Bret and Heather 89th DarkHorse Podcast Livestream\_ Transcen...

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**SPEAKERS**

Bret, Heather

**Bret** 00:11

Hey folks, welcome to the Dark Horse podcast live stream. I forgot to check what number but I think it might be 89 is it Dr. Heinz?

**Heather** 00:18

It is indeed. 89.

**Bret** 00:19

Live Stream 89. That's really something. All right, we have a lot to talk about today. We have some announcements up top, we have a couple of ads, and then we will get to the meat of the matter.

**Heather** 00:32

Indeed, indeed. So this week, we're going to talk a bit about well, we're going you're gonna speak a little bit to the Sam Harris episode that came out yesterday along with Eric Topol. And we're going to talk some about natural immunity to to, to COVID, and some about the emergency use authorizations. And then we are going to as as has become our want, we are working chapter by chapter through the book of ours that is forthcoming a hunter gatherers guide at the 21st century that will be out in September of this year, one chapter per week, up until the launch date. They're all on very different topics all exploring some aspect of humanity with an evolutionary lens. This week's chapter is sleep. So when you're talking hopefully not soporific, I think, I think it won't be we're specifically I'm specifically going to read an excerpt and we're going to talk about other aspects of sleep too. But we're specifically going to read an excerpt on dreams and hallucinations. Yeah, so I think that should be that should be fun. So announcements as usual if you're watching on YouTube, consider switching over to Odyssey and both both are live streaming right now and both will be up into perpetuity unless YouTube sees fit to change that and the new q&a system is live so we are no longer looking at Super Chat questions on YouTube. The directions to the audience involve going to Dark Horse submissions.com and there you will find everything you need to know in order to answer ask questions that we will try to get to in the second hour we do this for an hour hour and a half and then we take a break and then we come back for the live q&a and that's when we get to your questions. There are no no promises that we will get to yours but we try to prioritize the ones that that come in the most topically at the highest monetary value and the ones that we are most interested in please consider joining our Patreon many have of late and we appreciate it especially given the the messing with our our financial baseline that some of the some of the big tech platforms have been doing tomorrow is our monthly private to our q&a on my Patreon so that's at 11am Pacific tomorrow. All the questions that have already been asked but that's a small enough group that we're actually able to look at the chat as it happens and interact with with people in the chat and it's a lot of fun we actually really enjoy it. We've got as of a couple weeks ago we've got some new shirts, Goliath shirts at at the store Darkhorse podcast.org including a lot of stuff in short sleeve that when we first put it out was only in long sleeve. And after we do ads we will tell you who the additional sponsors of today's episode I'll give you a hint it's number 89 and the letter D Yeah, but we'll get there yes, we will get there we'll get there after the ad. So today's sponsors are relief band and public goods.

**Heather** 03:39

First relief band. I'm going to talk to you about this product which can help with nausea relief band first, though I want to say a few words about nausea under ancient circumstances and some modern ones to nausea was generally a useful signal that something is off you've eaten something you shouldn't have, or near something that is emanating a bad smell itself a signal that you shouldn't get near it. In modality we still need to track our bodily sensitivities we should not always choose to simply erase discomfort including nausea whenever we feel it. That said some of modality creates nausea that does no good at all. Travel sickness especially when there is nothing to be done about it. You're on a plane or a boat can be agonizing for instance and getting some relief from that would be lovely. Enter relief band relief band is the number one FDA cleared anti nausea wristband that has been clinically proven to quickly relieve and effectively prevent nausea and vomiting associated with motion sickness, anxiety, migraines, hangovers, morning sickness, chemotherapy, and so much more. Now that's the list for relief man. And this is a product that we are endorsing. But I will parenthetically say that that morning sickness should should first be dealt with by trying to figure out what it is that is making you nauseous and keeping that out of your diet. And a better way of for instance of dealing with hangovers, is to drink a lot of water while you drink the alcohol. But if you mess that up, and you got a hangover belief band can apparently help. Relief Ben is 100% drug free non drowsy provides all natural relief Side effects for as long as needed. technology was developed over 20 years ago in hospitals to help patients with nausea but is now available over the counter to treat nausea and vomiting. We happen to be lucky we don't neither of us really suffers from nausea but a good friend is not so lucky. And she had this to say about her experience with relief friend, quote, I used to have nausea on a near daily basis from both anxiety and the need to take regular medication. Relief bands relieved my nausea in less than three minutes without the side effects I was experiencing from anti nausea medication they have entirely changed my life for the better. So as you're getting ready to take that summer road trip hop on that boat or nauseous for other reasons, we've got good news right now relief band has an exclusive offer just for Darkhorse listeners. If you go to relief band calm and use promo code dark promo code, Darkhorse you receive 20% off plus free shipping and a no questions asked 30 day money back guarantee. So head to rlfbnd.com and use our promo code Darkhorse for 20% off plus free shipping.

**Bret** 05:59

You know, I always used to think that relief band was the band that filled in if the headlining band had drunk too much the night before. But of course if they had relief bands that might not be such an issue, apparently, right. All right on to public goods. public goods can simplify your life as a one stop shop for high quality, everyday essentials. Their ingredients are carefully sourced and affordable. public goods has towels glassware and sponges, razors and shampoo, toilet paper mustard, coffee and coconut oil. And they've gotten niche items like bone broth concentrate and gluten free pasta and small batch marshmallows ethically sourced from small marshes. public goods products have a great design to the aesthetic is simple and clean. There are no garish colors. And this is such an important point. If you're going to have dish soaps sitting on your counter, you don't want to calling attention to itself. Finally, your subscription service is efficient and simple and easy to use public goods members can buy all of their premium essentials in one place. It really is an everything store. For Darkhorse listeners, we have the following offer receive $15 off your first public goods order with no minimum purchase. There are they are so confident that you will absolutely love their products and come back again and again that they are giving you $15 to spend on your first public purchase. Go to public goods.com slash Darkhorse and use the code Darkhorse at checkout. That's public goods p Ub LICGOD s comm forward slash Darkhorse to receive $15 off your first order

**Heather** 07:38

very good Now sometimes since we've been reading from chapters of the book we have suggested an episode a certain letter outlaw Sesame Street, we felt and you know, we felt that YouTube was treating us and sort of the whole world like for all over me bit like we were we were the target audience for Sesame Street so today's episode brought to you by the number 89 and the letter D. This is what D from the index of our book sounds like you want me to be wild eyed a little bit wild just a little bit lately crazy just slightly crazy. Okay Darwin Charles Dawkins Richard Deepwater Horizon oil spill Delano Laura Dennis servants designed constraint trade offs, devall fronds, diaphragm, diarrhea, Dickens Charles diet, seafood, dimensional lumber and visual perception diminishing returns dinosaurs, disease risk and birth months, diurnal diverse views experience in places, experiences and places exposure to division of labor in agricultural societies, differences between sexes and gendered work. And in hunter gatherer societies and modern society, monogamy and that was all division of labor. dobzhansky Theodosius dogs, dolphins, dreams, drugs and children. duckbill platypus and ducks.

**Bret** 08:54

Awesome. Yeah, it's the dentists, ovens that really sell it's

**Heather** 08:57

the dentists, ovens. I think the duckbill platypus kind of get us there, too. There's two different references to duckbill platypus in this book.

**Bret** 09:03

Do you think other platypuses feel left out by the focus on duckbill platypus as

**Heather** 09:08

well. And so I made this observation the other day, and I have not vetted this at all with anything in the literature. And I'm sure this is observation that's been made by phylogenetic systematists that I was looking at a bunch of geese with Gosling's and these were older Gosling's, and they looked for all the world like a number of species of adult female ducks. And I thought that there might be within the narratives, the geese and the ducks be some metamorphosis going on. So you know, I don't think that there are in fact, any other build platypuses but I would expect that they might be goose bill platypuses if they were so that was what that long, ridiculous setup

**Bret** 09:45

that long, ridiculous. Yeah, I don't think there are any other plot of pi. I'm going to get mail on that one. I have a feeling but yes, I do know that the platypus when specimens were sent back to Europe was thought to be a hoax because of course, you know, pretty badly. Biologists used to be a much bigger thing.

**Heather** 10:07

Now looking for the staples. Right? Exactly. It

**Bret** 10:10

did look like somebody had had glue to bill on a mammal and tried to pass it off. Well,

**Heather** 10:15

I mean the Spurs the poisonous spurs spurs on the on the feed. Yeah, till now the whole thing's ridiculous thing is ridiculous. And that Eggs Eggs come out of this thing.

**Bret** 10:23

Eggs. Yeah, right. Exactly. Exactly. All right, come on, but they do exist. I really am eager to see them in the wild. It's one of the animals I most want. And not just because it's super weird, but because they're actually ecologically very fascinating.

**Heather** 10:37

Yeah. And they've got it's unclear. I actually don't remember it's the the echidnas. There's like three to five species of goodness, depending on how lumpy you're splitting. You're feeling that day, and one species of platypus and those are the monotremes what I used to call the wacky mammals, the egg laying mammals, and they have like eight or 10 pairs of sex chromosomes.

**Bret** 10:59

I thought it was five but it's definitely a large it's large difference

**Heather** 11:03

between the species of monotremes as few species of monotremes as there are it's different between them.

**Bret** 11:08

Yeah, I think the five was the platypus. No, it's

**Heather** 11:10

not that low.

**Bret** 11:11

That's not all right. Well, we're certainly going to get some mail from

**Heather** 11:15

what I mean, I did I looked into it deeply in order to like mentioned duckbill platypus at one of those points in in the book and it's it's definitely not that low, but it's variable. It's very well not I don't think within species of monotremes, but between the species.

**Bret** 11:31

Alright. Are we on to the question? All right. So I think we are on to the question of Sam Harris's podcast which came out yesterday. Now this is a slightly awkward topic. Sam is a friend and the podcast he released yesterday with Eric Topol was focused. Well, it was focused on dark horse, but it named me specifically. And it talked extensively about the issues surrounding COVID that we've been focused on for many months here, including the question of ivermectin, and the question of vaccine hazards and vaccine hesitancy. And I must say there was a certain amount of trepidation and discovering that Sam had released what was obviously a critical podcast of me and us. I say that because I know Sam to be a tremendously capable interlocutor. And I will say in my past, I have had a podcast on dark horse where I talked to Sam about freewill, a topic on which I disagree with Sam and I believe he he trounced me in that discussion, despite the fact that I suspect that I'm actually right, it took me a long time to figure out why it was that I was unable to make my point compellingly, it took me at least a week to figure out where I thought the bodies were buried. But anyway, the point is, Sam is so good at what he does, so smart and has, in my opinion, on a saleable entity integrity that to find that he was dismayed enough with what has gone on here on dark horse to take up the matter in a concentrated form. worried me what what would he find? And I must say that my reaction upon listening all the way through it, which I did, I listened all the way through it. And my sense is actually I'm not angry at Sam, I'm not even hurt. And I'm actually weirdly heartened, that's just the kind of report for what it was like to listen through this, because what I find is that there's very little there that actually lines up with what I or we have actually said. And so in some sense, if somebody's as capable as Sam is, I will try to say it delicately struggling to make a serious critique of what we've been doing. That is a hopeful sign, but it's even more hopeful for the following reason. I know Sam would never intentionally straw man, another person. And I know that in particular, he wouldn't do it to a friend and in fact, he in this podcast goes to great lengths to say that he does consider me a friend and and you know, he said some compassionate things. He also said some things about the hazard of what we are doing here to other people. And this is an argument I will I will take up in a second but my basic point would be this. When we began talking about ivermectin, I said, and I believe our first episode in which we discussed it at any length That upon looking at the evidence in this realm, I was struggling to find a polite way to say what the fuck is going on here, because nothing in the context of this set of claims arguments or evidence seems to add up in any straightforward way, there's something distorting the entire discussion. And I have the sense that if Sam will look at the podcast, he's put out the claims he has made, and then look at the critiques of those claims and see how they actually line up with what has been said here, he will realize that he has found himself somewhere that he would not ordinarily find himself. And I think the upshot for any honest broker, of which Sam is definitely one, the upshot would have to be well, how did I end up in this spot? Right? How did I end up? And you know, I don't know how to say it more gently. But how did I end up straw Manning a friend on such an important topic? So

**Heather** 16:02

go ahead. And since many people won't have heard what we're talking about what you're talking about here? Can I just provide one evidence one, one way in which, and it's all it's all? It's all in the abstract until there's mentioned a particulars and then it's you. But one of the one of the particular things is right up front, and I actually have not, I've only listened to about three fifths of it so far. But right up front, Sam says, Sam claims there's a bifurcation. And that's in fact, his word. The bifurcation that he claims is that there are people who take COVID seriously, who understand what a scourge it is, and how damaging it is for humanity, and that those people embrace vaccines. And then the other side of the bifurcation are the people who do not take COVID Seriously, why they think it's a hoax, or it's not worse than the flu or, you know, or whatever it is. And that those people strangely are concerned about vaccine safety, but not about COVID. Safety. Now, this is the imagining that this is a that couldn't be a bifurcating set is so so odd, honestly. And like I have I have some more to say about that. I know you weren't done, but I just wanted to provide that as like, even if it was just one thing, what is your position on COVID? That's not going to be a binary position. But then add to that, what is the solution that has no possibility of being a bifurcating position? You know, you cannot have a thing with a decision on top of it, in which there's only two possible outcomes. That's just not logically that doesn't make any sense. And, and, of course, it is utterly true that since our very first live stream in March of 2020, we have been banging the gong about the seriousness of COVID, in fact, to the irritation of some number of people who say we're taking it too seriously, you know, wearing masks in public before you went anyone else was and you know, all of these things, and, and that the claim right up front to set up, you know, his audience as believing that you're either on this side or not, you've got stars on your belly, or you don't you're one of us, or you're one of them, and you better hope you're one of us, because we're the science people were the reasonable people were the Democrats, you know, we're all you're we're the tribal affiliation. And it's not, you know, that's not how science works.

**Bret** 18:19

Yeah, this this is actually, so I we are not going to do for one thing, it's only been out for, you know, I think less than 24 hours, but at the very least, it's been out for a day at most. The so we're not going to do an exhaustive,

**Heather** 18:32

I just wanted to mention what you keep on saying straw Manning, and many people want to hurt,

**Bret** 18:36

right? This is this is the first point I wanted to make just so and again, my point here is really, that I want Sam to see that he has ended up somewhere that should cause all of us to be scratching our heads because I think the problem is, no matter what position you land on, on this logical map, None of this makes sense. There is something distorting our ability to see what our friends are saying there's something that is distorting our ability to understand what the evidence actually implies. And that means that everybody is ending up in some sort of paradoxical landscape. And you and I, in this case, we have been what I would describe as COVID hawks from the beginning. In fact, you know, speaking of friends, I have told Joe Rogan twice on his program, that I thought he was not concerned enough about COVID. Right. So that, you know, that's just a gentle critique, which is this is a very dangerous disease, the hazard of it is not captured in the case fatality rate, the case fatality rate is reasonably low, but the amount of damage and therefore probably the years of people's lives that are lost to this disease is very high. That's anomalous, it's interesting, but at the very least, it ought to have us be quite careful. And I will say, this is an interesting day to be having this discussion. There are protests happening around the world against various measures. Some of those measures are vaccine passports. So there are protests and my understanding is London, Paris, Sydney, Amsterdam, Quebec, Milan.

**Heather** 20:12

There happened in Greece I don't know in the UK I think.

**Bret** 20:14

So we've got lots of people protesting now some of what I see those protests being about our quote unquote lockdowns, which I've never really liked as a term. But nonetheless, they're about some sort of civil liberty incursions. And then others are about these passports. And there's a question about if you had reasonable entities, maybe

**Heather** 20:32

a third category, though, isn't it? So vaccine passport is a separate issue from mandatory vaccination?

**Bret** 20:38

Well, to be honest with you, I don't know enough about what's going on in the rest of the world. But the two things are obviously connected if you're going to be delivered, they're not identical issues, right. But if you're going to be delivering a course of penalty to people for not being vaccinated, and we will get to why that is so preposterous, no matter what you think this is a preposterous measure. But in any case, you and I have been COVID hawks, right? We have been very careful about COVID. And initially enthusiastic about the idea of vaccines concerned about what we didn't know about them going forward, and then increasingly alarmed by what we have seen in the data emerging about vaccine hazards. But the point is, we don't fit in either of the categories, right? As you say, Sam lays out two categories. One are people who are cavalier about COVID. And concerned about vaccine hazards. And the other is people who are concerned about COVID. And not so concerned about vaccines. There's no category for us, because our category, is it. Yeah, I'm concerned about the vaccines and concerned about COVID. And at the very least, having presented that as his framework, and then never saying, actually, Darkhorse doesn't fit in that framework at all right? It also doesn't fit in the framework of the portrayal of this as a political issue, which also comes up in this podcast, right? Yes, there may be more Skepticism on the right of the vaccine safety. On the other hand, we are anything but from the right and Sam ought to know that because he along with us has been portrayed again and again, as somehow a right winger, and it's not true of any of us.

**Heather** 22:13

I will say at least, so far as i've i've listened through it at this point. The numbers that they that that, that Harrison topel bring out are about republicans and their vaccination rates, both their intention to be vaccinated before the vaccinations came out, and their actual vaccination rates and Democrats. And increasingly, I feel like Don't we all know that Democrats versus republicans doesn't capture a rather large percentage of Americans, there are a whole lot of us I mean, independence have always been a real thing, and you know, a substantial minority. But I think, increasingly, what has happened in the last five years ish, a ton of people have, have decided that they that they can't abide either of these parties anymore. And so those people, all of the independents are not captured. And I think the number that Sam mentions in there, is that only 2%? I hope I'm getting this right. Yeah, I think what the number was 2%, but I think what that 2% was referring to was only 2% of Democrats are not vaccinated. Now, that's a staggering number. And that has to mean that they're, that the vast majority of people who used to be democrats who are now independents are part of the sort of the base going well, actually, actually, I know this is real. I know, COVID is a bad thing. And you and I can agree that that's a bad thing. But when you tell me novel solution is the only correction to bad thing. And I say, let's talk about it. If you come back at me with if you don't agree to novel solution, you don't believe it's a bad thing. That's a logical flaw on your end, not on mine. And this is something I actually I talked about on episode 82, as well, like, I want to know what the name for this logical fallacy is. There's a bad thing out there. Yes, there is. And there's only one solution to that that thing. Well, let's talk about it. If you don't agree to my one solution, then you don't believe in the bad thing. No, wrong.

**Bret** 24:12

Yep. And this is closely. I don't know what to say it is similar in theme to Eric's famous four quadrant model, which has now been illustrated by several people where one is forced into a box that does not represent their position. But okay, we've got a false dichotomy. You've really got, you know, at least in theory, four different categories of people and only two are laid out in the podcast set up and then we somehow end up falsely aligned with those who are cavalier about COVID, which is anything but our, our position. You know, and it's not the only place where we have a narrowing of the discussion in Sam's podcast, that forces a an incoherent conclusion. There's also the question about, you know, he portrays that some people are vaccinated and others are unprotected right. Now, in your In my case, we are anything but unprotected. Now it could be that our understanding of the evidence surrounding ivermectin is somehow way off. Now, it'd be hard to imagine how one gets there because actually, there is a lot of evidence, not all of it is randomized controlled trials. There are randomized, controlled trials. But there's a tremendous amount of evidence that suggests this is a highly effective prophylactic. And actually, it's interesting, as you go through the various edits on the data, whether you're looking at the randomized control trials, or you're looking at all of the trials, you get numbers in the range of 8586 87% effective, which is right up there with vaccines and potentially better than vaccines in light of the fact that we don't see the same degradation with respect to the protective nature of ivermectin against variance. So, did you want to show this paper?

**Heather** 26:07

I want it to behave itself first. You want to make sure both of them?

**Bret** 26:13

Yeah, we could just we could show both. So these are

**Heather** 26:17

so this is these are both papers that came out recently. This is Cohen at all in cell reports. Medicine, I think is the name of the journal title, although I'm not familiar with it self reports, medicine yet, called longitudinal analysis shows durable and broad immune memory after SARS Coby to infection with persisting antibody responses and memory B and T cells. So that's a pretty straightforward title. But in in simpler English, these authors, I think this was the eight month one. They look at my, my computer's jumping around, so I can't actually look at it unless you want to take off my screen for a minute. So I can take a look. Yeah, it's eight months. They looked at 254 patients, you can put my screen back up here 254 patients for eight months, and I just want the longitudinal means there it's time, time longitude. And they found several different ways in which those people retain their immunity to COVID. Haven't been exposed to the disease, not through vaccination. So that's one so then what

**Bret** 27:17

So the upshot of this is that the immunity that one gets the natural immunity, the natural acquired immunity that one gets from from contracting the disease, this is not something you want, but if you did contract the disease, the immunity seems to be long lasting and broken.

**Heather** 27:34

Yeah. And it you know, is there any silver lining at all to having had COVID? You really don't want it long? COVID is is is terrible and real and and we know people suffering from it. And you definitely don't want it. But you know, like with the vast majority of other diseases out there, having had it does appear to confer immunity. And then the second paper in this vein, is this even Nova.

**Bret** 27:58

So this one, we should warn, although we have serious critiques of the peer review process, the second one is a pre preprint, which means it hasn't gone through that process. Take that for what it's worth.

**Heather** 28:11

This is posted on April 21 2021. And it's still up as a preprint is even over at all, called the screen discrete immune response signature to SARS kobie to mRNA. vaccination versus infection. So unlike that first one, unlike colon at all, which was simply trying to assess whether or not there was long term immunity from having been infected with COVID, from having been infected with SARS, Coby to this paper specifically looks at what the differences in immune response are to having been vaccinated versus having been exposed to to SARS cofie to the actual the actual virus. And what they find is actually the immunity conferred by having had the disease is greater than the immunity conferred by having heard the vaccinations it's,

**Bret** 28:55

it is based on a much broader immunological response. Yeah, it is also likely to be more durable, which is consistent with the other paper that you showed. Anyway, I would also point out that this is something that we here on dark horse have predicted again and again, right, simply looking at the narrowness of the mechanism of induced immunity by the vaccines, it is very narrowly targeted. And so what we have said, and by the way, the CDC uses as their justification for attempting to get people who have already had COVID to get them vaccinated is that we don't know how long their immunity will last. Now, that's a nonsense justification. Even if it was true that we simply don't know the answer is at the point that we see that immunity beginning to decay, then we could do it. Right would have

**Heather** 29:49

been and we was it was it last week or a week before that Pfizer given the evidence coming out of Israel, that immunity from post vaccination was lapsing. In the face of delta, about six months post vaccination, and that Pfizer was I don't know, maybe they've pulled this back because I haven't seen anything about this in the last few days. But Pfizer was saying actually, you're going to need boosters every six months. So, you know, the coconut oil papers suggests and they just stopped at eight months. It's not like they said immunity drops at eight months, they said, actual exposure to SARS, Coby to having had COVID gives you longitudinal immunity, at least eight months. And meanwhile, some signals from the mRNA vaccines are suggesting that they are shorter lived than that.

**Bret** 30:32

Right. So with respect to to Sam's podcast, I would just simply point out that any analysis that forces us into a dichotomy of the vaccinated and the unprotected is inherently wrong. We unfortunately have a large number of people who have had COVID and apparently have immunity. So if you believed that there was no adverse events signal that was meaningful in the vaccines, you might argue, well, there's no cost to vaccinating them. But that is not the case. Nobody has established that that signal that is very obviously in the various data is meaningless, it could be meaningless, but the burden is on those who believe it is meaningless to show that the anomalously large signal doesn't mean anything. And until you do, it makes sense to take all of those people who haven't, who have had COVID and eliminate the hazard that there is some negative side effect of these vaccines to which they for which they would get no benefit. So at the very least you have those two categories. You have people whose immunity came from the disease who are not unprotected and are not vaccinated and raise substantial questions with respect to anything like a vaccine passport, I would point out, right, these people should have an exemption. But the other thing is, for people, you know, and it's not easy to get ivermectin in the United States, as far as I know, it's all but impossible in Canada, and I can't speak to the rest of the world. But what I can say is for those of us who have decided that actually, that adverse event signal is scary that the variance and the drop off in immunity is troubling, and have used this alternative method. I think the burden is on anybody who believes that this is not highly effective to explain why it is that, you know, a repeated demonstration that we have something like 86 87% protection is not sufficient. Right. So all right. In terms of, again, my point here is I think if Sam looks at the claims that were made in his podcast, and then he looks at the analyses of that podcast, and I know he's getting a lot of pushback from various quadrants. I will say thread emerged last night. Zach, do you want to show that Twitter thread? Yeah. Yeah. Okay. This is a thread by Alexandros Marino's, I should say, I have never met Alexandros. Have you ever met Alexandra? We have not met Alexandros. I will say he is engaged in a project that he calls better skeptics, which makes me nervous because what he's been doing is incentivizing people to find errors in our podcasts. And then he has a group of referees who are looking into them. And I'm very concerned that at the level of going through people's transcripts and finding errors, there's a hazard but I'm also encouraged that he is attempting to do the job well which would involve calibrating any errors found and weighting them correctly following through to see what their logical implication might be.

**Heather** 34:09

Let me just say that I think he invoked this idea that that we and this podcast needs better skeptics in in the wake of the Colette article by Berlin's can dig in from a couple weeks ago. And I just wholeheartedly agree with this. We all all of us need better skeptics, no matter how good our skeptics are, but with first that piece and collect two weeks ago and now this podcast yesterday. I feel it even more intently that, you know, we really we really 100% need people who are going to be honorable and scientific, rather than obscuring their actual perverse incentives and political in assessing what it is that we are doing.

**Bret** 34:51

Yes. Oddly, I'm not sure if it's true or not. But um, I think he may be quoting you that the term better skeptics may have been barred from Something you said on a stream. But in any case,

**Heather** 35:03

it's all we could just keep pointing at each other hold

**Bret** 35:05

it in. But any case, my basic point is I am cautiously encouraged that that Alexandros and his team are going to overcome the obstacles to this kind of analysis which involve basically calibrating and weighting the various conclusions, and then figuring out how to compare them to other things. But anyway, we can talk more about that some other time. In any case here, Alexandros has done a thread in which he goes through Sam's podcast from yesterday. And he found many of the critiques that I would make, he found a few that I didn't know to make. So he checks into some claims. And actually, I learned one thing about us from his thread, which I found encouraging that I would learn something about myself points to in this thread is he says that you and I actually have a bias in the direction of caution, which he takes from several things that we

**Heather** 36:14

that's, you know, that's exactly what the reputation of your grandfather was, is exactly my thought now, it's like we are so interested in risk, and so interested in like getting rid of all the unnecessary risks so that serendipity can allow us to go places, but I would say he's right, in one

**Bret** 36:31

way. I think he's right in that way. Anyway, he points to or two things, he points to the fact that you and I have a you know, informal but a policy where if one of us is sick, or thinks they're getting sick, we sleep separately, which epidemiologically obviously makes sense, right? It's the it's the kind of thing to do. And then the other thing is that we are not eating fish from the Pacific after the Fukushima incident, which may sound wild eyed and crazy. Of course, that is the result of the fact that after the Fukushima accident, fish were tested from the Pacific, and the results were alarming. Right. This is I have not looked at this since it's been a while the accident was in 2011. And the time wasn't too long after but what what these samples showed were that in so basically, there are two isotopes that you would be particularly concerned about. One of them is cesium, the other one is strontium one as a muscle seeker, the other is a bone seeker. And these things, these isotopes cause cancer because the radioactive decay, and it's actually, it's not just the radiations, the fact that you have a radioactive particle, basically a piece of dust, radiating the tissue around it. But the basic point was in salmon, it was a very high percentage of fish. My recollection was it was something like half of the animal sampled had cesium from Fukushima in their tissues, and strontium wasn't tested. So we it's not like we can say any of the fish were free of radioactive isotopes. And in tuna, the number was something like 100%. And the reason was apparently the ecologically the tuna were spending their youth in places that were contaminated. In any case,

**Heather** 38:11

well, they're higher up the food chain. Well,

**Bret** 38:13

they're both. They're both high up the food chain. You're right, some tuna big, real big tuna are higher up the food chain. But in any case, the point is yes, we are cautious about certain things. Why are we cautious? Because actually, as you point out with my grandfather, Harry was very cautious about hazards that could be managed, but he was also the guy who hiked up Mount Whitney with me. And when it was time to come back down, we slid down a glacier on trash bags that he had packed for the purpose of anyway, we're the

**Heather** 38:42

cautious people who took our children to the Amazon and like actual to the Amazon, not the not the fancy, easy to get to. And I don't know it doesn't feel easy. But you know, not the place that most gringos go when they think they're in the Amazon. But we actually took them there once. Once we felt that they were old enough to well actually be able to afford to be vaccinated against yellow fever and all the other things that one needs to be vaccinated against to be safe there. And, and you there are risks, but you get rid of the risks that you can.

**Bret** 39:11

Yes, What are you laughing at the idea of a fancy Amazon? Because frankly, I find the whole thing fancy? I really do.

**Heather** 39:18

Yeah, but you know, I mean, so you know what I mean? And actually, probably most most viewers and listeners don't. But the vast majority, you know, I've talked to people who think that they experienced the Amazon and you know, those of us who are actually tropical biologists listen to what they report and where they are, where they were and what just outside of the resort and maybe they didn't call it a resort but what that looked like and you know, there's a lot of ways to get people into things that feel like they're the real deal and are actually some Disney FIDE version of

**Bret** 39:47

it. I would put it I would put a different way. I would say that the sensitivity of tropical forest to disruption is immense. And that basically the edges are thoroughly compromised virtually everywhere. And so the problem is that when one wants to, it's very easy to end up with an empty forest or a forest in which certain creatures have been curated, it's very difficult to get to a play, then, you know, even the place that we go has been compromised by, you know, by friends from the outside. As

**Heather** 40:22

you know, I never published this, but my very first research in grad school ended up being on the effects of a so called eco tourist lodge having introduced a slightly bigger and more charismatic poison dart frog to the area because the one that was actually native there wasn't quite big enough for the tourists to see easily. And of course, the bigger, slightly more charismatic poison dart frog drove the original native one completely locally extinct, you know, as you would predict. So you know, I do I do have a bias towards thinking, you know, whenever I see development that is aimed at a pet appealing to the aesthetics of Northerners of gringos that pretty much every time I've then gone down into that rabbit hole and investigated what they're doing, the ways that they appeal to the aesthetics and the desire for comfort of those of us who don't live there tends to be destructive of the actual environmental.

**Bret** 41:13

Yeah, I mean, it's a it's a general tourism problem extended to to forest. Anyway, we're sort of far afield here. Maybe to close this out, I want to point out a couple things. I think that in light of what Sam released, and in light of the many valid critiques that have been leveled and can be leveled against it, that there has to be, this is an invitation to a conversation, and I think the theme of the conversation has to be what the fuck is going on here, right? Because what the fuck is going on here is the only way to interpret the fact that we all end up in these strange categories. So you know, among the things that need to be, I think, explained. Sam, who's generally very careful in his podcast is searching. It's clear that he is honestly searching for an explanation as to why people who appear to be credible doctors, I think he's specifically pointing to Dr. Corey, who showed up with me on Joe Rogan's program could possibly be so mistaken, that could possibly be on the right side of this, and he's grasping for an explanation. And I it's obvious, he's not accusing anybody of being schizophrenic. But this is what he reaches for. He says, you know, of course there, you know, and it's like, really is that is that,

**Heather** 42:43

like he's said, this is not in a part that I've listened to yet. But he's like appealing to the base rate of schizophrenia in the population and imagining that some that explains some of what we're saying,

**Bret** 42:52

I look, I think what he's really doing is he's looking for a proof of concept that something could explain why a doctor wouldn't be so far off the mark. And so clearly so and the answer is the doctor isn't so far off the mark. And it is not that he is clearly so the problem is that this landscape is so confusing that if you start with the conclusion that vaccines are safe, they are the only way forward. And anybody who says otherwise is obviously deeply confused, and then you try to explain how, you know, ICU doctor is so deeply confused? Well, the answer is, I don't know you need some exotic explanation. Likewise, Eric Topol portrays Robert Malone as not the inventor of mRNA vaccine technology, which is clearly not the case this has been looked into there are there are publications and there are patents that clearly indicate that he is where he said he was. So I think we need to close this out. But the basic point is the podcast that was released proceeds from the argument that nobody who is concerned alarmed about the vaccine hazards, or very enthusiastic about the possibility that repurposed drugs could be highly effective at preventing COVID or could be useful in driving the pathogen to extinction could possibly be right and on the discovery that those claims aren't correct that the the confusion is born of some other. Other cause the right thing to do is to have a conversation and I would like to have that conversation with you Sam, privately, publicly, whatever you think the right way to do it is but it seems like the right way to go.

**Heather** 44:52

So you want to you want to close that out. So this is not directly about about that, but I did want to point out to BMJ British Medical Journal opinion pieces that have been published in the last couple of months, that just speak to the fact that there are actually a large number of people, medical professionals who are even willing to speak publicly. And that, of course, doesn't address the very, very, very many number of people who are are not able to speak up for whatever reason. So here we have, for instance, sack of you will show my screen here from June eighth 2021 why we petitioned the FDA to refrain from fully approving any COVID-19 vaccine this year. And it begins we are part of a group of clinicians, scientists and patient advocates who have lodged a formal citizen petition with the US FDA, asking the agency to delay any consideration of a full approval of a COVID-19 vaccine. And this is this is related to the podcast for mistakes only in that I believe Topol specifically says, you know, of course people are scared It's only gotten the UAE it's only gotten emergencies authorization, why won't the FDA do what it needs to do? Well, there are a number of people in the health professions who are saying, actually in here it is. Our petition doesn't argue that risks outweigh benefits or that benefits outweigh risks. Rather, we focus on methods and processes, outlining the many remaining unknowns about safety and effectiveness, and suggest the kinds of studies needed to address the open questions. So this sounds like both caution and science to me. And then there is a similar one from a seven. They also in BMJ opinion, British Medical Journal opinion, titled COVID vaccines for children should not get emergency use authorization. And so this is a difference a smaller group of people, but they are saying, you know, based on very similar arguments that we don't know enough yet. And effectively, this is not their language, but the the children should not be the guinea pigs.

**Bret** 47:00

Yeah, not only not the guinea pigs, but the fact that kids appear to tolerate COVID extremely well and have a parent risk from the vaccines suggests that we have an obligation to, to exclude them from the hazard if it doesn't come to their benefit, otherwise, it becomes a transfer of health from the young to the old in a rational civilization wouldn't do that. Actually, I did want to make one other suggestion, something that has increasingly bothered me, and this showed up in the Sam's podcast, but it didn't start there. It's almost ubiquitous in the battle over the evidence here. It has to do with the claim that the other side is killing people. Right? Now, my sense is this is actually logically a very simple issue. You and I wouldn't be doing what we are doing. If we thought that the arguments we were making, we're liable to harm more people that may help. Now, it's not as simple calculation as how many lives saved, because as we just pointed out, I at least and I assume you would argue to protect children even at an increased number of lost lives amongst the elderly. But nonetheless, there's some basic calculation that we ought to all agree on that we're trying to minimize harm in some way that is weighted towards, you know, the quality of lives lost or or However, one would rationally do it. So that means that we are looking at the evidence, and we are doing what it seems is most likely to minimize the harm is guaranteed to know and we've talked about that it's not a very pleasant position to be in that when you err your position publicly that you know it will have consequences for people's lives, that certain number of people will perhaps die because of what you're saying. On the other hand, I would never portray Sam, or a Yuri or Claire as killing people, I know that they're motivated by a desire to to get the evidence, properly understood to minimize the hazard to people, we just disagree over what the evidence suggests. And so I guess my point is, it's like a mathematical equation, right? If everybody is motivated by looking at the evidence and trying to minimize harm to humanity, then that part cancels out from both sides of the equation. And what we're left with is a disagreement over what the evidence implies the best way forward is why can't we have that argument without one side portraying, portraying the other as either indifferent to harm or as Eric Topol said of me yesterday, he called me predatory. Yeah, right, as if that makes any sense at all.

**Heather** 49:59

Total wasn't careful in the way that that Sam was at all. And there was just a ton of falsehood there out of his mouth. But I do think that I have said here on previous episodes, at least once I think that if, for instance, YouTube is gonna have a policy by which you cannot speak the you know, you cannot say the name of the drug that we should call that, you know, that we might call Voldemort. They, they are actually the ones who have blood on their hands. And so I have said that about the entities at least once, at least with regard to YouTube. And I'm not I'm sure I've thought it I'm not sure I've said it about the other entities that might be obscuring some of you know, the benefits of ivermectin, for instance. But, but never about individuals. So that's so that's the comparison you're making. But I just wanted to be clear that, you know, there I do think that there ultimately, will be there's there's blood, but it's, it's in the sort of metaphorical hands of entities of, you know, entities that don't actually have hands. Well, that's, you know, that's part of how it works. That's got to happen. If you,

**Bret** 51:13

you know, if you capture a regulatory body, and you corrupt it so that it can't monitor a hazard or something like that. Yeah, that's obviously a different matter. But us out here in the public, trying to navigate a complete and confusing set of evidence is a whole different matter. Also a whole different matter. I'm getting, you know, you and I have predicted that the unvaccinated will be blamed for the variance and for the upsurge and COVID that is certain to come with the dawning of the Northern winter,

**Heather** 51:50

despite predictions from your long before COVID, that mass vaccination during a pandemic will create selective pressure for new variants.

**Bret** 51:58

Right. And so I think the point is, look, I wouldn't blame the vaccinated even though there's an argument to be made that vaccination is playing a key role in the generation of variants and I don't want to see the unvaccinated blamed, especially in light of the fact that the unvaccinated are several different categories, some of which are pretty likely to be blameless, right? So you know, those who have had COVID, and are unvaccinated are not guilty in any conceivable way, right? Likewise, if I react and actually works, the way the evidence seems to suggest it does. People who have gone out of their way to protect themselves in this alternative form are actually much less likely to be contributing. But at the very worst, what you have is a complex analysis in which do the unvaccinated who have not had COVID and aren't on ivermectin? Do they play a role in the ongoing pandemic? Of course they do? Do the vaccinated play a role? Of course they do, right, these things are part of a complex system. And the right way to analyze it, is to exclude blame and try to understand what's taking place and what might best be done in order to get control of the pandemic.

**Heather** 53:12

Let me just show this paper. Actually, I haven't spent a lot of time with it yet, but it's from 2015. It has nothing to do with COVID at all, read at all, published in PLOS biology, imperfect vaccination can enhance the transmission of highly virulent pathogens. And the last sentence of the abstract reads our data show the anti disease vaccines that do not prevent transmission can create conditions that promote the emergence of pathogenic strains that cause more severe disease and unvaccinated hosts. It's very much in keeping with what we've been talking about for months, it's, frankly, it's not a stretch. It's not it's not a leap to think this, you know, all you have to do is think a little bit evolutionarily to imagine that this would be likely then here we have a paper from six years ago saying, you know, be aware, be aware. And this, you know, again, imperfect. vaccination is just a term of art here, meaning that it doesn't 100% prevent transmission. And indeed, we don't, I don't think that we yet have evidence that these vaccines are preventing transmission at at all, are they? I mean, like, I'm not sure about that. But what they seem to be doing most of their effectiveness seems to be about reducing the degree of disease that people who do end up getting it having. But But I'm not, I'm not positive with the evidence,

**Bret** 54:29

almost certainly they're going to reduce the amount of transmission. But the problem is that they constitute an inadvertent gain of function experiments. Right you are collect you're creating a kind of hazard that the virus then evolves past and that is unavoidable in the circumstance. What is inexcusable is that we are not paying attention to the signs that we might be doing something wrong in this regard. What we are doing instead is rationalizing is in a way the signal that this might be having an adverse consequence. And that really is troubling. And I guess it does raise one final point. I also felt in Sam's podcast that it was ungenerous, especially in light of the fact that they spent time talking about the lab leak and the fact that civilization at large changed its tune on this. What they did not point out was that like, on many issues surrounding COVID, we have been early on this and we have been right and in fact, Eric Topol did not acknowledge that he has been wrong until very recently. In fact, he took jon stewart to task for a reason. It's very recent. The fact that he also appears to have a relationship with Christian Anderson raises a question about whether or not he's in fact viewing that issue objectively. But nonetheless, what I would say is, and I tried to say this, at the beginning of my podcast appear, Cory, I tried to say, look, if you have somebody who has gone against the grain and against the social pressure, right, and said, Look, no, the evidence suggests this thing and then suffered, you know, something like a year of being stigmatized for saying such a thing, and then they turn out to be right. My sense is that gives you a certain budget, right? And I think the point is that budget means that at the point that I say something, or you say something that amounts to actually, the conventional narrative is dangerously off. It doesn't make us right, but it means leaping to the idea that we've somehow missed the boat lost our minds. The question is, well, is this going to be another one of those cases where we turn out to be right down the road, right, and the all of the stigma on the way there is just simply misdirected? Alright, maybe now we are there.

**Heather** 56:54

Sure. Sure, talk about sleep.

**Bret** 56:57

Let's talk about sleep. Let's

**Heather** 56:58

talk about sleep. Let's just start. So this is sleep is chapter six of our forthcoming book, as I said, at the top of the hour, and it's gonna be a short excerpt today, just two pages from the middle of the chapter. So in the beginning of the chapter, we walked through a little bit about what sleep is and whether or not we think aliens, if they landed on the planet would recognize what we do for a third of our lives. I'm not going to give that away, we're just going to jump right into the section called dreams and hallucinations. You'll remember this moment, in the darkest quiet as moment of some night long ago, hours after we'd both been asleep. Heather sat up, looked at Brett and said, Do you seriously intend to leave these car parts on the bed? Brett's answer, I think so. Yes. Did that ease tensions any. Furthermore, the fact that there were of course, no car parts anywhere near the bed would not be admitted as evidence in this discussion. It wasn't the first time that Heather had said something while deeply asleep that was impossible to engage using the normal rules. When Brett responded to Heather sleep talk, the tone generally decayed quickly. There was it seemed no reasoning with either of us. without having any consciousness of these episodes, Heather somehow no later went away can being told about them what Brett was supposed to do. don't engage me, let me have both sides of the conversation it will be over soon enough. seeing things that aren't there hearing sounds that were never made believing things that are not true yet being certain of them being unable to control one's movements, having conversations with people who don't exist. As it turns out, a list of symptoms of a person with schizophrenia has a suspicious overlap with a person asleep and dreaming. All of us enter the state every night Even though not everyone reaches out through that state and toxin their sleep. We do not regularly draw this parallel because our dream state usually comes to paralysis and amnesia. And he confrontations with reality are blissfully hidden from us by the time we get to our morning coffee. How surprising then, that organisms that do not appear to have had our best interests in mind, such as silicides mushrooms and pod cactus seem to have access these very same tendencies. To explain this, we need to take a step back. Organisms including us and other animals, plus PAMP. Plants and fungi do not generally want to be eaten. fruit, nectar and milk are as we discussed in the previous chapter, exceptions to this rule, but in general organisms, but a lot of work into discouraging the consumption of their body parts. structural barriers are one method cactus spines, porcupine quills, turtle shells. Another is poison, but it is often too crude to be maximally effective. If a deer dies after eating foxglove the deer will be replaced by another deer that knows nothing of the plants poison. On the other hand, if a deer expands its dietary repertoire to include psilocybin mushrooms and spends the rest of the day having a temporary psychotic break, it will may well look elsewhere for its next meal, having been educated and perhaps terrorized rather than killed. Secondary compound is a loosely defined botanical term for a substance that is not functional within the organism that produces it. Rather it is intended to interact with pathways and other creatures often in a hostile way. The irritants in poison ivy are an obvious deterrent to herbivores eating those leaves Similarly, potatoes and the other night shades contain endogenous pesticides, a class of compounds known as glyco alkaloids that are highly toxic to humans. In contrast to those pure poisons and irritants consider these secondary compounds. capsaicin, the molecule that creates the burning sensation when we eat chili peppers, generally dissuades mammals for meeting seeds that are intended for birds which did not have the receptors to sense the heat. And caffeine which disincentivizes herbivores from eating caffeinated seeds at high concentrations may also be a kind of pharmacological social engineering on the part of the plants. When bees are given sugar rewards that contain caffeine, their spatial memory improved improves three fold. The caffeinated nectar of both citrus and coffee flowers may well be priming their pollinators the bees to remember them and to come back for more. from suicide, mushrooms and air got fungi to pod cactus in the botanical brewing io boska to salvia and Sonoran Desert toads, there are fungi, plants and animals that produce secondary compounds that interact with our physiology in ways that mirror dream states call them hallucinogens or psychedelics or entheogens. Their effect on us can be narrative and elucidating. We live our days connected by dreams. Lest we wake up each morning imagining that we were brand new beings, our dreams give us context and allow us to grow between days. We are conscious during the day and unconscious in the first part of the night during non REM sleep. Once ram picks up in the second half of each night, our consciousness is borrowed, our body's taken safely offline paralyzed, and our conscious minds create fiction strange, hypothetical and extravagant. Sometimes, they're even true.

**Heather** 1:01:35

A vast arrays of a vast array of cultures have some tradition in which hallucinogenic states are intentionally triggered in some or all of their members. Humans being human, it is not surprising to find that many cultures have borrowed secondary compounds that trigger terrifying waking dreams, and have turned what might have been a bad trip into an important tool for human consciousness expansion. More in this in chapter 12. Just as many cultures have appropriated the hallucinogenic secondary compounds of plants and fungus to expand the consciousness of their members. Many also have sleep rituals from the simple to the elaborate, by which individuals prepare for the nightly slumbers. Even some of our closest relatives engage in rituals in advance of sleep. And the next section tells us discovering some in some spider monkeys in Guatemala.

**Bret** 1:02:18

Pretty exciting. I'm actually quite interested to hear what the world will make of this set of hypotheses when and engages them. It's, it's something I've long wanted to bring into the world. And I guess we're finally going to find out whether

**Bret** 1:02:36

whether people are ready for it, but yeah, anyway. Well, where do you what do you think we should talk about here?

**Heather** 1:02:45

Yeah, I've got I mean, there's, there's a lot to say.

**Bret** 1:02:47

Yeah, there's a lot to say, actually, Zack, did you just get an email from me? I wanted to show this. years after we started talking about these hypotheses. I ran into this cartoon, it's an XKCD. cartoon.

**Heather** 1:03:03

You have to make a bet bigger I think for most people, people, including people on mobile who might want to see it.

**Bret** 1:03:09

So it starts out with a guy he's just awaken from a dream there people rappelling from most zepplin there's a nuclear explosion going on near a major city. He runs down the stairs, he goes to the breakfast table to talk to his significant other as the whole thing evaporates and he's left with almost nothing you could possibly describe.

**Heather** 1:03:41

She appears to be nonplussed. Right, and he hidden caption

**Bret** 1:03:44

to the thing is every damn morning. That's the title action. Every day morning. Yeah. Anyway, so yes, this idea that our dreams are actually built to be hidden from our conscious minds in a certain way. And then, you know, it wasn't in the piece that you read, but the fact that some dreams aren't. Dreams aren't what aren't deliberate, are not adaptively hidden, there seem to be some dreams that

**Heather** 1:04:12

just have their message right there emblazoned on them? Is that what you mean? Well, what

**Bret** 1:04:15

I mean is, there's a difference between the dream that you can't remember. And the dream that you can struggle to remember something of the dream that to my way of thinking is actually handed across the consciousness barrier, because its purpose is actually for your consciousness to see it would feel very different. And I think these are all disrupted by our terrible relationship with alarm clocks, which basically interrupt our dream cycles, arbitrarily

**Heather** 1:04:40

alarm clocks, and other intrusions in the soundscape and also light. And we'll talk a little bit about light here, but

**Bret** 1:04:46

yeah, right. Yeah. But for those of us who sometimes have the experience of solving a difficult problem in our sleep, right, it's very often one of these things where you awake with a solution that you're keenly aware of

**Heather** 1:04:59

well, and So I mean you you say that speaking specifically of mental or intellectual problems, right? I think I think probably everyone has everyone has solved problems in their sleep whether or not they recognize it as such so there are you know, there are physical problems that can be solved if you're like a craftsman if you're trying to figure out how to you know, make a particular joint or something, but also the one that is probably the most ubiquitous and perhaps the most ancient of of at least these types that we've sort of categorized here are just you know, how to get your body to do a thing. And in the modern world that might be you know, skateboarding or rock climbing or forehand frisbee or you know, whatever it is. But you know, you work out you work out you work at it, at some point you get, you know, you either walk away calm or not, and the next time you try it, if you have had time to sleep between now and then you're almost always better at it.

**Bret** 1:05:51

Right? And the distinction Yeah, I mean, as people who know the podcast well are people who will read in the book, obviously, all that dream stuff has to pay its way right not every dream does but on average, it all has to pay its way because it's very expensive. So the question which is so expensive,

**Heather** 1:06:12

it's metabolically expensive because the brain is by far the most expensive organ to run in the body and when it's doing all this extra stuff, even if it's got body offline actually muscle muscles are cheaper to run in in aggregate than the brain is Yeah, brain

**Bret** 1:06:27

is just a super expensive to run and you can also you know, you can Dorman ties it and so choosing to make it active about narratives that aren't real and all of that is something adaptation has done to us for a reason what the reason isn't so obvious but that there's a reason or that there has to be is clear enough but the point is yes, we have all probably most of what we do in dreams is at least attempt to solve problems and we will all have solved problems and in general those dreams that you can't remember are presumably about solving problems that you you know, at some level that is not conscious. But yeah, the dreams I was talking about the ones that seem to get handed across the consciousness barrier are ones you know, in my experience, it's been like there's some object that you're trying to fix and you can't figure out why it's not working and then you wake up with the solution to it it's clear that that work was done by your sleeping self but it's also clear that you're set your unconscious mind isn't in a position to operationalize it right yeah so it's yeah it's a pretty fascinating I

**Heather** 1:07:35

do still wonder about those car parts though.

**Bret** 1:07:40

Yes, well, I mean, you know, I hadn't thought it through But yeah, I mean, they had to go somewhere

**Heather** 1:07:46

I guess. You do always threatened to store things on my side of the bed since that incident Yeah, it's just me no one else threatens to store things on my side of the bed

**Bret** 1:07:57

right? No, I just thought it was symmetrical i thought you know I do threaten this new objects that I've been

**Heather** 1:08:03

no place I think if I do that it's following your lead. It was there. Yes.

**Bret** 1:08:09

I created a monster. Yeah. Yeah. No, want to store things on my side of the bed? Yeah.

**Heather** 1:08:16

Okay, more more from this or?

**Bret** 1:08:19

I mean, I don't know I'm, I'm, I'm pretty happy with it. All right.

**Heather** 1:08:21

Let us then. So I'm just going to read as we mentioned last week, most of the chapters in the book have at the very end, the corrective lens. And so just the last corrective lens from the sleep chapter is this advice that we are giving. Most of these are at the individual level, this is one for the societal level, restrict outdoor blue spectrum light at the societal level, particularly lights that shine upward and outward at all hours of the night. Nighttime darkness is healthy, 24 hour light is not and is even implicated in higher rates of disease. Furthermore, humans deserve a night sky, a sky full of possibilities, sometimes of clouds, often the moon occasionally planets, nearly always stars in the Milky way in which we live. Besides sleep, which we need, what else might we lose when we disappear our own night sky? And we don't know the answer to that, right, we will lose, we potentially lose a lot. And in light of that, in light of that there's a review paper out this year called non visual effects of indoor light environment on humans a review so this isn't this is very, very restricted when you it's not about visual effects. It's not about the effects of outdoor stuff. But it's a review of the extent evidence, which concludes a few things and really, they aren't going to be surprising, but but it's it's all nicely in in this one paper. Now, they find from the review of the literature that at night. Well first of all, let me just define a few terms. They've got a luminance as one of their terms which is just image just basically brightness, luminous flux per unit, as measured it foot candles are Lux illuminance and then CCT which is the correlated color temperature, which is basically a measure of temperature which is to say the higher CCT the bluer and cooler the light is and the lower the CCT the warmer and yellow are the lightest and so, in advance of us going through the evidence, daytime light tends to be blue and end of day and fire lights tend to be we are warmer CCT, lower CCT and yellow or red or so at night, both high luminance brighter and high CCT that is cooler, bluer light are positively correlated with the suppression of melatonin, which I think many of us knew that but there's there's basically nothing going in the opposite direction there. Furthermore, exposure to both blue light and high CCT light basically the same thing not quite, you're different researchers using test slightly different standards and measures at night exposure to the blue light blue light and cool light at night induce a delayed phase shift which is also consistent with a reduction in melatonin. So basically your sleep is going to be disrupted. You know, but it's not, you know, in in almost none of these cases can you just say Ah, you know, hi CCT, light, bad blue light bad No, you know, during the day, especially in the mornings, the more exposed we are to blue light. And I think I mentioned this last week, although maybe I failed to but there's a different piece of research that shows that the earlier in the mornings you tend to be exposed to bright light to outdoor light to cooler light that correlates with lower BMI like your obesity tends not to to thrive as well among people who are getting out into bright outdoor light early in the mornings. So high CCT again the blue light stimulates positive mood. And high luminance during the daytime is positively correlated with subjective alertness so you're more awake there's also a bunch of mood stuff the mood stuff is a little dicey er, so I didn't include it here. And then one of the papers that they cite from 2013 is that after you know, after millennia, maybe more than millennia of sort of folk folk tales and cultural stories about the moon influencing, influencing all sorts of things influencing mood and fertility and behavior and you know, all of these things, there's a paper from 2013 that finds that the lunar cycle does indeed influence human sleep. And they actually did this they went and collected data that had been collected from a sleep lab so afterwards people who actually aren't even affected by the light from the moon it's actually in the like with they've picked

**Bret** 1:12:54

up enough information about what the lunar cycle is that even while the moon is not impacting them directly it's right in their sleep

**Heather** 1:13:01

Yeah. So what they have is in SFX, electroencephalogram Delta activity during an REM sleep so eg Delta activity during non REM sleep which is an indicator of deep sleep decreases by 30% during the full moon time to fall asleep increases by five minutes not a lot but the eg assess total sleep duration is also reduced by 20 minutes during the full moon without being for people who were sleeping inside in a sleep lab without any you know without this being on the table about something that they were being they asked to think about.

**Bret** 1:13:34

It's interesting because people are so disconnected from the lunar cycle now that it's hard for me to you know, that's some signals is so strong that it's getting through the fact that if you ask most people on most days where we are in the lunar cycle they'd have no idea

**Heather** 1:13:50

right and i mean i think this is this is beautiful because it's it's a full moon right now today is the full moon and it's you know, especially in the northern summer at least in the part of the world where we live we're gonna have a clear blue sky and I was I was lucky enough to be out on the water very early this morning. And you know, bright bright blue illuminance you know, high high luminance bright high CCT light early in the morning and then to be able to go back out at night and see the full moon rising and yeah, it's gonna take a little longer to fall asleep maybe for you know, for for the whole planet during during a full moon, according to this research, and your sleep duration is going to be reduced by a bit and what what this paper didn't try to look at. But what I predict is true, is that there also going to be seasonal differences right? And so you know, whereas we have these expectations in modern and you're in weird country is that you know, you start work at eight or you go to class at eight. And that happens, you know, the farther away from the equator you are, the less sense that makes physiologically across the entire year, you know, eight, eight I'm here in in September when classes start, it's very, very bright out and in December, it's still dark out. And, you know, being expected to get up with the same enthusiasm and alertness and ability to do calculus or whatever it is, you're going to. If you've been, you've been raised in part by the photons from the sun, as opposed to, by, you know, your mom telling you have to get out of bed and, and your alarm clock, of course, you're not going to be equally capable. Of course. Yeah,

**Bret** 1:15:31

in some sense. I think I think we made the point on Darkhorse several weeks ago, that there is a distinction between biological time and laboratory time. And it's not that laboratory time doesn't exist. It's not that somebody made it up, right? laboratory time exists, and you can measure it. But the idea that what we're going to do is build mechanical clocks, and then align ourselves with them align our behavior with them. That's not how it works. And, you know, as soon as you break your cycle, just, you know, even somebody who lives by clocks, if you go backpacking, right? Suddenly, you find yourself not so eager to stay up to 11. Right, you know, it's like, oh, the sunset, unless it's

**Heather** 1:16:20

late June, and you're on Vancouver Island.

**Bret** 1:16:24

Right? Right. Very far north. Yeah. But the point is, you know, you tend to get up very easily, you don't need an alarm clock in the morning, and you don't need someone to to tell you, hey, it's getting really late, you need to go to bed, because it just, it resets very, very quickly. Now, you know, the problem is it trades off two things, your, your personal cycle, and how it interfaces with, you know, the the celestial motions of various objects, is at odds with your ability to say, I will meet you at this place at that time, right, or we will engage in this activity in this location, you know, on this day, and this time, we have to be able to do that, because that's the way civilization works. But to imagine that we are not borrowing from a much more natural, intuitive and ancient interaction with time is is just, it's an error.

**Heather** 1:17:15

Yeah. And, you know, you see, you begin to see in a way that I don't feel like I was seeing signage at parks and such in the 70s and 80s, when we were growing up, you know, some places now say open, you know, dawn to dusk, this sort of thing. But then, you know, is that I was at a park I hadn't been at before last week. And it was it was weird. It's like, open 8am through dusk, like why and I was, you know, I, again, was showing up to some new place to paddle board on some new River. And I was there at seven, and it was, it had been, the sun had risen an hour and a half earlier. And I was there an hour before the park opened. I just thought, you know, why, like, what, what's To what end? Is this park closed? Until 8am, even though it being open 8am in the winter, you know, to the degree that it's about safety, and and, you know, not being policed when it's dark out? Well, you know, just just make it down to dusk, then.

**Bret** 1:18:11

Yeah, I mean, I agree with you that that's it. You know, the good thing about a dawn and dusk rule is that you can operationalize it, because everybody can figure out whether it's, you know, after Donner pass dusk, the problem is probably an enforcement issue, unfortunately.

**Heather** 1:18:33

Right. But in this particular case, they had one and that was a clock lab time in your in your formulation, and one that was an astronomical time. And yeah, just it seemed it seemed a little random to choose one. You know, one is a lab time and one is an astronomical time. Yeah,

**Bret** 1:18:49

yeah. But you're also right, that as you get closer to the equator, these things become, you know, if you're really close to the equator, they become so regular that you actually

**Heather** 1:18:59

do it six to six, you know, like, that's right. And it doesn't, it doesn't wobble at the equator. But the farther north or south you are, the farther away from the equator you are, the more variation there's going to be and like I said, I think now we have we have good evidence and I presume that that evidence will grow that the lunar cycle is actually affecting our sleep. We know that it's you know, it's not just, you know, female typical sex hormones that are served that are that are changing with you know, a long cycles that are the same length of time as the lunar cycle. And that's no accident. It's you know, there are a lot of our home ons for both of us, both of us, all of us are both sexes when I met right, that are that are cyclic, and it's it's going to be circadian, it's going to be lunar and it's going to be seasonal as well, and the seasonal stuff will be you know, there will be higher peaks and lower lows. The farther from the equator you're going to be

**Bret** 1:19:52

totally. I'm also always keen to point out that in other creatures Features there are much less cryptic reasons for these things. So, lunar phobia in bats being a great example, if you go out and you try to catch bats, you find that typically you get many fewer bats when you do so, you know, the foot of the moon, the fear of the bat, and the reason for this is typically interpreted as basically increased vulnerability to visual predators, especially owls. So the idea is the, the, you know, bats are nocturnal, presumably, mostly because it hides them from their predators. And microbots at least have a mechanism for navigating at night that allows them not to be hobbled by it so echolocation works very well at night. There are some bats that navigate visually and they have giant eyes but in any case for most bats the advantage of hunting at night is diminished when they're predators have a fair number of photons to go on? And so anyway, you get this lunar phobia effect obviously human beings are not likely to be sensitive for that reason but the fact that we've remained sensitive is pretty pretty interesting.

**Heather** 1:21:21

Well I wouldn't be surprised if there weren't in different cultures some restrictions on when particular types of plants take place regarding the moon well, you know both both because the moon makes it easier to hunt and easier to be hunted

**Bret** 1:21:38

it's very rare for humans to hunt at night My guess would be so there obviously are creatures that will lead people but they're also typically typically cultural responses right like the mythology that says you know if a lion has hunted a person that you have to kill that lion because it has developed a taste for human blood or whatever and these things function presumably very effectively to select against the animals that experiment with the hunting of people and so anyway, you know, you and I have run into crocodiles that could easily kill a person that you know flee sherkin fear when we swim near them. And you know, obviously mountain lions are fully capable of killing a person but they very rarely do.

**Heather** 1:22:31

So they're you know, they're famously and I don't remember which which fossils but they're you know, they're famously these you know, African fossils with the, with the canine holes from some large cat in their heads, having been having had some hominid, some really hone, I've been dragged up a tree, right? I don't I don't actually remember, you know, most most

**Bret** 1:22:48

diurnal I think that was hit the scene and a leopard. Most

**Heather** 1:22:53

cats are diurnal, but I think I think that was imagined to be Yes, a leopard, which, you know, the kind of muscular Thank you.

**Bret** 1:22:58

I don't know. Yeah, yeah, that was the case.

**Heather** 1:23:01

Actually. No, they've got the the cats of all the cats have to pee them. lucidum Yeah. So so they are, they are presumably better able to navigate at night than we are right. But which is this replace

**Bret** 1:23:13

the sufficiently early human ancestor? That it's they were unlikely to have mythology around, you know, the killing of animals that have killed people. So anyway, the question at least the hypothesis on the table is that mythologies that force people to kill animals that have killed their kin actually function to select against that, that they create a superstition or something equivalent to it? In the wild animals that reduces the hunting of people. All right. Are we there? Yep, I think so.

**Heather** 1:23:53

Okay, so we're going to take a 15 minute break and then we'll be back with our live q&a unless Do you have a thumbnail for this

**Bret** 1:23:59

week? Oh, why do but yes, we are going to have a gorgeous thumbnail of a be in the late evening visiting a flower

**Heather** 1:24:17

and what's the connection to today's episode

**Bret** 1:24:19

Ah, the connection is that the baby is preparing presumably given the lateness of

**Heather** 1:24:26

do not even pretend the bees are sleeping. We don't i don't i mean i think there's some evidence that and I didn't I did not do my due diligence on whether or not there's evidence that bees sleep in advance of this I don't want you just off the cuff claiming this.

**Bret** 1:24:40

I am sure there is be dormancy and let this be is headed for it.

**Heather** 1:24:46

Okay, so we're going to be back with our q&a and fit in as soon as we can. It takes a bit longer with with Odyssey so bear with us. You can ask questions at Dark Horse submissions calm Please consider joining one or both of our Patreon tomorrow is the monthly private to our q&a online at 11am. Pacific. Buy shirts at stored at Dark Horse podcast.org email logistical questions like where do I go again? How do I ask questions? What's their PO Box at Dark Horse moderator@gmail.com and please consider subscribing to all four of the channels that we are now either streaming on or having clips put on which is to say both the main channel, Brett Weinstein's channel on both YouTube and honestly and darcars podcast clips on both YouTube and Odyssey. Like the videos, share the videos and remember to be good to the ones you love and eat good food and get outside. We will everybody