo reels. Instead of taking scenes from movies and television shows, the scientists will take scenes from talks they have given.

Scientists will post their “reels” on YouTube for event organizers to consider. And, with time, they will realize that the best parts of their reels come from the talks they give where the lighting and camerawork and sound recording are best. They will realize that even if the substance of their talk is identical in all the talks, the style of the talks that are recorded effectively is what makes those videos better.

As they look at their reels over time, they will realize that it really does matter if they dress well and comb their hair and maintain good posture. Though traditionally scientists have focused more on substance, in the future they will increasingly realize that style matters when it comes to communication, just as the people of Hollywood have known for over a century.

And I have nothing to do with this transition of scientists becoming more aware of these elements. With most of what I have to say, I’m just the messenger.

From Sea Stars to Hollywood Stars

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.

After spending two decades battling my way into the inner sanctums of academia, I switched careers at age thirty-eight and did my best to party my way into Hollywood (yes, party; that’s the main work mode for Hollywood).

And I do feel that Hollywood is the most powerful, albeit hard to control, mass communication resource of today. When a blockbuster movie suddenly makes dinosaurs more interesting than ever, the subject permeates every level of society, from magazines to elementary schools to dinner conversations. The impact can last for many years. And when a Hollywood
celebrity pulls a shocking stunt (like a “wardrobe malfunction,” as I mention in chapter 2), it sends equally powerful waves throughout society.

Two Other Books

In addition to this book, there are two others I would like to publish. A whole tome could be filled with adventures from my twenty years as a marine biologist. I got my start when I dropped out of college in my sophomore year and ended up in Puerto Rico working on an oceanographic project. I spent years in the Caribbean studying coral reefs—Jamaica, Panama, the Virgin Islands—and then migrated west to the Pacific. I spent the 1980s in Australia doing fieldwork for my doctorate from Harvard University, going back for a postdoctoral fellowship, and then finally settling in for the pot of gold at the end of the academic rainbow: a tenure-track professorship at the University of New Hampshire.

For the uninitiated, tenure means employment for life. They can’t fire you. It’s what every academic dreams of. By 1994 I had earned tenure at UNH. I had a group of graduate students studying with me, a major grant from the National Science Foundation, and twenty published research papers; at thirty-eight, I had essentially achieved the sort of career success I’d hoped for way back in college. I was professionally content. But, just as tragically as a happily married person can fall in love with another person, my heart had begun wandering from science to another career: filmmaking.

My affair with film had, actually, been slowly developing. Throughout the 1980s I gave countless slide shows about not just my research but also all the adventures I’d had diving around the world—from living on an island on Australia’s Great Barrier Reef for a year to diving under the ice in Antarctica to living in an undersea habitat for a week and eventually meeting the guru himself, Jacques Cousteau. I enjoyed giving the talks and telling the stories. And by the early 1990s I’d become intrigued with the power of video to supplement what I had to say.

I often thought about putting those stories in a separate book, and in fact that book exists, sort of. In 1989, in a blinding blaze of passion I wrote a 120,000-word manuscript in four weeks, titled “Coral Reefs and Cold Beers,” which centered on my best and most favorite stories, starting with the years I’d spent living on Lizard Island on the Great Barrier Reef. It was full of tales of getting drunk with fishermen, dodging sharks, and having the time of my life studying marine biology—including thoroughly enjoying the hypothetico-deductive process of science in the field. But alas, its brow wasn’t sufficiently high for the literary world, which demanded in 1989 that scientists write only in a voice of deadly seriousness. Despite three literary agents, a couple dozen publishers, and at least one academic press that gave it the green light, it never made it to publication. The overall opinion was summed up by one editor, who said, “The partying theme gets in the way of the science.” (Bali, humbug.)

The other book I’ve thought about writing is a thorough review of the state of science literacy in America today. It would examine the literary and popular image of scientists in our culture—how they are portrayed in movies and what effect that has on the public’s support for science in general. Fortunately, that job has been covered by Chris Mooney and Sheril Kirshenbaum in Unscientific America: How Scientific Illiteracy Threatens Our Future, published about the same time as this book.

Two Careers in Storytelling

So “scientist-turned-filmmaker” ends up being the label that has been applied to me, which seems like a professional stretch, yet there is a unity to the two careers. They are both, in the end, about telling stories. A scientist goes out into nature, gathers data, comes back to the laboratory, and puts it together in order to present to the world a story about how things are. A filmmaker goes out into the world, shoots film, comes back to the editing suite, and puts it together in order to present to the world a story about how life is. Same basic creative process. One group just tends to be a little better at the art of storytelling, as I’ll explore in chapter 3.
My formal entry into filmmaking began in 1990, when I made a first, silly short film, Lobstahs, a five-minute piece on how to eat a lobster that starred a couple of New Hampshire lobster fishermen. By the next year I was receiving awards at the International Wildlife Film Festival for my films, including Barnacles Tell No Lies, a jazz music video about the sex life of barnacles. And I had begun exploring the bigger picture of the film world, including initial trips to Hollywood.

Academic friends would ask, “Why are you so interested in Hollywood?” and I would paraphrase the famous bank robber Willie Sutton (when asked, “Why do you rob banks?” he’s said to have replied, “Because that’s where the money is”). I’d say, “I’m going to Hollywood because that’s where the mass communication is.”

By mid-1993 I had approached USC’s cinema school and spoken with an admissions advisor, who asked my age. I said thirty-seven. He said, “You’re right on the cusp—better act now or it will be too late.” Suffice it to say, I acted.

I made my move to Hollywood in January 1994, fittingly just in time for the Northridge earthquake. I rented an apartment in Beachwood Canyon, right below the Hollywood sign, and lived there for more than a decade as my journey led me to film school, through the two-year acting program, to premiering my films at festivals from Telluride to Tribeca, to short films and commercials with such actors as Jack Black and Dustin Hoffman, and eventually to my documentary feature Flock of Dodos: The Evolution–Intelligent Design Circus, airing on Showtime.

It’s been fifteen years now since I jumped ship on academia, and I have lots of genuinely insane Hollywood stories from the countless nights of partying and networking. But, in the end, it all comes back to that acting teacher screaming at me. That was the golden moment. That was when I knew I wasn’t as worldly smart as I had been led to believe in academia.

And that’s most of what this book is about—the fact that academics (and scientists specifically) tend to think that the solution to all problems is education. Which seems logical at first. But the extension of such a notion is that, all else equal, highly educated people are better at everything.

I thought that was true in August 1994. I had several college degrees. I knew a lot. I figured I must know more about communication than the “idiots” in Hollywood. Boy, was I wrong. As I hope to make you see.