Your Questions Answered - Bret and Heather 15th DarkHorse Po...

Sat, 10/9 12:43PM • 1:10:03

**SUMMARY KEYWORDS**

question, virus, hypothesis, fact, ilan, hormone, point, vaccine, problem, people, lab, work, bats, population, turtles, discussion, level, suggests, evidence, put

**SPEAKERS**

Bret, Heather

**Bret** 00:12

Hey folks, welcome back to the Dark Horse podcast live stream q&a section for live stream 15. I am here with Dr. Heather hying. We have questions overflowing our browsers and we are going to do our best to address as many of them as possible. We're going to start with two questions from Twitter, which I promised to do. The first question, by the way, how does printing sucks so badly? It's 2020. Why can the printer not figure out what I want it to do? It's a mystery. All right, first

**Heather** 00:45

question, do you want the printer to have that much access to your brain?

**Bret** 00:48

I just want it to behave. And I want it not to behave badly. When it knows I'm on deadline. Why does it always screw up? Yeah. All right. Benjamin asks, begins with thanks. Could you both give a simple tutorial for laypeople on how to distinguish between valid evolutionary theories and explanations? And overfitting just so stories, especially in Evo psych, much love from Spain? This is a great question. It deserves a 15 or 20 minute tutorial at some point, but let's just say for the moment that the basics are the same as for any other hypothesis driven science, the one difference is biology is complex. And therefore sometimes the standards have to be different. It's very easy to falsify a true biological idea with two highest standard, in other words, to accept some sort of noise as a falsification. But other than that, hypotheses lead to predictions. And those predictions are what tells you whether or not this is valid. And so what I would say is, when hypotheses are offered, ask what the predictions are. Now it may take some time this there's kind of an art to generating predictions, it's not simple. One gets better at it with practice, but the hypothesis and the predictions are a package. And to the extent that the predictions are either pretty, pretty certain to be true, they're not very high quality, to the extent that they're surprising, counterintuitive, and definitely outside the range of what the person offering the hypothesis would have reason to know, than they are high quality. And so anyway, I would just say, hype, hypothetical, hypothetical deductive method is philosophically well understood. It's not different in biology. And the question is, do you know how it works? And can you apply it and it will prevent you from overfitting? In fact, it will correct when you have engaged in overfitting, it will tell you what you don't want to know. Because it's it's that good a method.

**Heather** 03:00

So this definitely warrants several separate conversations. And this isn't exactly an answer to the question of a simple tutorial for how to distinguish. But I will say that I used to begin every single one of my programs at evergreen with an exercise that I had modified from one that the organization for tropical studies did with students, when they were learning how to be tropical biologists in Costa Rica and Panama, involve taking all of my students out somewhere out of sight of everyone else, and just dropping them there for two hours with a pen and a notebook and hopefully nothing else, and saying, Be still use your senses. Watch your brand tell you it's Borden that it's screaming, and you need to leave. And once that slows down, start observing those things that are happening outside of your brain and write down the questions that occur to you. That's the first half. And then the second half, everyone comes back together better if it's the next day, sometimes it's in the afternoon or the same day. And in small groups, looks at everyone's questions, everyone writes down maybe their two favorite questions and the two favorite questions of the person sitting next to them. And then as a group, they try to figure out the hypotheses that might address the questions and the predictions that follow from those hypotheses. And then in an all group, melaye, and all group and all class free for all, we all discuss a few of these hypotheses that were generated from each of the small groups. And it is amazing to see not just what kinds of observations people make, but what kinds of hypotheses they generate for those observations, and what predictions would inherently follow from those hypotheses. But also how dedicated people can't become to hypotheses that they have generated less than 24 hours before and now are willing to fiercely defend it seems with almost with their lives. And so it is a lesson not only in how to do science, specifically fields In this case, but science in general, but also in how quickly human psychology can twist itself around to defend things that it didn't even know exist in mere moments at an evolutionary timescale before.

**Bret** 05:12

Yeah, it's an important topic and separating a hypothesis that is valid from a hypothesis that I myself am advocating for is important. The advocacy has no philosophical implication, and should have no impact on what you think about the the truth or, or not of a given given question. Alright, second question from Twitter is for both of us from echo. Let's see. Brett, how do you disagree with Jordan Peterson on the function of the transcendent, you say the idea of God is a software hack. Peterson says, I act as if God exists. God has a conceptualization of one's future self with whom one can bargain. I say that, as I Brett say, I can't. It can be done through metaphor and must be done through it cannot now be done through metaphor and must not be done through insight and enlightenment. What is the nuance? Don't you think we're more wired for metaphor? etc? Yes. First of all, I would say we are damned if we do and damned if we don't. And I would advise people actually take a look at rationality rules recently did a an analysis of Harris and Peterson on stage with me moderating and engage this question very directly. And I would say the difference between what Peterson and I believe is this. And I mean, this came out on stage and rationality rules highlighted it is that because these metaphors that function in lieu of the literal truths, are responsive to environments which we may no longer live in, we cannot rely on them to the extent that we are faced with novel problems. And so that is the problem with going with the evolutionary solution rather than the insight and analytics based solution. But the insight and analytics based solution is error prone in the present, because it takes a while for the truth, to settle down into something that is actually robust. That is to say, there's a lot of false starts in science where you think you understand something and you don't quite knit bounces back and forth until it settles. And so neither of these is great. But I would argue the level of novelty in the current environment is so great, we really don't have a choice. We know that. Yes, some of those metaphorical truths, retain their currency, a few might even be timeless, but in general, they won't be. I would

**Heather** 07:47

say, just to add a tiny bit more to this. The objection that you had on stage with Jordan is exactly as you say, and is even less robust than the objection that you and I both have to Pinker's suggestion that basically, we live in a Panglossian world, it's the best of all possible worlds. And given the trajectory, it's only it's only getting better. This suggests that in order for that to be true, the future must look like the past. And this is also true for the time honored truths that are in things like religious texts, that in order for all of those to be the way that we need to continue to act, the future must continue to look like the past. And of course, the rate of change is such that we see very little evidence suggests that the future will, at least in every regard, continue to look like the

**Bret** 08:39

path future already doesn't. And it's going to look ever less so. All right, hopefully those were satisfying answers. All right, on to the Super Chat.

**Heather** 08:48

Yeah. So at 210 here we're starting we're gonna spend about half an hour on the Super Chat questions from the first round and then we'll switch to any that come in on the second. Okay, there was a post on Reddit, our science by Dr. James Dewar. COVID-19 did not come to the ruin Institute of Neurology a discussion about theories of origin from your friendly neighborhood neurologist, I would like your thoughts on it. love your show. I don't know of this, it came in at the top level of super check questions. So it's at the top of our list the top monetary level.

**Bret** 09:21

So I took a very brief look at it during the break. It is a long piece. And I must say I am actually encouraged by the fact that it's a long piece you will remember we are advocating, we are hoping that this turns out to be a natural virus and it would be wonderful if that evidence showed up in this post. However, I dove into it almost at random in order to figure out how credible this was. And the place I landed was a section in the middle of the thing that said if this was an engineered virus, that that would have left hallmarks in the genome which that is a not true. One of the We know is that in at least one published paper, the Ralph barrack lab prides itself on having done a seamless job of genetic engineering. So we know a, this is possible and be that this is considered desirable and an accomplishment in laboratory environments when it happens. The other thing is that this particular virus does appear to have some of that evidence, I believe in association with the Firaon site, there is a, a bit of a restriction fragment, this is a location that is cut by particular enzymes that look for particular genetic sequences. And there's a long history of using these things, if you can cut DNA or RNA at a particular sequence point, and then do something like run it out on a gel so that the different length molecules move different distances, and then you can cut the piece out of the gel, you have a set of molecules that has effectively been filtered by length, when it is restricted at these sites. And so you would tend to find in some cases, those sequences would be in the piece that you then having separated out through this filtration mechanism imported back into a genome. Now, is the site long enough that it couldn't have come about by random chance? I don't know. But to say that there isn't any evidence of it is wrong. There's some evidence how strong the evidence is we could debate but anyway, that is, maybe it's the only error in this guy's analysis. But I do think it's an error. And it was where I landed when I plunged into this document at random. So my guess is, the where we will come out is the thing that I believe we can say with certainty is that you cannot be certain of the origin of this virus, nobody who is telling you that it couldn't have come from a lab is telling you the truth, because that cannot be certain based on what we currently see. I think that is the case. If it is not the case, I would be pleased to discover it. And it will be personally embarrassing for me to have to admit it. But I will be pleased because it means we are far better off going forward. And I would like us to be far better off.

**Heather** 12:09

And I would say embarrassing, maybe. But really, you've been so careful, as both of us aim to be all the time about saying this is a hypothesis for which I see more and more evidence. And you know, in this particular case, you really hope it's not true, but that that does not change the the analysis ultimately, which is to say if it turns out that all the evidence that you're seeing and that we're seeing right now turn out to be erroneous or overwhelmed by contravening evidence. Fabulous and Cumbria will will come and say that, and I guess I'm not even sure that it warrants embarrassment. It's it's unfortunate, it'd be better would you know, it would be easier life if you were always right, if we were if we were always right. And of course that's not going to happen?

**Bret** 12:59

Yeah, I mean, I think this this is worth spending a moment on. It is embarrassing. Whether it should be or shouldn't be. It is embarrassing. However, it's a lot like quitting smoking. Right? quitting smoking is famously difficult. But it gets more difficult, the longer you've been smoking. So the fact that it's difficult is not an argument against it. In this case, being wrong when you have taken a position and you know, been mocked for it. discovering that actually, there's something wrong with your position is not a pleasant experience. But discovering that earlier is far better than continuing to double down on wrong idea. And so, comparatively speaking, it's a relief to get to the other side of that thing. And I will face the embarrassment if that's what it comes to. But so far, that has not been the direction.

**Heather** 13:48

Good. Okay, for three geographic next question for three geographic locations A, B, and C, B is closer to a C as far away from me. So it's linearly a next to be next to say, What do you expect bat? Cove b that is to say from location B to be closer genetically tobacco Bay, then backhoe c tobacco Bay, assume similar bats. So I'm gonna just reframe that. In. I think I understand what the question is. And it's well written, it's just hard probably to interpret for people who are merely hearing it rather than reading it. If you've got three locations arrayed in a line in which a and c are farthest apart from one another, and B is intermediate, would we expect you know, all else being equal is is unstated here, that a virus emerging from B is more closely related to that emerging from a than the one from C is to a, that is to say, if if nothing else is different between these these species and the environments and everything else is physical proximity, a decent proxy for relatedness. And yeah, but the all else being equal question is is the big one

**Bret** 15:00

All else being equal question is the big one. And I hate it when people follow and all else being equal with the claim that all else is never equal, because that's not the point of its inclusion here. But in this case, it is especially unlikely that they are equal. So for one thing, let's just point to the fact that you've got locations A, B, and C, in a world of airplanes, right? airplanes invalidate the expectation here, as long as those locations are far enough that people you know, can transport this virus and it could potentially move back and forth. I mean, I guess not, I guess, I guess if you're talking to your bats, but here's the other thing. So I worked on fruit bats. There was a species of fruit bats on the island Barrow, Colorado where I was working, you're a derma Biola batim. And I had an argument with my advisor, my bad advisor on the island about whether this animal ever roosted on the island I turned out to be right it did. But the reason that he one of the world's leading experts on fruit bats did not believe it, too, was that it did not live there year round, it circulated from one island to the next and there was a particular season in which this animal would fly on to the island and roost because I was studying its roosting ecology, I detected that it was present and there he was netting bats. And so he never knew if they were flying onto the island and then going home or what. But my point is, the physical location of your Dharma was actually in motion based on the presence or absence of ripe fruit on the island. And so the physical location if you had islands in proximity, the fact that some creature had flown from one island to another and started roosting there would not predict to which other population its viruses would be most closely related. So anyway, forget my airplane analogy. Obviously, with people that works with bats, it doesn't. But in the case of bats, there is an awful lot in the ecology that would tend to make the connection between populations of viruses inhabiting bats very, very noisy. But as Heather said, All else being equal. In general, there will be a closer connection between those populations in close proximity. Yeah,

**Heather** 17:19

I mean, flight flight changes everything, right? So in general, the bio geographic distribution of organisms is very different. For birds and for bats. And for other flying organisms, especially they can fly across any large body of water, then it's going to be for something that had to either catch a raft somewhere or wait for the continents to shift either you know, through getting someplace to dispersal of ikarians Okay, glad to see you too. looking healthy. Well, thank you. For our next project. I would like to recommend you produce a nature documentary or documentary series on that strangest of all creatures and second most intelligent on earth humans.

**Bret** 17:58

Want to know which most Intel I

**Heather** 18:01

do, too. I want to know what you think this the most intelligent species is. Well, thank you for that. Okay, recently had a discussion on an article quote finding suggests that a pandemic may promote preference for traditional gender roles. interested in your thoughts? parentheses, I doubt the articles quality. Okay, so I'm going to highlight this or Zack, if you could highlight this, so go back to it and maybe address it. Next time. 607 is held professors do y'all like turtles? You know, I am nominally hepatologist, which means that the organisms that I kind of, at one point knew the most about were the so called Herbes, which is a terrible group. It's not actually a valid phylogenetic group and but it includes amphibians and reptiles, but not birds. And so you know, that's a conversation for three of you another time the three of you care about that. But turtles are obviously included in that and I'd find turtles, the least interesting of a lot, and I'm not sure why, but they and they don't attack me. I just, I'm just not really into them. Alright, salamanders, marshes, Sicilians, legless, tropical amphibians, very interesting people from Sicily and also people from Sicily who have legs. Yes,

**Bret** 19:15

I would point out that we have to get through this question successfully in order to get to dinner, which makes this a test to die. Deer was a terrible, terrible

**Heather** 19:26

and yet and still, most people have no idea what you're talking about.

**Bret** 19:28

Oh, thank goodness. All right. Yes, I kind of like explain it. No, I think I'm not. They have Google most of them. So

**Heather** 19:40

yeah, it dies Yes, I

**Bret** 19:41

like turtles. I interesting thing about turtles. Turtles in the Amazon very frequently have butterflies. The Turtles pull out of the water they haul out onto a log and they sit there in the sun and butterflies land on their on their heads, and I think collect salt from tears and things. Anyway, you can if you Google it, you'll find dozens of photos of this. But here's the tragic thing. We were just in the Amazon. And we saw January, far fewer butterflies, we saw internals dearth of insects, but for the turtles we saw in given that there were less turtles, you might expect that they would be more set upon by the butterflies, but there appeared to be far fewer butterflies. And this was in a very remote location. So you know, we were talking about the possibility of pesticides working their way downstream in the watershed or something. But anyway,

**Heather** 20:41

the insectivorous birds are also beginning to disappear. They are they are. So that that again, is a conversation for another time. Let me just say one, one upbeat thing about turtles, which most people don't know, which is that their their care pays in plaster on the shell, the top and the bottom of the shell are actually so rigid, that they don't do a very good job of breathing within that. So they actually have accessory lungs in their legs. That is true.

**Bret** 21:08

Cool. Use a set of those. I

**Heather** 21:11

think it would make you look weird. Probably what Yeah, please consider sharing your views on Joe Rogan's podcast. You can also have an argument lockdown or not with him. Greetings from the Czech Republic. And thank you for all the content.

**Bret** 21:23

We'd love to we don't live in LA, but we'd be willing to travel for that for sure.

**Heather** 21:31

You say viruses evolved to be less deadly? Since it spreads well among the young and healthy with little deadliness. Am I right to think that it becomes less deadly at half the rate as it would if it had uniform deadliness. Approximately half the rate he says I'm not sure. Even without approximately in front of the half. I'm not sure where that where this comes from quite.

**Bret** 22:00

Wow. I'm sure I'm sure I'm just missing a logical step here. But I don't I can't imagine what it would be. Yeah, both of us. Feel free to rephrase that question and send it to us one way or the other.

**Heather** 22:13

Yep. Sorry about that. You said a few podcasts ago that herpes and Coronavirus might interact to cause neuronal damage. Can you elaborate on this? Are you talking about HSF? One or two or both? And what do we know about the damage? Love the podcast?

**Bret** 22:26

I'm not sure we can distinguish between the two.

**Heather** 22:30

Both of those are debts herpes simplex virus one and two. So rather not herpes complex that we're talking about. simplex only. Right. Yeah,

**Bret** 22:41

I think the way it interacts is this virus seems to cross into the central nervous system. And these herpes viruses reside in neurons, that's where they are latent. And something about the the cytokine storm, the cascade, the inflammation cascade, that unfold causes pressure on something that causes people to lose their sense of smell and taste. Maybe that's one thing, they lose their sense of smell, which degrades their sense of taste, which would be normal. So anyway, that's what I think we know, I don't think that that conclusion has changed very much in the weeks since we talked about it.

**Heather** 23:27

But I haven't run into anything new on it. But yeah, you know, the rate of the rate of new information is growing about as quickly as the rate of infections is growing. In some places, it's, it's really hard to keep track of

**Bret** 23:39

everything, which actually raises one thing, I just want to put a flag here for next time. One of the consequences of a highly explorative virus is that it may be up ending many of the assumptions that we utilize. In other words, what does this virus do? may not be a good question. If the virus is more variable than we think it is. Do you test it? You know, what is the rate of false positives and false negatives of these tests? That may not be a good question, because it could be that a virus from over here on a test from over there causes a high rate of failures, etc. And so anyway, this is an yet another reason that we need to know what critter we're dealing with, and does it have an unusual tendency to change that affects the likelihood of a vaccine functioning, it affects the likelihood that a vaccine would give permanent immunity, it affects all kinds of things.

**Heather** 24:34

Yeah, so this, this is something we should definitely return to this is something we intended to talk about when we're talking about the exploratory nature of a lab selected virus. And the idea, we're seeing so many tests of broadly three types, but out of so many different places with highly variable rates of false negatives and false positives, and one of the ones One of the reasons for that hypothesis for why these tests are so not just imprecise and largely inaccurate, but actually variably inaccurate, would be that the virus is mutating so quickly is evolving so quickly, that a test generated in an area with a particular strain of the virus may work to find that virus, that version of the virus, but not other strains that are circulating elsewhere. So if true, one thing that would suggest would be that the tests should be basically used in the area in which they are first generated, and or include multiple strains, the you know, the antibodies from multiple strains, not just from one.

**Bret** 25:42

Yeah. You know, obviously, if the thing is, if it's happening at the level of mutation, this will leave a hallmark that is visible, and people are doing sequencing, I guess I have a question that maybe it's just simply knowable about whether these are whole genome, this is a very large, you know,

**Heather** 25:59

for a virus it's like it maxes out viral genomes at 30,

**Bret** 26:02

kilobases. Something. But the question is, are people sequencing the whole thing, if they're not, you can do a phylogeny. By sequencing, little bits, the more of it you sequence, the better the data you get, and the more accurate your phylogeny will be, and the less noisy it will be, but I don't know what they're using in order to figure out how many strains are out there. And if it's scattershot, it may be that we're missing it may be experimenting in certain regions of its genome and not others. If these are whole genome sequences, which are now readily possible, then that's much less likely.

**Heather** 26:36

Okay, Dan says I've been a long I've long been a fan of rum and my current favorite is Ron zacapa. Centenario monthly price. What is your current favorite rum? I don't know.

**Bret** 26:50

Um, you know, the, the more the older Florida counties are very I was

**Heather** 26:56

just gonna say the older Florida Konya and boilers not not, not bad either.

**Bret** 27:00

willows, okay. There are some very fancy ones, I should say.

**Heather** 27:04

We tend to have field biologist instincts in this in this, which is to say, you get any dark round, you can come by when you're in the field.

**Bret** 27:12

Yeah, you know, chloroquine is made in Nicaragua, it's been available in Costa Rica and Panama where we've worked. But in part, our affinity for rum has a lot to do with the fact that eye allergy to wheat takes a huge number of things off the menu. And so I don't, but

**Heather** 27:31

I don't I don't think that's explanatory. We were long before you discovered an allergy to wheat, we were drinking rum because rum is what's available in Latin America, in places where there are field stations that aren't dry.

**Bret** 27:42

Yep. And it is reliable that drinking rum drives away snobs because they all look down on it for some reason.

**Heather** 27:52

So this is just a comment. Tim Poole doesn't engage much with Twitter, he probably doesn't know. You think he took your tweet too far. Next time I catch a live stream? I'll send them a Super Chat referencing this video. Appreciate it? Do we expect to be able to create a vaccine given that to the RNA virus? If not, do we have a clear path for quarantine decisions regarding the us that we simply modify our reaction to COVID to our capacity to care for our sick? Yeah, this is a lot of questions. And we've we've addressed each of them a bit in other places. One of them being there are plenty of vaccines for RNA viruses, including, what was it like yellow fever and various flu viruses. And I can't remember there's a long list that we went into last time.

**Bret** 28:37

I don't think yellow fever, but the flu for sure. But we

**Heather** 28:41

know fever was on there. The flu

**Bret** 28:45

obviously tells us that vaccine a vaccine is not a vaccine because the flu vaccine is famously ineffective in many years. And when it's effective, that effectiveness doesn't last and so anyway. Do note that vaccine doesn't mean we come up with this thing. And suddenly the problem is over. It would be lovely if it meant that a vaccine is probably years out. And if it does occur, it might not be a complete solution.

**Heather** 29:13

Is that can you click on don't put this thing on it. Can you click on 14? I don't have my trackpad isn't working. Thank you. Yes, please. Let's let me just here I'll ask the next question while you answering and I'll find this to part to a previous question. Should our freedoms be limited by our care capacity? If we have capacity to care for more patients? Is it moral to make Americans suffer financially when hospital beds are open? Thank you. You too, are great.

**Bret** 29:47

I'm probably missing the meaning of that question. I think we have a general problem, which is that our collective well being and our individual well being are in many cases is at odds. And we at some level cannot afford to navigate that by intuition or by everyone being free to opt in or opt out as they would, because that will create a game theoretic hazard for those people who feel the most obligation and it will create advantages for those who feel the least obligation to their fellow man. So at some level, we have to do something that deals with the distinction between the individual level and the population level. That said, I think one of the things that is driving Heather and me crazy is that it appears that there are many parts of the system that wish to resolve this puzzle by lying by pretending that the population level well being and the individual level well being are the same, and that anybody who questions anything about the story they're telling is somehow not getting the the scientific reality of it. And this is just not the case. It's time for us to grow up and talk about free rider problems and vaccines and things like that. And to do it honorably and completely, rather than by wagging our fingers at people and telling them that they're imagining things.

**Heather** 31:19

This is in fact, in some ways, the central tension that tends to describe the distinction between people on the left and people on the right, is are you more focused on individual level freedoms versus population level? well being and the increasingly the scientific, when we are told that the scientific consensus says x, it is often about promoting population level wellbeing, which is honorable and important, and in a globalized world is what we need. But by then shaming people into imagining that there is no distinction between population level and individual level analyses. You get a lot of people more likely to be on the right but plenty of people on the left to saying what the hell, I know that there's a difference between intellect, individual and population level, health and well being. And if you're claiming that, actually there is no distinction, I don't trust anything you say. So it is raw. It is also like, you know, it's not that lockdowns are bad, it's it's stupid lockdowns are bad, right, that the way it's being done is is wrong. And we need to be able to pick and choose the aspects of it. As we critique it, and say, actually, the lockdown needs to be done smart, so that people don't start disobeying one rule that stupid and then decided they're going to disobey the whole thing.

**Bret** 32:39

It is also the case that at the point, we allow the authoritative sources to tell fibs in the interest of our collective well being that they begin to tell fibs in their own interest that are actually at odds with the public's well being. And once the public discovers that it destroys the credibility that those authoritative sources need to have. So the whole thing is so corrosive of good policy that it has to go we've got to do this explicitly, completely in the open. That's the way it has to happen.

**Heather** 33:14

That's right. So just to pick up on what do we have vaccines, what RNA viruses Do we have vaccines for as we talked about last time, the science news article critiquing the pandemic video says claims that we have vaccines for these RNA viruses, influenza, measles, mumps, rubella, rabies, yellow fever, and Ebola. That's quite a lot. Where were we we're going to try to get through a few more of these. You have spoken, the likelihood that the virus originated in the lab, do you think they are covering that up? Or do you think it got out? And even they don't know how seems significant? does seem significant? That's a very good question.

**Bret** 33:57

Good question. Let's, let's sort this carefully. Based on what I've seen so far, I'm speaking only for me, I believe it is more likely to have come from the lab than not that could change, I'd be happy to see it change. If it came from the lab, I believe the lab that it came from has a very high degree of certainty that it did come from the lab, it would be very difficult if this had been something well, I should say, if it is modified by a lab, they would have a very high degree of certainty that it had come from their lab, if it was one of many samples, and it escaped before it got cataloged or something like that. It's possible. It's possible that they wouldn't, but I would think that if it came from the lab, the lab in question knows it. And the lab in question might have the instinct to discuss it openly and honorably. If the if this was one of the labs in Wuhan, they may not be free to and so one of the things that I would have our audience think carefully about is if it is in the interest of the world, to understand the origin of this and the origin of This is anything but natural, then how do we find the generosity of spirit to free those people who know the most about what this is to tell us what they know? That's the question, right? This is not about vengeance or blame. If this is from the lab, the chances are this is the result of an error in judgment of the scientific community. This was discussed, I believe in 2015. There was a question about gaina function research in Coronavirus is discussed in our top journals about whether or not this was safe or might result in some very serious epidemic. So is this that maybe, but if it is, in 2015, we had a chance to stop this kind of research. We didn't this happened. In some sense. That's the scientific community's responsibility. Now let's deal with this question completely without pretending that it's settled.

**Heather** 35:55

Okay, next question. Brett, you're an evolutionary theorist, please check out the generational hormone hypothesis. It explains why the Coronavirus will hit the western populations much worse than other nations. And a second part of the same question. The generational hormonal hypothesis describes how Western human populations are in a generational hormone cycle. Since the acth, levels are increasing. I don't know anything about this to you.

**Bret** 36:23

I know nothing about it, I would say I'm unclear. So a hormone is basically a signal molecule that operates at a distance across the body. It doesn't operate between individuals, you could have a pheromone or something that would. So anyway, I think they're referencing some change in hormone levels between generations. But again, we have such a novel environment, especially at the level of hormones, with all of the estrogens that we're putting into the world in the plastics that we make, and the pesticides that we use. We are doing all sorts of things that have nothing to do with some evolutionary pattern, but will affect human physiology and the hormones given to livestock hormones, given the lifestyle. Yeah, the list everywhere is endless of the number of ways that we're interfering with the endocrine system. So I'd be interested if there was a good evolutionary hypothesis, but that is not the only source of a pattern here. Yep.

**Heather** 37:19

Have either of you followed Chris martenson. With peak prosperity, I seems to be very much on the same page. As you guys. Also FYI, wired mag had a great article on the lack of chloroquine studies.

**Bret** 37:29

have not followed. Chris martenson. Okay, I'd be curious about studies. Yep.

**Heather** 37:37

Next question. Have you read the book, rare earth? If so what is your opinion of the hypothesis? The emergence of complex life is an improbable, improbable combination of special, astrophysical geological events and conditions. I have not read the book. I'm not familiar with it. The emergence of complex life is improbable, and yet it happened.

**Bret** 37:56

Yes. And I mean, I'm not clear what's loaded into the term improbable here, so improbable as to be doubtful. No. And I've engaged a lot of those hypotheses. And my sense is they're actually onto something. I think there is a mechanism that is not understood evolutionarily that fills in some of the, what amounts to gobbledygook in the story that our evolution textbooks tell. But it's very Darwinian, the thing that fits in that space is Darwinian, it's not a challenge to Darwin. But I don't know frankly, I don't know we'd have to look at the at this book, and I haven't read it yet.

**Heather** 38:36

I'm not sure if you've touched on it yet. But have you? Do you have any thoughts on the recent Joe Rogan episode with Ilan musk? Ilan, his opinion seems to be that the world should go back to normal effects. Not seeing that episode. I'm not sure I could handle it. Given how Ilan musk seems to be handling reality, at least through social media these days. But yeah, he does seem to be very much in the we need to go back to normal camp and, and as far as what I've seen of his positioning, he seems aggressive without being based in the reality that I'm seeing anywhere.

**Bret** 39:11

Yeah. Eric ran an interesting poll about in light of Ilan seeming to go off the rails do people want him sent to the cornfield, or did they want more of him? I mean, Eric can use that phrase, but in any case, and the poll, you know, it's a Twitter poll. It's not scientific, but the poll came back with people wanting more Ilan in spite of his apparent harebrained ness at the moment. And I must say, I'm in the same camp. I think, you know, he has a clear conflict of interest here, whether it's affecting his opinion, I don't know. But I don't, I don't love the way he's behaving. But he has been very generative. I'm concerned that a guy who's gotten to where he's gotten has done so by getting gambling sometimes when an individual should be free to do it, but you don't do it on behalf of civilization. And so it may be that he has gambling in his blood. And he's now ready to gamble on our behalf. And it's not his to do. But I

**Heather** 40:13

mean, it seems like there's two different questions. And I think you did a little a little switching here. And you switch the other question. You said, I want more Ilan. And that's, that's fine. That's, you know, that's an anti censorship censorship position, as opposed to what do you think of what he's saying? So I mean, I think we've been very careful about threading this needle around, I want, I want all of the opinions that want to be voiced to be visible and find the ball by those who look at the same time as being able to critique them. And so you're just beginning to get into why, why does it seem like he's got, he's now holding opinions that seem potentially dangerous at a public health level that is worth investigating, while not being in any way suggested that you think you should, therefore, either choose to sit down and shut up or should be forced to sit down and shut up?

**Bret** 41:03

Well, I think I want to put this into an idiom that you and I have discussed before. So we have talked about the difference between and the tension between culture and consciousness. And that maps onto a bunch of other things, including a distinction between the shamanistic and the sacred, and I think the problem is that Ilan

**Heather** 41:25

okay, but you just switch those, let's just keep it in the same order culture is to consciousness as the sacred as the shamanistic perfect. Yeah.

**Bret** 41:33

I think the problem is that because Ilan comes across on a High Tech High competence channel that that's his ethos that we tend to read him as more in the sacred cultural mode. And in some sense, he may be more shamanistic. And the thing about the shaman is, you don't want the shaman in charge of policy. That's not the shamans role, but the shaman adventures on to the possible frontier, and they may come back with visions. But the point is, in order for shamanism to work, you have to not be obligated to their advice,

**Heather** 42:13

expect most of the visions to be nuts, and some of the visions to sound nuts and not be

**Bret** 42:18

right. And there's no question that Ilan has some visions that are not nuts, and then he's got a bunch of others that I find preposterous.

**Heather** 42:25

So maybe maybe, what you're saying is not only should he obviously not be censored, but that you actually you personally are interested in continuing to have sort of the ticker tape of Ilan, continuing to run in the back of your mind, because there will be he's in such a mode right now that it's become easy to dismiss him. And a lot of people are saying, I just don't want to hear him anymore. And you're saying I actually want to continue to hear the stuff that's coming out of that guy's brain? Because in the past, he's understood some things that the rest of us haven't. And he may be about to come to something like that

**Bret** 42:57

here. Yes. And in fact, I want to hear him even when he's crazy, right? I'm not looking to filter it, but I want to personally be able to filter it, I want to be able to take any Ilan idea and say, I don't know what that is. I'm gonna put it aside. But I, you know, I want to hear him during the pandemic. I don't want to follow his advice, because I think it's wrong. So good. Anyway, I want him in the room.

**Heather** 43:23

Yeah. Okay, so I think we're gonna just switch to the next Super Chat questions, and we'll come back to these. If if we have time, which I hope we do. Because there are a lot of good ones and I apologize that we got through relatively few. Caroline Okay, here we go. Are there any organizations that solve societal problems like tissue regenerators as they grow more numerous and effective, we grow stronger in the short run, but more of them become cancerous and dangerous.

**Bret** 44:00

So I ran, the questions are really pushing the bounds this time? Are there Can you read that again? Or Yeah, put my glasses on. Are

**Heather** 44:10

there organizations that solve societal problems like tissue regenerators. as they grow more numerous and effective, we grow stronger in the short run, but more of them become cancerous and dangerous. Okay, so I think I think we're both hung up on the tissue generator phrase. I don't I really trying to do already organizations trying to do this. I want

**Bret** 44:35

to zoom back out on the question. I don't think organizations is what we want to focus on. There are many processes that in their success, actually make us fragile. Right. And we are seeing this actually across the board where the relative ease in which we live has caused us to become soft and I believe we are actually we have become incapable of doing some of the things that are necessary. And if you look back at history we just saw at Zacks recommendation, we just saw the movie 1917, which is absolutely excellent. But it reminds it reminds us of what in this case men had to do. Right. And the fact is, it's, it's astonishing. And to the extent that it took 10s of millions of Russian lives to turn the rack, the German war machine around, they had to do it. Now they had an authoritarian state ready to tell them that they had to do it. But the point is, it was also in the Russian character. And we have lived with such ease that now we have an epidemic of snowflake curry. That is the opposite of having what it takes to you know, to douse the core of a nuclear reactor that's melted down or to you know, turn around a vile enemy as it advances over your land or any one of these things. And so yes, I think many things that succeed, actually sow the seeds of our undoing. And we have to, we should engineer civilization with this in mind so that we produce antifragility fragility rather than fragility.

**Heather** 46:25

I would say also to your point about war, at the same time that the four of us watched 1917 and we actually watched we watched Good Morning Vietnam after you began the last live stream with that. And I've also been reading Sebastian youngers book war about which he then was Sebastian younger was then I don't remember producer, director on the documentary Restrepo. It is an extraordinary look into modern warfare, but at the effectively the infantry level, and I'm sure I'm using the wrong word here. But he posits that, in part, being engaged in actual combat is a is alluring to those who have engaged in it. And it's pretty much all men, it certainly was all men until recently in history and is in generally all men. Because not not because it makes you feel alive. There's lots of things that can make you feel alive. I think his example is skydiving makes you feel alive. But it makes you feel maximally utilized. The idea that at the moment of combat of being in combat, that you know, that you would lay your life down for another human being, and that they would lay their life down for you. And that you are actually an important a key piece in the puzzle of keeping your fellow man alive, is absolutely exhilarating. And how In fact, do you go back effectively to a society that tries to sell you coke and Cheetos and encourages you to work some crap job after you've actually been utilized so fully at such a young age?

**Bret** 48:08

Yeah. And there's a question about what this has to do with the PTSD that people come back with? Absolutely. That, you know, they get it when they come back in general. And at some level, it's it's hard to confront a mundane, generic world, even when the alternative is horrifying.

**Heather** 48:27

Yeah, that's right. What's more important, allow open discussion or prevent harmful advice, who may be bad, but there's nothing better. Most people on YouTube are not experts. Why endanger them? What do we get love from Russia? So what's more important to allow open discussion or prevent harmful advice? Allow open discussion. And it's not that that answer won't end up harming some people as well. But

**Bret** 48:55

well, I would just add, as soon as you decide to stop to start protecting people from discussion of alternative possibilities, you a blind us, we can't go forward. If you don't have people willing to navigate the murkiness at the fringe of what is understood and be worst, you get corruption. The corrupters will take your apparatus that you build to protect people from bad advice, and they will use it to enrich themselves and to hobble the rest of us. And fuck them. I'm absolutely sick of the idea that we needed to be we need to be protected from discussion of anything. Frankly, we should be able to handle the discussion, even the gross stuff, even the awful stuff, even the dangerous stuff. Let's talk about it like adults, and people will respond well, it's the fact that people have the sense that there's something you're not telling them and that it's reinforced by the fact that indeed there are things you're not telling them that makes this problem really poisonous. Yeah.

**Heather** 49:58

So the next several refer to People that we people in work that we are not familiar with, so I'm not sure it's worth. I don't know Paul bangham on the human uniqueness problem, or Jacob longueville. On Sorento both announcing the identification of labmate antibodies with high potency against the virus. That sounds interesting, but I don't know. I don't know anything about it. Back to the ABC question, yes. All else being equal. So I'm not trying to skip questions, but some of these, I'm just not sure what we can do with them. So let's go here, Brett, population cycles. This is actually another follow up population cycles and an increased acth levels and the animals die from disease. My generational hormone hypothesis says that Western human populations are in this phase, especially the US. Is that possible? I wouldn't put so much on acth. In particular, which, god I can't remember what the acronym, it's a hormone. h stands for hormone, I can't remember what the AC T stands for at the moment. I would say with high confidence, that hormonal disruption, disruption of hormonal systems and humans and across vertebrates that have the same kinds of hormones that we have is highly explanatory and much of the disease of both individuals and ecosystem level that's happening across the world. But I would be very surprised if a major source of human illness and injury was traced to a particular hormone disruptor like this?

**Bret** 51:42

Well, yeah, I'm still not clear on whether this is an evolutionary hypothesis being offered, in which case, I think you have to ask yourself the question. hormones are messengers from one part of the body to one or more other parts of the body. To the extent that the message is causing a disruptive pattern. There's a question about why the message is being sent or interpreted the way it is, it doesn't make sense for evolution to set you up for failure and focusing on the message rather than the pattern is going to be a mistake. So if if the suggestion is that there's a natural evolutionary pattern, I want to understand why evolution would have built it then. Then maybe there's something to talk about.

**Heather** 52:26

Any reason as to why countries in the Indian subcontinent have relatively lower death rates due to COVID? We talked about this in one of the previous live streams, I'm sorry, I can't point you to exactly where right now.

**Bret** 52:36

Yeah, remember? Let's say it's an interesting question. And one of the things that we are likely to do in the upcoming live streams is talk a little bit about some data on the distinctions between countries but I think as far as we know, India is still a bit anomalous.

**Heather** 52:53

I actually don't know where they stand at the moment but certainly as of a couple of weeks ago, which is when we were talking about it that was true. Have we have we seen peak prosperity YouTube channel, it has been covering COVID? Since January, really accurate forecasting. A lot of the events developed. I have not,

**Bret** 53:10

I think I encountered it for the first time today. Okay. So anyway, I had a few minutes and there were some things on it, I found disturbing. And then there were some things that seemed interesting. But anyway, it will take a deeper dive. Yeah.

**Heather** 53:24

Can you talk about the relationship between unique ability and talent and disability trauma in humans? Sure, yeah.

**Bret** 53:37

Especially now, where human civilization tends to point people in the direction of basically trading your time and talents, doing other people's bidding in exchange for money that you then spend on frivolous entertainment or whatever. That's not a recipe for insight. To the extent that you face some sort of hazard that disrupts normal development, that's not a good thing, but it opens the door to the patterns that will track you into useless Calgary and might divert you into something useful. So in some sense, I would say that those people who have been disrupted in their development have suffered a setback but it's one that opens the possibility of ending up somewhere distinct and unique each each. You know, there's a the Anna Karenina principle you know, each happy family is alike. Each unhappy family is unhappy in its own unique way. Every functional airplane is alike every disrupted airplane is its own unique flying machine. There's a way in which disruption alters things and makes them unique and the result is often failure and catastrophe. But it also opens the door to discovery so human development is sort of the ghost that haunts so many discussions about about human capacity.

**Heather** 55:11

Yeah. Now we talk about this a fair bit in the childhood chapter of our book as well and and in an otherwise not I think very interesting video, I talked about this in one of the big think videos. But let me just say that with regard to the question is what what is the relationship between unique ability talent and disability and trauma, and it's as this is gonna seem semantic, but both of us have argued with the framing of many of the things that are called disability as In fact, disability. And so specifically, a lot of the things that are now being sort of categorized under neuro diversity seem to because they put a young child out of step with the standard, sit down, face forward, shut up, raise your hand, when you have a question, you'd use the bathroom model of schooling. If you have anything that's a bit different about you, that keeps you from not playing that game perfectly, you are more likely to then to start seeing other problems with the system and maybe then maybe be forced to, in fact, develop particular talents. And so some of these so called disabilities, which, you know, we have argued both of us separately, and together before are not likely to be disabilities are things like dyslexia, or ADHD, or colorblindness even or left handed this and, and, and the list goes on and on and on, oh, autism spectrum, you know, Asperger's, you know, shallow end of the autism spectrum. So a lot of these things just allow for you to stand in a slightly different place force you to stand in a slightly different place as you try to access the standard model of resources that society wants to hand to you. And it kind of allows scales to fall from the eyes and people to start people in such positions to become incapable of seeing the standard issue school and employment opportunities and everything else about society that so many people are otherwise just kind of slotting into.

**Bret** 57:12

Yeah. And it also feed look cross culturally, at what shamans are. There are basically a lot of ways to disrupt normal thought. And thought does not collapse. When normal thought is disrupted, something else takes its place. And it is error prone, but insight prone at the same time. And so anyway, human populations, deal with this and you can, you can get there a lot of ways but let's put it this way. misfits have been a fascination for us for a long time. And we saw a lot of what they're capable of in the classroom. And society is so foolish to throw away their capacity because they're not easy to educate in an economically efficient fashion.

**Heather** 58:02

Good. I remember on Joe Rogan, I remember on Jerry, Joe Rogan said to you, the Catholic Church is a cult. And you said back it's not a cult. Can you elaborate?

**Bret** 58:13

Yeah. run afoul of Joe Rogan and Sam Harris on once here, but the Catholic Church is I guess the church is not a couple 1000 years old. But Catholicism is an outgrowth of an innovation that goes back a couple 1000 years. I would argue it's an update of an earlier innovation. You've got the Moses version, then you got the Jesus version on the Catholic Church is a manifestation of the Christian update to this compendium of ancient wisdom. Is the Catholic Church. Does it have a corruption problem? Yes, it obviously has a pedophilia problem. On the other hand, there's a reason that it has persisted over the very long period of time that it has and that has to do with the fact that it actually as costly as it is, and the belief system is costly, the opportunity cost is very high. The reason that it has persisted is that it has clearly given advantages to those who subscribe to it. And that is in conflict with the connotations of cult that we carry with us. a cult is an exploitative version of a belief system where somebody offers you the promise of something valuable to you. But in fact, what they end up doing is typically robbing you blind or in some way, getting you to enslave yourself to them or something along those lines. So if you look at the Catholic Church, you have to take it as a whole and there's been a lot of bad but it it is coupled to something that has obviously served Catholics well over a long period.

**Heather** 1:00:02

The next one, I'm thwarted by I mean, I'm gonna just read it normally, and then we can talk about it. Heather read this comment imitating Brad's voice also Brett read this comment imitating Heather's voice, which amuses me. I will say it's interesting. I've saw that as you were talking as I was thinking about it. And as you know, I strangely, I have an ability that I didn't know, I had to actually imitate voices of people, compellingly. And it has never occurred to me to do you, and I think I've never tried and I don't know how it's like, it's like, you're too close. Wow, okay, go for it. No, there's no text here. Really? I think I think it would be easier if we had a sentence written by the other to imitate Where are we? It's, I'm on the right. It's this one. But it's just the comment is just read this comment imitating

**Bret** 1:00:58

Oh, yeah, it's funny, you know, I think this actually lines up, if you try to conjure the face of somebody that you know, well, in the absence of a picture of them, or them sitting in front of you, it's often kind of hard to do. I think this is a little bit like that, where it's just like the you know, there's not you're not a picture of you, you're, you know, 100,000 different images in different contexts.

**Heather** 1:01:24

Like, we live in each other as well, you know, it's, it's so close. Yeah. That it's really hard to separate maybe, maybe I'll maybe I'll work on it. But at the moment, there's just so little separation at all, you know, we just have no distance from one another that I think, I think imitation requires some distance in order to get perspective.

**Bret** 1:01:51

All right, well, you're gonna see if you can figure out how to to impersonate me. And if you would do me a favor and also figure out how to impersonate me impersonating you. Oh, absolutely. Really take the pressure off. Okay.

**Heather** 1:02:07

Okay, so we're, we're really close to dying to so many good questions here, guys. I'm going to read two more out of this one. And I'm going to go back I think, and this is one other from the other Super Chat. And, and then we'll stop for today. Okay, so the next two in order here, a follow up from echo. Jordan Peterson replied to you, Brett and the Harris debate, quote. That's why the process by which the knowledge is updated has to occupy a position in the hierarchy of values that supersedes the reliance on dogma. How do you disagree? Man? That's a great quote from Peterson. Yeah, it

**Bret** 1:02:38

is a great quote. I mean, I must say, I don't think Peterson and I disagree that intensely. And in fact, what he acknowledged, during I guess it was the second night of debates in Vancouver. I regard it as an essentially, completely satisfying acknowledgement of the point I was trying to make that allows me to see his point as valid, right, behaving as if has clear value, and it has limits and he sees both. So I'm not sure our position in the end is substantially different. What he's saying here, I have trouble interpreting. I mean, I think if you translate what I think he's saying into our language, the compendium of wisdom is not I mean, if you've ever tried to read a Bible, it don't work. Right. It's self contradictory. It's not a novel, right? It requires something to interpret, to highlight this section to downplay that section with reference to history. And what I would say is, this creates the possibility of the compendium of wisdom functioning far better as a living document with wise interpreters than it can function as just simply an instruction manual. But even the process whereby the folks who decide what to emphasize can be wise and farsighted. That has limits to and then this is the point that we've been making, which has now become a theme of the q&a here, which is the priestly sacred, and the shamanistic often live together in the same tradition. So in other words, the priest may be subscribing to an orthodoxy and figuring out how to apply it to a modern circumstance. And the monastery may be aware of some sort of tear in the fabric that needs dealing with them longer term, but are not directly interfacing with the public in the same way. And that process extends the flexibility potentially of the apparatus that those out the wisdom but ultimately You will get to a point where novelty will be so great that the apparatus that evolved in light of past variation will be inadequate to address the present circumstance. And our point is painful as it is. We pretty clearly have arrived there in the 21st century.

**Heather** 1:05:17

Okay, one more question from this live chat and we'll pick up two from the previous one, and then we'll sign off. This lead this next one is from the militant moderate. In response to our earlier question, his earlier question, I assume his he says what a thought you folks would be conversant in The Hitchhiker's Guide to the Galaxy. Douglas Adams claims that the smartest organisms on earth were hyper intelligent pan dimensional beings manifesting here as mice. Yes, we missed it. We missed the reference the first time. Yep, got it. Alright. Last few questions. In Black Swan versus normal distribution discussion. Couldn't we point to outliers in the evolutionary process? Is it reasonable to say that all traits cultural or biological first appear as outliers?

**Bret** 1:06:04

Almost, is almost a tautology, right?

**Heather** 1:06:07

It absolutely has to be, which is why I went here, because this seemed like something we could do pretty pretty quickly. Yeah, absolutely. And then finally, social distancing seems to try. Excuse me, social distancing seems to treat Coronavirus, like fleas that will jump if you get too close, rather than a complex touch transmission. Is it an effective safety proxy? are we wasting resources on a bad strategy? I think the the viral particles are a bit like fleas, actually, the seems it seems the the evidence that I've seen and yes, we expect the virus to change strategies over time. But the evidence that I've seen that we've seen suggests that direct transmission through you know catapulting droplets out of your mouth, either through you know, yelling, or exertion or singing, or yes, even talking pretty quietly, is actually the most effective mode of transmission and picking stuff up from surfaces that you've touched. It's certainly possible, but it's far less likely to transmit the virus that way. Well,

**Bret** 1:07:12

I want to amend that slightly.

**Bret** 1:07:14

I think what we're learning about the number of particles necessary before transmission becomes likely viral load in the air question suggests that it's not exactly fleed. Like I think about a flea infestation is that if it's the wrong flea, you know, pregnant flea leaves omdia, now you're infested with fleas. In this case, the flea is more analogous to a sufficiently dense cloud of these particles. And so what I think what my model, you and I are walking down the street in Portland the other day, yes, we had to be out there. We're walking down the street, we were walking by some homeless people, they were eating on a wall somewhere, and one of them coughed. And the point was, okay, this person may be sick with covid 19, almost people have many fewer resources to protect themselves, that cough may have contained droplets, a brief encounter with that cloud is unlikely to transmit the disease possible, absolutely. Likely no standing where that cloud was greatly increases the likelihood. And so

**Heather** 1:08:25

you just saw that guy's friends are more likely to become an affected by hanging out with him than we are by walking by him,

**Bret** 1:08:31

right. And so I think we all need to update our model, where every time you enter a circumstance where you may have just walked into a cloud of the stuff that you cannot see, you walk into a space into an elevator, and you don't know if somebody just got out of that elevator, who had it and coughed, right? a stopwatch starts, the longer you stay there, the more you breathe while you're there, the more you will cross the threshold in which exposure that does not cause an infection crosses over into an infection. And so if you take that model, and you allow it to modify your behavior, you can actually greatly reduce the chances of catching this thing. And that is what we should be doing. And, boy, I wish we were all on the same page about this. I really, this is a moment at which the world could be galvanized where we would all be learning in tandem about the danger we face, how it is best managed and we could manage this thing into oblivion, but not if we're tearing each other apart. All right. And we arrived there. Yeah. All right. Well, excellent questions. Thank you so much for them. Please, if you have not already, like the video, subscribe, share it with your friends, make a comment and we will see you in the next live stream which is scheduled for Tuesday. All right, be well, everyone's