

# Agnotology with Dr. Robert Proctor

## Ologies Podcast

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Oh heeey, it's that little wooly caterpillar you just picked up and moved off the sidewalk, who's like, "Hey, thanks for looking out for my thick, bristly behind! Sorry I peed on you," Alie Ward, back with the most stupid questions ever packed into a smart episode. Because today we are exploring the topic of not just ignorance, but willful ignorance; intentional misinformation, doubt, controversy, and well... evil.

But before we examine our own lingering stupidity, let's thank the folks at [Patreon.com/Ologies](https://www.patreon.com/Ologies) for all their great questions they submitted and for supporting the show for as little as a dollar a month. You too can join if you'd like. Thanks to everyone who subscribes, and rates, and of course reviews to keep the show up in the charts. This week's fresh pick is from [hoodiegirl555](#) who says they listen every night wearing their *Ologies* sweatshirt. Thank you for listening. Thank you for repping with an *Ologies* hoodies. Everyone who left reviews: I read them. I loved them. I thank you.

Okay, Agnotology, we're gonna get into it. *Agno* comes from Greek for 'unknown', and according to the originator of the word Agnotology, it is the study of ignorance and it seeks to answer why we don't know what we don't know. The person who coined the phrase... I'm sure you're like, "Was it a long-dead philosopher? Was it a quippy war nurse? Was it a child, wise beyond her years?" Nope! It's our guest today. That's correct, the biggest cheese in the agnotology world is here to talk to you. He edited the book *Agnotology: The Making and Unmaking of Ignorance*, and approximately 10 million of you have tweeted and emailed me begging to have him on. He's been on my list for years, so this was a huge get to have him sit down during a pandemic and chat via computer. He got his Bachelor's degree in Biology, and then went to Harvard University to get his Master's and his PhD in the History of Science. He is now a professor at Stanford University teaching the history of science.

I'm gonna warn you up top: if you do not enjoy political discourse, or scientific facts versus religious mythology, or how industry favors profits over health, or the topic of equity for marginalized groups, this episode may not be for you. Rather, it might be perfect for you. We are living in very uncomfortable, very polarized, scary times, in so many ways. People are screaming at each other about masks in Costco. It pains me to see the divides because I feel there's so much at play psychologically underneath these sometimes-violent differences of opinion. So, we get into all of that. I was very curious and excited to talk it out with someone who studies ignorance and the comfort of ignorance, for a living: Agnotologist, Dr. Robert Proctor.

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**Alie:** Everyone has told me I need to hunt you down to talk about what you study. You are, technically speaking, an Agnotologist?

**Dr. P:** I guess so. Yeah. That's one of the things I do. I do a lot of different things. My title is, I'm Professor of the History of Science at Stanford University, where I'm also a professor by courtesy of Pulmonary Medicine. But I work on a lot of different things, including the history of ignorance.

**Alie:** And you also studied the history of science. How did it dovetail into the history of ignorance? At what point did a light bulb go off and you thought, "Oh, I want to study that."?

**Dr. P:** *[laughs]* Well, I was always interested in puzzles, and mysteries, and illusions. Even from being a kid, I remember in high school trying to figure out the moon illusion. Why does the

moon appear large on the horizon? And I basically, I think, figured it out. We live in a low-dome cosmology where the sky, we figure, is about two or three miles high and the horizon is about 10 or 20 miles high. So, it makes sense that if something appears the same above you and on the horizon, it will actually, in effect, create an illusion of being much larger on the horizon. So that's kind of the popular cosmology we live in, because if a bird is overhead it's closer, if it's on the horizon it's farther. And we normalize that, and that creates the moon illusion. I was always interested in puzzles and Martin Gardner-type of mysteries.

**Aside:** Oh, and for more on those moon illusions, see the Selenology episode with Raquel Nuno. Also, side note: Martin Gardner was a popular and beloved mathematics columnist - yeah, he made math cool - and he was a founder of the skeptics movement, starting way back with his early 1950s book *Fads and Fallacies in the Name of Science*. This guy was the original Myth Buster, the founder of the debunking of flimflammy.

**Dr. P:** I remember noticing... learning things that I thought were true that turned out not to be true. I remember as a kid thinking that... I grew up in South Texas, and we would eat chicken hearts, so I thought *my* heart was the size of a chicken heart. Still, when I think of my heart, I kind of think of it like a little tiny chicken heart. And I remember thinking that every country was the same size and the same shape, and I remember puzzling: how can it be that a refrigerator is hot at the back and that it's the heat at the back that makes the cold in the front?

**Aside:** One day, we're going to figure this out in a Thermotechnology episode for y'all. I promise. That day is not today.

**Dr. P:** So, I was a curious child, and when I went off to graduate school after majoring in biology and chemistry, I didn't know what I wanted to do. I started noticing that basically... what I was supposed to learn was all this great science; Darwin, and Einstein, and the double helix. And I thought, "What about, you know, the things people don't know? And what about all the people who don't believe in evolution, and don't understand cosmology? What about them?" And that was uninteresting to my Harvard professors. So, I thought, "Hey, wait a minute. A lot of people don't believe evolution. Why don't we study them?" You know? And so that's kind of one of the things that got me going on ignorance.

**Alie:** And what about the word itself, agnotology? Where did that come from?

**Dr. P:** I got involved with some radical science groups at Harvard University where I was studying with Stephen Jay Gould.

**Aside:** Stephen Jay Gould, side note, was known as someone who challenged the scientific theories he found to be rooted in racism, among studying a lot of other things. So, this work toward dismantling misinformation goes way back.

**Dr. P:** We were studying things like how the chemical industry lies about chemicals, and how the tobacco industry lies about cigarettes, and the sugar industry has its own set of deceptions. So, I was saying, "This is kind of a big deal." You know, Harvard was taking all this money from the sugar industry and creating ignorance, and I could see it around me. I said we need a word for the creation of ignorance. There's something called epistemology, which is the study of knowledge; how we know what we know, what are the methods? Empiricism, rationalism, the sources of knowledge. That was heavily studied, and what I noticed is everyone was ignoring ignorance.

**Aside:** He says this was salient to him because he comes from the Deep South, and his beliefs didn't match those of a lot of his relatives.

**Dr. P:** Again, it was sort of like, “What about *them*?” And what about these big corporations lying about tobacco or lying about chemicals? So, I said, “Well, we need a word.” This was in the early 1990s, I was writing a book on a cancer. I’d already written a book on Nazi medicine, because that’s another thing I write about, Nazi science. But I was writing a book on what causes cancer and I needed a word for all of these efforts to create ignorance. So, I asked a linguist friend of mine, a brilliant linguist by the name of Iain Boal. And he came up with ‘agnatology’. Originally, we spelled it differently. It was A-G-N-A... agnAtology. And we got protests from the people who studied jawless fish, which is Agnathology. [*Alie laughs*] So, I changed it to A-G-N-O so there’s a cognate with, you know...

**Alie:** Agnostic...

**Dr. P:** Agnostic and that sort of thing. So, that was sort of how it came up. I needed a word to describe the deliberate production of ignorance, the kind of things we now associate with climate denial, or fear of vaccines, or the denial of the HIV etiology of AIDS, things like that.

**Alie:** What is the difference between creating willful ignorance and propaganda? Is there a difference or is propaganda just another word for it?

**Dr. P:** Well, they’re slightly different. Both involve deception, but not necessarily, and not in every case. For example, I think the Nazis really believed their own propaganda. In other words, propaganda is kind of like an extreme word for education and it’s bad if it’s bad education, it’s good if it’s good education, or at least used to be. So, you can believe your own propaganda, but agnotology is maybe a little more subtle because the tobacco industry, they knew that cigarettes cause cancer and their whole goal was to create ignorance to stave off people learning the truth by creating doubt, by throwing up a smoke screen, by throwing sand in the gears. [*clip from 1960s Newport cigarette ad: fade up during idyllic music: “Playing tag with the waves, a refreshing way to take a walk at the beach. How can you add to it? With a menthol cigarette.”*]

And they were able to instrumentalize science by doing that. So, by funding genetics, by funding the study of viruses, they created all these blind alleys and false etiologies for disease. So, it’s a much more diabolical thing. Propaganda, I think of as more ham-handed, it’s just brainwashing really. Whereas the tobacco industry was much more clever in creating doubt by emphasizing uncertainty. They become, really, engines of uncertainty by saying there’s two sides to every question. [*clip from President Donald Trump On Charlottesville: “There are two sides to a story...”*] So, they set up the whole Tobacco Institute to promote these non-tobacco causes of cancer. It’s a kind of giant misdirection campaign, and that’s much more subtle than just the brow beating of propaganda.

**Alie:** Yeah. My mom told me a story that when she was trying to lose some weight after her first baby in the early ‘70s, her obstetrician recommended taking up smoking. [*laughs*]

**Dr. P:** You know, I’m so glad you brought that up because until the 1980s doctors were more likely to *recommend* that pregnant women smoke than to recommend against it. [*Alie exasperated*] It was called the ‘smaller babies theory’, and the tobacco industry ran with it. They funded the people pushing for this theory. The theory was that, yes, it makes a smaller baby if you smoke, but they’re just as healthy and it’s more pleasant to just have this nice small baby. I’ve talked to several women whose doctors told them to take up smoking during pregnancy. Again, that was part of that whole ‘sunny side of nicotine’ that was pushed by the tobacco industry.

**Aside:** Just a quick side note: In 1937, Phillip Morris, tobacco giant, ran an ad in the *Saturday Evening Post* depicting a child bellhop offering up a silver platter of cigarettes with the information:

[*Alie's old-timey voice, over record static:*] *"When smokers changed to Philip Morris, every case of irritation of the nose and throat caused by smoking cleared completely or definitely improved."*

Then there are TV gems, too! [*clip from 1949 Camel cigarette ad: "Time out for many men of medicine usually means just long enough to enjoy a cigarette."*]

So as an agnotologist, he clearly covers smoking, but his book also includes chapters on military operations, and clitoral orgasms, issues with Indigenous paleontology, racial ignorance, and injustice, and of course, commerce.

**Alie:** What are some of the other historical - especially in America - campaigns of doubt and ignorance that have been waged on our collective intelligence?

**Dr. P:** Well, there's so many. In Washington, D.C. there's 1,500 trade associations. The Beer Institute, the Sugar Institute, the Methyl Tertiary-Butyl Ether Taskforce, the Salt Institute. Basically, every product that might cause harm has an institute or a trade association designed to diminish that harm or to cast doubt on that harm. So, basically everything that causes harm, whether it be asbestos, or food dyes, or Coca-Cola - through the Beverage Council or whatever it's called - there are these organizations whose job it is to rescue products.

Some of the more dramatic ones are things like the Lead Institute which, years ago, going back into the '20s, '30s, '40s, they would promote lead and cast doubts on the hazards of lead. The Asbestos Information Association did the same thing. The Calorie Control Council... Coca-Cola was funding some of these things trying to rescue the reputation of sugar. And these things often were interrelated. So, the Sugar Research Foundation President in the early 1950s actually goes to work for the tobacco industry saying that he could use the same techniques that they'd used to rescue the reputation of sugar to rescue the safety of tobacco. So there's an interlocking. There are even trade associations of trade associations. There are whole buildings. I remember one, I think it was in Atlanta, where there's a whole building full of these trade associations and they share tricks. It's a little bit like that great scene in *Thank You for Smoking*, where there's the gun lobby and alcohol and tobacco.

[*clip from Thank You for Smoking: "We call ourselves the mod squad, MOD: Merchants of Death. We're lobbyists for the tobacco, alcohol and firearms industries." "How many alcohol-related deaths a year? 100,000? That's about 270 a day?" (sarcastically) "Tragedy."*]

So these groups sometimes even work together as engines of uncertainty, engines of ignorance.

**Alie:** And does that change, for you, how you just live your day-to-day life? Do you see things with like an infrared vision that maybe other people don't? Like when you walk down the soda aisle in your store or see flashes on social media or the news?

**Dr. P:** Well, sure. You always want to know who's funding it. I remember I had an aunt who worked for some kind of dairy counsel or chicken council, even in my own family. And there was an issue on the ballot about whether to require a certain minimum square footage for chickens, and I remember raising this to her and she said, "Oh, chickens, hate to run free, they'll just

peck themselves to death.” So, she had bought into this mythology that ‘chickens actually like their confinement’. I see it all the time.

**Aside:** See the oft-cited 2015 study put out by The Coalition for Sustainable Egg Supply. They’re like, “Trust us maaaann! These chickens love cages the size of a shoebox, it’s cozy as hell, man.” Actually, bad news: cage-free hens do not typically spend their days roaming rolling green hills, though. They’re not out there chasing grasshoppers and singing Joni Mitchell songs into the golden horizon. Cage free just means they hang out in a big warehouse, pooping on each other. Forgive me for robbing anyone of that willful ignorance. [*confessing guiltily*] I had cage free eggs for breakfast.

**Alie:** And what do you think the difference is between just straight up ignorance of not being exposed to something versus willful ignorance, when you maybe have an inkling that you perhaps could be wrong about something, but you just don’t want to believe it? Where does denial fit into that?

**Dr. P:** Oh yeah, denial is key. There’s all kinds of ignorance. There’s what I call native ignorance: we all start off... As embryos, we’re ignorant, right? Each one of us comes into the world innocent and not knowing everything we know we have to learn. And so all of us have a kind of innocent ignorance and then our very lives as creatures... This has a lot to do with evolution because we evolved as predators. We have the forward-looking eyes of the predator, which means we are highly focused, and highly focused means we ignore almost everything. So we have the focus of the predator and not the eternal watchfulness of prey. A horse sees 360° but nothing in particular; they’re on the watch for everything, but they don’t focus on any one thing. The biology of that is deep in our neural circuits.

**Aside:** At this moment, I felt embarrassed for Robert, because he clearly meant 180° degrees. You know how people will say, “She changed her mind and did a 360,” but you’re like, “Well technically that means they came full circle, I think you mean 180.”

Then I looked it up and read, “horses have a range of vision of about 350°.” WHAT?! So he was totally right! Horses *can* see almost everything around them. I was ignorant of this. They can pretty much see everything but their own butts. Also, their eye anatomy involves something called a ‘nervous tunic’ which sounds like something I would wear in a nightmare of me giving a TED Talk. Anyway, human eyesight is more, literally, straightforward.

**Dr. P:** We have a fovea which concentrates our perception, and that’s very different from a prey like a deer. So even in our biology, it means that we have this intensive focus and we have to ignore everything. If you think about it, if you saw everything at once, you could see nothing. Or if you remembered everything you’ve ever known, you would also know nothing. So, a big part of learning is forgetting. A big part of focus is inattention. You can’t focus without defocusing at the very same time on most things that are around you.

Another aspect of agnotology is actually looking at the creation of ignorance, even in the non-human animal world. The reason that deer have white bellies is that’s how they create themselves as a non-object. All objects in the world have a shadow on the bottom. And if you’re prey, you create a white underbelly to dissolve yourself as an object into the surrounding. So that’s a form of ignorance, creating the invisibility or camouflage, and many animals do that. So as long as there’s been predation, there’s been camouflage, and that’s a kind of way of making yourself invisible.

**Aside:** Next time you see a deer or a frog or a lizard, just feel free to say, “That’s called countershading,” and then, if you want, you can high five yourself.

**Alie:** And what about what is happening on a nationwide level, the last few years in particular? Do you have to use maps at all to study higher levels of willful ignorance? Or how do you parse out who is, maybe, more susceptible to believing certain things?

**Dr. P:** It's true there's a geography of ignorance. So while it's true that basically everything that has been known has been forgotten, it's also true that many of the things that have been forgotten *are* known to some people. In a way that's what the whole field of history is, to recover lost knowledge. But education is very selective, right? People are well-educated; they're poorly educated. There's a big geography of knowledge. Humorists deal with this very well. I remember Jay Leno, the comedian, used to do what he called Jaywalking, and he would ask people, "How many moons does the earth have?"

*[clip of Jaywalking]*

*Jay Leno: What is our galaxy called?*

*Woman: Um... I... Umm...*

*Leno: It's also a candy bar.*

*Woman: Mars!*

It was kind of one of those "Who's buried in Grant's tomb?" kind of questions, but a lot of people don't know a lot of things. That's one of the things I actually do in my classes. I do what I call an agnotology survey, where I asked people, "How old is the earth?" And the answers are surprising. I remember when I did this at Harvard for the undergraduates, it turned out about 15% of the biology majors at Harvard were creationists and thought the world was 6,000 years old. I developed what I call agnometrics, the measurement of ignorance, and there's lots of techniques for studying ignorance and surveys you can do.

**Aside:** Agnometrics, by the way, isn't the only great word that you're going to learn today. Consider 'agnogenesis', which is creating doubt for nefarious purposes, or 'agnometric generators', which are the forces generating the doubt. Now, why do some opinions seem so regional? What creates factors that are agnogeographical (which is a word that I just made up)?

**Alie:** Is there something about, perhaps, the geography of being near a port city or a body of water that exposes people to different cultures or different types of people?

**Dr. P:** Yeah. That historically has been true. That's why a lot of the great early empires and intellectual centers are built on maritime commercial centers. You think of the ancient Greeks trading amongst the city states, or you think of the river cultures, either in Mesoamerica or Ancient China. That's one of the old theories of the rise of modern science, that it's deeply connected with cosmopolitan trade. And so there definitely is something to isolation and the 'monkish' life, you might say, that's not conducive to intellectual discovery. Intellectual discovery involves a kind of mixing of ideas, and that allows you to see yourself as a parochial agent.

**Alie:** PS: A parochial agent is someone who is narrow minded or doesn't know a lot, which is a humbling thing to have to google.

**Dr. P:** Part of the need is to get rid of parochialism, to ask, "Why are we the way we are?" That's kind of the undergraduate experience.

**Alie:** And what about social media or just the democratization of information in the digital age? Do you think that we're getting more brainwashed more quickly? Or are we finally getting exposure to voices that have been systemically oppressed for a long time through large

media channels? I'm learning a lot more about just how to word things and how to include people, but at the same time, it seems like we're distracted by stupid stuff.

**Dr. P:** For sure, I think we live in the golden age of ignorance. Ignorance spreads at the speed of light now and with the rise of conspiracy theories, with the rise of denial campaigns, with the siloing of people into... or reinforcing like communities through Facebook or whatever. It's easy to find self-reinforcing bubble world, and that's a huge problem. Now, there's also the flattening of data and sources. If you're getting information off an iPhone or a laptop, it doesn't discriminate by quality. That democratization has also been a kind of a dumbing down, I think, of a lot of media. It's very easy to circulate. If everyone can pop off anything they want on Twitter, and that's all you read, there's no quality control there. So that is a big problem.

**Alie:** I always think about, even when I was growing up, I grew up in near San Francisco and everyone had a copy of the *Chronicle* and that's where they got their news. You woke up in the morning, you read it, when it was delivered at three in the morning or whatever. And granted, a lot of voices were probably stifled by not getting through to the press, but at the same time, you probably had less disparate sources of information and maybe was there more collective trust?

**Dr. P:** Yeah, certainly in the pre-Watergate era there was more collective trust in all kinds of institutions.

**Aside:** The Watergate Era - in case you're like, "Huh?" - was in the mid-1970s, all you young'ns who were born after the 1970s (which technically is me, FYI; I'm very young and cool).

**Dr. P:** A whole other thing I look at is virtuous ignorance. Not all ignorance is bad, that's another one of our myths. In fact, many of our forms of ignorance, you have to have. The whole right to privacy is a form of ignorance - you don't want other people to know everything about you, your medical records or personal life. So we create ignorance about things all the time in order just to have a right to privacy. It's the same thing with all kinds of dangerous knowledge, right? No science magazine will publish a recipe book on how to make AIDS airborne.

There's all kinds of dangerous things that should not be known, and there are all kinds of institutions that require ignorance. Juries must be ignorant of the particulars of a case before they go in, or there's medical confidentiality. There's all kinds of virtuous ignorance. So yeah, there's a mix in how things circulate. And the flatness is a big concern I have, but it's also important to realize it's easy to be awash in information, and as easy to be awash in misinformation.

**Alie:** And how do we know if we are ignorant or not? I understand people say 'ignorance is bliss'. I don't know how you feel about that, but how do we know if we are the dummies who are misbelieving things?

**Dr. P:** Well, for one thing, all of us are profoundly ignorant. One of the things I work on is gemstones. I saw you had an interesting episode on gemology, and that's one of the things I do, I cut and polish stones. And what I fantasize about are all the gemstones on other planets - I call them exo-agates - and we'll never know about that, right? Think of the infinity of beautiful gemstones on other planets. So, each of us is *profoundly* ignorant. We walk through a tiny slice of life, and Socratic wisdom is knowing the limits of what you know. So all we can do is scrape together a few things and hopefully those turn out to be true.

**Aside:** Just a side note disclaimer: that gemology episode was one of the first I ever recorded and it's a wild ride. Not just through minerals and rocks, but also by exploring the gemologist's faith in crystal powers, which I discuss from a neuroscience perspective. The mechanisms of the placebo effect are very thrilling and interesting. So, does having a pointy gem in your bra cause you to alter your decisions throughout the day? Feel free to run the experiment yourself.

Now, let's move on from my bra to the apocalypse. Climate change. The top contributors worldwide to carbon emissions: China and the US. So while many of us in industrialized nations are wringing our hands every day looking at climate data, as a whole there's actually a lot of shrugs.

According to some Gallup data, which is now admittedly 10 years old, residents of the US and China are less worried about climate change and less likely to agree with, "Do you think rising temperatures are a result of human activities?" Less likely to agree in the nations with the biggest carbon emissions. Latin America, European countries? They're like, "Hell yeah." But the Middle East is also like, "Ehhh, probably not because of humans." So as you'll hear in my ignorant question coming up, I thought the US was more vocal and concerned, but no! Ohhh no we're not. It's just my little bubble.

**Alie:** Because we tend to have more resources, but are the most, maybe, vocal in terms of combating climate change, but we're the biggest contributors. How does anyone kind of grapple with that?

**Dr. P:** Well, both those things are true. In a way, we diagnosed the problem earlier than a lot of people because we're the ones making the problem, right? And it's exactly true what you say, we're the biggest culprits, and we're going to have to lead out of the mess that we've created. Now fortunately, we do have a lot of critiques and tools that we can use to try to undo some of the ignorance, the damage that's been done.

But again, that's why I'm so interested and a lot of other people are interested in climate agnotology, because there are these dedicated bodies - bodies like the American Petroleum Institute or these various fronts of oil producers - whose job is dedicated to continuing the carbon world. And so that's what we've really got to expose and fight against. There was just a big debate in our Senate at Stanford last week about whether to divest from carbon stocks, big oil and so forth. A lot of institutions have already done that. Harvard has done that, and a lot of other institutions. There is going to have to be a reckoning and a break with this carbon world. Unfortunately, things are heading in the wrong direction at present.

**Aside:** Hmm. Most of that comes down to, of course, greed. Now, what about how power is established or maintained through willful ignorance and hate?

**Alie:** And what about racial justice? It always struck me even as a kid reading that all men are created equal, which left out women entirely and was written by slaveholders. At what point do you think that this country might start to recognize its own ignorance and racism and correct course?

**Dr. P:** Well yeah, that's what's been going on for years now, a slow, steady, one step forward, several steps back sometimes. That was actually yet another prompt for agnotology. I was studying science and I thought about going to MIT out of high school. I looked at it and it was 96% male, and I wasn't going to go spend my best hormonal years at MIT around 96% guys. [Alie chuckles] And I thought about going there for graduate school again, and it was still 92% male. So I became aware of that very early.

That's how I became a feminist and involved in feminist critiques of science early on. I was amazed that no one was researching this or that this was not a primary object of study. And this was, I'm talking about the late 1970s now, and again that was like a gaping hole. Why is no one studying this? Why is there silence around that? The same story with racial equality and inequality. Again, I came from the deep South where I remember 'whites only' signs in the early 1960s, late 1950s. Why were people not studying that?

That's why I actually wrote two books on Nazi medicine looking at how the American racial experience was actually used by Hitler and by the Germans in the Nazi regime to carry out their programs of racial destruction. There was this bond between American racialism and the racism of Nazi Germany. People hadn't really written on that either, so that was another gaping hole. So we've got a lot of these holes that have not been properly excavated or filled.

**Alie:** Yeah, it seems that that is what's happening a bit with police brutality and Black Lives Matter.

**Dr. P:** That's right. Well, and of course one glimmer of hope is that these things are being filmed. That's why body cams are so important is we can actually get a record of this horror, and that makes it possible to address it. I mean, imagine how difficult it would be to prove something like what we saw with the George Floyd case, 30 years ago, before ubiquitous video.

**Alie:** Even now with video. Even *with* video. So imagine that without video.

**Dr. P:** Right.

**Alie:** Yeah. Do you get along with all your relatives in the South still or do you just not talk to them?

**Dr. P:** Yeah, I get along with them. Yeah. I don't see them a lot. But yeah, I think we know we have different points of view. It is interesting cause my mom, she didn't even know that her dad was in the Ku Klux Klan, and I could sort of tell by talking with him that something like this was going on. She was surprised to learn it from me that her own dad had been in the Klan. So some aspects of this get covered up. It's part of the sort of psychological denial, maybe, that you were bringing up earlier.

**Alie:** Having studied this, I know that there's a difference between research and diagnosing versus prescriptive, perhaps, but do any studies come up that show what is effective in changing ignorance in ourselves?

**Dr. P:** Well of course, that's what pedagogy is all about. That's why a lot of educators have become so interested in agnotology because that's what education is all about. In a way it's about overcoming ignorance. There's no magic wand that you can wave, but the thing you can do, I think, is try to get some of the big money out of politics to try to go after these institutions that create ignorance.

One of the things I do, I testify against the tobacco industry as an expert witness. So that's one of the things we always talk about is how the hundreds and hundreds of millions of dollars were spent to create this fantasy world of what was called 'alternative causation' or the 'sunny side of nicotine'. And so exposing how that worked, diagnosing it, and showing how it went to very high levels... because what I found is that 25 Nobel laureates have taken money from big tobacco. So the corruption of science, that's one of the main things I'm interested in; how science itself can become corrupted.

*[clip from Jurassic Park: Ian Malcolm, "Yeah, but your scientists were so preoccupied with whether or not they could, that they didn't stop to think if they should."]*

Even good science, as part of these engines of ignorance to create distractions about, "Well, cancer is all genetic. It's your ancestry, it's all food dyes. It's all..." you know, anything but cigarettes. So once you understand how these powerful institutions work, that lets you understand how they might be dismantled.

**Aside:** And side note: it's easy to look back on horrible ignorance, and injustice, and lies, and say, "Of course that was wrong. How could people not know then? How could their intuition or moral compass be so skewed by outside sources?" From cigarette commercials, to misogyny, and more. What will future generations look back on now with utter mortification? What would they profess to build a time machine to come back and fight? How opioids are marketed and have led to an epidemic? Our daily dependence on oil? How we vaped on TikTok? Or America's love affair with cheeseburgers?

**Dr. P:** That's why you have these 'ag gag' laws in so many states where you can't even film inside a slaughterhouse. There's a recognition that if people saw the horror of some of the ways we process animals, that this might give us pause. There are a lot of things we do in life that are really made possible by a kind of invisibility, a kind of distancing. That's something that's important to realize, is that a lot of what we are able to see is only because we are allowed to see it.

I remember when I was at Penn State, we were calling to arrange a lecture series and I called up and it was like, "This is the Department of Undersea Warfare." And this wasn't even in the college catalog that we had a whole section or division on undersea warfare. And so there are a lot of things that are kept from us. And again, that's why I like to expose secrets. I like whistleblowing. You have to see these things to let the sunshine in.

**Alie:** And I have questions from listeners, is it okay to pepper you with them?

**Dr. P:** Sure. Go ahead.

**Alie:** *[laughs]* Okay, good. So many questions!

**Aside:** And before we get to questions, some words from sponsors of the show who make it possible to donate to a cause each week. And this week, while researching, I learned of a lecture our guest gave citing some extremely hurtful racist tobacco advertising in an effort to teach students about how big industries use systemic racism as a weapon. And he read off the names of a few of the brands that many people in attendance were deeply hurt to hear aloud, and later released a statement saying it was an effort to illuminate the wrongness of the messages, saying, "My whole career has been devoted to exposing, analyzing, and condemning racism and white privilege."

And I wanted to support the National Black Law Students Association, who spoke out about the incident and educated so many on the pain that words can cause even in historical and scholastic contexts. So this week I'm choosing that a donation will be going to them. I support the shared goal of dismantling systemic racism and I thank organizations who work to keep us all less ignorant, especially when it comes to intentions versus impact which is so important.

Dr. Proctor also wanted to support SavingBlackLives.org, which is the African American Tobacco Control Leadership Council, which educates the public about tobacco products and

their effects on Black American and African immigrant populations. And he's been working closely with them for years. So a donation goes to them.

And WHY NOT? Let's do a third donation! This is an important topic. It's going to go to the Public Health Advocacy Institute. They use the civil justice system to improve public health by focusing on litigation targeting tobacco industry products and unhealthy foods, and deceptive health marketing. Maybe jade eggs, I'm not sure, but deceptive gambling practices also. All to advance public health and social justice.

So, a lot of great donations this week, and a lot of ignorance on all of our parts. But what's important is the willingness to learn. So those donations were made possible by sponsors, who you may hear about now.

[Ad Break]

Okay. Now, to your questions. The first question is about willful ignorance and if it's related to the Dunning-Kruger Effect in which, the less you know, the smarter you think you are.

Nicole Howley, Joel Michello, L. Wink, Ed Matesevac, and first-time question-asker Fyllys, wanted to know:

**Alie:** People are very excited about the topic. Some people asked about the Dunning-Kruger Effect and whether or not agnotology is related to the Dunning-Kruger Effect, where people who maybe think they're more intelligent than they are, are ignorant to what they don't know. Do you use that in research at all?

**Dr. P:** I don't use that specifically, but that's certainly true. There's a kind of... I link it to a kind of myopia of specialization. The more expertise you often get in science, the more narrow your focus is. That becomes a sort of tragedy because you don't see the forest for the trees, and I believe that the truth is in the whole and you have to see the big picture. I'm a big fan of what we call 'Big History' and also the unity of what we know with what animals know as well. Our unity of biological life in the course of evolution... That's one of the things I study is human origins, how we became human. A lot of our deep biology is still expressed in our limitations today.

**Aside:** Okay, quick question, because I am unwillingly ignorant. What is 'Big History'? I looked it up, and it's history taught from the Big Bang onward instead of just starting from when us hairy humans meandered on the scene. So Big History ends up being multidisciplinary because in order to teach how the planets and the stars formed and the universe expanding, you have to go back and learn about physics and astrophysics. It's a bit of a hodge-podge of sciences, which is fun.

For more on that, you can enjoy the two-parter on cosmology with Dr. Katie Mack wherein I get cosmic vertigo, which is a kind of horror at the scale of things. Speaking of fear, who asked about fear fueling ignorance? Turns out, a lot of you: first-time question-asker Ethan Stoller, Erin Maglecic, Sutton Taggart, Zora Phoenix, Devon Robertson, Misty Dawn, Beth Monaco, Sam Correia, and Greg.

**Alie:** A few people had a question about whether or not fear plays into ignorance. Emily Meredith Lewis, first-time-question-asker, asks: How much does vulnerability play into it versus entitlement?

**Dr. P:** That's a great question too. That's why we talk about homophobia. That's fairly new to talk about ignorance as a kind of fear, or fear as a kind of ignorance. To not know what it really means to be homosexual, for example, leads to a kind of alien misunderstanding. That, I

think, is a really important part of human relations. The distancing of peoples from one another allows stereotypes to develop, and stereotyping, and blanket ignorances. It goes back to your point about circulation and travel. Descartes used to say, “There are three great principles for science: travel, travel, travel,” because knowing the other and walking in their shoes... that’s why I talk about the importance of, in the history of science; wonder, sympathy, and critique.

You want to wonder like a child, but you also want to have sympathy, and you want to have critiques. The sympathy is that you want to walk in the shoes of the past, or in this case in someone else’s experience, to understand them so you don’t fear them. But then you still retain your humanity and your recognition that there is right and wrong, so you are free to critique. You don’t want to lose yourself in someone else’s shoes. You want to maintain principles. Those are three of the principles I operate with: wonder, sympathy, and critique.

**Alie:** That’s beautiful. When it comes to the “travel, travel, travel” part, what if that causes more of a carbon footprint? Donate to mangroves?

**Dr. P:** Well, of course, that’s the part of the main problem. The world of the future is going to be very different. We’re not going to have ubiquitous travel. We’re not going to have cigarettes being sold. We’re not going to have meat consumption the way we’ve had it. Hopefully, we’ll even have a lower population because that’s also part of the problem. The world of the future is going to have to be very different. We’re sailing away, as people like to say, ‘running the Book of Genesis backwards’, and creating this unholy world. That’s going to have to change.

**Aside:** I’m doing my part by being infertile. You’re welcome! Did anyone ask about the demographics of climate science believers? Kata Zarándy did as well as...

**Alie:** Hannah Johnson, also a first-time-question-asker, asked if there had been research about the demographics of people who are more likely to be science deniers, like significant differences across gender, education level, income, etc.

**Dr. P:** Of course. Wealth is power. Power is wealth. Knowledge is power. Wealth helps create knowledge. Wealth can also destroy knowledge. Of course, there’s huge differences in that regard. An interesting connection with climate science denialism is the whole evangelical problem because a lot of climate denialists are evangelical Christians who don’t want to confront a world where their god is abandoning them in a sense, or allowing us to foul our own nest. There are some problems even with the recency of the age of the Earth and that whole view, but there are some progressive evangelical critics of us fouling our nest.

That’s why we need to think very metaphorically about what kinds of metaphors we use to overcome denialism. Metaphors of the garden, of the steward, of the flock, the caring for our own life as for other people. We’re going to have to rethink our metaphors. We can’t just get away with polar bears and even the 1°, 2°, or 3° threshold problem. That’s not good enough. We’ve got to think much more creatively about how to bond people in the stories we tell, in the allegories we tell, about why we need to act differently from how we’ve acted in the past.

**Aside:** I did a little bit of research on this. It turns out that Evangelical Christians, that just means Christians who want to spread the good news. It’s kind of been co-opted a little bit to mean the ‘Christian right’, but there are a lot of Evangelical Christians who do not find that the teachings of Christ align with certain political parties wholly. Amy Black is a professor of political science at Wheaton College and writes a lot about faith and politics. She wrote in 2016:

*Because Evangelical voters are an important voting bloc, politicians have many incentives to pander to them. In this time of rapid social change, church leaders need to train people in the pews on how to respond, helping them understand and embody the core commitments of the Christian faith.*

Now, what about folks who do not have faith that the Earth is round? A lot of you asked about flat-earthers, including D. B. Narveson, MacKenzie Campbell, Kate Stomps, Kayleigh Douglass, Cassidy Williams, science teacher Karen Blaisdell, another science teacher and first-time question-asker Chloe Chambers, first-time question-askers Kevin Beamer, and Mara Rosenbloom, and Ben Bignell, who says: I drive by a sign for Flat Earth Canada twice a day, five days a week, and wonder every day why people can believe it.

I don't know, is the road flat, Ben? [*mock condescension*] Think about it!

**Alie:** Along that line, without the ability to connect with people digitally, do you think there would be fewer flat Earthers? When did we start believing the Earth was flat?

**Dr. P:** That's a great question. One of the great gotchas, or corrections, historians of science like to make is that actually, most people did not think the Earth was flat, say, in the Middle Ages. People knew the world was round. That goes back to antiquity. The myth that people used to think the Earth was flat really arises in the 19th century in order to, basically, beat our own chest and say how much greater we are than the Middle Ages. There's a whole book about this, about how in the 1830s, the myth that people used to think the world was flat arose.

Now, obviously if you go back far enough, I'm sure that most people were flat Earthers. But yes, since we are in a world where misinformation and disinformation circulates faster than ever before - your questioner is quite right - that's allowing some of this craziness to flourish. There may be some more flat Earthers than there have been in the last 300 years.

**Aside:** Just gonna toss this in real quick: if you want more info on this, watch the documentary *Behind the Curve*. I just saw the trailer for it, and wow, wow, wow. Thank you to Patron Nicole Thomas who wrote in:

*At first I was furious, but after watching that, I understand that people who operate on the fringe beliefs usually get further marginalized and isolated with their thoughts, and since no one is engaging them with the correct information and they've isolated themselves from everyone that has a different set of beliefs, it's really easy to retreat to the community bubbles that have the same belief set.*

Thanks for writing in, Nicole Thomas. Good point, indeed.

**Alie:** Francesca Huggins and Toby Christink seconded this question. Francesca just asked: Religion, what gives? I do wonder... You mentioned evangelical Christians. It seems sometimes there's a disconnect between the teachings of a certain religion and the actions of its most extreme promoters of the religion. Where is that disconnect where you're like, "I don't think Christ would do that"?

**Dr. P:** That's for sure. The Sermon on the Mount is very different from some of the craziness we hear in a megachurch nowadays. There are good lessons and good principles in all religions. There are moral aspects. There are ontological aspects. I think part of the problem is when it becomes this commercialization of the churches, the merger of churches with the Tea Party Movement, which itself was created by Big Oil and Big Tobacco in order to fight taxation and fight governmental regulation. You have to look at these things politically and in the political context and see how religions have bonded to these other powerful institutions.

In many other parts of the world, you can be three religions. In Japan, you can be Shintoist, and Daoist, and Confucian; there's no contradiction there. There's something strange about parts of the West that we feel we have to be either Jewish, or Protestant, or Catholic, or Muslim. That either/or is part of the problem. We need to view these things as maybe a buffet of sacred practices. Remember, 'sacred' means that which you value, that which can't be touched in a negative way, and I think we need to revisit aspects of the sacred.

**Alie:** You mentioned that really stark dichotomy. I always feel like everything from the colors to the mascots, our political parties have become like opposing sports teams more and more. Do you think that a strong third party or more political parties would help see those gray areas more?

**Dr. P:** Yeah, I think that would... Because there is something weird about the binary world we're in where winner takes all. Some of the European systems are better in the sense of parliamentary representation. I do think we have some big problems in how we organize our binary world, and I think it's getting much worse. I do worry a lot about that.

**Alie:** Jessica Craver asked: Is there a good way to handle talking with someone on a subject like refusal to wear a mask when any slight mention just makes them very angry and worked up and they are maybe incapable of hearing reason? In times of pandemic and self-preservation, is there any way to get through to people, or is that denial out of fear?

**Dr. P:** It is odd that something as simple as wearing a mask has become politicized. Basically, you just follow the rules. People need to just be a little more chill. As we say in California: Don't harsh my mellow.

*[clip from Kendrick Lamar song: "Bitch, don't kill my vibe"]*

**Alie:** Kelsey Story had a health question, and a lot of people seconded this. They said: Why are people so willing to believe in wellness therapies such as cleanses to remove toxins from our bodies - thanks, liver - but so resistant to facts from actual health professionals?

**Dr. P:** There's a saying. What is it? There's an idiot born every moment, or something like that. A lot of my agnotology class... I teach both an introduction to agnotology and an advanced agnotology class. We've had several students do interesting projects on food supplements and how people will pay hundreds of dollars for something that is basically additives without food. There's a lot of mythology surrounding what we eat. I'm a big fan of Michael Pollan: eat simply. There's so many mythologies about what we put into our bodies, I think, because we've had so many powerful trade associations promoting sugar, or additives, or salt, or whatever highly packaged processed foods. That's been part of the problem: the trade associations.

One simple example of this: three of my four grandparents died from smoking, but my dad's dad died of a heart attack. He had smoked two packs a day and died in his mid-50s, but the theory promoted by the tobacco industry at that time was that *eggs* were what killed you. The family story was always that he died of eggs! So I was always terrified of eggs, and then I finally realized by reading the industry secret documents that the tobacco industry basically created that theory attacking eggs in order to exonerate smoking. We do live awash in mythologies about what we eat.

**Aside:** So, so many patrons asked this next question, almost 50. It's the one question on literally all of our minds, so I'm just going to read the names of the first-time question-askers who asked it. Another high school science teacher Miranda Chavez, Susan Webb, Aloi Johnson, scientist Courtney Malo, Emily Taylor, Kasia Wisniewski, Troy Langknecht,

Samantha Sonnich, and Kevin Lahey, who is a *second*-time question-asker but forgot to say it was their first time last time, and also, you know, all of us want to know:

**Alie:** And one last question all listeners had, essentially, in Shirley Dark's words, they say: I know others who seem to hold tight to the wrong ideas. What are some good steps to take to make sure you can maybe get through to people, and that also you're not clinging to false information?

I mean, I think I just see, you know, a lot of the fake news, a lot of the doubts cast on a lot of media; how do we correct that? What do we do?

**Dr. P:** Well if it's one-on-one, of course intelligent listening and sympathetic listening is absolutely crucial. I think there's often too much talking, not enough listening. And you know, view other people, if nothing else, as anthropologically fascinating. My own brother has become alt-right recently and we've had many backs and forths about that, but if nothing else, I still love him and I'm still fascinated by how in the world this happened, almost in a medical sense. *[laughs]* I think we need to be sympathetic, and to listen, and to learn from people whose views are very different from us. That's the kind of anthropological, ethnographic aspect, I think, of being a scholar or an ordinary person in the world; is learning from others, however strange they may seem.

**Alie:** Is there a way to use empathy to deescalate the denial that might come with ignorance?

**Dr. P:** Yes and that's why... I have an idea, I developed it called 'unsurrogacy'. Basically, when people deny evolution or climate change, they're really not so much denying evolution or climate change, there's something usually that's behind that. So we need to understand a particular form of denialism as possibly standing for something else. If someone doesn't believe in climate change, is that because they're worried economically that their way of life is going to disappear? Is it that they're worried about a threat to religion, a religious view they might have? In other words, what stands behind these movements? This goes back to our talk about fear - a lot of ignorance is really, as you said, about fear.

**Alie:** And so maybe we would have better luck having an open discourse by being empathetic to the fears that are behind that and addressing those, rather than, say with the people in our lives that we might see having viewpoints that are not super kind?

**Dr. P:** I think that's exactly right. You have to say, "What is at stake? Who benefits? What are the alternatives?" And until you get behind those, then it'd be just, you know, shadow-boxing or useless confrontation.

**Alie:** Exactly, yeah. I think that, especially right now, it's imperative that white people in their lives have those conversations with people they know.

**Aside:** As the election approaches this fall you may have friends from back home, or cousins who live in a state that votes very differently than you, and of course it's easier to leave the tough issues unspoken.

**Alie:** It's almost harder to speak up on a family group text than it is to post a lot of hashtags on Twitter to people who agree with you.

**Dr. P:** *[laughs]* Yeah! Get out of your bubble!

**Alie:** Yeah, and so have those conversations privately with people in your life as well as publicly to the people who agree with you.

Last questions I always ask every guest: What is the worst thing about your job, or thing that you dislike the most? What is something that sticks in your craw, either from a philosophical or from a practical standpoint, like filing?

**Dr. P:** Well you know, I have a great job, which is being a professor. I get to interact with students. I do miss the personal contact because now it's all over Zoom, and I miss the interaction in terms of artifacts; when I teach ignorance, when I teach world history, or I teach human origins, I bring in artifacts, and it's not the same in the screened world. We already live obsessively in a screened world, and so I do miss the loss of the artifactual world. So I guess I would say is the worst part of my job right at the moment. But I'm hoping that will change.

**Alie:** What about the thing you love the most about what you do?

**Dr. P:** I love dealing with young people who are learning about the world. I love challenging my own views. I love finding out where I'm wrong, what I didn't know. It wasn't so long ago I learned of the color called "done." I never heard of the color 'done' before! So I love learning new things, and if people can tell me something I didn't know, I just... what could be better?!

**Aside:** And that is what he is trying to do for us. Also what color is "done"? How does one even spell that? Of course I looked it up for us, and it's a camel-y, creamy kind of buckskin color. Dun! So, a dun horse is like a pretty, beige horse. So, when in doubt, google a reputable source. What else?

**Alie:** Any places people can start to look if they want to make sure that they're dismantling their own ignorance?

**Dr. P:** [laughs] Well, they can always check any of these books that are coming out now about ignorance, there's a whole slew of them. There's a new one, *Science and the Production of Ignorance*, that just came out, by Janet Kourany and Martin Carrier, agnotologists. It's also being taught now in Europe. There's the Oreskes-Conway book, *Merchants of Doubt*. There's our agnotology book, or I've published a lot of other books. One is called *The Golden Holocaust*, which is about the use of science as a form of deception by the tobacco industry.

There's so many great... I just finished assigning to students, the Wallace-Wells *Uninhabitable Earth*. And before that, we did the, *The Shock of the Anthropocene*, which is such a great book. So, those are some of the hot topics that we like to explore in the agnotology world.

**Alie:** Great! I'll put links to those in the show notes as well as to yours, *Agnotology: The Making and Unmaking of Ignorance*. We'll make sure we put that up too. This was so amazing! I can't thank you enough for doing this. This is an episode people couldn't be more thrilled or ready for.

**Dr. P:** [laughs] Great! Well, it's very timely.

**Alie:** [laughs] It is indeed!

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So ask smart people stupid questions because the only thing worse than ignorance is when you don't want to do anything to get rid of it. So yes, that was Dr. Robert Proctor, you can grab his book [Agnotology: The Making and Unmaking of Ignorance](#), which was co-edited with Londa Schiebinger, wherever books are sold. And dude came through with other book recs, so if you hit the link in the show notes to [AlieWard.com/Ologies/Agnotology](http://AlieWard.com/Ologies/Agnotology) there will be links to all of those books he mentioned, including his. I hope you'll call a local bookstore and order those up.

We are @Ologies on [Twitter](#) and [Instagram](#), I'm @AlieWard on [Twitter](#) and [Instagram](#). If you need perhaps an *Ologies* sun visor, swimsuit, beanie, maybe a t-shirt, please don't hesitate to hit up [OlogiesMerch.com](#). You can tag photos of you in *Ologies* merch #OlogiesMerch on Instagram; we'll repost you.

And thank you to Shannon Feltus and Boni Dutch of the comedy podcast *You Are That* for managing merch. Thank you to Erin Talbert for adminning the wonderful [Facebook group](#). Hello to all the Ologies Redditors, and thanks to all the folks who support on [Patreon.com/Ologies](#).

Thanks Emily White and all the Ologies transcribers who making these episodes accessible, and Caleb Patton for bleeping them and making them kid safe. Those are both available at [AlieWard.com/Ologies-Extras](#). There is a link to that in the show notes as well. Noel Dilworth keeps me on schedule and is amazing. Jarrett Sleeper assistant edits and makes me popcorn when I'm sad. And thank you to dinosaur and kitty Lobbyist, Steven Ray Morris, who hosts the podcasts *See Jurassic Right* and *The Purrrrcast*, for being lead editor. Nick Thorburn wrote and performed our theme music.

And if you stick around until the end of the episode, you know I tell you a secret every week. And I know I've confessed to you in that past that I enjoy canned smoked oysters, but just hear me out: If you add a can to some lackcluster soup, it's pretty good! I mean the whole thing will taste like hot, canned, smoked oysters, but just toss some in your clam chowder, let me know how it goes. If you don't like it; it's not my fault. I mean it is - but it's... it's my fault and I'm sorry.

Okay. Berbye.

*Transcribed by:*

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### **Some links you may find of use:**

Books Dr. Proctor mentioned:

[Fads and Fallacies in the Name of Science](#) by Martin Gardner (original debunker of flimflam)

[Science and the Production of Ignorance](#) edited by Janet Kourany & Martin Carrier

[The Uninhabitable Earth: Life After Warming](#) by David Wallace-Wells

[The Shock of the Anthropocene: Earth, History and Us](#) by [Christophe Bonneuil](#) and [Jean-Baptiste Fressoz](#)

[Golden Holocaust: Origins of the Cigarette Catastrophe and the Case for Abolition](#) by Dr. Robert Proctor

[Merchants of Doubt](#) by Naomi Oreskes and Erik Conway. Buy the book [here](#)

[Movie trailer for Merchants of Doubt](#)

[Chicken study about cage size](#)

[Doctors endorsing smoking, a history](#)

[Climate change opinion by country](#)

The color [dun](#)

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