Your Questions Answered - Bret and Heather 7th DarkHorse Liv...

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**SPEAKERS**

Bret, Heather

**Bret** 00:08

Hey folks, welcome back to the second half of the Dark Horse podcast live stream number seven. We are going to answer your super chat questions I am sitting with Dr. Heather hying. I am going to do a better job I promise of speaking into the microphone, it's harder than it looks. Alright,

**Heather** 00:27

alright. Without further ado, we are going to embark on these questions. Question number one. Looking at the toilet paper hoarding from an evolutionary standpoint, do you believe gender differences could be playing a role and would men or women be the more likely culprit?

**Bret** 00:41

playing a role? Good one. roll of toilet paper spelled differently? Oh, it's spelled differently. You spellers are all alike. Yeah. What do you think you want to address that?

**Heather** 00:54

Yeah, I think women are more likely to be hoarding toilet paper. I am not sure I love the term hoarding. I don't know if we've talked about this on on the live stream. But the idea of planning ahead and having a back supply of things that you need is not inherently hoarding. If you've never done it before, and you're panicking, maybe that looks like hoarding. But if you always tend to have a lot of something around I'm not sure that that should be qualified as hoarding but put that aside. Women in general are more likely to be putting stuff away and saving and planning for for later situations I think. And also women use toilet paper more for you know, women use toilet paper every time they use the bathroom, I think whereas men only use toilet paper when they're actually sitting down on the toilet.

**Bret** 01:42

So I think it's safe to say women are probably more likely to be stockpiling toilet paper and men are more likely to be left scratching their heads wondering why it doesn't drop from the sky like normal

**Bret** 01:56

perhaps

**Bret** 01:58

Yes, I would say I find the whole toilet paper phenomenon curious because as much as I get that people are stocking up even on stuff that's not absolutely essential. The I think this is more a reflection of human insecurities than it is a response to the particular crisis in question. You know, this could get kind of biological in nature. But I got to say, if the toilet paper I mean some people wise people aren't using toilet paper to begin with, they've moved on to some version of the day that's healthier for the body. And you know, if the if the hot water continues to run, toilet paper isn't your only go to move. So a whole

**Heather** 02:45

lot of the world doesn't use toilet paper. And this is why we cannot continue to spend so much time on the first question in front of time at the end. But back when I Madagascar you know i embark on these five month field seasons, and would have to plan out what am I going to need for five months and one of the things was how much does a person and her field assistant how much toilet paper does one person in their field assistant or for the field season you were with me on two people and the field assistant us in five months because at that point anyway, there was literally no possibility of buying toilet paper anywhere in Madagascar. It's just not what they used. And it's such a desperately poor country that it was not going to be a luxury item that started to be used. It's not that people don't clean their butts. They do so they just don't do it with paper.

**Bret** 03:30

There's another way Yes, in Madagascar even the concept of toilet was a bit foreign in most locations. Alright, let's move on. Alright.

**Heather** 03:41

So this we have several questions from Echo, which thank you I know know how to pronounce your name. Assume that virus X has become innocuous in a rat species. Can it cause radical diet change? For instance, if all pandas who fed on virus laden rats die, and only those able to eat bamboo survive?

**Bret** 04:00

Yeah. So first of all, when you say innocuous, we presume that you mean that it has become a sum harmless to the creature that is not consistent with it radically changing diet because presumably the animal that would be infected has a diet choice that is honed based on whatever the opportunity cost of the various foodstuffs that are available are so if the virus alters what the animal is feeding on, it's moving away from whatever selection had chosen as the right diet for that habitat. So those two things are a little bit inconsistent. But your point about could a virus alter the the food preferences of an animal? Yes, this is readily possible and I would just say that if we look at toxoplasmosis in rodents, which is a parasite that alters the behavior of rodents such that they are more likely to be ingested by cats cats being the place where the the pathogen reproduces. We see exactly this kind of alteration. And it's not the only case there are many places where pathogens alter behavior to increase the likelihood of there being passed on. Not all of them match that model you propose. But enough things are close that yeah, it's readily possible.

**Heather** 05:27

And follow up here. Could awareness of the possibility of catching a potential virus be one of the reasons why some animals don't like the company of other species? Could that be one more reason than food to defend territory? The question about defending territories particularly interesting, I think, I think, yes, potentially.

**Bret** 05:46

Yeah, I would say it's certainly true that, to the extent that viruses or any other pathogen leaping between species carries a cost that it will be it will schedule, how reluctant creatures are to interact. And I will also say that I've seen as a mammalogists, I've seen Ecto parasites attempt to abandon a sinking mammal, you know, where an animal dies, and it's got fleas, and those fleas are now in a desperate race to find some other animals. So from the point of view of anything that would mess with that carcass, like a scavenger, there is going to be a cost benefit analysis is the meat worth the act of parasites or you know, if it's a raptor, maybe the ectoparasites aren't very well adapted to jump to the Raptor. So it might be a better food item for a bird than another mammal, for example.

**Heather** 06:46

I will say I think actually that the default assumption here may be flipped, that organisms are not bazeley. That is primitively, but we tend not to try not to use that word and evolution in biology, we talk about the basil state, the earliest state, organisms tend to be solitary, and develop, evolved sociality rather than our social and evolve away from sociality, not that that doesn't happen. But that if the default assumption is one of being relatively solitary, we tend to end up trying to explain why sociality evolves rather than excuse me, whether than why solitariness evolves. That said, we know for instance, that in cases of let's see migrating shorebirds who end up in these mass nesting colonies in Alaska and the Pacific coast of Canada, that their nests become it's not virus, but another pathogen, they have these Ecto parasites that become that their nest become filled with such that they have a limited time that they are going to be in those nests. So they are they are social, but in a temporary, temporarily restricted way. So they're sort of mass aggregations. And then once they're once they're broods are reared, and they're migrating again, they tend to disaggregate.

**Bret** 08:09

Yes. All right,

**Heather** 08:12

are another question from so there's four questions here from echo. are animals aware of more things than we assume?

**Bret** 08:19

Yes, depends who you are, and what you say. Yes,

**Heather** 08:23

but they but they know, but they are aware of things that probably some animals are capable of inferring information about the world that we have very little concept of.

**Bret** 08:35

So I will, I'll pull in both directions on this one, animals are frequently aware of things that you don't expect them to be aware of. On the other hand, awareness and conscious are two different things. And some, at some point, we will talk about consciousness. But I would just say that there is next to no reason to hypothesize consciousness in a great many organisms that behave in a beautifully interactive way. In other words, consciousness that is subjective experience is costly and not necessarily beneficial with respect to accomplishing many of the beautiful things that animals do so don't leap to the assumption that just because an animal behaves in a way that a conscious animal might, that it is inherently conscious. In many cases, it will almost certainly turn out not to be the case.

**Heather** 09:25

That's so interesting, I read aware I immediately synonymized that with sensory inputs, you know, what, what kinds of sensory inputs to do other animals have, that we either don't have an as is higher form, you know, our sense of smell is much reduced compared to the other mammals, or that we don't appear to have at all things like electro sensory perception.

**Bret** 09:48

Yep. And I would just say, the way to think about this is if you look up at the canopy of a forest, you will see that the trees actually have interlaced with each other They don't spend a lot of time overlapping. And they really don't spend a lot of time crashing into each other. Right? they've sort of navigated the space in some way. That suggests a kind of awareness. And we know it has nothing to do with a conscious awareness, subjective experience, etc. It's a kind of passive awareness but

**Heather** 10:18

elegant. Good. And final question from echo. Bret, what people who look younger than their age have longer telomeres, any studies on different ethnicities, telomere length?

**Bret** 10:29

Yeah, I would be a little bit cautious about people who look younger, that is a that is too broad. But yes, you will find any tissue that has a below average level of damage at a given age, we'll leave that individual younger in that tissue that can be your liver, it can be your skin, we know a lot about how this works in skin with collagen matrix. But basically, rule of thumb would be that if a tissue looks younger, and I would say the gold standard would be under a microscope, if the tissue looks really well organized, like it came from a young animal, it probably is chronologically younger by virtue of having gone through fewer cell divisions to get where it is. And you know, we also empirically, I would just say, there's a lot of truth to the fact that, you know, 60 is the new 40, right? There's a way in which our lives just do so much less damage than our immediate ancestors, you know, because, you know, we do certain kinds of damages sitting at a desk or whatever. But by and large, our lives are physically a lot easier than they were even a century ago. And so, hard lives were down your replicative capacity rapidly. And to the extent that you're spared that you do retain youth longer, which is desirable. This part of why I'm so troubled by the campaign to end human aging is that actually, if we got over that, we know a ton about how to how to keep you healthy longer, and the returns on research investments that go towards how do we slow the aging process, not by magic, but by, you know, making life better and healthier. Those returns are great, and we are ignoring them gambling on something that I think will never come to pass which is actually correcting the aging problem in the living organism without disrupting its ability to function.

**Heather** 12:31

Good. I don't know anything about this next question, Brett. So I'm going to read it although I know that I don't have the one guy's name pronounced correctly, London real? Had the video removed, banned from LinkedIn and more after the interview with David Icke on 5g rights and freedom issues, wackos are not targeted? What do you guys see there? So this was broadly a question about 5g, but I don't know the particular references he's making.

**Bret** 12:57

Yeah, and I'm not I'm not too far ahead of you. I'm sort of aware that there is a story, but I couldn't even tell you what it is. So maybe this is something somehow we need a better mechanism for remembering what we've said we're going to look into I know I dropped the ball on a couple from sec, I

**Heather** 13:11

don't know if you can highlight that. That line in the in the Super Chat. Google thing. Great. All right. Could viruses have evolved? Could could viruses have evolved some mechanism to self regulate their rate of replication to maximize transmission and the time the host keeps transmitting? Isn't it probable in viruses like COVID-19? Like SARS, cov? Two?

**Bret** 13:37

Yep, I would say, absolutely, you would expect viruses to naturally evolve to regulate their rate for maximum levels of transmission, sometimes that will be produced as many as possible, right. So inside of a cell that's been infected, that might even be the rule. But how much how much transmission to a new host is accomplished by invading new tissue within an already infected host is an interesting question. And the more transmission between cells, the more compromised the host is going to be. So as we've talked about before, in the case of many, but not all pathogens, they benefit from not making you so sick, that you can't move around and spread them. So they will evolve in the direction of regulating their pathogenicity within the host to leave you on your feet.

**Heather** 14:30

And the more specialize the transmission maximizing between hosts of the same species, the less likely probably that the virus will be able to jump species, right. So the more the more specialized your virus is, the less likely we're going to see it if it started out in the bat or a pangolin, or a sibbett, or camel or whatever. Whereas these more generalized transmission vectors are the ones that we're going to see. And part of probably why we see something that looks kind of dysregulated on the part of the virus right? Now, you know, I think, I think I think most people have dropped the expectation now that this will clearly follow the seasonal pattern. And we'll see less event in the North American Summer. Because there doesn't seem to be any evidence of that from the South America from the southern hemisphere, summer and from more tropical climes. But really this is about as we've talked about earlier, this is about the this particular virus being completely new to the human host. It's not that the virus is new to life on this planet. But it's very new to its relationship with us.

**Bret** 15:40

Yeah, it, it has no experience with us. And so even if it's well regulated for its original bat host, it's not clear that it even has the signals to follow the same pattern, right, in a in a human. So I would say, in the case of COVID-19, we're in some sense, waiting for it to figure out what its interests are. We, I do expect some decrease in the transmissibility from a number of different sources. One is what we talked about last time, UV light, being an effective killer of the thing. So to the extent that it's brighter and more hours of daylight, that suggests a positivity that has nothing to do with the cyclic pattern of the pathogen itself. And also, if it is true, that we are seeing and again, there's a couple of studies that say that we're seeing something like half a percent to 1% of the total infected population are showing up on reports of COVID-19 cases. If that holds from the Scottish data and elsewhere, then what it suggests is potentially a sizeable fraction of the population growing immune over time without being symptomatic. And that also predicts and has nothing to do with seasonality. But as we head towards the northern summer, we're also heading towards greater herd immunity, right?

**Heather** 17:03

Which is what we want Yep, that's, that's the best outcome. Can you recommend some books from any event from any of the vast branches of biology? I left the question somewhat vague to give more room for interpretation. We will have recommended reading associated with the book that we are writing, but I guess I can do three right off the top of my head. Selfish Gene by Richard Dawkins is from 1976 is still the classic. It's a little dated, but and you could use could use an update, but it's excellent. Mother Nature by Sarah Blaffer. hurty is an extraordinary investigation of the evolution of not just parenting and mothering, but sex and gender more broadly. And baboon metaphysics by Cheney and Seyfarth, a married couple who worked on in case of this book, baboons in the Okavango Delta of Botswana, and they looked into, to what degree baboons have things like theory of mind and are able to interpret to realize not just that other beings exist, but that they have different understandings about the universe than they do. Yep.

**Bret** 18:15

Maybe I'll add a couple others. Sure. Guns, Germs, and Steel. That's an awfully good one, from the point of view of understanding how biology and humanity interface. And just for fun, there's a great book that you and I have taught from called tropical nature, which if you want to get a handle on how things are different in the tropics, it's a great place to start a really good book.

**Heather** 18:38

And if, when this lockdown is lifted, and people are able to travel again, it is the book that we recommend for people going to the tropics, and actually, you know, going to explore tropical nature. You want this book in your hands, especially if it's the neotropic. Yeah, in fact,

**Bret** 18:54

if I would go so far as to say it is essential reading so Amazon should send it to you, even if you're in Michigan.

**Heather** 19:01

Yes, because you heard it here first from tropical biologists. There you go. There it is. And we would know, we would know that the use of ancient psychotropic plants by early hominids caused a genetic disposition to addiction, or are social constructs a greater actor in this? I see no reason to imagine a genetic disposition, but, but

**Bret** 19:23

I'm not gonna blame psychotropic plants or early hominids. For one thing, I don't think either one of them would listen to us. But I will say we are coming to understand over time that the model of addiction is more complex than many people have thought and not built of the stuff that we usually assume. So what I have learned I have come to understand from years of thinking about these things is that boredom is a much greater contributor to addiction than anything else, even these predispositions that people genetically have basically function when you don't have a better choice so

**Heather** 20:04

and there are some there's a rat study I think that bears this out right that I think it's rats that you you offer them and I don't remember it's it's coke or meth or one of these one of these powder drugs you offer to them in a cage bereft have anything to do and of course they become addicted and you enrich their lives with things that enrich the lives of rats. I don't know if that's wheels to run in or television to watch. I have no idea I don't remember. But they'll try it. They'll try the lever and and, and take some but but they don't become addicted at nearly as high rates.

**Bret** 20:39

Yeah, so a rat study bears it out. Probably a bear study would rat it out. But absolutely. You wouldn't want to give this stuff to do.

**Heather** 20:47

Especially not math. No. Any thoughts on the three Toad skink regarding its Amba parody? Here's the CNN article. So we were able to look at one and only one of these questions in advance. And we both saw that because skinks. Right?

**Bret** 21:01

Why would you tell them we looked it up? It's so much cooler to just pretend that we happen to know this particular study.

**Heather** 21:08

I so neither of us did. And I still I only looked at the CNN article. So I have not I did not have time to look at the the paper that it was based on. But it seems that there is a skink that was both oberus and vaporous, meaning that an individual both laid eggs and gave live birth, and that is not supposed to happen. Right? That in general species? Well, it gave it I think, I think what the study said was that it laid eggs and it gave lapboard sort of within the confines of what would normally be expected in a single pregnancy. But there are snake species that do this, there are snake species, that, depending on where they are in their range, they will sometimes be a vaporous, that is given live birth and sometimes be over press. I don't think it's within in single individual, although it's harder these are these are these very nasty and aggressive African snakes that I'm thinking of, I can't remember the species or a couple of them. But, you know, begs the question, it's, it's amazing if individuals can do both. But why in general, the question is, why why lay eggs versus Why give birth. egg laying is the basil state to return to that terminology, that vivid parity evolves later than egg laying, and there are reversals, you can go back to over parody from FIFA parody. And there's also this intermediate state called oval vivah parody where you have eggs inside of you that hatch, and

**Bret** 22:34

then I was gonna ask if that was the mechanism here. Yeah, so

**Heather** 22:37

it may well be in at least the CNN article didn't didn't say, but but just think about, you know, under what circumstances you would you would want, if you know, if you're having kids, if you're, you know, pursuing the thing that evolution has told you to pursue, under what circumstances is it better to have a clutch of eggs that's totally defenseless, but which you can leave behind and traveled to get food without the burden of being weighed down by the eggs. Or you want all of your brood on you at all times. But whenever you go out your full your kids and you are suffering, the greater weight, you're probably more susceptible to predation, all of that. So and then there are also differences around whether or not the sex of your offspring is determined by by chromosomes or by environmental measures. And you basically if you're going to be the vaporous, you're going to need to have chromosomal sex determination. There's all of these interesting factors here.

**Bret** 23:38

I'm going to go the other way, and say that this is actually a totally expected thing. What's not expected is that you will see it that basically the fact of species that do both things depending upon where in their range, there aren't they are, and the fact that over time, this characteristic changes, predicts that individuals will find themselves somewhere in between some fraction of the time and then we just almost never see it. But

**Heather** 24:02

wouldn't your prediction be that it's almost certainly over over parity then since vivid parity requires so many distinct anatomical and physiological adaptations? Well, right that they mean they're like four different phenotypes of placentas within placental mammals, but all of them have not just a remarkable number of circulatory, respiratory neurological distinctions that then also have genetic distinctions. Whereas overview of parity, okay, I've got eggs, do I lay the eggs or do I let the thing hatch out inside of me and then give birth like that? That seems like a pretty

**Bret** 24:34

that's an easy, that's an easy one to get past. But the real question I would say is, if you looked across the phylogeny of snakes, if this pattern is distributed, such that we know it has evolved many times, it could be a facultative thing where the structures are already latent in the genome. Yeah, actually his breath.

**Heather** 24:55

I have just the paper for you. It's cool for people like us. map the oval visibility onto onto the

**Bret** 25:04

sniper legend. Nice. We just lost.

**Heather** 25:07

No, but okay. If an effective treatment or vaccine is not discovered before leaving quarantine, have our actions delayed rather than prevented COVID-19 deaths? No, I mean, both both. Yeah, both, but rather than No, our actions will have delayed some deaths. But they also prevented some because there will be greater herd immunity, there will the virus, presumably and this is a guess. But based on other viruses, we will be evolving towards lesser variance over time. And the healthcare professionals are learning better ways to treat. So you know, you say effective treatment or vaccine? I think, you know, we have been skeptical of the plan that like it's only event it's a vaccine or nothing. But there are so many different avenues by which we are trying to approach this. That I would say, even so, even if we have no vaccine, and just treatments that seem to work in places and not in others, that the quarantine will have, yes, delayed some deaths but also prevented others.

**Bret** 26:22

I would add to this. There's this lurking parameter that I think we don't know how to think about yet, which is low levels of exposure, causing non symptomatic cases that then generate immunity. And we don't know how many of these we're generating, it is possible that I have been through this that you got sick with COVID-19 back in February, and that I had an asymptomatic case, we actually friend is sending us some tests. And we may know more about whether or not this is what happened to us

**Heather** 26:56

serology tests. But

**Bret** 26:59

in any case, many things are possible, including that what we are doing given the density dependent evidence that lower lower exposure levels result in less serious cases, and that there are many non symptomatic cases, slowing this down may actually be producing the effect of a vaccine without us having invented a vaccine. So I think there are lots of ways in which this is actually moving in the right direction. And as much as I think much of this had been botched at the governmental level, the population has actually risen to the challenge surprisingly well. And you know, even absent the silver bullet, this could work out pretty well,

**Heather** 27:49

I mean, with an endogenous biological vaccine created through behavioral modification rather than in a lab. Yep. On the fifth podcast, you discuss the low success rate of respirators, like we're talking about with ventilator, hypothesize, and COVID-19 is hungry for oxygen somehow attacking hemoglobin, if that is the case, with blood doping via treatment,

**Bret** 28:12

this is actively being thought about and discussed in medical circles. And I think we need to leave it to them to, to navigate that. But I think that the evidence for hypoxia as a primary driver here is less secure than it was there's been more people have looked into it. And it doesn't look that way. On the other hand, the evidence that ventilators that physical mechanical ventilation, is not highly effective, that basically it becomes necessary as people face these cytokine storms at the end of very serious cases, oh, I could come back to cytokine storm maybe a little bit later. But as people face these dire consequences at the end of one of these very bad cases of COVID-19, the ventilators become necessary, but lots of people don't live to get off the ventilator. So I think that's where we are blood doping is a possibility. We've talked about whether or not it carries immunity factors, if it's taken from people who have had an exposure and recovered from it, or whether or not it just simply carries increased capacity to have oxygen in the blood. Either way, it could be viable. But yes, there's a lot to be understood there.

**Heather** 29:30

Well, COVID-19 proved to be as cataclysmic for academia as it is for other domains, exposing academia as major structural weaknesses and inability to adapt. We can hope. Yes. I my answer was not in response to you know, it was in response to the question. Yes, I think it will. I think especially the liberal arts colleges are suffering greatly, and maybe some of the chickens have come home to roost.

**Bret** 29:57

Yeah, and there are a lot of chickens in academia, I've encountered quite I remember myself, I wouldn't. I would say that chickens, oh, we could, we could do a whole livestream about the chickens in academia. But the weaknesses in academia are being revealed. That is a hopeful thing if it allows what has been trapped inside of academia to either upgrade the institution, so that the vital things that academia has traditionally been in charge of get done better, or that those things find a new home. Either way, we cannot have science trapped inside of an institution that can't figure out, for example, that men and women are actually two different things, right? You just can't have an institution in charge of the one if it's confused about the other, for example.

**Heather** 30:57

This is Pamela also them again, who ends her question by asking us to hold hands and smile again. So we're going to do that. All right, hi. She gives a link which we can't access right here, but says that it says 91% of deaths are over 55 years old 28.5% or over 85. The who cites as only 1% of deaths do not have a quote, quote, comorbid disease? Shouldn't quarantine be targeted? I think there's a really good argument for this. And I think with with widespread serology testing, it becomes an excellent argument that once we know, especially including who has already been exposed, the big if they're being that, we are assuming that if you've been exposed and recovered, that you cannot be infected again, at least right away. That then doing targeted quarantine, would seem to be a very good intermediate stage that would not be putting so many people at risk of economic disaster.

**Bret** 32:08

I would add to this so the reason it's not a simple question is because even if the people who are dying are older, and therefore you could potentially free younger people to go about their business, those younger people may be circulating things that then reach those older people. And so this is why I raised the question before about, about effectively, I think the the academic term is sanella side, if you know we are effectively taking old people and leaving them to the wolves. That's presumably not something we want to do. And so keeping those people safe, may involve a general quarantine. But the other thing I, unfortunately, did not have time to fully digest it. But I read the beginnings of a very interesting article written by one of the founders of Instagram, Kevin, whose last name escapes me, other people will know it. But anyway, he was arguing for a metric, which was, I believe, r sub t, which would allow you to compare different methods of quarantining for their effectiveness at reducing the spread of the disease. And thereby, in essence, we could figure out how is it that we could liberate people who are less endangered by this and not put those who are in danger are at greater risk, etc. So better metrics? And as you've been saying, since moment, one, much higher rates of testing, those are absolutely necessary.

**Heather** 33:48

Yeah. And some of the changes we've seen with regard to the quarantine could persist. You know, I think it's pretty widespread at this point, at least in the US, and I suspect, at least some places elsewhere as well, that grocery stores, for instance, are now starting out their day by having an hour for only elderly and other maybe immunocompromised people. And, sure it's less convenient for those of us who prefer to shop first thing in the morning. But it makes a lot of sense. And those those sorts of things could continue on for a very long time. While perhaps freeing us freeing the rest of us in some greater was. Next question. Universities are announcing austerity cuts that impact key instructors. What models would allow those fleeing these colleges to claim emergent online learning terrain outside a university system?

**Bret** 34:42

If you build it, they will come. Yeah. So

**Heather** 34:46

I think that's right. That's not a model, but sorry, go on.

**Bret** 34:52

Well, I mean, what we need is for the gatekeeping to be ended by the situation or something else, so that those who can deliver the goods without the huge overhead of the massive administrations and other absurdities that go along with modern colleges and universities, that those people are liberated to deliver the educational goods and to discover how to do it outside of that system?

**Heather** 35:23

I guess I would also say that, although I know what's going on in a few schools, I don't know more widely. And my assumption is that because it's so much easier to cut non tenured faculty, adjuncts and non tenured faculty, and even people on tenure track, but without, without tenure yet, that those are the people who are being cut first. And those are the people of course, who were exactly doing almost all the teaching. So one effect that we may see here is that you have higher ed becoming more and more Bastion for research. And, and you know, what has been clear to undergraduates at big universities for a very long time, is that for the most part, the big, the big name academics either never never show up in classrooms, or if they do, they certainly don't have time to actually think about teaching or to engage with undergraduates. So this, this separation of education from research of scholarship from education is, is a problem. And I think this will put that on even Starker relief. But to the degree that the people who are being let go from their higher ed jobs were primarily in educational roles rather than research roles, they may be better positioned to figure out how to teach online than if someone with 40 years of NIH grants but no experience in the classroom and we're suddenly unable to get grants. And the last is hard money position on our one,

**Bret** 36:47

but we have a situation in which a visionary needs to figure out how to take the people who are gifted with respect to teaching, to compile them, get them paid, give them a path forward in the in a career that that makes sense and can feed a family. And that can actually deliver something to students, that is not only enriching to them, but also is recognized by the outside world as valid. You know, part of this comes down to the fact that you've got a stranglehold on education, that comes from the fact that only these institutions are licensed to give you a credential that's worth anything. And so lots of people are going to these institutions, not because they believe in them. But because that's where the credential comes from. That then is the gateway to a job. And so somebody has to figure out how to break the stranglehold. And you know, this is one of the place places where those who are in love with the idea of economic competition are just absolutely right, which is if, if the universities had to compete head to head with something on the outside that delivered higher quality educational goods that were equally valid in the marketplace. For careers, the universities would get better it is the fact that they have an effective monopoly through accreditation and other mechanisms. That has made them so feeble.

**Heather** 38:19

A bit off topic, but if you haven't seen Richard Linklaters movie waking life, I highly recommend it. Okay. Is there a hashtag we can use to tweet you possible topics for your podcast? We haven't, we should do that. Okay, but we aren't going to figure that out right now. Yeah, okay. You can try.

**Bret** 38:35

Darkhorse horse podcast. Try that for Dark Horse suggestions.

**Heather** 38:45

I don't think we should do this.

**Bret** 38:46

Yeah, let's not do it live. But

**Heather** 38:47

you want to note that Zachary. Thank you. And then this is another question. Okay. It's blocked. I can't see it. about this. David, Iker Icke interview, making outlandish claims this one about SARS cov to being a hoax with evidence. So I think two of our questions have come at that from different angles, and we don't know enough about it to assess. Next one octopodes, occupy or octopuses. I think that we should actually defer to Toby, our younger son on this who is a master of creating plural names for animals such as his fur horse. And I cannot remember any more than beaks, fakes, obviously fix Yeah.

**Bret** 39:33

So I believe I got schooled in my own class that I insisted that occupy was correct. And octopuses is also correct. Oh, they're both correct. Yeah, that's what I that's what I came to understand years ago.

**Heather** 39:48

Fair enough. Could the left right political spectrum have evolutionary origins dating as far back as the early mammals 65 million years ago. I'm wondering if the curiosity for your access could have evolved in the left right axis. We see it Today, so I'm going to let you take that, but I'm going to first just correct. mammals actually didn't originate with the KT boundary when, when the meteor hit at Chicxulub sort of modern Yucatan. And in fact, there are good phylogenetic models that suggests that there have been mammals around for 200 million years. But you know, it's not clear if all of the current clades, including, you know, primates, and cats and rodents and bats were around 65 million years ago, or if they were still just a bunch of basil, scurrying mammals running around, and that caused the the, the vast adaptive radiation. But we didn't originate that way. We are from much longer ago than that. But you want to take the political question.

**Bret** 40:44

Yeah, I think I mean, the political spectrum is a feature of a moment in time, but there is something and we actually addressed this a bit in the book that we are currently writing and revising. There is a basic dichotomy between, let's say, status and progress with progress being risky, but the mechanism that opens up what we call frontiers. So yes, this will be a very ancient process, but I don't even think it's early mammals, we've made the argument that this is actually an evolutionary feature that will cover all taxa, even ones that don't have a cognitive capacity bacteria. Yeah, that there there is a tension between modes. And so anyway, we'll talk more about that at some other point. But yes, there is something to the idea that those kinds of divisions that we find in our cognitive political space, actually have roots that go far back into our distant ancestral past.

**Heather** 41:57

Which, excuse me, what should the productive conversations of geometric unity theory look like? And what platforms do they live on? While talking to the wrong brother?

**Bret** 42:06

Yeah, you got the wrong Weinstein? Yeah, I don't I don't know how to answer that question. I think the fact that we are talking about geometric unity in public is very healthy. And I look forward to seeing where it goes. But Eric, that's a question for you. Clearly,

**Heather** 42:25

that's right. Your thoughts on a virtual convention on freedom rights in light of the crisis? Your thoughts on a virtual convention on freedom rights in light of the crisis? And would you be interested in participating in such a conversation?

**Bret** 42:39

Yeah, I don't know that you even need the current crisis. And I will say that I think most of the people who were involved in conversations about how we might remake civilization productively were motivated by a fear of just how fragile our current civilization has become. And so

**Heather** 43:01

510 years ago, long, long, long, long before right, right now.

**Bret** 43:06

Yeah. So for some of us, you know, I don't know anybody who saw the particulars of this crisis emerging as they did. But while there were a lot of us who were awfully nervous that people seem to have gotten complacent about the hazards we face, and the hazards were looming ever larger.

**Heather** 43:25

Salutations, super people. Thank you. There's been chatter on the philanthropic front and philanthropic front lately about the possibility of COVID related vaccination and surveillance campaigns. Gates seems enthusiastic, but I'm a little worried thoughts.

**Bret** 43:38

What could possibly go wrong?

**Heather** 43:40

What could possibly go wrong? What

**Bret** 43:41

could possibly go wrong?

**Heather** 43:43

Yeah, said, you know, South Korea's track and trace requires, which has been by nearly everyone's measures, one of the most successful nation state wide measures to keep this under under control, required targeted surveillance.

**Bret** 44:03

So I guess I at the risk of destroying what we've built up here. Yeah. I would say, look, this is this is the wrong time to be having this discussion. And I understand that we have to have it because we're in this situation. But a lot of us have been shouting about the hazard of a government that appears to be functioning towards objectives that are not public spirited, and the necessity of remaking it such that it is accountable. Right, that is not a new topic for many of us. And so yes, we are now in a situation where we both have to do some sort of track and trace thing. And the one entity that's really in a position to do it couldn't possibly be trusted. And even if you say, well, it could be done privately. You're going to do it through your phone, is it going to be Google I don't trust any of these entities to engage in this kind of behavior. So we're now damned if we Do and damned if we don't, what we should do is recognize, never again, we don't want to be in the situation we need the ability to deploy some sort of track and trace in order to deal with the next epidemic without it inviting this kind of authoritarian overreach, nonsense we've seen so much love. So let's, let's fix this. And if we can't fix it for this round, let's fix it for the next one.

**Heather** 45:25

Good. A study shows SARS two attacks Ace two and testes and reduces testosterone by 50%. recovered patients thoughts. Zack, you want to highlight that one? Because it's got a link in it?

**Bret** 45:39

I would say a

**Heather** 45:42

I haven't seen I feel like someone pointed this out to us before and we didn't pursue it. Yeah, so just haven't seen the research. A, we need to know it's a huge reduction. If that's true, what if it's a huge reduction? Huge.

**Bret** 45:55

We need to know what it means is Does this mean everybody who's had an asymptomatic case? I strongly doubt it. What it's going to mean is people have had a severe case, and is the result robust? I have my doubts about that, too. But we could find out that it is is the result robust. But you know, nobody's had this disease for very long. So does it clear up over a year, in which case, let's not worry about it. If it doesn't clear up, you know, over the course of time, then it raises questions. Obviously, testosterone is something you could supplement if you needed to. So anyway, I don't see it as the primary concern. And I'd like to know a lot more about it before saying anything definitive. But

**Heather** 46:38

you know, that number 50 reduces testosterone by 50% and recovered patients. strikes me as a red flag. It just seems so high. Yeah. But but we'll take a look. Y'all have an email to send papers of interest to? We both have websites that have emails on them. I think it's support at Brett Weinstein dotnet. Yeah, and Hello, farmer broke. Mine is at Heather hying.com. Maybe I'm not sure I'm sure about yours. Yep. Thoughts on link between positive blood types and death rate with a sample of 1500 those with positive blood type. Positive Oh, we're talking about rhesus factor then are up to 15% more likely to die from COVID-19. Interesting. We had seen the A B. o. Blood type paper and talked about it and one of the early livestreams. But I had not seen the rhesus factor one. So I don't have any particular. Yep, that's here.

**Bret** 47:37

So I would say this raises some questions for me, which may well be known to other people. But there's some question about why. So in mammals, red blood cells do not have a nucleus. The story that we tell about that is that the nucleus is removed so that there's more room for hemoglobin to carry oxygen. This raises all sorts of questions about why the virus is invading red blood cells to begin with, because absence nucleus is unable to do anything. My guess would be no, but I can't rule it out. I should have looked it up. But I can't rule it out without looking it up. Because it's possible that when the nucleus is removed, ribosomes are left behind in which case this particular virus could continue to operate in a red blood cell in which case this would be straightforward. If that was not the case, which I assume it is not the case. I don't think there are arriva zones left behind in the red blood cell. But I don't know, if there are no red if there are no ribosomes left behind in the red blood cells. Then there's a question about why these antigens on the surface of the red blood cells are playing a primary role. Are those antigens also being some seen somewhere else in the physiology? And so the red blood cells are a red herring in this case, or is there some meaning, you know, the reason that the Coronavirus looks, the way it does is that it has these receptors on its surface, which interact with the proteins on the surface of cells. And so, you know, getting into cells very frequently. And in this case, it is a matter of joining proteins on the surface of the cell and using them to, I think bind the membrane so it has a cell like membrane, the lipid membrane you've heard of and spill its contents into the cytoplasm of the cell. So there's a question about whether that's happening in red blood cells? If so, why does the virus want in if it doesn't have ribosomes with which to make more virus? And I don't know the answers to those questions, but that's the road I would go down.

**Heather** 49:35

Okay, yeah, so we're going to stop taking Super Chat questions. Zack, you just want to draw a line on the spreadsheet if you can, so that we know where to stop because we've got a lot more to get through here and let's so I now can't see what the next question is though. Let's see if I can find it on mine. Would you be interested in forming an alliance of professors and exile ape, academic stakeholders like us, we'll have more power to influence the academy as a group. Maybe?

**Bret** 50:09

Yeah, we're always open to these ideas, but we want to see something that has the potential to do the job. That's really crucial. Yep.

**Heather** 50:19

Hi, professors. Thank you for these streams. Brett last week, you said you were doubting the wet doubting the wet market origin story in favor of the virus virology lab? Can you discuss your reasons in more depth? before you answer, though, you're saying for virology lab accidental release rather than bio weapons? Just

**Bret** 50:41

gonna say that I saw an appalling question, I think out of the Pew Research Center then parroted by CNN, where some 30% of Americans believe the virus is architected in a lab. And I looked at this and I just thought, you know, if I had been asked this question, the answer that I would give was not available, because I don't believe that this virus was engineered. We don't have evidence that I believe points in that direction. But there is reason to think that it was being investigated in the lab, and that that may have been how it was released. So thank

**Heather** 51:16

you spelled it out the question the the question that you saw was a or b, do you think this virus came out of a lab or not?

**Bret** 51:25

Do you think it's natural, or it was engineered in the lab, just not a complete solution set? Right. So what I you know, and I am open to all kinds of evidence for any other hypothesis, but from what I've seen so far, I would say, I think it's a natural virus, I think it was in the lab, potentially for legitimate reasons could have been legitimate reasons. But that what happened is a mistake in the lab caused someone to be infected. And you know, that's a natural virus that is escaped through a lab. It's not a or b.

**Heather** 51:56

And why specifically, Are you doubting the wet market origin?

**Bret** 51:58

I'm doubting the wet market origin because I have yet to see the evidence for a clear pattern that the wet market was involved. And you

**Heather** 52:07

know, they weren't selling bats. The closest colony of horseshoe bats is a long ways away. Yep. There was something else you were were talking about last.

**Bret** 52:14

So again, I don't want to I don't want responsibility for the story. I don't know. I've never been to Wuhan. I don't know anything about their wet market, how it functions under normal circumstances. I don't know whether you can order bat soup in a restaurant and Wuhan. But what I have seen suggests that this is not common practice. In that part of the world. The bats in question,

**Heather** 52:35

what isn't eating that soup isn't common practice isn't common practice there.

**Bret** 52:40

There isn't. From what I understand, bats were not found for sale in the Wuhan market at the point that this was suspected.

**Heather** 52:48

The clade of bats, which are understood to be the source of the virus, the quote, the closest colony is at least 100 miles away farther,

**Bret** 52:58

it's farther away than that. And that could be wrong. Maybe there's a cave I don't know about. But the evidence I saw suggested that and on the other hand, I have seen what credibly appears to be a job advertisement to study bad coronaviruses at a lab that just happens to be in Wuhan. And so, you know, where am I? I'm not committed to any hypothesis yet, but I would say the one hypothesis continues to look weaker, the more I see and the other hypothesis look stronger. What doesn't look strong to me at all, is the idea that this is an engineered virus totally engineered at all engineer. Yeah,

**Heather** 53:33

or, nor do we see do I think of either of us seeing any compelling evidence that this was intentional release as weapon

**Bret** 53:40

doesn't make sense to me that you would release it close to the virology lab? Because it raises too many questions. So you know, everything I know, so far suggests accidental release.

**Heather** 53:52

And that's not to say that there weren't lab safety issues, right, perhaps, you know, more so in that lab than there should have been that they could have foreseen problems and all but this, this is always a risk when you are doing this kind of research in any lab, which are which exist, probably in every major city on the planet.

**Bret** 54:11

So I'm still very anti wet market. I mean, we effectively know that HIV came from human contact with a hunted chimpanzee is is that not enough of a cost for us to end the hunting of wild animals for the sale and wet markets? I think it's sufficient in and of itself, right?

**Heather** 54:30

How much of a role do you think climate change has to play in increasing the likelihood of more zoonotic diseases jumping from wild animals to humans?

**Bret** 54:39

I hate to say it, but I think probably in the end, reduces the likelihood because it reduces diversity. I think it's just going to reduce the number of creatures we're interacting with.

**Heather** 54:51

So I think in the end it obviously climate change will reduce diversity, but it may put species in contact with one another Sooner than they would have or you know, at all than they would have in the shorter term such that you end up with a shorter term spike in zoonotic jumping between host species with a longer term decline because there's just not as many species to jump from.

**Bret** 55:16

Yeah. And it will also create desperate people who will eat bush meat who wouldn't otherwise be driven to it. But I would say, you know, as somebody who has handled wild mammals regularly in graduate school, you know, I studied bats, I netted them, I took data, glued transmitters to them, let them go. I don't

**Heather** 55:38

think a good scientific reason you handled mouse lemurs. Yeah,

**Bret** 55:42

I had a good scientific reason, just a little hard to defend. But in any case, basic precautions, in general have prevented this kind of transmission. As far as we know, there's always the risk that something is going to jump. I think we need to think about how to deal with people who do what I did in graduate school studying these animals, you know, how do we make sure that, you know, not releasing something into into the human population is high on their list of concerns. But by and large, if something had a really easy time jumping to humans, it's already happened. And to the extent that things don't jump so easily to humans, then the point is we need to prevent intimate contact of the sort that butchering and cutting your finger or whatever it is, that would cause that. sets in motion. So anyway, I don't think it's a straightforward anthropogenic climate change increases or decreases, I think it's going to be a bit of both.

**Heather** 56:49

Hello again, do you think a rethrow poten. EPO would help with hypoxia and treating COVID-19 with a malaria drugs such as hydro hydroxychloroquine? Thanks for all the insightful ideas to digest while in isolation. I don't know enough enough about EPO to address this.

**Bret** 57:08

I can't say All I can say is what I said on the beginning of the livestream, which is that I've seen two papers this week that cast doubt on the idea of hydroxychloroquine being a useful treatment, at least for people who are already very sick that I believe was true in both both papers.

**Heather** 57:26

amazing work, folks. Keep it up. Thank you. Do you think the fact? Where are we? There we go? No, don't move in it for a second. No problem. Do you think the fact that China has controlled this virus with relative ease points the possibility that this was a bio weapon intentionally released, the Chinese government has certainly sacrificed more citizens before thanks. I don't think that we can believe that China has controlled this virus with relative ease. I don't think there's any reason to assume that the data coming out of China are real or accurate. That said, it's true that the Chinese government has demonstrated willingness to sacrifice citizens in ways that would be anathema to people of other nation states. But I just I don't think that there's any reason to trust the numbers coming out of China at this point. Agreed. Thank you for the intellectual informative and engaging broadcast. You're welcome. What's your EDC, your everyday carry your wallet, keys, et cetera?

**Bret** 58:29

Well, even though we're in lockdown, I still put on pants every day, every day reasons I can't quite articulate.

**Heather** 58:36

And you're not going Commando. You've got to know. Oh, yeah,

**Bret** 58:38

the full thing. Yeah, I everyday carry I mean,

**Heather** 58:42

Well, mine is actually less like when when I mean, if you're staying at home, you don't put on wallet and keys and such. But when I do have to go out, I now restart, I stripped down to a driver's license and a card and a, an insurance card and a single key and my phone so that I don't have to be playing with a lot of objects.

**Bret** 59:04

I now know what I was supposed to answer to this question.

**Heather** 59:06

Okay, can we start again, what's your EDC, everyday, carry your wallet, keys etc.

**Bret** 59:11

When I go out among the things that I do is I take my phone out of the case that I have it in at home, if I drop my phone, the case protects it from breaking if I go out, I take it out of the case so that I can wash it when I get home or sanitize it while I'm out if I think it's been compromised, because I do find myself interacting with it. But it's an obvious source of contagion if, you know I touch an object at a store, I touched my phone. I want to be able to clean it and so this puts the phone at risk but I think it's worth it.

**Heather** 59:43

And we've got sanitizer in the car and in the truck so that we have we have a way to clean stuff when we get back into

**Bret** 59:49

the vehicle. Yes, and modern phones can be washed under a faucet. Yeah,

**Heather** 59:52

but I mean with regard to the credit cards, keys, it's totally we now know an economic shutdown and curfews are not proportional to the danger of this virus whose head should roll first?

**Bret** 1:00:03

Wow. I don't think we know any such thing. And the problem is to the extent that we've been effective at addressing this with lockdowns, we don't know what the world would have looked like otherwise. But if you missed our discussion of what happened in Guayaquil, Ecuador, I suggest you look into it because this can get pretty frightening pretty quick. And you know, even with lockdown, we've got mass graves being dug in potter's field in New York. Now, that's for unclaimed bodies. But nonetheless, we have a body crisis in New York. that's causing extraordinary measures, we saw an absolute catastrophe unfold in Guayaquil, Ecuador. I think we have enough evidence that very serious things occurred and that we hovered at the edge of something much worse that I am not prepared to say we overreacted at all. Whenever,

**Heather** 1:01:01

whenever public health measures work. It's easy for the people who didn't want them in place to say they were unnecessary. Yep. And this is this is forever a permanent problem of defending measures that were functional

**Bret** 1:01:14

chestertons locked down.

**Heather** 1:01:17

All right, good, right. Good. The lack of positive tobacco research, because by no funding after the MSA stopped Big Tobacco from funding research. Mature were the MSA as to what the MSA is

**Bret** 1:01:28

no, can't figure it out.

**Heather** 1:01:35

So, you know, the idea of Big Tobacco funding research that's looking into whether or not tobacco is harmful, might have decreased bad research, for sure. But I think in fact, there was there was a clear, perverse incentive with having big tobacco funding research that is trying to discover whether or not tobacco is harmful or not. And when it's NIH or NSF, there are other issues with having these big governmental organizations basically being the gatekeepers for what questions you're allowed to ask. But the researchers in that case, at least have no perverse incentive to find one way or the other. So there shouldn't be you shouldn't find it being biased in the other direction, just because the people with a clear bias are no longer allowed to fund research. Anything else? Nope. Okay. libertarianism isn't insane. T bra says it's a different form of societal optimization, outside of its proper context, any optimization appears insane.

**Bret** 1:02:42

It's not a societal optimization. It's essentially the abdication of the attempt to reach societal optimization, or it is a misunderstanding of the game theory that would allow you to imagine that society full of people who are individually freed to do as they wish, will optimize for the whole, which it won't. Now, that said, I take a very hard line with libertarians because I think they have something dead wrong, but I have also come to understand they have something dead, right. And it would be very valuable if we could tease those two apart, so we could recover the part of libertarianism that makes sense, which is to say, Liberty is a special virtue, and one can reasonably seek to maximize it. If one understands its true nature. Rather than understanding you will maximize realized Liberty by maximizing formal liberty, maximizing formal Liberty results in needless failures. And so let's please level up and tease these two things apart so that we can stop making the same errors over and over again,

**Heather** 1:03:53

very good. research question is COVID-19, a plan implemented in Vantage global pandemic by orgs, using PR tactics to gain compliance regarding immunization, and every person digital tagging a world health order?

**Bret** 1:04:09

I think that one Yeah, go for it. I don't believe we have any evidence to suggest that it is. However, the instinct of those authoritarian entities to take advantage of a crisis to advance their ball is essentially certain we're already seeing it at a legislative level. And we have to be very concerned. And I have to say, this is one of many reasons that I'm very unhappy with the Democratic Party's choice to rally around Joe Biden because, as I understand it, Joe Biden was actually the author of a prototype bill for the Patriot Act, which emerged in the crisis of 911. So anyway, yes, we have a problem, but that doesn't mean that the crisis was orchestrated in order to advance These things much more likely that this is just opportunistic overreach.

**Heather** 1:05:04

There it is opportunistic overreach. mosside tribal wisdom states although washing your hands and cow urine won't kill viruses it will encourage you to not touch and well does one of the good there are solitary sawflies bees and wasps so are there solitary ants and if not why not there are well I guess no yes or no there there there are ants like the ball and that forge solitarily but they go back to homes with lots of big scary arms lots of scary ball and in fact, permit me Oh, you don't have bullet ants in the studio.

**Bret** 1:05:44

solitary Oh my goodness. Okay. It is Lucite ice cube and a Lucite

**Bret** 1:05:49

ice cube that I made back when I was a graduate student experimenting with Lucite. So anyway, this is an ant, you can't really see it. It has wings. It's a reproductive ant. And it is of a species that we've encountered regular upon. This is para poner. So this is a giant air flying and it forages solitarily. But they do live in colonies. So it's not truly solitary. I think the answer to your question is

**Heather** 1:06:20

I don't I think maybe there aren't any of them that are entirely solitary. Yeah. Is that right? I

**Bret** 1:06:26

think that is I think that's right, but we're gonna find out because somebody will correct us please, please.

**Bret** 1:06:31

Correct? Yeah,

**Heather** 1:06:33

and if not, why not? Like what? What makes ads different I'm trying to remember with regard to the phylogeny of the hymenoptera are ants, basil. I mean bees and wasps certainly are sister but I I just I don't remember. I don't remember how it falls out and where the sawflies are, because I think they're hymenoptera ins but they're like maybe they're the most basil. I don't know. I don't know how it falls

**Bret** 1:06:55

out. Yeah, I don't either. I seem to recall wasps for basil, but maybe that's wrong. It feels. I don't know. JACK we need That's right.

**Heather** 1:07:04

We we know when that guy? Yeah, he's probably not washing. Thanks to the three of you. These are so great. Could you do my job? For me? This is the steel band podcast. Could you do my job for me and steel, man, social media, our ability to coordinate solutions disseminate critical info expose for expertise? It's not without faults, but

**Bret** 1:07:23

didn't you just do it? Yeah, kinda social media? Well, I mean, look, it's the same, it's the same thing over and over again. It's not the box. It's the business model. That's what I used to say about television. And lo and behold, things like HBO proved that. That's not to say HBO was flawless. But it's to say that when you liberate television from a model where it has to keep you in your seat between commercial breaks, it produces a much higher quality good. Social media absolutely sucks. Why? Because of the nature of the corporations that deploy it in the market and their obligations in general to their shareholders, but to their owners. In any case, that can't possibly go well. Same thing goes for your cell phone, these things are all potentially fantastic technologies that are hamstrung by the way they are plugged into the market. And unfortunately, because they belong to these Goliath like corporate entities, we can't replace them with something that would do the job that's positive without being predatory. And that's really the predicament we're stuck in. What we need is the phone and the social media platform that actually has our interests at heart. And we just can't get there from here.

**Heather** 1:08:46

have really enjoyed these streams. Thanks. I'm curious about the skull on the desk.

**Bret** 1:08:52

Yeah, the skull on the desk is a and now you've done it. Okay. That is a seal skull that I acquired from a seal,

**Heather** 1:09:05

who was no longer who was no longer using it.

**Bret** 1:09:08

He was no longer using it, especially as I disassociated it from him, and that made it impossible to use it but he had actually died of presumably natural causes and washed up on a beach in Oregon, where I violated the law by removing his head with a knife. That was way too short for the job. I did this in the headlight of a pickup truck driven by a student friend of mine who had found the animal and it caused quite a kerfuffle on the field trip that I was on where many people had a moral objection to my having recovered the head of this animal for the purpose of generating this beautiful skull. Even

**Heather** 1:09:45

at least some people had a legal objection understanding that you would in fact broken the law.

**Bret** 1:09:51

Yeah, I mean, I guess but the discussion was an interesting one because lots of people found what I did distasteful, even though they had a hard time putting their finger on exactly what the problem was. Now it turns out that what I had engaged in was actually kind of dangerous behavior because there are a lot of things you can get from a sea mammal like this one. And diseases. Yeah. pathogens from animals. Oh, yeah, bad ones. So anyway, I got lucky, I got this fancy skull here. It has served me well, I've demonstrated to many classes how these, the skull of a seal looks just like the skull of a bear except for the teeth. And there's a reason for that, which is that as far as we understand it, seals are actually bears. And if that sounds like a preposterous statement, then allow me to defend it to you at some point, because it's literally true. somewhere around here.

**Heather** 1:10:42

We have a bear skull from Alaska downstairs, we can put them next to each other. Yeah. Please explain your objection to the lesser of two evils calculation. How is Biden not preferable to Trump?

**Bret** 1:10:56

Well, yeah, we're gonna have to go deeper into this later. But let me just say this, my objection to the lesser evil paradigm is twofold. One, it doesn't hold up. If you think about elections as an iterated phenomenon. In other words, it requires us to think about elections individually, and then say, Well, okay, they may both suck, but this one sucks less, obviously, you're going to vote for him, right? On the other hand, if the point is actually no, my objective is that humans are still on this planet 500 years from now. And I think both of these guys leave the basic problem intact, and therefore I'm looking for whatever solution gets us through that bottleneck? It's a very different question. So that's, that's that's the primary objection. The secondary objection is that things like the Democratic National Committee, have used the lesser evil paradigm in order to keep us trapped and not cater to the interests of the public. So having abandoned the interests of working people decades ago, the way they keep us from fleeing the party in favor of some alternative has to do with the fact that all they have to do is deliver something that at the particular cocktail parties we go to is treated as a lesser evil, and we will be hamstrung and we will just simply roll our eyes and vote for their person one more time. And at some point, when somebody uses that mechanism to control you, you have to not do what they're expecting.

**Heather** 1:12:31

So lots more to say, but another time. Which organisms follow us in a conscious scale. Not sure what follow us.

**Bret** 1:12:38

Oh, you Oh, they want? Who is next most conscious? This is a easy one. I think it's dogs. That is domestic dogs. And not Incidentally, it is a result of their coevolution with us. So that's I realize a paradoxical answer. Maybe

**Heather** 1:12:57

we should leave it leave that answer there for further split exploration number another time, but also say those organisms that are long lived, social with generational overlap and have long childhoods tend to be more conscious than not so you can fill in the gaps. It's the other great apes, it's many monkeys, it's dolphins, elephants and elephants and wolves and parrots and crows and many others, but

**Bret** 1:13:25

not all toothed whales, not just dolphins, but yeah, those other critters are high on the list too.

**Heather** 1:13:31

Is the dogma of original sin. An example of your factually false metaphorically true. And could utopianism be a pitfall that it is attempting to avoid?

**Bret** 1:13:42

Trying to parse that one? Obviously, Original Sin would be a literally false, metaphorically, true idea how it functions? I don't know. We could make several arguments. Could you tokenism be a pip I think utopianism is just a it's an overall it's a response to an overly reductive understanding of improvement. And the fact is utopians create disasters because they see one thing that they want to fix, and they focus on it without understanding trade offs. It's as simple as that. So

**Heather** 1:14:25

it assumes a static world. Yep. Thoughts whether male homosexual preferences caused by pathogen that's too common to be mutational pressure identical twins are usually discordance. 75% of the time, it's all on fitness not found in hunter gatherers.

**Bret** 1:14:39

Nope, it's an adaptation. Yep,

**Heather** 1:14:41

just you have it there.

**Bret** 1:14:42

Leave it there. We I recognize you're probably screaming at your screen. Now. It can't be an adaptation because how would it be passed on? We'll get there.

**Heather** 1:14:53

Is it crazy to be fearful of the idea of forced vaccination? My girlfriend suggests it's crazy, but I think it's reasonable to be fearful of the idea of forced vaccination. This is This is hard.

**Bret** 1:15:04

It's not crazy to be fearful, yeah. Is there a circumstance in which it would be necessary to force vaccination, and you would have to overcome your fears, I think there are rational places where that could well emerged. But

**Heather** 1:15:19

figuring out where that line is, is really, really hard. Yes, and

**Bret** 1:15:23

I think we've done a terrible job, our safety system is so broken, that we, you know, to force people to vaccinate would be reasonable if the vaccines were so safe that for the benefit to the herd of producing the immunity, it was necessary to require it. But that puts the burden on the system to make the things very, very, very safe. And the problem is the economic model doesn't support it. So anyway, as I have said elsewhere, we have vaccinated our children. We are strong believers in the importance of vaccines, but we are, well, I'll speak for me, I am livid that we have been as cavalier about drug safety and medical procedure safety as we have been. And if you want me to become an enthusiastic advocate for things like mandatory vaccination, then you got to make these things safe.

**Heather** 1:16:28

Good. Can you talk about viral exam, thumbs and COVID-19. I had chickenpox as a child, but I recently was diagnosed with it again, mid March after traveling to Western Asia, more likely to be COVID or chickenpox. Or I wouldn't think those two things would look like the same at all.

**Bret** 1:16:46

Yeah, I don't know chickenpox is fascinating in trade is a virus that goes latent inside of people who've been exposed. So there are many possibilities possible you encountered a strain that was far enough from the one that you had had before and so we're capable of being infected. Also, you know, possible it was COVID. Who knows?

**Heather** 1:17:11

Yep. Okay, three more questions. I'm gonna go bottom to top here. Okay. Would you like to discuss decentralized legislature's on your show? The null hypothesis of politics, calm,

**Bret** 1:17:25

decentralized legislators, you know, I've encountered other potential solutions to what that must be a response to, but I decentralized legislature is not it, I can't even quite tell what it would be. I mean, in some sense, we have a decentralized legislature by virtue of the fact that it is sourcing people from all over the country and compiling them in a. So he's given

**Heather** 1:17:51

us a a link to learn more, maybe, from my research, most vaccines are manufactured using animal tissues and may therefore introduce animal based virus to humans. If vaccines science controls and quality are as safe as possible, why should manufacturers receive immunity?

**Bret** 1:18:12

Well, this was a can of worms to be sure.

**Heather** 1:18:16

immunity from

**Bret** 1:18:18

being sued. Yeah, okay. Here's the reason. I think we have to steal man it before we attack it. The reason is, because if we need vaccines produced, then we cannot leave those that we are asking to produce them in the frightening position of being sued over things they could not reasonably have foreseen. And the very fact that we say, well, you're making it with animal tissue, therefore, something could jump that's on, you might drive everybody out of the race to produce these things. So there's an argument for it. But what I would say is, it isn't clear to me at all. And I rather suspect otherwise, that the production of these things for profit is a bad idea. And so there's a question about whether or not you want to generate a public effort to create the vaccines that would not have the same fears or incentives, and then could render them as safe as possible, which is really, I think, the ideal solution, which is where all the libertarians who follow us will now be apoplectic because I've advocated government doing something that we don't want government and aptitude, compromising. But the point is, what we need is higher quality government. And I do believe that's possible.

**Heather** 1:19:40

Final question, can you talk more about rent seeking?

**Bret** 1:19:44

Sure. Rent seeking effectively is the utilization of a bottleneck to recover profits that are the result of non productive behavior in the market and my contention is that we tend to imagine based on what we've all been taught from classical economics, that rent seeking exists, but that it is a small perturbation on a system that by and large functions as the textbook says. And the more I think about it, and the more I read, the more I discover that rent seeking may, in fact, be an ever larger fraction of the economy. And that it would become so as a result of the what we would call the adaptive landscape of opportunities that the market provides. In other words, this is not the result of evil people. You know, it's not that you're born a rent seeker, but everybody is looking for opportunities to profit in the market. And the question is, do they have good opportunities that don't involve rent seeking, and if they didn't have good opportunities, but they did have rent seeking opportunities? Wouldn't you expect them to discover that, and anybody who opted not to would be leaving the door open to anybody who would so we would expect to see the growth of rent seeking operations anywhere and everywhere it's possible. So in any case, rent seeking is a huge problem. It is a doubly huge problem when you have governmental corruption built into your structures as we do, because those who make their profit through rent seeking and that will, it's not that these people are inherently rent seekers, it may be that you've got people who have been very productive and 20% of their fortune as the result of productivity and 80% of their fortune as a result of rent seeking, they probably don't even know the difference. So the problem is, when rent seeking produces profits and profits, produces political power through some sort of corruption, very often legal, but immoral, then what you get is a system that becomes built around protecting the interests of rent seekers, and that's where we find ourselves. So let's fix it.

**Heather** 1:22:00

That's it from within that time. Okay, we have one more question then. All right. For Bret, are we experiencing some sort of social collapse in the West? It may be a bias on my part, but we seem to be moving inexorably towards some climax socially, geopolitically. And economically.

**Bret** 1:22:18

I would say we are experiencing a gentle Apocalypse, which I'm calling it the rolling apocalypse rolling apocalypse. All right. It's a mild apocalypse. Yes, we are. You know, if you read our upcoming book, you will find us discussing the meaning of close calls. What this is, is actually an almost ideal close call for us to understand almost everything that's wrong with our system. So that when this happens again next time, we can't say this caught us off guard. So my hope here is that this is mild enough that we get through it without a major depression without massive quantities of deaths, all of those things, but I certainly hope that it leaves an indelible mark and that it puts an end to certain childish nonsensical notions about how things have never been better, because yeah, things have never been better at one level, and they've never been more dangerous at the very same time. So here we are.

**Heather** 1:23:28

Great place to end. All right, yeah. Well,

**Bret** 1:23:31

it's been great. We will see you next time. Which, if everything goes according to plan will be Friday, Friday. All right. Be will be well, stay safe. And we'll see you Friday.