Your Questions Answered - Bret and Heather 93rd DarkHorse Po...

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**SPEAKERS**

Bret, Heather

**Bret** 00:06

Hey folks, welcome back to the Dark Horse podcast live stream 93rd Q and A. It is time. Do we have the queues?

**Heather** 00:16

We do? We do. So we're going to start there a few COVID questions. We're gonna start with some COVID questions and then move on to a bunch of other stuff. Which is lunch. First question the amplification of Merricks disease due to leaky vaccines. This was in chickens, has me concerned about evolution of COVID with lockdowns in modern society, the selective pressure, the selective pressures on a disease are to have symptoms mild enough that you can go into work or school that's printed around. It may even select for asymptomatic spreads. So you don't have to you don't take sick days with lockdowns, most of the spread happens in hospitals where the most virulent strains go to spread and don't require mobility of the host. Should we worry?

**Bret** 00:58

That is an extremely insightful question. The idea being if I can put in a slightly different context, you've got pathogens that depend on the comparative well being of their hosts in order that the host gets in contact with other potential hosts and spreads the disease. Right. And then you have a few pathogens in which incapacitating the host actually facilitates transmission, things like malaria and yellow fever, where being incapacitated leaves you more likely to be bitten by a mosquito. Right, the

**Heather** 01:32

distinction there being that there vectored rises.

**Bret** 01:35

So the point here is, is the hospital playing the role of the mosquito where the idea is making you vulnerable to the hospital actually has a an upside from the point of view of the pathogen? It's a fascinating question. I do think this is exactly the sort of thing we need to worry about. And that the net the thing that one hears very frequently, which has a certain substantial truth in it, is that pathogens tend to evolve to be more benign over time, more transmissible and more benign. But that is not that's a rule of thumb. And the real question is, what is the mode of transmission? And to the extent that we are affecting it? Are we capable of driving them in the other direction?

**Heather** 02:15

Well, frankly, as you were saying, that I'm reminded of, you know, the rule of thumb, Island dwarfism. Right? While on on islands, things get smaller, right? Well, no, they get smaller, if they started out big, and they get bigger, they started out small islands, things tend to change in response to selective pressures that are different on the island compared to the mainland for which the organism came. And so you've got some rule of thumb that in many people's heads to think about such things becomes like the rule, oh, you know, what is going on in this weird case where things got bigger instead? It's like, well, the rule you had was just a rule of thumb. And you need to be doing the first principle stuff. And so I don't know exactly exactly how that maps on here, but it's something similar where you know, in general, in general, a disease that has a specific, in particular that has very specific host will tend to become less virulent and more transmissible over time, but not necessarily.

**Bret** 03:14

Yep. And I am reminded of the horrifying story that we just learned about the deer up in the San Juan Islands on San Juan Island and Orcas Island. Apparently, both populations were wiped out something like 90% of the deer were lost in a very short period of time as a result of a virus.

**Heather** 03:37

So we just we talked to a guy like you know, a park guide, I don't know that he said that number for orcas. He said the virus, the virus got to the deer on orcas, but he was specifically talking he gave that 90% number for example,

**Bret** 03:48

I've since I've since looked it up. But in any case,

**Heather** 03:53

it 90% of virus comes over from the mainland. So something that circulates

**Bret** 03:57

among deer on in mainland populations got on to the islands where it was not initially and wiped out in a matter of months 90% of the deer. So an extremely, a couple of months ago, extremely, very little pathogen. And the question is to what extent does the island isolation of those populations leave the more vulnerable? What exactly happened? And what will be the fate of this virus going forward to the virus burn itself out? Was the 10% of the deer that were left standing immune to the virus, in which case the virus might well be again extinct on these islands? Are they actually harboring the virus and they're tolerant to it? In which case what will their descendants be like? There are a lot of interesting questions, but I would say beware rules of thumb, because they may well mislead you.

**Heather** 04:49

Indeed. Indeed. Yeah. Great question. Would you both be willing to share what you currently do to protect yourselves from COVID behavioral Changes ivermectin doses, etc.

**Bret** 05:04

You know, we're using the advertised ivermectin dose. I will say that. The the original one, the original one? Yeah, yeah, I'm concerned about doubling it as is the current recommendation, I would say we're both being very cautious about contacting. contacting people we don't know who might have COVID.

**Heather** 05:28

And at the moment, it's still summer. So it's pretty easy. We're outside. We continue to eat in restaurants, but we're doing so outside as much as possible. And, and, you know, the distancing, you know, frankly, if, if people are actually not protected from the virus, the idea that walking into a restaurant with a mascot and then sitting down and having all of the people eating there with their masks off is somehow is so how safe is absurd, right? So, you know, one one hopes that people have in those situations, immunity from one of several, several, several means that we've talked about natural immunity from having had the disease, natural immunity from having had vaccination vaccination or other prophylaxis in the form of either repurposed drugs like ivermectin, or other other things, like a combination of D and C, and zinc. and such. Yeah, I

**Bret** 06:31

would say, D being the obvious cheapest intervention that seems to be highly effective. Apparently, there's something the believe the statistic is correct, that people with a D deficiency have a much higher as at 40% increased likelihood of contracting COVID in a given situation, as far as we know. So a very cheap intervention. But the other thing I would say is, there are two prongs here, you've got How do you prevent yourself from contracting? COVID? And were you to catch COVID? What would you do and I would say, Be prepared to treat it aggressively that one of the many ways in which our public health authorities are failing us is that we do have a series of drugs that appear to be very effective at reducing the severity of the disease. And we are pretending that we don't have any, and so be prepared to treat it aggressively and aggressively means immediately.

**Heather** 07:35

Yeah, it does. And I mean, I guess the other stuff, which we we tend to do a good job with, in life in general, but we are being even more cognizant of, of our diet and activity. Yep. And, you know, we, we eat whole foods and we eat, you know, we shop farmer's markets and the edges of grocery stores and don't eat much processed food and all of that is is true anyway, but you know, ferment and whole organisms in as much as possible and, and really, really getting your body moving on a regular basis, like not not just walks which are fabulous, and you know, taking a lot of walks is very good for you, but working up a sweat and you know, getting set getting moving such that you really, you know, you feel it during and afterwards. Is, is protective against all manner of things, presumably including certain viruses. Okay, next one, sort of, sort of, in the same theme, like I said, there's five questions here. COVID II, this is number three roleplay scenario, be infected with a Delta variant with no access to medications, or get one of the vaccines, which would you pick and why

**Bret** 08:56

is a very hard roleplay because what we don't know, is, you know, be infected with the Delta variant does that, you know, how many asymptomatic cases are there in which you walk away with durable immunity? If that number is very, very high? Right, then, in some sense, because the vaccine effectiveness is dropping with respect to the evolution of variants. You know, there's an argument to me I think, we just don't know enough

**Heather** 09:28

so yeah, well, it's also there's like, it's a point in time, right? So like, for this moment, the answer might be different. But if given that you have to live in your own body for the next three years, like Okay, are you are you saying that you can get back and then you totally protected forever after which we know you aren't right, which we know

**Bret** 09:44

we aren't so. Yeah, I mean, and the other thing is that the scenario, it's very hard to put oneself in the mindset of you don't have access to drugs having been having been infected. Because those drugs exist, and they definitely affect the calculation. So I mean, I guess,

**Heather** 10:07

yeah, I mean, at some level, we're really lucky, we don't live in that world. And this is something we were beginning to say a couple, couple, three, maybe four months ago, which was a number of things that we're seeing in the data that we, as members of the public are allowed access to, is concerning. And how, how grateful our way that there do seem to be a number of, of drugs, including, you know, common vitamins that are available on every on every shelf that sells such things that are understood to be effective in both prophylaxis and treatment. And, you know, yes, ivermectin is also on that list. But with regard to common things like C and D, and zinc, it's, you know, it's just a, it's just a no brainer. And so, you know, it's it is impossible to imagine the world in which those things aren't available.

**Bret** 11:05

I think it is also the case people will hear us having this discussion and think you've lost your mind why, you know, most people get the vaccine and don't have a negative reaction. And it does it is somewhat effective at preventing the disease or contraction of the disease. The problem is that's the reason it's not a simple question is we can't take something like a D, off the list of possible consequences.

**Heather** 11:34

Dependent enhancement, right. So

**Bret** 11:36

if ad e happens, then the point is the vaccines have a cost that we cannot yet measure. And that cost comes in the form of enhancing the hazard of COVID-19. So yeah, it's a very difficult puzzle. And I think the thing that is driving me crazy, and I think you crazy is, it does not appear to be any commitment to a holistic analyses of, you know, the things we know, there's no commitment to analyzing the adverse events and figuring out what fraction of them actually are related to the vaccines. So we can't calibrate the hazard, we can't calibrate the degree to which those things might be mitigated if we treated the post vaccine syndromes, we can't calibrate the true hazard of the disease because we're not tracking it properly. And anyway, it makes it a very hard puzzle. I think, you know, if I had to take the scenario at face value, I guess I would take the vaccine rather than contract the Delta variant, but it doesn't mean that that's, you know, ex ante. That's the right choice. But if ad turns out to be an important component here, then it could be exactly the wrong choice.

**Heather** 12:55

Yeah. I agree. I agree and given given given some new new research, that's, that seems to be out. But for me, the data stream is more polluted by the day. It's less trustworthy by the day. And so it's very hard to know what is actually true. But we continue to say, I continue to believe and I believe that you do as well, that the adenovirus vector vaccines, like j&j. have fewer novel elements associated with them, then the mRNA vaccines. And given that there is for instance, new research out that is finding promise in some new lipid nanoparticle chemistry, I think it was that has fewer of the costs of what are currently in the mRNA vaccines. And it's, you're allowed to talk about this if what you're doing is trying to figure out a new kind of vaccine to create, but you're not allowed to talk about this. If that's not the business you're in. If, if this was the situation, I think I would, I would prefer the adenovirus vector. Yeah, vaccines, I

**Bret** 14:20

think, actually, we missed one of the advantages of the adenovirus vaccine, which is that because it's a single dose, one doesn't run the risk that amping up the immune system the first time then causes an increased likelihood of adverse reaction on the second encounter. Yeah,

**Heather** 14:40

that's true. Do you I feel like maybe we've done this one before, but do you have a take on COVID and spike protein in the vaccine affecting cellular senescence and telomere shortening? What could be done to prevent that?

**Bret** 14:55

Yeah, we've we've talked about this which is anything that you is destructive of cells increases the rate of senescence, whether it's a an appreciable amount is unclear. This is presumably a feature of more standard vaccines to the extent that if you have something that's like an attenuated virus based vaccine, it infects cells, presumably those cells are then destroyed by the immune system. So all of these things will increase the rate of senescence and therefore telomere loss. The question is, is it appreciable? Yeah, certainly the disease itself does such damage to the body that there will be significant losses in terms of repair capacity going forward. Yeah, yeah, for sure.

**Heather** 15:43

Okay, thank you for answering my question recently about ivermectin is prophylaxis. I shared this info with my doctor, including multiple studies as well as your substack and driving saris Coby to extinction. And his response was Thanks for the info still not convincing enough to prescribe ivermectin Sorry about that. Do you have thoughts on this?

**Bret** 16:01

Yeah. I don't understand it. Yeah. Because, you know, in effect, there's clearly a propaganda campaign designed to make ivermectin seem more dangerous than it is. And in the absence of that danger, the obvious thing to do is to prescribe it in a case where, you know, if you've just sent somebody home to second place, why wouldn't you prescribe it? And why wouldn't you prescribe it to the people that they are likely to give the virus to live in their house? Right. So at some level much hinges on the idea of dangers that have been amplified specifically to justify a conclusion, which is it's the evidence isn't good enough to prescribe it? And the answer is, if the cost of prescribing It is very, very low, the evidence doesn't have to be especially strong to justify it. And you know, and the evidence is pretty good, right? So what I would say is, you know, a sophist can turn the Hippocratic oath on its head. And the idea is do nothing because some remote possibility of harm exists rather than do that, which makes harm. least likely, right. Yeah, that's good. And I think that's where we are. Yeah, definitely.

**Heather** 17:16

Yeah. Okay, one more COVID question came in, and then we'll switch gears here. I heard that both sides Coby one, and MERS appear to have gone extinct after two years without homosapiens intervention. Is there a plausible two year self terminating cycle for SARS? Coby? I've never heard this

**Bret** 17:34

know that it I think this is our best understanding. I don't think so. I think

**Heather** 17:42

certainly all that before, what is our best understanding, but they went extinct? Two years, like, like, the thing that I've never heard is like there's too late this chart right here.

**Bret** 17:52

There's anything magic about that. Yeah, that strikes me

**Heather** 17:55

as very unlikely.

**Bret** 17:58

I don't think there's anything plausible to do here. But I will say we keep doing the dumb thing, right? The dumb thing. Anytime you have a wave that is decreasing, that you've crested, and you're now on the downslope or not is below one, what we do is we then relax and start behaving more normally, which then causes the next wave. And really, the point is, if you can keep are not below one, you're on the path to the extinction of the virus. But we've blown this so many times that it is going to be a much harder job to deal with it. And

**Heather** 18:34

you know, well, I mean, with each with each failure, it becomes less and less possible that you can you can do it because because people are done. Well, people are just done. People are not just exhausted and tired of this, but they're, you know, they're literally going broke. And they're watching their children fall apart in front of them. And you know, just the sum number of people who take the disease very seriously and are have been doing everything they can to do what the health officials are telling them to do. Or at the point of saying To hell with it. I'm just I'm done. You know that that is just a human response. And I don't I at this point, I don't see a way out of that spiral.

**Bret** 19:16

No, but I do think it is very important to point out that, you know, people continue to blame us for stuff. This is something we were very clear about early on that the point was, it's not pro lockdown, or anti lock down. What we probably needed was extremely intensive short term measures, right basically prevent all but absolutely essential interaction for something like six weeks, then it would burn it This was before we understood that there were viable treatments and prophylactics before the vaccines. And the idea was, it's very difficult to prevent it from spreading within a within a household. So it needs time to burn out. Within those households in order to get to a place where we could get are not permanently below one, but in any case, we we have now blown it. And you're right now the idea of getting anybody to be enthusiastic about draconian measures, especially measures that go beyond anything that we've seen yet is it's implausible. But again, that's the result of very lackluster public health officials that have deployed a policy that was, at best, so utterly inept that it couldn't possibly have worked.

**Heather** 20:33

And there was an obvious Public Enemy, and it was the virus and instead, you know, first, at this point, it's the unvaccinated and,

**Bret** 20:43

you know, there's the official line is that it's the unvaccinated? No,

**Heather** 20:46

that's the Public Enemy. So that is what is what is being created as the Public Enemies. The virus should have been the Public Enemy that was created by the public health campaign. And there was a series of you know, was it Trump? Was it Trump supporters? Was it you know, people who aren't even I can't even remember all the stages we went through, but we sort of landed on this, this really insane and divisive and not in any way helpful. tribalism in which it's even less likely, that that people who think that they have been virtuous and done everything that is necessary, would would concede to any further restrictions, given that they've been told that they're in the right, and they've done everything they need to do, yes. Well, maybe by a public health authority that clearly doesn't know what it's doing, or unfortunately, does, in which case, we don't know what it's actually trying to accomplish,

**Bret** 21:46

because so much rides on this. I'm going to clarify what might not otherwise require clarification. Yeah, those people may morally be in the right. They've done what they were told. And they did it in large measure for civilizations benefit, whether what they were told makes any sense is a different question and what role those who have been vaccinated are playing in the ongoing pandemic is not the one that they're being led to understand. So this idea that it is the unvaccinated that are the source of the variants that escaped the immunity induced by the vaccines is nonsense. It's evolutionary nonsense. The fact is, it's selection that does that and the selection that beat the vaccine is didn't come from the unvaccinated happened in the vaccinated So in any case, yes, the unvaccinated are being demonized for some social political purpose, even though logically This makes no sense. And that's where we are.

**Heather** 22:41

Good. I mean, not literally, bad, bad. But I don't blame you.

**Bret** 22:49

Awesome.

**Heather** 22:50

Yeah. Okay, total Change of topic here. Next question. What evolutionary function does emotional sensitivity play? This being the predisposition predisposition that leads to murder? and see that coming? Okay. Let me read this. Now that I know where we're going here. What evolutionary function does emotional sensitivity play? This being the predisposition that leads to borderline personality disorder, when childhood trauma occurs? involves feeling that all emotions off the scale compared to other people, much greater empathy, etc? And how is it a disadvantage in today's society as compared to psychopathy, which seems to be an asset? Where there's a lot in this?

**Bret** 23:31

Yeah, including a lot of assumptions.

**Heather** 23:32

Yeah, I'm not I'm not sure. I'm not sure how many of these assumptions are warranted. You know, emotional sensitivity is to some degree, what allows us to have theory of mind, which is utterly necessary to being human. It's not it's not just emotional sensitivity. It's like mental sensitivity as well as psychological sensitivity. It's clearly

**Bret** 23:54

an optimality problem. Yeah. What is the optimal level of sensitivity to other people's emotions and,

**Heather** 24:01

and then when there's something in here that's actually sort of describing a continuum? And the assumption is like psychopathy, psychopathy is at one end of an emotional sensitivity continuum and borderline is at the other and I don't I just don't know. You know, yes, in combination with trauma, etc. But I don't I don't feel like I feel like there's a lot of places that being highly emotionally attuned can lead that has nothing to do with with borderline at all.

**Bret** 24:29

Yeah, yeah. Unfortunately, I feel like pushing back on almost every one of the claims there which doesn't mean there's nothing in those claims, but it means I don't think they're claims that you can simply say this is true. This is true. This is true. Yeah, for one thing, psychopathy. I don't think psychopathy. As I understand it is almost ever an advantage. sociopathy very frequently is but either either we're going to minimize those and then we've got a problem because you've lost resolution or an anonymize them. And so anyway, I don't I just don't think that the model, as presented in a single question is capable of supporting the weight necessary to Yep. To answer it. Fair enough.

**Heather** 25:19

I am reminded somehow by my brain, but there's a there's a discord question this week as well, which I'd never see now because we're using this different system.

**Bret** 25:30

reminded by your brain. That's interesting.

**Heather** 25:34

Yeah. And again, of course, now, you know, when I search Okay, I'm going to ask unfortunate the moderator once again to send it to me on text, if that's possible, and I'll pick up my phone in a couple of minutes, because I saw it earlier and my mail program is not finding it. Okay.

**Bret** 25:54

Next month when your brain are in agreement about that for now,

**Heather** 25:57

yeah. Cool. Do you have any thoughts on Catherine I don't know how to pronounce your last name. Do you have any thoughts on Catherine burble Singh, the headmistress at the McKellar school in the UK. She's very successful, and the school is very successful. And she's a fan of structure. Her interview on trigonometry is eye opening. So I I know of her I have not seen her in trigonometry. I did see her a couple years ago on Dave Rubin. And she's she's fascinating. She is like the person asking the question suggests the headmistress at the school. I think it's Kate, I think it's a K through 12 School in the UK. That is, is very strict their uniforms. I think there's a very set curriculum, you know, very, very much more in the traditional model, maybe a little bit more in the model of the school that you were invited to leave, and then came to the school that you that you and I met at. And she seems to be an extraordinary educator who has landed on a model that is very much different from the one that we the ones that we were innovating. And I think what she is doing will work for some people, but it would not work for everyone.

**Bret** 27:15

Well, I wonder if the problem isn't the benevolent dictator problem.

**Heather** 27:20

That because she is I think she appears to be so good at what she does. And she cares so deeply about the students that that the system will work because she's because she is right. benevolent dictator, a benevolent

**Bret** 27:34

dictator, who knows what they're doing. Right is the best form of government. The problem is there's no mechanism for choosing a benevolent dictator. And so what you get is the powers of a dictator in the hands of somebody who will use them, like most dictators do. Yeah, and so but so my point here would just simply be, there's nothing wrong with structure, if structure is wielded by somebody who's highly insightful, and, you know, capable of utilizing it to maximum effect, it may even be the best way to go about things. The problem is, if you say, Ah, she's got a method, right? And it involves tons and tons of structure, then who exactly does that method get handed off to? And you know, at what point are you looking at depth or Attarian structure with no any site?

**Heather** 28:21

I mean, I, I certainly, I used to structure Yeah, that affects your dam, I, you know, I really did architect curriculum. And, but it had a lot of space for diversions, and serendipity, and, and other things. But let's just take, for instance, that the discussion of school uniforms, which has been had many, many times by many, many people, and I, you know, I never was at a place that had uniforms, I never had to succumb to them. But the argument in favor of them that I've heard that rings somewhat true to me, is that, at least in some circumstances, that is to say, in some environments, having that choice taken from you, such that you are not signaling to other people, either your status or your status within a social circle or your membership, your your wealth, your family wealth, or your membership in some group allows for greater focus on who you are the inside.

**Bret** 29:21

Oh, I actually think school uniforms are probably a good idea. Because there's all kinds of runaway competition and stuff and you know, neutralizing all of that. Yeah, look, I hope people don't get the wrong idea. When structure fails, it fails spectacularly, right. And there's a lot to be said for a person who is capable of navigating when there is no structure and somebody who deploys structure really well. we'll deploy it in such a way that when you remove that structure, the person is not incapable but highly capable. So the point is, it becomes very easy to look at really structured things and think structure is the problem. And that's not it. You know, I wish I had had a really well structured education, from somebody who really understood human minds and children and all of that, I would have avoided a lot of the things that got in my way and still get in my way. But absent that, right, the last thing, the worst of all possible worlds, is the structure without the insight, right? The structure in the hands of people who are incapable of dealing with the moral obligation that comes along with administering it. And that's what you tend to get. So, you know, there's sort of a hierarchy here. But yes, the structure isn't the problem. It's bad structure.

**Heather** 30:44

What is your advice for kids who are planning for college, our oldest two kids are the same age as your boys. And we're trying to figure out how not to spend a fortune on education that will do more harm than good. Thanks. We don't have good advice at this point, unfortunately.

**Bret** 30:59

Yeah, I mean, I wish we did. We're all in it together at some level, because do you really, you know, it makes no sense to spend huge sums of money and even more important than the money, the most important years of your kids developmental life, potentially. Maybe I take that back, but most important years, from the point of view of them finding their place in the world, and spending them learning false garbage, or pretending that they're learning false garbage, right, this is such an incredible waste. On the other hand, deciding college is done. So I'm not going to send my kids because it's not worthwhile depends on the world, recognizing that it wasn't an important component. And that's an awfully risky thing to do. So yeah, there's there's nothing good to say. And I guess, in lieu of something useful to say, we had every obligation to recognize that this was happening, and head it off at the pass. And having failed to do that we are now facing a collective catastrophe. And we can also see what that's going to produce, which is a society full of people who are incapable of running even basic operations. So yeah, that's where we're headed. And it's an emergency.

**Heather** 32:16

Yeah, it is. At the, I'm not sure this is useful or not, but at the practical level, I used to recommend, I used to really feel strongly that for undergraduate, a small liberal arts college was the right place, because you didn't, you couldn't slide into anonymity, and you had a better chance of being in a small class with hopefully an excellent teacher and engaged peers and could discover things you had no idea existed or that you were interested in before and that if you wanted to go on to graduate school, for instance, then then you wanted the big the r1, the big the major research institution that had as many people flowing through as possible, you know, as many talks that you would go to in a day that you can, you know, choose to go to or not as possible. And, you know, that would also allow you the capacity to, you know, pay for your graduate school by teaching or doing research, whatever. Given that the small liberal arts colleges are more easily captured by silly ideology, and are large are largely captured by silly ideology at this point, I no longer think that's the right choice. And it's terrible, because really, a liberal arts education is is a fabulous thing when it works, but it's very hard to know where you might find it now. So to some degree, veering towards the larger schools, even as even for undergrads is one of the things that is one of the ways that I my thinking has pivoted over the last really like 578 years like since before evergreen blew up.

**Bret** 33:56

I see why it pivots away from the small liberal arts colleges. But even though it seems like the the research one, the larger schools auto have been resistant. We know they weren't. And we know that it extends even to places that you would think are perfectly immune like math, right? So given that, yes, it's an emergency. And the fact that you are scratching your head trying to figure out what to do for your own kids. The only thing we can say is that that's not the result of the fact that you've overlooked something. Yeah.

**Heather** 34:32

I am starting a career as a biology teacher on Monday, ninth grade, how can I use what you outline to be the best possible teacher to my students? And how do I teach or learn evolution? What book would you recommend? A big fun question.

**Bret** 34:46

Yeah, that's a great question. Yeah. The Selfish Gene is it's getting it's showing its age because it's finally

**Heather** 34:58

like, you know, published 19 seven sex. Yes, still class.

**Bret** 35:01

It's amazing how current it is. And what's in it is largely right. What isn't in it is the problem, right. So updating for things like epigenetic effects are is is an important addendum. But I would say it's probably still the best place to go to learn the basics of this style of thinking.

**Heather** 35:22

And then on the macro side, ancestors tale also by Dawkins, Selfish Gene for the micro evolutionary stuff, of adaptive evolution, and for your origin of species and deep history of species, ancestors tale, also by Dawkins, yeah.

**Bret** 35:37

And I'm still fond of climbing Mount improbable, just as in terms of a way to encapsulate the style of thinking, right, and so that you understand sort of a design space looks like in the way selection explores it. But

**Bret** 36:00

I don't know that this has any use to you. But one of the exercises I used to do in my classes was to take a documentary, and nature documentary and go through it such that anybody in the class could shout pause at any moment, and try to figure out whether what is being said makes sense, and what it predicts about other things and how you would test that. And so I guess what I'm really saying is not that that exercise is necessarily what you want to engage with, but that there's no substitute for doing for trying out your thinking, rather than absorbing it. Plus, you're sorry about that.

**Heather** 36:42

Oh, you were done? Yep. Okay. Um, in terms of teaching? Well, in terms of both evolution and teaching, we you know, we have some of that also in our book, but that's not out yet. It'll be out September 14, I do have a couple of pieces on, I'm now putting everything on substack, but a couple pieces on my medium. So here's one Zachary to show my screen for a second. This is on medium.com at hying H, called the twin virtues of trust uncertainty. And there's there's pieces from this also in the chapter on school. But this describes some of the things that that I in particular, but many of the things that Bret and I both did in the classroom. That was particularly effective. We found with you, I think your team teaching high schoolers is going to be different from teaching college students. But it's not wholly different. And I think a lot of the same, a lot of the same things will apply. Yeah, I'm

**Bret** 37:43

not so sure. It's going to be different at the level of what they can handle assignment wise, but in terms of how one reaches them, other than maybe being, I don't know, are they more distracted in high school? But I don't know, I actually suspect there's not that much difference, you know, who we are in high school is largely who we are in college, from the point of view of our intellectual development and, you know, the same, the same things are useful for for reaching, and cultivating those minds.

**Heather** 38:22

I think there are a lot of people who hang out with a lot of teenagers who are gonna think that you've never met a teenager. I have two of them. I know. But they're, they're not typical, I think

**Bret** 38:31

because we talked to them like adults from the beginning,

**Heather** 38:34

Dad, you know, shoved them in with undergraduates, young age. Which Oh, so all right. I didn't know. Okay, I Next question. I don't grasp the cross lateral purpose of the brain hemispheres. Why did evolution do this? Do all vertebrates central nervous system do this? What do you think of my gilchrist's master and his emissary? we've we've talked about this before version we've talked about so many things in so many places, who knows where then there are a couple of different things and McGilchrist is mostly not be pleased. He's great. And and he is mostly not talking about the history of lateralization in the CNS. Which Yes, all vertebrates have lateralization. And then mammals have this corpus callosum, which basically is the bundle of nerve fibers that allows the communication between the left and right hemispheres separately, birds have a different structure. I've forgotten the name of it, which allows for the communication between the two hemispheres. Other vertebrates, certainly have some, some communication but not nearly as much And early in vertebrate evolution you have what litter becomes the cerebral hemispheres basically as like all factory stocks not even connected to one another off of the front end of the of the brain is part of the telencephalon so you know they're they're doing stuff early that then in mammals in particular the cerebral hemispheres become become engaged with scenario building and memory recollection and the synthesis of interpretation and and perception and and thought that it is now important not just useful, not just useful but actually necessary to allow those two hemispheres to connect to communicate with one another but it can also be useful to have part of your brain not be fully fully on board with everything that's happening in the rest so you know, compartmentalization has a bad rap, but it actually has utility right? So having two parts of your brain two sides of your brain that are both connected and not so connected, that they can't do things out of reach of the other. Except for when you know errors happen. Accidents happen. It can actually be a very productive way to to have a brain thought you went for to say no, okay. Oh, I okay. I will not say more now. What animal behavior? Were you able to witness that was most fascinating.

**Bret** 41:39

Like an individual instance?

**Heather** 41:41

I read the question

**Bret** 41:44

well, let's see. I mean for me, I have once seen a bird writing another bird. I thought that was fantastic. Really, yeah. Do I was I there? No, you're not present. What

**Heather** 42:00

do you know what bird

**Bret** 42:03

is? I don't know what the bird doing the writing was it was writing a CRO I have now seen this documented elsewhere. Oops. Nope. I guess you know i for sheer fascination the incident with the tire is killing a sloth. Tyra is a mostella the weasel and arboreal, or semi arboreal weasel in the neotropics. And I happened on some noise in a patch of forest and followed it. And there were two Tyra's that we're attacking and killing a slaw off. And I was in a very tough spot actually, you know, you guys weren't too far back and I ran back up the trail to get you guys to come see it, and I assumed it would be gone by the time we got back but they were so distracted. They didn't even see me.

**Heather** 43:02

We watched it for a good half an hour 40 minutes.

**Bret** 43:04

Yeah, that was pretty. Pretty wild. I did manage to see a bat and in fact, was able to video capture was back on videotape the building of a tent by a tropical bat. And that was a behavior that had never been seen before. I don't know those are all pretty good.

**Heather** 43:29

Yeah, I don't I don't have a categorize this way. I just, I every time I go out and spend time in nature, I see. It's harder in the temperate zone because there's fewer animals with less diversity. But pretty much every time I go out into any kind of nature that's intact, I see something amazing and you know, when I when I was doing my research on Madagascar every day, I saw just extraordinarily elaborate courtships between these tiny poison frogs and fights these wrestling matches between these frogs they'd be up you know, belly to belly like sumo wrestlers up against one another and parental care about both males and females and and other species moving in on the territories and and keeping the the guys that I was researching out of the territory is by barking at them other species of frogs. And and you know, and then overhead there'd be like Volusia, these ruffed lemurs tearing apart a jackfruit or, you know, chameleon down down below. You know, doing their incredibly slow walk that looks like they don't know what they're doing, but they're actually being super cryptic. Yeah, Boa shows up at some point and chomps down on one of the frogs and slowly slowly chews on it for a while. All The frog activity stops it's particularly loud moment in, in frog land. So there's a lot of calling and suddenly everyone's quiet. And there's just this Boa, chewing slowly on this frog, it was a frog and Mark, so I knew it was a female frog. I knew who it was. And after about 15 minutes, the BOA releases the frog. I never see this bow again, the boat have been living under the bamboo stand where all these territories were. And the frog was bloody, but went on to become a mom and give parental care to her kids. So, you know, she survived, presumably by dented the poison Otherwise, the ball would have just eaten or so there's just so much all the time when you're out there. And and you slow down enough that the nature can come back alive around you. And you don't require that it looked like what you imagined it was going to look like. All right. I read Dr. delegators. three articles about vaccine efficacy. Amazing. Are there other sources looking into this? It's such a bombshell. I don't know where to go to confirm it. Thanks. I don't know if anyone

**Bret** 46:14

not on the same angle. It's worth looking at Matthew Crawford's substack. He's looking at a different angle, but it's also quite interesting. I think his substack is called rounding the earth.

**Heather** 46:29

I think that's right. Yeah, yeah. Yeah, that's good. Matthew one T. Crawford. This one I think is a step Miss room Miss memory or miss read of something we said. So could you clarify the data you explored in stream 90 that shows younger vaccinated people are more likely to die from COVID-19 than those who are not? I think this is about one of those Dr. Roller Gator articles that we cite in, in that substack piece. Where I live the data shows vaccinated people are having better outcomes. Well, I so I would say it's very hard to know what the data show. And so what Dr. Alligator does is actually when the data are available goes in and does the analysis, but nothing that we have seen from him, nor said I'm certain suggests that younger vaccinated people are more likely to die. That's not that's absolutely not true. What he what his reanalysis of the actual data showed, if I remember correctly, is that the the apparently strong signal that vaccinated people are far less likely to have bad, bad outcomes. Cannot can is not actually a pattern that you see in the data when you do the math, right.

**Bret** 47:46

They are less likely to have bad outcomes by virtue of reduced contraction of the disease. But beyond that, what we are told that's just not reflected in the data. That's right.

**Heather** 48:00

Totally different question. Thoughts on the current situation in Afghanistan?

**Bret** 48:07

Yeah, I mean, unfortunately, a lot of things that everybody will have thought, which is to what extent was this huge investment, pointless? And I would say that's not a slam dunk, that it was pointless, even to the extent that it ends with this particular catastrophe, because of course, there was a 20 year period in there in which something else happened, and what ultimately will be the effect of that. That difference? I don't know. But I mean, 20 years is enough time for somebody to become, you know, to be born and become an adult. So yeah, it's it's an absolute tragedy, and it's obviously being incredibly badly handled. On the other hand, there's a question about what we thought we were doing in the first place and how plausible it was.

**Heather** 49:02

Yeah, I, I actually had just begun to listen to Barry weiss's latest podcast with general McMaster. And you know, as usual, there's nuance and depth there. And I don't know enough. I don't know enough. It's clearly it's clearly a mess all the way all the way around. But I can't say more than you've said here. Full disclosure, I took the j&j in March. Finally, some good news for us, j&j is a study indicates that j&j might actually be better at dealing with a Delta variant than the mRNA vaccines. Why might this be broader spectrum? Question, Mark. So I'd like to see I feel like I'd heard something about that, but I haven't seen the study. I'd like to know I'd like to see the actual research.

**Bret** 49:49

Yep. I can't think of a mechanistic reason I can't think about it, either. But it could be, you know, we talked at length about the fact that one of the things about the M RNA vaccines is that there's no obvious calibration for how many of these mRNA is make it into how many different cells and right and all of that, and at least the adenovirus vector stuff is using basically the ecology of an adenovirus in order to introduce this novel mRNA I make DNA to create this protein, but that's there's at least a mechanism there that something other than nanoparticle covered mRNA, bumping into cells finding their way into the mRNA, finding its way into the cytoplasm and being transcribed. So there may be something in the systematic nature of the adenovirus vector that causes it to be more effective in producing an immunity that actually matters. And it may be that the range of uptake in that range of uptake that is liable to be very great in the mRNA vaccines has some application for immunity, but it's very hard to say specifically

**Heather** 51:04

Yeah. Could environmental contaminants like endocrine disruptors be contributing to rapid onset gender dysphoria or just gender dysphoria? Yes, of course. Yeah. I think the rapid onset is, is largely social social contagion, but the rise in actual gender dysphoria, as opposed to gender nonconformity. And as opposed as separate from just not not being like traditional people have been seems likely and we've talked about this elsewhere seems likely to be at least in part a result of endocrine disruptors and we and we know that in other species some of the some of the pesticides and herbicides that are in the water supply are causing greater rates of for instance from Africa tourism in some amphibians and that these have effect have effects on the steroid tarpons including the sex hormones Yeah, absolutely. Let's see what what kind of time are we at all right. Just two comments here I'm in New Zealand I fear we are moving towards no job no job. I take CD c d, zinc and I yeah, that's an unfortunate ridiculous here's another comment. I graduated from evergreen from Teske in 2012. I met you both on campus great people. Thank you. Thanks someone named Randall. I don't you don't say if you were either of our students you say you met us on campus I'm guessing that means that our student but but thank you let's see where can one find or purchase your published analysis the COVID situation that's on my substack just natural selections.substack.com I think you can find that there.

**Heather** 53:32

Just a lot of these would you consider making an online course on evolutionary biology of the kind you might see on masterclass Skillshare, brilliant etc. as a means to supplement your income you know, we've talked about this at times and we used to talk about it more and we definitely talked about doing trips which we just haven't talked about at all since COVID. Because who knows what point that's going to really be a plausible thing that people will be engaging again and again but online classes are going to have such a hard time doing what we did with students where we had so much time with them every week for weeks and months that that I at least even I've gotten several you know please including from some of the organizations that you know would make it very easy logistically to just you know, just supply the content and it just it feels like part of part of the magic was exactly about the interaction and about the extended time in the in the really getting to know the people with whom you're in the classroom.

**Bret** 54:45

Yeah, there's no way to there's no way to do it that would equal that but it doesn't mean that there's not room for curriculum that would have some other effect but you know, it you know, yes, you cannot do what we were doing in the classroom. online.

**Heather** 55:02

So what do you think about doing it? Yeah,

**Bret** 55:04

I would consider doing it. But, you know, there's a question that, you know, it sort of fits in the same place as a book, right, that would describe evolutionary content in, in a systematic way.

**Heather** 55:19

Yeah, and I guess, you know, I just, I love writing, and I want to write more books after this one that we have coming out, and I intend to. And it as it turned out, I love to teaching, but they're not the same thing. And pretending that one is the other seems like a big mistake. So you know, I specifically, for instance, architected you know, things that were, the things that I was most proud of, were things that were invisible to the students, and occasionally one of them would discover, oh, you know, I, I discovered this thing, and I think it's because you introduced that back then, and then three months later, and it's like, oh, because I put that in that order, and was putting easter eggs and you know, all along, and, you know, and, and maybe you saw them, maybe you didn't. But that sense of discovery is part of what is so remarkable for people to have. And it gives us a more of a sense of ownership and, you know, the kinds of assessments the, you know, these elaborate, you know, fictional scenarios, these evolutionary scenarios in which I would ask students to figure out well, if, given given this fictional scenario, what else would be true? predict the meeting system? And tell me why, you know, predict, predict the sex ratio and tell me why this sort of thing? And I don't see a way to do that. In an online class in which you don't already you have the shared history with the people and then you if you do pull it off, how do you do it a second time? Yeah.

**Bret** 56:47

And I'm not disagreeing with you. I would do not want to do an online class. Yeah. But you know, is there room for delivering a curriculum that contains useful stuff, there's room for that,

**Heather** 56:58

and, you know, maybe a curriculum that other people, you know, some something has a deliverable such that other people could, could use it, you know, such that the person starting real, being an eighth grade biology teacher could use pieces up, for instance? Yeah. All right. Have either of you read any of the studies on I never know how to pronounce this word either. artemisinin extract, which is from Artemisia annua, a plant in regard to its ability to inhibit spike protein adhesion to h2 receptors. I have not. I some, I've heard some little glimmers. But this is this is one of these plants that actually is thought to have a number of interesting properties. And I don't know, really anything more than that. I haven't read about this.

**Bret** 57:47

But I'm interested.

**Heather** 57:53

Why is college for breadth of education? Isn't that supposed to be high school?

**Bret** 58:01

Well, increasingly, I'm not sure how much of any of this I believe, it's obviously about creating a mind that is capable of a great many more things than it would otherwise be capable of. And some of it doesn't belong in school at all. And the fact that we relegate this stuff to school as a result of our misunderstanding of what school is for, and then there's a question about us, because completely under leveraging the opportunity that comes from having students present in such an environment, and you know, I think you and I spent a year considering how to build a replacement educational system, yeah, higher ed system. And I think we settled on a lot of the groundwork, that would do it. And I don't want to be responsible for thinking about this old broken system that is now finally in complete collapse, and what might be made better about it if we tinkered this or that yes, I think the point is, you know, good riddance.

**Heather** 59:04

Yeah, very much. So. So maybe, like, maybe we'll just finish on this and riff a little bit here. I honestly don't, I neither know the history of what people have claimed to the various stages of schooling or for except for higher ed, I have, I have done some research and digging on what people have claimed, higher ed was for and have written and published someone that But why? why we assume that what has been said in the past is relevant today. Or that it was actually what it was for, given that we know that at least with the K through 12 schooling. The compulsory education was not actually what it claimed to be for. It was not it was not really for students originally. And that's not to say that it couldn't have been co opted for the good of students. But it largely, largely wasn't so especially in the mall. Modern era, the idea that you go to college to become a specialist is seems completely backwards. Because modality is unpredictable from decade to decade from year to year, to some degree, I mean, and this will be easy for everyone right now to recognize from, you know, from week to week. So the idea that you should become a specialist in college and less and then assume that the thing you graduated graduate being able to do at 21 is the same thing you'll be doing 50 years later at 71. Well, who can look around this world right now and say, yeah, there's something that I could be prepared to do right now. And in 50 years, I can be just doing the same thing. So that's what that's what training and specialty does for you, as opposed to being learning how to think broadly and to assess pattern. And to deal with uncertainty.

**Bret** 1:00:57

I think one thing, I always thought, every time I started a new class and met a new crop of students was, this is a great job. But this is far too late to be me meeting these people. And that probably it was good for me to be a college professor, because the material that was expected to deal with college level material, you know, is worthy material to be thinking of right. But the point was, we were dealing with a lot of damage done by the systems that caused the thinking mind to atrophy, right. And so the point is, college becomes a remedial activity. And it should not be a remedial activity, it's only a remedial activity, because you screwed up the education of these people in grade school and high school. And were you to simply not screw up their education. Right? Were you to give them things that were worthy of their mental capacity, and that challenge them and that excited them. And that caused them to learn than the point of the I don't even know what college would be for at that point, right? Because you could do college level material with high school students if you hadn't hobbled them in grade school. And none of this needs to happen. It's at best, it's a failure born of not enough economic resource to do the job. Right? Right. But I mean, at the very least just notice the following thing. We pay teachers like crap, right? We pay teachers like crap means obviously, that either you're going to get people in the profession who do not regard their own earning potential as a significant factor. That's the best case scenario that we are abusing people who will accept it, because they have a higher priority. But of course, the regimentation of school means that those people aren't likely to be satisfied with the job in the first place. So by and large, we are driving the best people away from the idea of teaching kids, because it doesn't pay like a job that we take seriously. And it doesn't give you the freedom to innovate anything that would entertain you enough to be worth your time. And so, you know, how on earth are we shocked that a system that sabotage is the entire faculty that are in, you know, in entrusted with educating these kids, that it fails to produce highly educated kids who then need what we used to deliver in high school when they get to college, because nobody taught it to him in high school, right? We sabotage the system, and then we're shocked that it didn't work. And the point is, hey, you want to not have that failure? Stop sabotaging it, right? Pay people, you know, I always thought it would make sense to try to induce people to teach grade school and high school temporarily on the way to a career right to make it something that somebody was actually going to contribute to these fields would find worthy both economically and because it was an interesting thing to do, because we incentivize that.

**Heather** 1:04:12

I mean, those federal programs exist. We had students who went on to do that, but it's it they sort of, they sort of exist exactly they're they're pale imitations of what they could yes we are not serious

**Bret** 1:04:23

about it. And the fact is, if you were serious about it, you really want to educate kids or you just want to talk about it if you really want your kids educated then you know, pay pay more until you get the quality of people teaching your children that you might get and then give those people freedom to do it properly. Right yeah,

**Heather** 1:04:43

I mean pay more isn't going to do it so I'm glad you added you know, give give them freedom but of course, the money is the easy part. The give them freedom is so give give them freedom is tough, given all of the constraints currently in The system. And it's particularly tough, given how teachers are being trained, yep, there are plenty of amazing people who want to go into teaching, who then become basically incapable of teaching as a combinatorial result of the policies, they have to contend with the teaching to the test, the you know, the lined up rows, and all of this and the glazed over drugged students. And, and the fact that what they were taught in, in their school of education was often a bunch of garbage. Well, the

**Bret** 1:05:34

whole idea of school of education is probably preposterous in its own right, right. If you have somebody, you know, who knows a hell of a lot about chemistry, or history, or biology, or physics, or whatever it might be, right, and they are attracted to a profession in which people are trying to get in because it pays well. And, you know, just simply set the bar high enough on your success as a teacher, that the people who end up sticking in the profession are people who actually succeed in educating, right, the point is, this is not a hard problem to solve. If you want to solve it at the current economic level of commitment. Well, good luck. You're not gonna and so you know, I know you mean, when you say that the money is the easy part. You don't mean it's easy. You mean, it's the easiest of all the things you have to solve? On the other hand, if you created demand for those positions, and then you simply evaluated who was any good at it, having learned something? I mean, you know, we didn't have to go to a school of education. Yeah,

**Heather** 1:06:37

I mean, I think I think I disagree with you, in your conclusion here, because I just I don't think, I don't think at this point, there's a huge amount of people who would be talented teachers who are waiting to go into the profession, but for I agree,

**Bret** 1:06:53

they they don't they don't exist now. But that's also because the graduate education that we should be delivering in order to make people into high quality scientists, for example, doesn't exist. And so you're looking you're tuning into one place in a system that is in collapse,

**Heather** 1:07:09

right, but so that's why I'm saying I just you would appear to have been given a prescription that I don't think is a prescription that could possibly work right now.

**Bret** 1:07:17

Well, it's a prescription that if you deploy it without actually educating anybody about how to do science won't work, because then the people who would go in who knows something are few and far between to begin with. But you know, from the point of view of what's the problem?

**Heather** 1:07:31

Well, we actually did see, we did know, some really extraordinary scientists, who said to me, that I give up, I give up, I'm done with this particular kind of rat race that I've been told is what I need to do. And they actually they went not to some high school, actually, we do know some people with PhDs and scientists in scientists who are doing high school who are also doing this, what I was thinking of first was the community colleges. Yeah. And, you know, to some, you know, evergreen was not a community college, but, you know, we, similarly, it's like, well, you know, people, you know, people with these degrees are supposed to go to an r1. And do you know, high powered research jobs and do with that horrible sounding life, you know, or you could do this thing, where you can still do the, you know, the academic thing and earn tenure and all but actually focus on the teaching, rather than the research, at least as it usually looks. So that, you know, there are a lot of ways that people but I think it's still a tiny number of people really, who are choosing to say, okay, you know, what, I'm not doing the standard rat race thing, I'm going, I am going to go and the other thing is you can't, the way it's structured the moment you have, if you want to go into high school teaching, it's a private school. And so you're near your relegating, you know, the public, the public school kids never get access to these people who actually are highly trained in the sciences, because they would have also needed to go back and get like an education degree, which is insane, right?

**Bret** 1:09:01

If they were, you know, had any self respect, going through one of these education degree programs would cause them to explode. I mean, they would just, you know, you're not talking about the students now. No, I'm talking about their teachers. And the point is, even going back to get that degree isn't just a matter of going back to get that degree. It's having to endure what is being dispensed in the schools of education. Yeah. And so my sense is, I do not know the problem for which school of education is a solution.

**Heather** 1:09:29

Oh, I agree. I agree. But I guess so I agree with that. I also don't think that paying teachers more as much as I think teachers should be paid more can solve the problem now,

**Bret** 1:09:44

not you've got too many different problems. The only reason that paid teachers more is the solution is because what we need is demand that will cause the highest quality, best teaching types to add to land in those positions and stick right starts to

**Heather** 1:10:00

tweak the incentives in the right direction,

**Bret** 1:10:02

right. And you know, at the point that people are trying to get into teaching because it's a good paying job, then the point is, then you can be selective about who you keep you keep the ones who are effective at reaching their students. And, you know, this is this is something evergreen completely screwed up, right? evergreen brought people in who looked promising on paper, and then it had an impossible time getting rid of them. And so the point was, yeah, faculty. So there was no selectivity. You know, it was a no, is it a good guess that this person will be able to teach in this totally unusual model, right. And then the point was, well, how many people did we know, who either played some game where they were popular with students, but didn't teach them anything, or didn't give a damn what students thought about them, because they knew there was no way to get rid of them. Right? It was like a large fraction of the faculty, and you know, the number of people who came in and who were like, wait a minute, I can figure out how to teach people in some way that nobody's ever done before. And the point is, you know, it takes years to make use of that and figure out what actually does work. But there were a small number of very committed people, but you could have, the job was so desirable, from the point of view of the freedom to do something different. Yeah, you could have filled the entire faculty with odd balls who were interested in exploring how to teach differently. And yet, right, we

**Heather** 1:11:22

didn't know you absolutely could have at a, you know, medium sized public liberal arts college. Yeah, evergreen, with regard to you know, the K through 12. Teachers, though. It's, in part, in part again, the problem is, does what work at smaller scale work at larger scale? And, you know, given the class sizes are more than 40 students in some places, and that's not the old teacher may have four or five, six different classes every day, how? How do you develop relationships? How can you possibly develop relationships with these with all of your students and absent relationship? How beyond a just already on board innate desire to learn? Does a student who comes in going like I'm about to have my time wasted? come away with any other conclusion? And of course, they're gonna feel that way.

**Bret** 1:12:16

Right? And that's a system built to fail or neglected into oblivion or, you know, some combination of those things. But, you know, getting good people in is a matter of paying them enough that they don't, you know, that they're not driven out by the sheer austerity required in order to keep doing the job. And selectivity requires that lots of those people be be induced to take it up. So, you know, no, if you deployed that one solution in isolation, it would not work. But is that an essential aspect? Yes, you need to pay people enough that the best people want to go into it, and that you can then be selective about only keeping those who are effective at it.

**Heather** 1:13:00

I agree. All right. I think we've reached the end. All right of Episode 93 q&a. Please like, share, subscribe to all the channels. consider joining us on our Patreon. Send logistical questions, Darkhorse, moderator, gmail.com. do various other things. consider supporting our sponsors for this week, if you are in the in the market for a coffee alternative that tastes delicious, or various things that you could find on certain very common internet stores, but might prefer to find public goods? Maybe, maybe that's it.

**Bret** 1:13:45

Yes. Maybe. Take a look at the calendar at some point the next few days. Take a look at the calendar, figure out where you are, look up where vitamin D comes from. And if you're in the Northern Hemisphere, get to it because there's not a lot of time.

**Heather** 1:13:58

Yeah, and regardless of where you are on the planet, take a look at the sky. Tonight. The moon is full, it's going to be full for a couple of couple of nights. Hopefully one of those nights you get a clear enough sky. Try to get out around when it's going to come up. And just just drink it in.

**Bret** 1:14:18

Yeah, drink it in. It's the same moon for all of us. It ought to be a uniting force. It is

**Heather** 1:14:22

it's the same room for all of us to be uniting force. In the meantime, be good to the ones you love, eat good food and

**Bret** 1:14:31

be well everybody.