

EPISODE 34

NON-FAKE SCIENCE

Hi there. Welcome to the end of the world. My name is Michael Folz. And this is Episode number 34 of my podcast Dial It Back Or Die. Now last time I went over some of the reasons why you shouldn't trust at least some of the so-called Science which you may think that you know. On this episode we're going to go over just how you can separate the good from the bad, the non-fake science from the fake stuff.

And this is a good thing to know in and of itself. But there's also something much larger here. Because: Remember how I started this podcast with the observation from Herodotus 2500 years ago that every society thinks that its beliefs are the correct ones and that everyone else is wrong? And even though I keep pointing out that, even with the clearest of arguments, our minds always want to snap back to their preexisting states, I hope that by now you have at least accepted the theory that at least some of our minds, and maybe even yours, have been polluted by ideological untruths told to us our entire lives.

Assuming that our eyes have been fully opened, however, what do we replace these untruths with? For instance, if we replace the Marxism of the Soviet Union with neoliberal economics, with one 19th Century ideology by another 19th Century ideology, how can we be at all sure that we have made anything better in the process? Other than the tautology of our own preexisting ideological belief in neoliberal economics?

Ah, Science! Because from its inception the whole point of the Scientific Method was to create a framework whereby the Truth could be separated from what you wanted to be true. Where, as with Descartes, preexisting beliefs and myths and stories no longer mattered, and where the foundation finally rested upon something that was solid. And even though the philosophy of Hume, with its unyielding faith in unbelief, made a complete mockery of the hypothesis of the Scientific Method, and even though the Scientism of the Age of Enlightenment tried to cloak purely speculative and unfounded ideas in the mantle of science, still the basic principles laid out by those Franciscan monks back in the 13th Century nonetheless stayed pure even through the French Revolution.

Oh, and by the way, the 18th Century's fetish for Scientism is to a large degree what is responsible for so much of the confusion in the present day social sciences. Not that it shouldn't in theory be possible to figure out the science which is behind human behavior. But just as those 13th Century monks didn't have telescopes or microscopes, etc., to precisely measure things, so, too, did 18th Century people, with their what I have been calling adolescent mindset, lack the method or the wisdom to analyze something as complicated as human behavior.

For instance, as with Jeremy Bentham's so-called calculus of hedonism, they naively thought that pleasure, pain, motivation, whatever, could all be easily and simply quantified. And they also assumed that humans were by and large interchangeable lumps which could be observed and acted upon by the experimenter. Whereas they, the experimenters, were somehow not interchangeable lumps themselves, but rather had the agency to observe and act.

By far the biggest problem which they caused, though, is that—admittedly unconsciously—the actual purpose of the social sciences which they created was not to find out the real truth of human behavior, but rather to somehow 'prove' the truth of their preexisting beliefs. In other words, to so massage the data that it could be used to seem to conform to just about any theory. Which, as I've pointed out before, is particularly easy to do with something like human behavior, which is so complex and which has so many interconnecting variables.

Fortunately, however, over the past fifty years or so, methods have gotten better. And the evidence has continued to pile up. So that certain dogmas with direct ties to Age of Enlightenment thinking, such as Freudian psychiatry or B.F. Skinner's behavioralism, have by now been totally debunked. And other ideas, such as the belief that nurture (ie the environment) is solely responsible for personality, etc., have at least been brought more into balance.

But there is so much more that has been discovered that is basically just sitting there. With relevant findings still being massaged away. And/or without any of the obvious implications being realized. And I'm not talking about obscure findings, either. I'm talking about really hard to dispute reality.

And we'll get to all of that soon enough. But right now I'd like to talk a little about what I mean when I say that Science can solve the mystery of proper human behavior when all of the ideologies out there have not.

Because I most definitely do not mean to suggest that we approach Science as some sort of idol which we bow down and worship. Nor do I mean to invoke the image of humanity all lined up in identical jumpsuits, eagerly awaiting the instructions of people in lab coats holding clipboards.

What I am saying is that life is a game. And that Science, through careful observation and experimentation, can help establish the rules so that said game is fun, fair, and enjoyable.

And when I say that life is a game, I am not saying that it is something that is trivial. Nor am I thinking of a zero sum game, where each person's gain is another person's loss. I am not even thinking of a game the major purpose of is to win. Rather I am picturing something like a pickup softball or volleyball game on a Sunday afternoon, where everyone is invited, and where—although vaguely interested in the outcome—people's prime motivation is to have a good time, and where in the end no one really cares who won or lost.

Because even in such a situation, you still need rules.

Now one of the biggest fantasies in our current ideologies is that we are all independent actors, we are all creative people, and that we all have a natural aversion to rules. This is why we have the absurd phenomenon of all that advertising which says: 'No one tells *you* what to do. And that's why you drive the car (or eat the mayonnaise or drink the vodka) that we are now telling you to purchase.'

But I would suggest that those of us who really do hate rules (and who are also older than, say sixteen years old) in reality are hating dumb rules. Rules that make sense, that by their nature create an interesting and fun game, nobody really objects to that. I mean, no one ever shows up for a softball game and says, 'I don't really like this three outs thing.' Or 'Let's make it longer to first base than to second base.' As I've mentioned before, even the most out there libertarian never declares that, because of his inherent personal liberty, he has the right to drive on whichever damn side of the road he feels like.

And in setting the rules, in finding the optimum parameters, as it were, Science can indeed come in mighty handy.

For instance, take working conditions. Specifically, is it possible to determine what temperature an office or work place should be so as to maximize both comfort and production? Well, yes it is. In fact, since there is basically only one variable involved, it's a pretty simple problem. And it turns out that in cold climates warming a room to 70 degrees is best. Likewise in hot climates cooling a room to 70 degrees is best. And it also turns out that regulating the temperature to be around 70 creates

dramatically more comfort and production than does, say, 65 or 75. So that would seem to be one parameter (or *rule*, if you prefer) that can easily be established.

And this finding also has the added benefit that it doesn't seem to be connected to any particular ideological or cultural or religious bias. You don't have to believe in Karl Marx or Jeremy Bentham or the Catholic Church in order to see its truth. So that now... all we have to do is replicate that success with the umpteen thousand or so other variables which are involved with our human lives.

Well, maybe not so fast. Because even with this example, it turns out that sometimes even extreme variations in temperature serve to make the endeavor more interesting. For instance, a professional football game in the freezing snow is a completely different affair than is one in mild Hawaii.

But I trust that you get the concept. Namely, that all activities require parameters. Rules. All physical processes, from the boiling of water to the explosion of an atomic bomb, operate within parameters. And just like there were genuine mystically inclined good Deists alongside the religion and authority hating bad Deists, so, too, the original premise after the success of the Scientific Revolution of the 17th Century, that natural parameters, natural rules, natural moral law, could also apply to human behavior, what we might call the good Age of Enlightenment, this also coexisted along with the bad one.

And now, as we are about to find out, it turns out that while we have all been caught up in all the 20th and 21st Century isms, whether it be Marxism, Nazism, or Liberal Democracy, unbeknownst to us many of those natural parameters have indeed been figured out.

First, though, there is still that problem of Freedom.

Let me explain. Remember how I pointed out a while ago that to the wise people of classical civilizations, as best exemplified by the Buddhists and the Stoics, 'freedom' meant freedom from desire. And that, as so-called 'modern' thought replaced classical thought, this got totally turned around. So that now 'freedom' meant freedom *to* desire. Well, this idea that somehow you or I can have it all, that there are no limits, and, further, that somehow having more stuff or more pleasure or more so-called freedom is going to make us happy, was dealt with quite effectively over two thousand years ago. More recently, in the last few hundred years, the various iterations of the Faust story, most notably by Goethe, dealt with the dead end that this way of thinking inevitably leads to.

But this fantasy of no limits, and, even worse, the fantasy that somehow science and technology are going to create some future world of no limits, while understandable given the adolescent mindset which I keep pointing out defined most of those 18th Century thinkers, continues in the present day.

And why not? After all, it's good for the economy. It allows advertisers to sell you more stuff. And by nurturing the fantasy that somewhere around the bend is some pleasure that's going to make all of this churning worthwhile, they can then sell you even more stuff. And then more stuff on top of that to distract you from the fear of not being happy and, ultimately, the fear of mortality.

Well, I don't want to go off on a moralistic tear here, and I do want to get back to the science. But I need to impress upon you the plain truth that, yes, there are limits. On just about everything. Because even if they succeed in increasing life expectancy to 300 years, you're still going to die. Even if somehow you accumulate a billion dollars, if you're like most people you'll still feel bad because some other guy has ten billion dollars. Finally, the plain fact is that both pleasure and pain only go up to ten. Trust me, I've been there on both. There's no eleven. And once you've hit ten, that's that. Big whup.

And this point—that there are naturally occurring limits on just about everything—is one of the most important points of this entire podcast. After all, I didn't call it 'Dial It Back Or Die' just to be cute. What I was meaning to suggest is that one can imagine a dial for all of human thought and behavior, kind of like that tachometer dial on your dashboard which is used to show engine speed. And just as the function of a tachometer is to show you when the engine is running too fast or too slow, because either situation can throw a rod or otherwise mess the situation up, and just as these red lines were established by rational engineering and not through the noodlings of some 18th Century man's mind, so, too, what I am trying to do is to use the findings of science, not ideology or wishful thinking, to establish the proper tachometers for human behavior in particular and for an entire future human civilization in general.

And one final note before we proceed. Because, again, I am not imagining some future technocracy where people are forced to behave within some artificially narrow set of constraints. As we shall see, that would be as unnatural to the human condition as the current pretense that there should be no limits. Further, as lawyers like to say, reasonable people can disagree over the precise set points of the various parameters. But for the moment we can leave the final decisions over such things for the future. Because for right now what we need to focus on is A) that naturally occurring limits do exist,

that parameters need to be laid out, and that, yes, rules—if they are good rules—can be very good things. And B) That at this moment in the human journey we're already redlining on so many of our human variables, and that at this moment we're already past the point where the metaphorical rod should have been thrown.

Okay. One more final note. Because by now I hope that you're going to trust that I've done my research on what I am about to present. As always, however, if anything which I am about to say sounds weird, or if anything contradicts what you thought you knew about a subject, I encourage you to do some research on your own. Wikipedia is always a good place to start. And if you have any experience in properly separating the wheat from the chaff, the internet can be a much better resource than the library stacks of old.

What I would not like you to do is to come up with a variation of 'Who can really say anything about anything?' Because that's just mental laziness masquerading as worldly wisdom or cynicism or whatever. If I am wrong about anything I am about to say, then prove it. And if I am right, then accept that, and change your thinking on the matter.

After all, isn't that what science is supposed to be all about?

So let's get started.

Now what I am going to do is to tell you what we currently know about the state of the Universe and of our place within it. Then I'm going to tell you what we currently know about evolution in general, about human evolution in particular, about the underpinnings of human society, and about how our brains and minds actually operate.

I will try to be very careful about distinguishing between what experts agree is rock solid science, what there is still some controversy about, and what is speculative. If there is an idea which I find highly plausible, but which is nonetheless a hypothesis of mine, I will try to label it as such.

I will also try to relate all of these scientific discoveries to all of the ideology and all of the ideological history which I have been talking about for these past thirty episodes or so. Many of these discoveries, and how they so clearly invalidate so many of our ideological beliefs, are so blatant to me that it boggles my mind that the experts who know these things don't ever come forward to point out these obvious ideological mis-beliefs. Perhaps they are petrified about the professional or social fallout from coming forward. Perhaps they themselves are so blinded by ideology and/or wishful thinking that they honestly don't notice these things. Who knows? After all, in the story about the Emperor's New

Clothes, was everyone just being a yes man or did they actually see the emperor wearing those new clothes? Either way, though, the end result was the same.

Well, I myself have always been socially dumb enough to just come out and say what I saw as the truth. Which, throughout my life, has never made me all that popular. Now, however, with humanity at its obvious crossroads, perhaps this trait will turn out to be useful.

It does occur to me, though, that even at this point, still not all of you may be totally clear on what the terms ‘science’ and ‘the scientific method’ really mean. So let’s go over it one more time.

First, as I’ve just said, ‘science’ is not some idol that we bow down to. There is nothing magical or mystical about it. Rather it is simply a logical and sophisticated outgrowth of common sense and inductive reasoning.

Remember that our brains evolved so as to find patterns in the world around us, patterns which would help us in navigating through said world. For instance, when we see the sun rise every morning, our minds infer that the sun will rise tomorrow. And the ability to infer is quite the big deal. Because you can, for instance, overfeed monkeys every day for years on end, and they will still never grasp that they’re probably going to get enough to eat tomorrow.

But in making inferences our brains can sometimes get it wrong. For instance, someone might have had a few genuine experiences with black people who were lazy and shiftless. Their mind then makes the inference that all black people are lazy and shiftless. Worse, once they have made that inference, their mind will then seek to ignore all of the non-lazy, shiftless black people that they meet in the future, and emphasize the ones that they do, therefore confirming them in their original false inference.

Which doesn’t lead to anywhere good.

But you can think of the scientific method as a way which was developed to, first, collect clear evidence which is untainted by personal bias or preexisting belief, and to then methodically and rationally separate the good inferences from the bad ones. What’s more, once you have the evidence accumulated, the evidence itself might suggest a *hypothesis*—a hypothetical inference—as to why the evidence lines up as it does. A good hypothesis then predicts ways that future evidence will line up. And if you conduct an experiment to test your hypothesis, and the results come out as the hypothesis has predicted, then you’ve gone a long way in proving your hypothesis.

Now a paragraph ago I just deliberately used a highly charged statement, that black people are lazy and shiftless. I did this for two reasons. The first, obvious, one was to illustrate how the inference making machinery in our brains can get things wrong. And in a little while, when I describe how our brains and minds actually work, you will readily see how ridiculously wrong those 18th Century thinkers were. Once again: Garbage in, Garbage out.

But here's the second reason why I used that statement. And this is in certain ways just as important. Because let's say that you were scientifically studying the laziness of different groups. And you carefully separated out all the possible factors which could have affected the data, such as levels of education, socioeconomic status, etc. And much to your surprise you found out that black people actually were comparatively lazy and shiftless.

Now I keep harping on and on about how ideology—our preexisting beliefs—interferes with interpreting reality. But as Science progresses, it might also contradict not only what had previously been core *scientific* understandings, but also what we might call our noble beliefs and wishes. For instance, the two most important findings in physics in the 20th Century, relativity and quantum mechanics, describe a Universe which, at its largest and smallest levels, is totally irrational. Or at least what we used to think 'irrational' meant. Nonetheless...

Or how about this: I have been a vegetarian for 51 years now. And, since all other primates are overwhelmingly vegetarian, I had always assumed that meat eating was some strange aberration that humans had started relatively recently. But in those past 51 years research has shown that it is highly probable that extensive meat eating began 1.5 million years ago, and that it is this which provided early humans with the extra energy needed to produce our big brains and to then evolve into homo sapiens.

Now I still personally think that it is morally superior for people to eat vegetarian diets. But I can't run and hide from the facts. Because the whole thing about Science is that we have to follow where it leads. Otherwise we shouldn't have tried to systematically ferret out the truth about Nature in the first place.

Okay. But in the totally hypothetical example which I just gave about blacks and laziness, you as a skeptic might say, 'Well, how do I know that, even if you are consciously being sincere, you're still just a racist inside who can't admit it to himself?' And if I respond that I've taken a vow to the Truth and to Science, you as a cynic might reply, 'Yeah, that's what they all say'.

Well, first of all, what with the codes of honor, etc., which Civilization spent a couple of thousand of years developing before the 18th Century, and which then pretty much re-instituted in the

19th Century, until recently one actually could pretty much take the word of a scientist. But, fortunately, even for complete cynics, the scientific method has a pretty foolproof answer. And this is that in general science will not recognize a new result unless it can be replicated. That is to say, unless some other experimenter somewhere else gets the same results as you did.

Of course the replication requirement can also run into problems. Because a short cut which is often used is to compute the probability that what you got wasn't due to chance. And if the probability is less than 5% then you get to publish your results. But then this means that 5% of meaningless results will nonetheless look meaningful, and will therefore get published. And then it often turns out that no one else ever gets around to trying to replicate them. Yet, if the results are weird or sexy enough, the media will then publicize them.

So you also have to look out for that.

Anyway, that kind of covers the truth of facts and findings. However, as I keep saying, our minds want to somehow fit whatever new facts or findings we run across into our preexisting belief system. Our ideology. Further, even well meaning scientists can disagree. So that, until everything is known and everything is airtight, you're almost always going to have different theories which try to explain how and why those facts and findings fit together.

So now let me introduce you to Occam's Razor.

Now this strange sounding rule of thumb was named after William of Occam, one of those founders of the Scientific Method back in the 13th Century. Even stranger, no one can find that William of Occam ever actually stated it. Although scholars have been able to trace a version of it back to Aristotle. Anyway, what it basically says is that: Given the available evidence, the simplest, most common sense explanation is always the best.

And I know that murder mysteries usually revolve around elaborate exceptions to this rule. But in science, even though it can't be proven mathematically, it almost always turns out to be the case.

And going forward, I want you to keep Occam's Razor in mind whenever you are deciding whether any commonly accepted explanation or theory is scientifically 'real', or whether it is rather a function of ideological wishful thinking.

For instance, take the question of whether human intelligence is primarily inherited or is primarily a function of one's environment and upbringing. Now the common perception throughout the ages was that it is inherited. After all, it was a common finding that when you bred, say, two very

intelligent dogs, you tended to get very intelligent offspring. Likewise, intelligent parents tended to have intelligent children.

But one of the hallmarks of Liberal Democracy, which is based upon Utilitarianism, is that it is supposed to be absolutely fair. That is to say, that as we consumption units maneuver our way around the metaphorical shopping mall of life, the only differences in what our metaphorical shopping carts contain will be due to our different pleasure preferences. But if you are innately more intelligent than I am, and if it turns out that said metaphorical shopping mall ends up with endless rules and regulations, then of course you will be cleverer and quicker in filling up your shopping basket. Which means that such a system would be blatantly unfair.

Therefore, in the middle of the 20th Century, in the face of not only common sense but also of much research, many psychologists subscribed to the idea that intelligence was not primarily inherited. That it wasn't that smart parents had smart children. It was that doctors and lawyers and such could afford to give better environments to their children. And so forth and so on.

Well, by the end of the century there was so much evidence that intelligence was primarily hereditary that most such psychologists had to reluctantly backtrack. Although you will still find people (usually those without much of a background in real science) who continue to argue the case.

Anyway, whenever you hear of any new findings which seem to confirm your preexisting beliefs, you should always be doubly suspicious. Always ask yourself: 'Is this the best theory which fits both common experience and the available facts, or is this the best theory which fits the prevailing ideology?'

And here's something else which should help you when we soon tackle weighty subjects like Life and the Universe. It's called Bayesian Inference.

Now the mathematics behind Bayesian Probability are complex. But a simple way to explain the basic concept is that one event occurring offers no evidence as to the probability of that event occurring. Which pretty much sounds like common sense.

A problem which arises, though, is that our minds, in trying to find patterns everywhere, sometimes mistakenly see patterns where none exist. Here's an example: Let's say that you are walking down the street in a foreign country. And you see something that looks exactly like a lottery ticket. You take it to the authorities, who silently hand you a million dollars. And you then think that you've somehow just beaten million-to-one odds. Bayesian Inference, however, says that the

overwhelming probability is that in actuality this wasn't a lottery ticket. But rather some other phenomenon. And that your mind had jumped to an unjustified conclusion.

And here's another problem, this time a function of those preexisting ideological beliefs. Because, let's say, for whatever reason our ideology believes that life should be widespread in the Universe. So that when hundreds of exoplanets are discovered we immediately jump to the conclusion that our ideology was correct. But the reality is that we have exactly one example of life existing. And that is us. So that the reality is also that we are being rather foolish in extrapolating from that one example in any direction.

Anyway, we'll be getting to this particular question soon enough. Because right now—finally—the actual science is about to start. And by 'right now' I mean the next episode. After all, this episode is just about over.

As always, though, before that happens, I would like to thank you so much for so far having listened.