Your Questions Answered - Bret and Heather 67th DarkHorse Po...

Sat, 10/9 12:23PM • 1:33:55

**SUMMARY KEYWORDS**

question, point, marsupial, consciousness, cats, part, epigenetic, fact, mammals, put, sense, good, hair, evolved, imagine, individual, males, australia, echolocation, selection

**SPEAKERS**

Bret, Heather

**Bret** 00:11

Hey folks, welcome back to the Dark Horse podcast live stream q&a with lots of cats drinking cream on the back shelf.

**Heather** 00:19

Yes, that's what they do.

**Bret** 00:21

What they do who they are it's how they do Yep. Already like that sometimes what?

**Heather** 00:32

We're gonna get in trouble,

**Bret** 00:33

are we i think i don't think so i think i think we've crossed through that valley will get in trouble but not for that.

**Heather** 00:38

Okay. We have three questions from Episode 66. Then a question from the discord server this week and then we will launch into the questions from last hour before moving on to the questions from this hour question one from last week Why did marsupials evolved have pouches and why are they mainly found in Australia?

**Bret** 01:00

The pouches because they're on the marsupial's there

**Heather** 01:03

it is good? No, we're not so the last night's thing that we did yes that bad answers to bad question wrong answers to both answers right? That wasn't a bad question. But that was a bad answer was

**Bret** 01:13

a bad answer.

**Heather** 01:14

one correct answer here is that they don't all have patches.

**Bret** 01:22

Go on. No, that's all okay. It's

**Heather** 01:23

just true. It's true though. They don't all have patches, right.

**Bret** 01:25

But now I'm not going to be the one to spell out which parts of the clade are powerless.

**Heather** 01:32

I don't I don't honestly remember all of that now. Alright, because I did I did not do my research on this just so why are they mainly found in Australia? Okay, so I can do that part. If you like. You go

**Bret** 01:44

Alright, let's just let's let's break this down, we get several parts of

**Heather** 01:47

the way we would probably want to try to go for a bid so many questions. This first hour,

**Bret** 01:51

I'm gonna I'm razor I'm laser focused, and razor sharp you are? The answer is this, you've got a problem that you need to solve. Right? The problem is, how do you just date a comparatively large endothermic creature? One answer would be to lay an egg, right? laying an egg has certain advantages. You can leave the egg the egg is self contained. But it doesn't allow you to provision it right. So you've got to load everything into the egg to begin with, which is dangerous. Another version of this would be internal pregnancy. And if I can quote you when you were internally pregnant, this is a really goddamn dumb way to reproduce your sample off. It's

**Heather** 02:33

really awful. But like if I at some point, I would be delighted to do an entire episode on of a parody of a parody and wait for it. Oh vivre parody? Yeah, I love this stuff. The various selective pressures on when to lay an egg when to have live birth when to have an egg inside of you that hatches right before you birth the thing amazing different selective pressures, most of which allows a person to talk about lizards as well, which is always something I'm interested in doing. But I don't think this is the place because if we go back that far, we're gonna be here forever.

**Bret** 03:03

But when we do that one, that'll be the biggest Dark Horse podcast ever.

**Heather** 03:08

Yes, fine. I'm interested in the niche subjects. I know this, but the point

**Bret** 03:11

is okay, you got egg on one side, right? Lay the egg, certain advantages, lots of disadvantages. You got internal carry it with you everywhere pregnancy, right, that has certain advantages, certain disadvantages. And marsupial is a bit in between, right there's a faculty nativeness to it so you can birth the baby early. So it is not a threat to the mother in the birthing process. The baby continues to function more or less as if it is internal in the sense that it latches on to a teat and takes nutrients and grows in the pouch rather than in the uterus

**Heather** 03:48

and the iPod so she can she can effectively have three dependent offspring at different ages at a time. That's true, she can have a Joey in the pouch, she can have a Joey that's free floating free hopping, if it's a kangaroo, and and one still in utero.

**Bret** 04:03

And if you think about it, that allows some of the advantages of pregnancy to extend beyond pregnancy at Joey that's capable of bouncing around on its own, can still hop in the pouch when you got to hightail it and get somewhere quick. So there are certain advantages, certain disadvantages. The one thing you don't want to hear, but I'm going to tell you anyway, is that it's all about the future. And for a mother who is being pursued by a predator, she may in fact even inject a Joey in order to save her own life, which sounds selfish, but in fact, future children's that's the thing. She's protecting her future brood. So So the short answer is, it is one way of solving this set of problems and it has advantages and disadvantages like all of the others, but like that, and then do you want to cover why it's in Australia? Yeah.

**Heather** 04:55

So broadly speaking, there are three extent clades of mammals. There are the ones that I call the wacky mammals at the base of the mammal tree, which include the echidnas, and platypus which are egg laying. And then you have the two big clades. The placentas, which we are a member of and marsupials and the plus plus lentils I think are still an order of magnitude larger in terms of speciosum than the marsupial's maybe not quite. But but close enough. I think there are not even 1000 species and marsupials are over 4000 species of placental mammals, I think, I believe so.

**Bret** 05:30

I think it's not quite but doesn't matter. We're in the right neighborhood.

**Heather** 05:33

If there are 5000 species of mammals at this point, they're well more than 4000 plus rentals, I think, but I'm not. Yeah, anyway, not not sure exactly what the numbers are. But plus, Central's in direct competition with marsupial's do better. And one of the ways we know that is that placentas evolve. So you had Pangea, and then it split into a northern Laura Asia and a southern Gondwana. And the mammals already existed before Pangea split and the placental mammals were in the north in Eurasia and the marsupial mammals were in the south and Gondwana. And so you have either extend or fossil evidence of placentas throughout all of the modern land masses that that were gone one in, which is to say, Australia, South America, Madagascar, India, Australia, and Antarctica, even like, I actually don't know if there's any fossil evidence in Antarctica. But for other stuff with gondwanan distribution, we know from ice cores in Antarctica that there is that they were there. And so there were marsupial mammals in South America. And when South America and North America slammed into one another, some many millions of years ago, the marsupial's that were in the south started heading north, and the placentas that were in the north started heading south. And basically the placenta is one. And the only thing we have remaining in terms of marsupial's in the new world, the so called New World, the Americas is a few possums like all within one little tiny possum, clear. There's some many, much more interesting possums in Australia. And we've just got like delvis adelphia day, I think, and maybe maybe, maybe one or two others in South America, I can't remember but it's a small group, small group, tiny group. And basically plus lentils have Didn't you know, Australia never slammed in anything. And except for us in all of our hubris and arrogance. Bringing stuff into Australia, which Yes, indeed, the other placentas that we brought in, are putting the marsupial mammals that are endemic to Australia at risk. The marsupials are doing fine, absent direct competition from Central's

**Bret** 07:43

Yep. There are some placenta holes natively on Australia though. ones. Now that's Yeah, that's, that's the

**Heather** 07:54

whole flying thing.

**Bret** 07:54

It's the whole flying thing. You can just you can you can lose barriers that other things just can't get across. That's

**Heather** 08:01

right. All right. Question two. Two, I don't know what that means to asterisk speed media. Evolutionary view on impact, oh, two times media. Evolutionary view on impact of routinely listening to or watching podcasts and classical music at two times speed advisable are not for young children. Question mark.

**Bret** 08:25

Would we have young children listen to podcasts on double speed is that the question

**Heather** 08:31

podcasts and classical music which I find it fascinating that that's added in here. Like I cannot imagine listening to classical music, or really any music at twice the speed that that it was intended to be listened to at except that actually, the story may be apocryphal. But I remember from when I was deep in the classical music scene as a child and teenager was a john Philip Sousa, who apparently wrote all of his music as like dodges. And his wife came in it was like, dude, speed it up. And she made them into these marches that we're now familiar with. So sometimes composers get it wrong. And that back in that may be an apocryphal story. But in general, I would I would not think that listening to music at twice the speed that the artists themselves imagined would do would enhance the experience or do good things for your brain. Yeah,

**Bret** 09:26

I would say music, super bummer. And podcast just fine if you're an adult, but I wouldn't. Yeah, because the thing is that there's a lot of information in like, cadences and things. And to the extent that you are going to be developmentally impacted by what you discover on podcast. It's not just, you know, factual content, right. So yeah, I would say, What's the rush I mean, for one thing, it's childhood. So yeah I think it's it can't help yeah i mean i guess the argue well I mentioned I do more but

**Heather** 10:07

exactly I'm imagining that you know the kids in the car is willing to listen and the parent might be accustomed to listening to times speed because they want to get through more content and I would say if you can if if you can bear it you know you pick your your place where you're willing to have more risk and less and all of this but i would i would strongly suggest not

**Bret** 10:27

sorry I must have missed something in the question. The idea is the parent is listening on double speed while the child is in there

**Heather** 10:32

that's just my that's what that's what I'm intuitive as a possible context in which this would be relevant.

**Bret** 10:37

Yeah, it'd be a little different because it might actually allow a child to tune out you know, if you're listening to podcast content that your child's not going to be interested in then at some level, breaking them free from it completely might be a good idea and having it just be you know,

**Heather** 10:49

maybe I'm not sure about that.

**Bret** 10:52

Well, definitely we can agree that driving at double speed is probably not safe. Yeah, so

**Heather** 10:59

driving Yeah, I can't do it. Okay. Third question from last episode. Boy doggie is interested in playing she wants to go and play in the snow. Is there a correlation between pornography and lack of masculinity that's driving some of the madness in our current political climate? Thanks for all you do.

**Bret** 11:18

Lack of masculinity I would say lack of masculine maturity. Yes, there is a way in which this pornography is certain and at some point, I am going to go very much in depth on this topic because I feel like there's a huge amount of good to be gleaned just by getting us all on the same page but what the hell is going on with men? I feel like there's an equally important what the hell is going on with women conversation and where you to file those two things together, you could almost just put them on a bookshelf. But in any case, men have to reproductive strategies. porn is playing to one of them and it's not the one that makes good things happen on planet Earth. So yes, it's a very it's a good question and a deep answer and stay tuned.

**Heather** 12:09

Yep. And you know, we do we do a fair bit of it in the book, which will be out in still way too many months. But you're talking about doing an even more sort of simultaneously slightly deeper and more succinct dive elsewhere. Okay, the discord question for this week, so every week those of you who are on discord some of you get together and I guess post questions and then vote on which one you want us to answer this one we

**Bret** 12:35

should call it the discordant question. Go on.

**Heather** 12:39

So he does not yet know what the question is guys just so in case you aren't or just

**Bret** 12:43

um, you know, I felt like we stripped a gear there.

**Heather** 12:47

So Brett says the discordant question is yes you ready? Yeah. In honor of Valentine's Day, would you tell us the story of how the two of you ended up together we know that you met in high school but two of you ended up together Oh god so the way it comes in I would have to copy and paste several lines and oh my goodness sorry I have to go back into my email because this something oh here we go. Okay. In honor of Valentine's Day, would you tell us the story of how the two of you ended up together? We know that you met in high school but when did you know you want to pursue each other and how did that happen?

**Bret** 13:23

Yeah Wow, boy,

**Heather** 13:25

when we go in there discordant is what you said? Yes.

**Bret** 13:29

All right. Well, let me say I For my part, I did not know right away it was like 30 seconds after meeting Heather that it was clear that that this was the right person for me. But it was also quite clear I had been at a an all boys school for a critical period in childhood development. And that was going to take an awful lot of getting past that before any such thing was going to be plausible. So anyway,

**Heather** 13:56

so you've been in that all boys school from seventh through 10th grade? Yeah. And then you came to the school that I'd been out since seventh grade. And 11th We met in 11th grade.

**Bret** 14:03

Yeah, and I was a shy kid. So there were people in the all boys school that I went to who did manage to figure out how to meet girls and interact with them. I was not one of those boys and so anyway, suddenly being invited to leave the all boys school as you were, as I as I was, and coming to your school was a kind of mental revolutional all of its own. But so anyway, we became friends because I don't know why we became friends. I guess.

**Heather** 14:41

I honestly cannot figure it out.

**Bret** 14:43

To be honest, I know why I became friends with you. I don't know why you put up with it, but you did. Which is cool.

**Heather** 14:54

So one of the things that proves that he didn't know anything about girls, is that Oh yes. Is that you upon finding yourself interested in me? decided that you would suss out the situation by telling one of my dearest friends how interested you were in me not imagining that she might share that information with me somehow I think it had not crossed your mind that girls

**Bret** 15:18

either. I didn't know a goddamn thing about girls, or that was the result of some sort of deep insight. And here we are.

**Heather** 15:27

And here we are the truth. Okay, well, I have two more bits of this story here. And there's lots more but I want to be here you want to call it discordant before even getting the question, Daddy relax. Yeah, she's she's interested in something here. One of the ways that you could tell that I was really truly interested in at that point, being close friends with you was that we had at the school is Crossroads the crossroad School for the Arts and Sciences and you were dropped. One of the things that people used to do but apparently doesn't really happen anymore is that once you have your driver's license, you can basically pay other people's parents to pick their kids up and take them to school. And so you know, they pay you Sorry, sorry, go up there. As you get paid like your one of your jobs was that you were driving younger kids to school. And so you always had to be at school for zero period. And I didn't have a zero period. But I always showed up at school for zero period and a group of us and I could still name all of them. But a group of us would sit in the hallway, outside of history class, I remember because the history teacher would occasionally come out and yell at us, you're making too much noise. Sorry. Yes. Tom Leach is the history teacher who, with whom we had no love lost because we were too rowdy in the in the hallway, I would come and hang out with you and three or four other their friends, all of whom I had been we had all been friends and then you showed up and we're like cool Brett's here. So I didn't have to be getting up 45 minutes early every day to come hang out with you and a few other people in the hallway, did I it does

**Bret** 17:08

seem like a strong evidence. But I would not be aware of that evidence for years where I just assumed you had a reason to be there like I did. And so never put two and two together. But one

**Heather** 17:19

of the other little stories then contributing to the evidence is that I haven't known for a while because one of my friends told me that you had told her that a boyfriend at that point, actually a boyfriend from that same all boys school that you had been evicted from and, and you know, few others along the way, and you had a girlfriend in college. And at some point, close to halfway through college, I had looked around and said you know what? I know who I want to be with. I know exactly who I want to be with. And you were at that point on the east coast. And I was on the west coast. We were in different colleges. And I wrote you a long letter telling you that I was I was ready to try this out and interested.

**Bret** 18:07

I was a great letter. And

**Heather** 18:09

guess what his response

**Bret** 18:10

was? Oh, God must silence No, no, I wrote so many response letters.

**Heather** 18:19

So much silence. It was the mailing of the letter.

**Bret** 18:23

That's the sticking point. Because it was really hard to get one really, really right. Actually, I apologize for that. Yeah, that was

**Heather** 18:31

apologize before now. But you know, we were asked, we were

**Bret** 18:34

asked All right, good. Well, that was very painful. Do you think we've answered the question a lot what

**Heather** 18:40

I said so we can we can go here more, you know,

**Bret** 18:42

next Valentine's Day. Next round or sooner? Perfect.

**Heather** 18:46

Okay, first question from last hour. This is actually just a suggestion, but it came in at such a high monetary value. I'm gonna read it. With COVID reporting and COVID origin story news spiking recently, please consider a conversation with Chris martenson of peak prosperity. Your collective knowledge and conversation on this summer on the specific topics could be fruitful for you both and enlightening for your audience. Do you know I feel like that name vaguely rings a bell, but I can't quite place it.

**Bret** 19:14

I'm not placing it either. Okay. Well, I've

**Heather** 19:16

got it in highlighted here. And we send such suggestions to our assistant and hopefully you can have conversations on the regular about who might be worth talking to. Good. All right. I don't know what this question means, but I'm going to read it. I want more epigenetic ecology, comparative epigenetics, epigenetic epidemiology, but how Who? epigenetic inheritance and speciation, right? Wow. So I support the enthusiasm, but I'm not sure what the what just like. I think the question is like, I want more of this research. I want us to know more about what's going on at the modification of genetic engineering. Well, well,

**Bret** 20:00

well, what we don't know, we assume that the invocation of the term epigenetic here is the narrow molecular version. But it doesn't have to be epigenetic means above the genome. And there's much above the genome, including culture. So there's a question about what the person is enthusiastic about. I think the most fascinating thing about this realm is that there seem to be features of the or rules of the epigenetic landscape that transcend mechanism. So there is something about culture and molecular epigenetic mechanisms that actually is similar. So where, who, how I don't know where to direct you. I do think it's among the most lively and interesting of the biological landscapes at the moment. I am struck, I saw conversation last week, in which somebody who is deeply ensconced in this field reveals just how little was known. Back when you and I were in college, which I remember somehow, there was a belief in the power of genes that didn't make any sense, since all of your cells have the same genes, there's obviously a whole lot to be explained developmentally. And otherwise, that isn't resident there. But the degree to which the discovery of these mechanisms that allow one cell to differ from another by transcribing different genes, etc. The degree to which we have begun to unlock that set of puzzles is amazing. And anyway, it is the right place to be focused. But now I don't have any idea where to point you. Yeah,

**Heather** 21:46

yeah, I don't either, I'm afraid. What? This is just this is easy for us to point someone. What is the role of consciousness in human evolution? Was it our genes, improving the species survival, we did it appear randomly. Seems like it helped the rise of civilizations, but it also introduced many self harming behaviors for the individual. So we, this is something that we have talked about and written about, extensively, the writing, writing about it is not yet out there in the world. It's in the book that will be coming out this year. But among other places, you I think you've talked about it a number of places. But we talked about it in the talk that we were supposed to give in person at Princeton last April or May, and of course, had to give over zoom. But that means the upside of that is that I think it's still available. I think so too. So if you if you google up Princeton, and our two names, maybe it'll come up in consciousness it'll come up or since we're still filling as well, but since we're still fellows there, it might that might not be sufficient. But

**Bret** 22:43

Robbie George was our into Look who interlocutor Yeah,

**Heather** 22:46

but he's still so the

**Bret** 22:47

right but nonetheless, if you google those names, it's likely to come up, especially if you hit video on search. But anyway, I would say I have noticed that consciousness is the topic that is most likely to turn to turn careful thinking people into scouters of gobbledygook. And I have this has begun to be the most.

**Heather** 23:15

That's quite something.

**Bret** 23:17

The number one I would say that there is something about this topic, which causes otherwise logical people to start saying the most amazingly ridiculous things. So consciousness can't have been an accident, I think was her term.

**Heather** 23:34

That says, was it our genes improving the species survival? Or did it appear randomly?

**Bret** 23:39

So okay, so did it appear randomly? The answer is all the components of mega possible have to have appeared. Ultimately, there has to be a random layer at the bottom back in time. But the fact is, consciousness is hugely goddamn expensive, right? complex, complex and prone to error. Right. So what that says all of those facts tell you this was massively useful to the species because all of those downsides that it has to overcome wouldn't have allowed it to to be augmented if it didn't have this tremendous benefit. So the real question is how, and I don't think we want to get too bogged down here. But I will say, I believe the reason that we don't understand consciousness that is to say that we don't have agreement on what it means is that we have misunderstood it as an individual level phenomenon, which is very hard to explain. And what Heather and I do that's different, is we regard it as most likely a collective phenomenon first, and then individual consciousness is an epiphenomenon of collective consciousness. And the problem is, because you can stick a person in a scanner and have them experience conscious thoughts and figure out what parts of the brain light up, right there's a bias towards studying it as an individual phenomenon which leaves lots of paradoxes. And so the upshot of this is, there is a hidden assumption, the assumption is that thing which is so compelling, right, individual consciousness, we all know that that exists because we experience it. But we don't know that there's a consciousness that exists between us because we can't tap into it directly. That that bias in the direction of individual consciousness causes nothing to add up simply. And because it doesn't add up simply, people start grasping at evermore ridiculous straws, like the particles themselves are conscious, and we're just tuning into it and all sorts of other nonsense.

**Heather** 25:35

So the bias exists, just to rephrase what you just said, the bias exists. you're arguing we are arguing in large part perhaps perhaps in entire part, because it is easier to measure things at the individual level than at the interaction level than at the than at the shared level. And yet, we know that there are other examples of things which only makes sense in terms of what is the competent, torial effect. So you know, language, and just even, you know, just not humans. But communication. You know, communication requires both a signaler and a receiver, you can't talk about the evolution of communication, or any of the communicative strategies that we talked about over in our neck of the woods, evolutionary ecology, space and such, absent there being both a signaler and a receiver and doesn't have to be conscious, doesn't even have to be intentional by some people's definitions of communication. But it requires those two things, those two individuals, sometimes they're not even of the same species. But you don't have communication if there's just one evolved in organism. And so this argument is actually not so. So out in left field as it might seem, because there are things that we know require more than one individual to understand them. from an evolutionary perspective.

**Bret** 26:48

This is a great way of conveying This, I think, yeah, I'm

**Heather** 26:51

not sure Actually, I'm No, we haven't done that in the book. But I think it actually this analogy more,

**Bret** 26:55

I think it works. And part of why it works is it's news to nobody, that speech is not about the speaker, right? Because we all are the listener also. And so because we can tune in on both of those things. Nobody's confused about this. The thing about consciousness is if you say, consciousness, the purpose of it is actually for me to say, you know, you know, what, if we took, you know, the sail from a wind surfer, and put it on a large skateboard, right? That's an idea that I can convey just by vibrating the air molecules between us. And there's a good chance that if I had use if I said, Okay, now can you sketch what I just said, you could sketch it out. And we would know that I had successfully conveyed this abstract idea, right between us. So the point is, the language is obviously an emergent phenomenon, consciousness stands every chance of being an emergent phenomenon, but we only have the one side of it, right? So because of that, the bias towards you know, in other words, I know that you probably have a picture in your head of a windsurfer sail on a skateboard, because I intended to put it there and you and I share a language. And so it's possible to do that, I can look at my picture that thing, I can't see your picture that thing until you put it on paper. So the point is the asymmetry here,

**Heather** 28:20

or I could use language right back at you, you could write, but

**Bret** 28:26

the the asymmetry between the personal experience of consciousness and the inference that we have about somebody else's consciousness is so different, that it's unlike language. Right? You know, you and I speak English, approximately equally well. And batting stuff back and forth is a very simple process. But you know, to be honest, you know, look at the dog, how conscious is the dog? It's very hard to know, right? I have the sense of the dog is substantially more conscious than the cat's. I don't mean smarter, but more conscious. But it's very hard to establish if that's the case, because, you know, we can't play that game. We can't tell her things and have her draw them or anything like that.

**Heather** 29:07

So we'd love to play that game. Oh, she would

**Bret** 29:09

love to play any game that we wanted her to play. That's the nature of the dog. Yeah. All right. So anyway, yeah, I think that's a good that's a good way of pointing it out. The emergent thing is the thing. And, you know, imagine the absurdity of trying to figure out what language is for if all you did was look at people speaking. Right? If you didn't understand that there was a listener? Yeah. Well, what is the point of that behavior? Seems?

**Heather** 29:33

Yeah, I mean, we obviously could and have in the past, and presumably we'll spend lots and lots more time on this, but I'm reminded actually of, sort of, you know, one of the exceptions that kind of proves the rule of what you're saying, I recall a conversation in a class I was teaching years ago with a linguist and it was a class called the evolution of communications to quarter program in which I was mostly talking about non human communication and she was mostly talking about language, but we of course, were were interleaving And it was a seminar with both both sections. And somehow we got on the subject of catcalls. And one of the young women in the class said, You know, I just don't I just do not get it. Like, how often does that work? Like, how often does a dude making a rock? sound out you on the street get you going home with him? Like, I don't know of anyone who would ever do whatever respond this way? And another student, I'm just I'm not going to name him. But But do you know, you know who it is? Said I think completely correctly? No, he said it. I'm glad he did. Exactly. Before I was gonna say it. He said, Yeah, but often, and this is not someone who would ever CAC all anyone, I just like, just know this for sure. He said, often, the cat calls aren't for the woman. That's not who's being communicated with the dude who's catcalling or like a construction site or something is often communicating with the other dudes, like that's who the communication is for. It's not actually about the successful completion of sexual encounter as the result of a gross move on the street that makes a woman feel less safe, right? It's about still, you know, inappropriate. And we all we all hope all of us, you know, wish it wasn't happening. But it's about a way of establishing rank between the men.

**Bret** 31:19

Yep. Um, in that case, I also wonder if there's not just a distortion that comes from the big anonymous society, and if the cat call would be toned way down in a normal, you know, Township,

**Heather** 31:31

and one of the other guys on the crew be like this, my sister. Yeah, don't do that. Yeah.

**Bret** 31:38

I just wanted to add one last thing, it occurs to me that there's actually a hint of this failure to grok, based on seeing only one side of the interaction in the history of the study of echolocation. So you'll, you'll remember, because we've talked about it before, that echolocation was first understood in animals. When Griffin Don Griffin accidentally, he was an undergraduate at Harvard at the time. And he accidentally went to talk to a physicist and he put a cage full of bats down on the desk, and it went, the ultrasonic detector went crazy there because the bats were echolocating. And he put two and two together, but hundreds of years earlier, an Italian guy who I

**Heather** 32:28

that's the kind of serendipity that could never happen. Now you don't you don't just walk into a physicists office with a cage full of bats. It's an undergraduate, right?

**Bret** 32:35

And I mean, it was a whole different era. And yeah, Don Griffin is a great guy. And it was a really wonderful story. the right guy made the discovery anyways, super intelligence has contributed a great deal since then. But anyway, that couple 100 years earlier, I believe, a an Italian guy named spotland Zani I think seanie. Maybe. Anyway, in any case, he was a naturalist. He was trying to figure out how bats navigate in the dark. And he got close. Right? He ran some experiments. And he demonstrated that it was their ears, not their eyes. And he did that by doing things like plugging their ears. And he found actually, the bats if you plugged both ears, they actually I think did okay. And if you plugged one year, they didn't, right. And the the way he tested whether or not they were able to find their way in the dark was by measuring their weight, right? So he would plug their ears and then recapture them and see if they'd lost weight. The idea being if, you know, so anyway, he did that. And then so he's got all the pieces of the puzzle. They navigate out their ears somehow. But he wrongly concludes that what must be going on is that objects make noise, and the bats are tuning into it. Right. And so the point is, he's got the one side of the thing, but he can't see the bat is emitting sounds that he can't hear.

**Heather** 33:54

Yeah, that's so good. So until you were right, it's Lazaro spawn Zani lived in the 1700s. Yep, died in 1799.

**Bret** 34:02

So anyway, I think it's a it's a perfect indicator of how you can go wrong, because you're only seeing half the interaction and that the real thing is the emergent space between and that that's what's going on with consciousness. Yeah,

**Heather** 34:14

yeah, that's, that's good. We should we should remember this. Yes.

**Bret** 34:17

It'd be great if we should record it. And then, I don't know. Put it into the world. Yeah, it can remind us.

**Heather** 34:24

Excellent. Where we are that was the consciousness question. Markets can't solve everything. How much is this? I don't know what this question means. How much is the species average lifetime the limiting factor here? market failure be a function of the participants of its participants probability of being alive, to realize their investments, profits and costs?

**Bret** 34:48

Yes, 100% actually, and the way I tried it the way I say this, I'm not sure this is the best way to say it. Maybe there's some better way but the end Individual is a description of the limits of your capacity to actually affect your genes well being going forward. So in other words, you actually selection doesn't care more about whether you're in the next generation than it does five generations down the road. But the point is your ability to affect your genes present to the next generation is vastly greater than your ability to do anything in the present that will affect how many of your genes are around five generations later. And so your focus is tuned to that over which your ancestors had influence and which mattered to fitness. So the point is, we now live very different lives, and we now have the ability to have effects that are vastly greater, at much greater scale, we can do things at industrial scale that pollute oceans and atmospheres. And we can do things that have an effect many, many generations down the road. And we have not had our perception retuned for that, so our sense of self is at the wrong scale self is really about lineage, but it's been limited down to that part of the lineage that actually you have influence over rather than the modern version, which is actually you could kill off the lineage, you can make decisions now that two generations from now will end humanity. And you shouldn't that should be every bit as important to you as not stepping in front of a bus. Yeah. So anyway, yeah, we're in need

**Heather** 36:32

of it's like it's another downside of senescence.

**Bret** 36:35

Well, yes. Now there are upsides to senescence to Yeah, of course, but people don't see it that way, in part because they're so obsessed with their individual nature, and they don't understand that really, they're part of a lineage and that what matters. What should matter is the well being of lineage going forward. And yes, you do get a delicious little slice where you get to be, you know, conscious and coherent in the middle, but that's not the point of the exercise.

**Heather** 37:02

Yeah. What do you guys think about this simple rubric? Sex equals bedrock? gender equals clay? Also, is random mutation really random? And if not, should we ditch the term mimicry? I am expressively grateful to you both. That was a lot of questions. Yeah.

**Bret** 37:22

Who was that?

**Heather** 37:24

The person is called we haven't met

**Bret** 37:27

Okay, so let's let's let's try this one at a time.

**Heather** 37:30

The simple rubric sex equals bedrock gender equals clay. Yeah, I mean, it works I don't think it's the it's the I don't think is the most helpful that I've heard

**Bret** 37:42

obvious pun. bedrock. I mean, I'm not gonna make the pun but I mean, you see it right? Sex equal so I which sex? do they mean? They mean sexual interaction? Or do they mean sexual reproduction?

**Heather** 38:01

Like sexism and sexist binary, and gender is friendly by modal? It's a sex gender comparison.

**Bret** 38:08

Right? Yeah, I agree with you. I think you can you could wrestle something from that. But I think, you know, we, what we have said, and I still think it's the right way to do it is that gender is the software of sex. Yep. And this is really how it works and why it's more flexible and all of those things. Yeah,

**Heather** 38:29

yeah. The, I guess the both the sort of soils ecologist and ceramicist, in me, don't quite like the clay bedrock thing doesn't quite work because both exist without the other sometimes, but sometimes is underlying a sandy soil or loamy. soil, not a clay, soil and clay can of course exist without bedrock.

**Bret** 38:48

I think I just figured out what they're getting at, though. Okay. The point is, they're not really talking about it being distributed. In a strata, they're talking about just simple malleability, rock changes slowly over time. Clay can change more quickly, in that regard. Yeah, I agree. That's fair. Yeah. But software versus hardware is probably more useful. Yeah, yeah. Or more dimensions to

**Heather** 39:15

it. Okay. 40 minutes? Well, we've only just barely gotten into this anyway, we're gonna keep going a little bit. Also, is random mutation really random? And if not, should we ditch the term mimicry? So that's actually that's the second question doesn't fall off. We should probably

**Bret** 39:31

speak, I don't think the place to attack this is the randomness of mutation. There is some level at which we can make arguments for things other than random mutation. In other words, even just the rate of mutation is malleable, right? By moving things around the genome, we can adjust how frequently they mutate. So that is in some sense a non random process. There may even be examples and there is some evidence for places in which random is not exactly which means is not exactly random. But by and large, random mutation is not the problem with the model. The problem with the model is the way in which design space is explored. And so I have, as we've talked about on the podcast before, I've gotten into trouble by proposing something I call explorer modes in which selection is more systematic than random at searching design space for useful adaptations. I believe this is essentially certain to exist, that there are many examples, consciousness being one. But the point is that model in which design space is searched non randomly, is compatible with fully random mutation. I'm not saying that there is nothing non random in mutation, but I'm saying you don't need non randomness in mutation in order to get a supercharged evolutionary process.

**Heather** 40:54

And that non random search is epigenetic at least since you lotto Yes. May be potentially sensitive stricto as well, epigenetic census strict Oh, yeah. And then, if not, should we ditch the term mimicry? Which, you know, I think selection selection works over here to find a similar form. Regardless of exactly what the random distribution of randomness or non randomness is, so I feel like that's a bit of a non sequitur. Yep. Agreed. With regards to your hypothesis of screentime, and autism, would we expect to see a similar correlation from prolific book reading or TV watching? Why or why not? Seems like these also detract from our evolved social cues. So TV watching Yeah, it's a screen. I mean, I guess I don't I we never meant I at least didn't mean to suggest that putting your kid in front of a, like an iPhone screen was going to be worse than parking them in front of a TV using the TV as a babysitter. book reading is different. Because it's, it's not pretending to be the entire complement of human being now Breton, I fall out a little bit differently in terms of what we think that the actual risks of, especially early reading is on performance are predictable ways.

**Bret** 42:16

And semi, okay, you know, there are physical risks to your eyes, for example. And then there are also risks about it a fire hose of information and misinformation, pointed at a brain that may not know how to sort the two.

**Heather** 42:34

And, you know, you say, as someone who for a number of reasons didn't read much as a child and I who had that, who, who asked for all the fire hoses, you dealt Well, the fire all the time. Yeah, as as in part a result of that, but also spent a lot of time outside and getting a lot, I just saw a lot of the world as well experienced, like tactilely. And since really a lot of the world as well, I was able to, to a large degree, I think, quite effectively parse the various poses of information and figured out as such, you know, now, I think better able than many, many people to actually quickly assess a lot of streams of information coming in in text like that. Not that No way. Yes, maybe even though it comes in on a weird source, that

**Bret** 43:16

sort of thing. But I don't I don't think that's really where this question is, right.

**Heather** 43:19

So I mean, that's why I said I don't, it's not, regardless of what were you when I fall out in terms of what we think the risks of early of a lot of book reading might be, I don't think I don't think that prolific book reading is, you know, anywhere close to the kind of danger that we are positing for young children watching human and humanoid faces that look like they could respond, but then do not respond to the child engaging is there, you know, because, you know, if you're reading a book, you may really want to engage with the characters. But there's a level of abstraction, that that hope the book itself is like holding you at a distance in a way that screens do not appear to be doing at least the younger you are, the more likely you are to be confused by it.

**Bret** 44:09

Yeah, I think I would, I would say the same thing. But I might push it even a little bit farther and say, the mechanism of the book is a safety mechanism. Right? The book may be trying to conjure things that are plausible in your mind, but it does not pretend in the same way that the screen does, and that the screen pretend to be those things that doesn't pretend to be them. And that basically what we have is a market, solving the problem of how do we make the people look ever more realistic with no thought about is that a good idea to put children in front of something that's that realistic, and does not interact? It's a one way interaction. So in fact, it's almost the mirror image of the consciousness question we were dealing with a couple questions ago, because in some sense, it seems like something with an emergent consciousness. connection to you. And it doesn't work like one. Yeah. But my point would be,

**Heather** 45:04

whereas a book, I can't mistake this for another human being right?

**Bret** 45:07

It's very obviously a book, right. And there's you can't for one minute mistake, it is anything other. What I would argue, by the way, I should say this is not our hypothesis about autism, and screens, the part of it that is our hypothesis is, so the hypothesis that screens are doing it, that something about parking kids in front of screens comes from the study about weather and its correlation with autism, which suggests that people who were like kids were likely to be in front of screens more would be more vulnerable. The part that we're adding to that is, here's why that makes sense. You're learning to interact in a emergent cognitive way. And then somebody puts you in front of something that has many of the components, but it's missing the key one, which is that it's not reacting to you. And that would do it. So what this predicts if it's true, is that black and white TVs better than color TVs? Now, there's no such thing as a black and white TV anymore. But there used to be commonly. And the point is, there's a bit, is it black and white? Or is it color, the black and white TV, maybe kind of looks like people at night, sort of so it's maybe not perfect. But probably, if you put a yellow filter on a TV, right, so that the child knew Oh, those are the yellow filter people, they don't interact with me, the people in normal color do

**Heather** 46:30

this is I mean, this is so so good. And in fact, you know, we employ these sorts of rules in other places too. And like this, this is this is a useful thing to do in life is that if you want to be able to do something that might not be optimal for you. And you want to be able to discriminate between these two conditions, which otherwise might seem really similar and learn to behave one way under one condition another way under another, like find a bit that you can flip. Yep. And you know, obviously, before you even said yellow filter, I was thinking of what we do with ping pong, right? Where when we're rallying, before we start playing a game now, we play with an orange ball. And, you know, I, I love, I love to hit it no matter where it is.

**Bret** 47:10

Really See if you can get it to see if you're gonna let it go. Because you'll want to point

**Heather** 47:14

exactly, and so since we actually started doing that, I've become better at not hitting the balls that are out when we're playing with the white ball, even though I find it much more fun to do. So like sometimes they do it anyway. But I might there's something that like goes what white game, white ball means we're in a game. orange ball means we're rallying slightly different, you know, just so that

**Bret** 47:37

that was a hypothesis that that would work. And we've gone to different co Yeah, yeah, my thought was, I'd like I don't, if we're not if we're just rallying, I want to be able to chase stuff down, but I don't want to mess up my game. So anyway, turns out it works. It does, which is cool. And I want to draw one other connection here. So you have described sexual autism, a sexual autism of the current moment. Now, I think you have connected this to porn. Yeah. And I want to draw the full circle here, because the point is, all right,

**Heather** 48:14

sexual autism having nothing to do with actual artists, right, right having to do with a, it produces a kind of set of behavior. I'm arguing that porn, we are arguing the book that, that that, especially watching porn is going to produce a set of behaviors that is going to render people less able to read and less caring about emotional states. With with regard to sexual interactions, that is somewhat analogous to the difficulty that autistic people have in reading and responding to emotional states, right? Without without claiming that, you know, autistic people are more likely to have this have this or I guess I'm using the term I actually went to the clinical definition of autism and went like, actually, the description of how many people men in particular, are engaging in sex. Now, in this porn rife society seems to really over in the sexual sphere map on to this, like DSM, clinical diagnosis of autism, right.

**Bret** 49:15

And so the connection I want to draw is, you've got men whose some large fraction of their sexual experience is now screen based and not realistic, because you've got these, basically corporations looking to deliver them what they will spend money for. So basically, if the state of being turned on is frequently accompanied by unrealistic human interactions that are designed for one party with no interaction with another party, right. And the point is, it results in completely wrong lessons being learned about the way people interact sexually, which then get imported into actual real bedrooms with real people with whom you ought to be really communicating. And so the point is this may actually be just literal. Yeah, right. It may be that same developmental break where the screens are realistic and compelling. And that's misinforming the mind as to what a particular kind of interaction is. And you know, like that.

**Heather** 50:20

Yeah. Yes? If so, this is two questions from the same person, but I'm not sure they're directly related. If the extinction of the Irish elk due to huge antlers is an example of sexual over selection, leading to mal adaptation, what are other examples in humans question mark, and more in sexual selection leading to male adaptation? If we are not optimized for a new environment, should we play it safe and only have ugly mates and kids?

**Bret** 50:52

Alright, I'm struggling with the Irish elk and whether or not there is actually compelling evidence. Yeah, I don't know stiction is the result of the impressive antlers? I do

**Heather** 51:01

not know that to be true. I don't know the Irish elk story that well, and I don't know when and so like I without knowing when I don't know if this is a viable hypothesis at all. But if if the when of the extinction of the Irish elk was after humans are in Ireland, then that giant rock, may well have just made them easier to hunt. Yeah, that is, you know, that's downstream of sexual selection, having made that giant rack but

**Bret** 51:28

right, but if it evolved before people were there, which it most certainly did,

**Heather** 51:31

and then it's a novel, it's a novel selection for us. Here's the reason

**Bret** 51:35

I sort of doubt the connection that is being handed out here is that that rack of antlers, comes with a extreme polygynous mating system. The disadvantage does not flow to the females who don't have it. Therefore, all it is necessary for the species to go from one moment in time to the next moment in time is for there to be enough males to fertilize all the females. That is to say, even if the males are massively more vulnerable because of those antlers, which they almost certainly are, it doesn't adjust the species likelihood of going extinct, because what you need is females to be fertilized. And it only takes a tiny number of males to do that. So

**Heather** 52:20

yeah, although you would expect a sort of a constant bottlenecking pressure, if a lot of the males were getting picked off by predators because they're more susceptible. Well, I mean, but if you unless the hobbies as a hobby applies here, and they're just they're doing brilliantly despite the handicap, I

**Bret** 52:36

think the thing is, you'll you'll get whatever the populate down to a very tiny percentage of the males, which is not rare in these systems anyway. And even to the extent that it was what we've seen time and again, with these near extinction events where a population rebounds as a result of human protection of like elephants, seals or otters is that we just get this inbreeding thing wrong. inbreeding is very bad early on. And then it exposes all of the deleterious recessive to selection. And so the point is, it actually cures the system of the very recessives that are the hazard. So so I'm not too worried about it in the Irish healthcare,

**Heather** 53:17

I'm not actually worried about it, either. Because I know I set a sort of a constant low grade bottlenecking without actually saying what I think you heard me say about it like going, you know, repeatedly down to close to extinction. Because if you have if the female elk don't have the antlers at all, which I think they don't, and there are a few males, you know, you've actually got more than 50% of the population that's still on the gene pool you're producing. So it's so it's not it's just it's just a by what I said was a bottleneck. And you know, it's a restriction of the gene pool. That isn't down to anything close to extinction level restriction,

**Bret** 53:49

right. And of course, that bottlenecking some point, I will reveal the version of sexual selection in which this all makes sense where that bottlenecking is, in fact, the point of these systems and it has to do with females engaging in a selectivity that is not nearly so nonsensical as

**Heather** 54:13

biological silly lady females,

**Bret** 54:15

right. It's about something that we can't see very easily, but it's there nonetheless.

**Heather** 54:20

Good. Thank you for everything. interweb mama hi and Papa Weinstein. I am a beekeeper in Texas. I am curious if your thoughts on the honeybee presence in North America in regard to their impact on other pollinators here.

**Bret** 54:36

Well, if I understand the story of honeybees in North America, they are in fact invasives from Asia. I

**Heather** 54:43

think that I mean that that's implied without the specificity, the geographic specificity and the question, right, it's a Miss mellifera I believe, and I can't see my screen. Where are they from? You can keep

**Bret** 54:57

talking. So the question really is how long Have they been here? If you and I have the right story about this,

**Heather** 55:03

it says, well just you know, just Wikipedia, Western honeybee or European honeybee. So I, I don't know if you're right, if it's Asia, or these guys are right, if it's Europe, but either way, with human assistance Western honeybee now occupies every continent except Antarctica.

**Bret** 55:21

Yeah, so let's put it this way. I think this is the standard story of an invasive, the impact on other pollinators was no doubt devastating. The impact on Flora That is to say plants was probably pretty radical. But at this point, that ship has so long sailed, that this is effectively now our natural pollinator and we ought to defend it as such. And the other thing that I would say is there actually be the harm of invasive species is one of these underappreciated effects of humans, that the devastation that comes from invasive species is massive. But in this case, we have something rather different than we see in the cases that you and I have mentioned on the stream before of eucalyptus, which is devastating parts of California, devastating the Andes, or English Ivy, which is devastating the Pacific Northwest and other places. These things drive out native species and do not tend to contribute very much in terms of habitat. In other words, they create a kind of empty forest phenomenon because very few things eat Eucalyptus or English ivy. Well, on the other hand, the honeybee is obviously playing a very positive role with respect to pollination and a lot of plants. So it may have driven diversity down by competing with other pollinators, but it is doing some of the very heavy lifting in these ecosystems anyway. And so I don't know it's possible that ecologists have two different categories of invasives like evil invasives and contributing invasives. But in this case, I would say where we you know, where we faced with the initial habitat and its initial pollinators, we got to keep the honeybee out. Yeah, but now that the honeybee is here, we got to protect it because it is effectively our native pollinator now.

**Heather** 57:23

Yep. And I will just put on my screen for a moment, Zack, the animal diversity web ad w out of university of michigan museum as well G is a great source for questions on particulars on animals, especially at the higher level clades. But in this case, actually, this entry on a piece of paper was written co written by George Hammond, I was a friend of ours in grad school who were in grad school with George and, and therefore it was often these individual level species counts on AWS are written by undergrads as part of some, you know, biology for beatniks course, or something that their professor assigns them. And it's not always clear how well it's done, given the George's an author on this. I mean, I know this is, you know, probably decades old at this point. But I trust this initial assessment, geographic range, as Melissa is native to Europe, Western Asia, and Africa, and human introduction to other continents started in the 17th century. And, and like that, so

**Bret** 58:22

yep, there we go. So there you have it.

**Heather** 58:26

To do Here we go. Greetings from Norway. Is there some evolutionary aspect of male pattern baldness? And are there some cultural differences for this phenomenon? And what's the best treatment for it? It seems to be huge in Scandinavia. I will say actually, that the question actually reads, is there some evolutionary aspect of male pattern baldness? pattern, which I think we should address on a separate stream?

**Bret** 58:48

Yes. Right, with Eagle pattern baldness, which is my favorite, but this is a really good question. There. I think the problem is this. You've got two things tied up here. One is it there is pretty clearly a senescent component. And the question is, is the pattern the result of senescence? It is just the failure of some adaptive state which is having hair on the top of your head? Or is the pattern and adaptation and of itself? In other words, is it a modification of the senescent failure in some way that has benefits? And you know, at some level, what you ultimately need to do is figure out what the adaptive purpose of hair on the top of the head is and why it might be altered over time. Right? There's a thermal argument there is a UV protection argument. And frankly, I don't know where any of I don't frankly, even know if there is a literature in which this is well addressed.

**Heather** 59:47

I don't lie we've retained here where we have. Yeah, I mean, certainly some of it is sexual. Some of it is pheromonal pheromone distribution inside Yeah,

**Bret** 59:55

it's probably not on the top of the head. Yeah. So Anyway I think I think a deeper dive needs to be done on okay why is the hair there in the first place what would the natural state of it be presumably dreadlocks would be the thing which you know there are lots of you know hey look if you have dreadlocks to the natural state it's on the top of the head oh that's true, but I think it's gone I

**Heather** 1:00:19

mean, I guess maybe before scissors before blades

**Bret** 1:00:23

before before metallurgy

**Heather** 1:00:27

I have no idea I like I don't know what length hair stops growing in different human populations

**Bret** 1:00:35

Yeah, well anyway, let's take it to be something like dreadlocks okay. And something like dreadlocks would serve a couple of purposes very likely. One would be thermal. And other would be cushioning the I mean basically a helmet. I mean, seriously, I know you're Yeah, my head is very vulnerable. You know, our giant brains

**Heather** 1:00:58

make it dreadlocks more than just thick hair.

**Bret** 1:01:01

Yeah, I think so. Because I think the the thing about dreadlocks is the hairs are multiplied inter linked. And you know, what we do to hair is kind of weird separating out all the strands and there's just a lot less cushioning there. I have the feeling I've just said something that's gonna get me cancelled? Yeah, I don't think any answers I

**Heather** 1:01:21

just I think this is maybe the farthest into like adaptive arm waving stories that I maybe have ever seen. You go.

**Bret** 1:01:29

Alright, yeah, good hay,

**Heather** 1:01:30

you are not prone to them.

**Bret** 1:01:32

It is a apotheosis. And it makes certain predictions. One is to otherwise similar people in an otherwise similar accident

**Heather** 1:01:40

propelled at high speed into a wall.

**Bret** 1:01:42

And there are a lot of accidents. I'm on the what could go wrong channel, let me tell you, there are a lot of things that can go wrong. And the question is, is it likely to be less serious? If you have dreadlocks, then, you know, hair that you separated all the strands, and I would say almost certainly be true. Another prediction of the hypothesis would just simply be that we could measure the force absorption, you could just experimentally measure. But I

**Heather** 1:02:05

mean, if you if you're arguing for the original value of hair, yep, we're talking about African populations.

**Bret** 1:02:13

Probably not thermal. Well,

**Heather** 1:02:15

we're not talking about dreadlocks versus you know, hair that looks like mine, where you're separating out all the strands, you're talking about very tightly coiled hair, that it seems to me would provide more of a cushioning value than like my hair, even your hair would. So I just I don't think that's the right gun. I think you've created a sort of a straw man comparison, I

**Bret** 1:02:35

sort of feel like you're you're I don't see that this is this is this runs counter. Okay. All right, if you've got hair that would be playing that role, and kind of a cushioning role you got here that would play that role in the ancestral form. And then presumably, it would continue to play that role on a lot of planet Earth prior to modern haircare. So it all seems consistent to me. But anyway, basic point is, hey, that's a hypothesis. It makes predictions.

**Heather** 1:03:08

Yeah, I mean, but, but there's other stuff there. Which is to say, you know, I think you know, hair belong to people of African descent is more easily turned into dreadlocks, I believe, than hair belong to people of East Asian or European descent.

**Bret** 1:03:25

Is that a challenge? Sure. Okay, I'm on it.

**Heather** 1:03:29

Great. We need to switch. Oh, my God, guys. There were so many good questions here that okay, well, let me just get like three more quick and then we'll switch. I promised that I was going to share a joke about bibliographies. But you probably won't get the reference.

**Bret** 1:03:44

Ah, terrible.

**Heather** 1:03:48

If evolution were to rerun from the beginning on Earth, would you expect sexual dimorphism in the form of small as it began its versus large mobile gametes to evolve? If not, would you expect sexual reproduction at all? Yes, absolutely. And I sagami, which is what that's called having two distinct forms would evolve. If I wasn't trying to race through these now I'd put up a cool graph sort of describing it from Yeah,

**Bret** 1:04:09

but obviously evolution on other planets were expected here. Yeah, I just it's not the only way. But yes, we would expect to see it.

**Heather** 1:04:18

Yep. Okay, one more, and then we'll move to the next one. And we will get back to some of these next week. I'm from Texas, and was outside trying to save my plants from the freeze, where my neighbor came outside to tell me this weather is global warming and Biden will help us any truth to that statement. I'd like to respond kindly let us

**Bret** 1:04:36

know when you see him.

**Heather** 1:04:38

Biden or the neighbor Biden. So that's, I mean, that's true. That's two claims. Right? And it's really hard to assess either of them. The freeze that you are getting right now is due to global warming. We can't know that. You know, with individual weather events. We can't we can't attribute to much longer scale, climate, climate change, but over time, You know, they they add up and they start to look like climate. And then and Biden will help us.

**Bret** 1:05:07

Biden will increase the likelihood of our participating in the collective governance exerted by nations in

**Heather** 1:05:16

the sense that he just was being advised by anyone who knew what they were doing. Well,

**Bret** 1:05:20

you know, the fact that we will now sit down at the table, yeah, good. What we will do at the table, probably the usual corrupt garbage and it will, you know, be a drop in the bucket, and it will not take advantage of any of the opportunities that would actually leverage the climate predicament for the opportunity that it provides. Yeah.

**Heather** 1:05:41

That's right. Okay, so I don't have a line here. I'm gonna see if I can figure out I should probably be able to figure it out.

**Heather** 1:05:55

Yeah, I see that. Okay. When? Yeah. When Daniel Trachtenberg talks about creating a human collective intelligence, do you think this means generating a new kind of consciousness? And would we individual humans and this consciousness be able to communicate somehow? Or would it be like us trying to talk with ourselves? If possible, what kind of signals could we expect to receive from the CI? Love the podcast?

**Bret** 1:06:27

I don't want to speak for Daniel, but I have the slides.

**Heather** 1:06:29

Also. Sorry, can you elaborate more on the concept of exploring design space, as you have mentioned when talking about both evolution and humans?

**Bret** 1:06:36

Sure, I can do that quickly. But I think what Daniel is talking about is something that's more mundane than what you're imagining, right? We are already involved in some kind of consciousness. It's very haphazard. And it's very polluted by some of the things that we allow to shape the exchange of ideas. In other words, we know that our collective consciousness has tech platforms, exerting influence over what you can and can't say, and who can say what and, you know, in interspersing, advertisements, and all of these things that pollute our collective thinking to the question is, can we do it better. And if we do it better, it will feel a lot like, there are shared assumptions away. You know, until five minutes ago, the West was pretty much in agreement, that Liberty was a good thing, that everybody deserved it, you know, these sorts of things. That's what collective consciousness feels like, is like, you don't have to walk into a room. And there's a pretty darn good chance that the person you're about to sit down with an exchange, the first words ever is going to have a shared sense that racism is bad. Opportunity is good, that, you know, being healthy is desirable, right? Like, that sort of thing is what collective consciousness looks like. And we're just in a much tougher predicament generating it. So facilitating it. So it turns into something higher quality is very much an important objective, but I don't think it's some, I don't think it would feel like something radically new, it would just feel like, you know, people on average, weren't as confused as they are now.

**Heather** 1:08:13

Did you get the exploring design space piece in there?

**Bret** 1:08:15

No, I didn't. Exploring design space is pretty simple. Imagine you are some kind of creature that there is some opportunity for a creature that isn't exactly like you. And the question is, can you get from here to there, one of the things that would dictate whether you get from here to there is whether everything between here and there is an improvement. Right? You know, it may be that there's an opportunity in this room that would be just killer for a canary light creature. But the problem is that, you know, for, you know, if you bring, you know, I don't know, ferrets in here, and you breed them, you know, can they detect the canary opportunity enough that after, you know, many millions of years that they would be Canary like, probably not because there's a lot of gobbledygook between fair and Canary so so I'm

**Heather** 1:09:04

the go to example is eyes. Right? The eyes of the complex mollusks, the cephalopods, octopus and squid are more efficiently built than ours are. And we can imagine cheaper to run and maybe better or know about the better part but cheaper to run gem, no blind spot, and no blind spot, right. But in order for us to have eyes as vertebrates, like they have, we'd have to go through the adaptive valley of having less and less and less and less good vision. Before we got to a spot where you could rebuild, you'll build up something from scratch, I mean, unless we start forming eyes somewhere else on our body and then you know, having now a second set of eyes can disappear these but to use the same, the same framework that is already being used, you know, be it locomotory or cardiovascularly, or centrally, whatever it is. You can't take selection can't move you pure selection cannot move you to a less fit state.

**Bret** 1:09:58

So just To answer the question, finally, imagine that you are a rodent of a given size. There is a question about whether or not scaled up by 50%, you'd be better off or worse off, right? It might be that scaled up by 50%, you'd be able to bite into some seeds that you can't currently access because they're too big to fit in your mouth or your muscles aren't strong enough to crack them, right? So there's an opportunity from being bigger, and then there's the cost of having to fuel that larger body form, right? Now imagine if instead of random mutation, figuring out whether or not it made sense to be 50% bigger, there was a module that asked the question more directly, right? In other words, in many in many habitats, a mammal the size, we're reading, the size has been scaled up successfully. So can selection learn that that's a question rather than having to discover it each and every time, right? That sort of thing.

**Heather** 1:11:01

Very good. masked sneetches and sneetches. Without meets the loyalty oath crusade from catch 22 which we read from many episodes ago. I would love a masked mask and snitch shirt sold together or similar malicious to tyranny compliance merchandise. Yeah, I thought I liked that idea. It's cool. And I've thought about snitch illustrations instantly, we are still looking through the artists submissions. Thank you for those. My concern is one of copyright honestly, with snitches, I just don't I haven't I haven't looked into it. But I'm sure that the the Seuss world has feelings about whether or not people use stitches on things. She's got her head right under your

**Bret** 1:11:48

face. Yeah, no, but I like the idea in principle. Yeah. So anyway, yeah. Is it possible is the question?

**Heather** 1:11:55

Yeah. Hey, Bret. Hi there. Do you have any favorite metal exercises? I think that's going to be mental, but I'm gonna leave it as metal. Do you have any favorite metal exercises are introspective questions for while on the herbs? I know you don't smoke anymore. But I can imagine it affecting your thinking as it has done to me, maybe it does mean metal?

**Bret** 1:12:15

Yeah. Yeah, I mean, you know, basically, it's not worth doing exercises, if they ain't metal. That's my feeling. No mental exercise. Sure. I mean, it's all mental exercises every day, right. And, you know, a lot of them aren't conscious. They're just ways of looking at something and having an intuition of what might give way and figuring out how to try it out as if the thing had given away and seeing what flows from and I don't know how to describe it. But as I've said, Before, we teach people how to do certain things, and certain things that actually can't be taught. And the How do you make significant mental breakthroughs in a field is one of these can't be taught. Because even if you take somebody who does something and knows what they do, that method is very unlikely to work for somebody else. It is not that there's no lesson in it. But But these things are deeply personal. And frankly, most of this comes down to motivation. That is to say, you have to have a kind of perverse relationship with frustration, or some kind of fruitless exploration is that you know that if you have the sense of like, I have to beat that puzzle. I know, it's beatable, and I have to beat it, then you have to have some sense of where to spend your time. I think Einstein has said some very clever things about the allocation of time to figuring out what the question is relative to figuring out how it is answered. But in any case, you have to have enough reward that you actually develop the capacity to do so. I mean, it is an explorer mode question.

**Heather** 1:14:07

Yeah, well, I mean, this, there's also, I feel like I did this to some degree before we were together, but I really feel like you are one of the you know, maybe the master of this, and I really come to recognize it as one of the things that you do specifically, is when, when assessing anything, not that you're observing directly, so separate from you go out and observe a pattern, and now you're trying to figure out what the question is. But when you are told something, you maybe start or at least very quickly get to what must be true, if that is true. What is the foundation on which that claim is built, and you try to trace all of them back? And, you know, almost inevitably, at least one of the two things on which the claim is built are at least a little shaky. Right and you know, very many of the Things that we believe to be true are true. And the foundations on which they're built turned out to be true, even though one or two of the sort of like foundational pieces on which they're built aren't as easy to demonstrate as you might like, but knowing exactly what it is that your framework is built on. So that I mean in parts of so that so many things, but so that in part, you are appropriately surprised when it does or does not fail right later, you know, oh, well, but I was told x, okay. But also I had done all the analysis going back to sort of root situation and assess that there were some of the things that were necessary to be true for that to be true that I wasn't so sure about. And me, I feel like you do this with everything. Well, they're not and I say that, and like that, that is not irritating to live with. Like, that's not infuriating habit.

**Bret** 1:15:55

That's surprising.

**Heather** 1:15:57

I know, I think it would sound like it was what I at least for me, it's not well,

**Bret** 1:16:00

I think, you know, in part there is there's a part of this that depends on a kind of concentrated insensitivity to certain things even just in yourself. Yeah. Right. And so, just the simple discomfort of thinking really ridiculous thoughts. Like if you're somebody who as you start thinking really ridiculous thoughts, find finds yourself uncomfortable, like why am I even allowing my brain to play that game? Right? If you do that, there's certain things you cannot find, right? You will, you will talk yourself out of thinking the thought, whereas, you know, if you can, which I

**Heather** 1:16:41

mean, that is the game that the media is playing with us, right around things like COVID origins, like Scooby torch, it's like it, it assumes that if you tell people often enough, this thing is not worth your consideration. You'd be crazy to think that thing. Most people will go like, okay, I can't see that thing. Because I've been totally be crazy to think that thing,

**Bret** 1:17:01

right? And then so you're right, this is the right thing, the shell game. In that case, the shell game that comes from the implication that for this virus to be unnatural as those of us who think lab leak is likely wonder if it is the implication is that it's some whole other level of unnatural that we're actually claiming, which makes us sound insane. Right? So we intuitively, even those of us who know very little about what goes on in the lab, intuitively know that we are not in a position to design a virus that's going to go out and infect people effectively, right? So the point is, if they can falsely portray us as claiming that then we're easy to dismiss, because people giving that thought the chance just makes them feel stupid, right? Whereas, you know, biologists who don't know how viruses work using natural selection to solve problems they can't yet solve, right? That's a lot easier to imagine. Right? You know, we're the people who, you know, turned bison like creatures into domestic cattle, you know, expert geneticists, no,

**Heather** 1:18:06

no, but they were again, a function researchers, they weren't didn't call themselves that,

**Bret** 1:18:09

right, then they use the mechanism that the fact is, any reasonable person, you know, could do just simply recognizing that offspring tend to look like their parents, and therefore, if you want offspring that look like that breed parents that have produced those offspring, etc, etc. So

**Heather** 1:18:25

I would like to ask you, though, what the hell evolution has to do with virology or epidemiology and why you think you get to say anything in the space?

**Bret** 1:18:32

Right? Yeah, it is an amazing thing that people don't recognize the ubiquity of this level of analysis and all of the questions that they're asking, right?

**Heather** 1:18:44

Love the podcast, can I get one of those clubhouse invites?

**Bret** 1:18:48

Let's put it this way. We should distribute them, there's no reason not to. So as I acquire invites, I am interested in bringing people who want to make use of them in and I think, you know, the one thing I can't really convey is that the the thing is evolving, and the evolution looks like conversation. And for some reason, in the last month, all sorts of people that you couldn't hope to be in the same room with have dropped in and had amazing conversations and taking questions from the audience and all of this. So there's a lot going on there. So anyway, yes, we will figure out how to get some more invites into the world

**Heather** 1:19:30

could so I just we have so many questions this time, and we're not going to get to the vast majority of them. So let's just try to get through like a few more really quick like, could prolonged mask wearing lead to a more fragile immune system in general beyond just COVID. I'm thinking along the lines of bubble boy, in contrast to how progressive exposure to germs allergens make it anti fragile. I really doubt it. And we responded to this, I think last week in the q&a, and I couldn't point to exactly where

**Bret** 1:19:53

there's a level at which it will be true. It's not a level at which you should avoid you know, so

**Heather** 1:20:00

Be more true if you like really locked yourself in your house and you live alone and you never go out and you you know put your groceries that are delivered delivered to you in a like airlock for a day before bring them in like you know every time you go out you get a little bit a tiny bit of exposure to something if you if you're just doing your own grocery shopping or occasionally occasionally interacting with anyone

**Bret** 1:20:24

but in some sense the hygiene hypothesis for allergies is this taken to an extreme taken doings right so if yes, you know overly sanitize your children's lives, you're likely to give them an allergy rather than prevent them from getting

**Heather** 1:20:41

sick. Yep, true true. I'm a disaffected lefty who found you guys while wandering the political wilderness. Cool welcome. When I heard about the intellectual dark web I was turned off by the label it who has too many negative connotations want you to come up with a new name for our movement? While So Eric Weinstein Brett's brother, who named it did so with intention and he's got a good short video out on his channel Eric Weinstein's YouTube channel from I don't know, probably a year or two, two and a half ago at this point, explaining why he named it that it might it might morph into something something different, but yeah, so I'm not taking on a renaming campaign at this point. Yeah,

**Bret** 1:21:20

it was, ironically named Yeah. And in part because we knew that we would be attacked of certain things. And so, you know, stealing their fire by labeling ourselves something absurd, was Eric's intent.

**Heather** 1:21:33

I wish my props were like you too. If it were so maybe I wouldn't have switched from biology to math. And I learned more about how to think from watching YouTube videos than from lectures. Yeah, unfortunately, most lectures suck. That's part of why. Since George Floyd died, my hospital does daily moment of silence, quote, to think about what we're doing individually and collectively to fight racial injustice. Many ignore, feel awkward, get annoyed. What are your thoughts? Yeah, I think it's making things worse. Yeah, it's making these things or making things worse, people

**Bret** 1:22:04

are going to resent it. And the fact is, we should do a lot of thinking about racial injustice, and especially about the fact that a lot of it is awfully subtle and doesn't function through the kind of bigotry that we're told is everywhere. But making people do it is sure to backfire.

**Heather** 1:22:20

Yeah, taking people into a conscious space and wasting a little bit of their time every day. Not going to be effective. Yeah, no way. I don't know what this means. clubhouse is the front end of the CCP company, a Gora slash, why why, be sure to enunciate your political and financial plans clearly for the translators?

**Bret** 1:22:40

Well, I do think that there is a hazard in here in that we don't know, you know, as with all social media networks, we don't know what is monitored. And you know what it would mean, for it to be banked? I think we know that they don't record the rooms. That is certainly what they tell us.

**Bret** 1:22:59

But I can't say more than that, I can say they are certainly going to have a data problem sorting through it.

**Heather** 1:23:11

But that doesn't seem you know, again, I've never been on it. But it would seem that at this point in our ability to, to do data collection, that collecting text, written text is far easier than collecting speech, while turning it into information. The

**Bret** 1:23:29

problem, as I said to kim.com, the other day on clubhouse is that banking, the stuff even if you don't know how to sort, it allows for a very surgical kind of repression because you if you bank everybody's stuff, and you don't figure out how to analyze it through any sort of mechanism. And then you only look at those people who have proven to be difficult, you can go back and you can understand everything about their lives back through whatever point you started collecting information. So yeah, my insane and safe

**Heather** 1:24:06

given that men and women have different evolved life objectives, and men have dominated politics until very recently, should women have our own party? I mean, like a political party. If you mean political party, if you mean like the party, once again, when we can have our own parties when we have parties, I guess, although I always like mixed sex spaces more. But our own political party No, no, I think male typical ways of getting things done and female typical ways of getting things done are both prone to go off things to going off the rails in different ways. And the world is all too familiar with the ways that male typical ways of getting things done can go off the rails because that has been dominant politically, and female typical ways of getting things done is going to go off the rails in some other way. And we tend to see not heads of state so much, but increasingly other organizations like you know, schools and such being led By by women and largely women staff, and you see different kinds of errors, we need both. We need when there's a tension between and you can be a woman with more male typical ways of leadership and a man with more female typical ways of leadership and all of that can be true, but we need both to provide tension on on the other and to keep the extremes from happening.

**Bret** 1:25:22

What's more, I think we can probably come pretty close to proving that a woman only political party will not be viable and that the impact of a non viable female only political party will be to empower its exact opposite.

**Heather** 1:25:45

Thank you both for your great work. It's a refuge for many people for many reasons. Cool. Okay, there's so many more questions. I'm going to just find two real quick. Okay. Have you seen the video that majority report did on you know, not? I don't actually know what majority report is.

**Bret** 1:26:02

He who shall not be named.

**Heather** 1:26:06

Oh. Putting the thing in the mail is always the hardest part, isn't it? I guess hitting enter these days Super Chat in solidarity with Brett's psychic discomfort. Heather's evident delight and Zachary's likely discomfort. What do you guys think about the U f. Meta study that came out showing that pre slash asymptomatic spread has a secondary attack rate of point 7% is COVID that different in terms of asymptomatic spread compared to other airborne viruses? But I just I don't know. We spent a long time destroying I think a study from a few weeks ago on asymptomatic spread i don't know i don't know this is that one. I don't recognize that number. That number seems wrong. I don't I don't think I know this particular study.

**Heather** 1:27:07

Just looking for to do could the characteristics of SARS Coby to give us clues to the environment that the intermediary evolved under. Very transmissible with inside aerosols trade off week spread outside labs or inside? So yeah, yeah, we've talked about this

**Bret** 1:27:26

a lot there. That might be the result of inadvertent selection in the lab rather than directed

**Heather** 1:27:31

selection. Okay, this seems like a two good questions to end on the last two here. I grew up in a young earth creationist anti Vax household. I've had access to a computer and the internet every day since I was 13. I'm 28. Now, I had to learn evolution from the ground up. been following Brett since 2014. Thanks for everything.

1:27:53

Cool. Cool. Yeah.

**Heather** 1:27:57

One final question. When cats cackle at prey, could they be attempting echolocation? Also also second part of the question consider that COVID may have crossed over in

**Bret** 1:28:08

Batman in what Batman? I don't know what that means.

**Heather** 1:28:14

like Batman exists, does

**Bret** 1:28:15

he not I assume but therefore all spillover

**Heather** 1:28:19

we'd need the spillover happened in the actual hybrid individual that is our part man. That man

**Bret** 1:28:25

got it. Okay. Oh, absolutely. Um, yes. I think the only argument against that is that he's a fictional character.

**Heather** 1:28:33

I feel like that is a weak objection compared to what is passing for evidence. A lot of this space

**Bret** 1:28:41

Well, let us say that the evidence in favor of the Batman intermediary hypothesis is of similar strength to the evidence in favor of the frozen ferret badger stake hypothesis. Yes,

**Heather** 1:28:57

yes, yes, yes. Okay. When cats calculate prey Could they be attempting echolocation?

**Bret** 1:29:02

I do not think so. I don't think so. But that's cool. Yeah, I

**Heather** 1:29:05

mean, cats cats are so far. Well, let's see who who's the closest relative to cats that echo locates. Dolphins echolocate citations and carnivor aren't that closely related batcycle locate chiroptera and carnivor aren't that closely related? 10 Rex echolocate? Obviously, these spy little critters and Madagascar terrestrial? What are 10 Rex? mammals Oh

**Bret** 1:29:29

insectivore is polyphyletic but they are in the insectivore

**Heather** 1:29:36

I don't know where they are in the mammal phylogeny compared to Coronavirus anyway, like cats or cats are so distantly related from anything except at the back okay, it's I can't Is there anything in carnera that we know to echolocate? Wait, wait there is there is

**Bret** 1:29:51

I believe they're getting some very weak evidence for some weak form of echolocation in seals. But I'm not sure of that right? But I think there is something anyway it's pretty crude. In any case, we wouldn't get there phylogenetically Is it possible that they would have adapted such a thing? Sure. But the point is the cackles don't really fit with the mean a the things that they would be echolocating at the prayer

**Heather** 1:30:25

hyrum Yeah. No, it looks it looks more like they're trying to mimic something in the the vocalizations or the interest space of the wouldn't be prey item to get them either to come to or not be scared by the would be predator.

**Bret** 1:30:42

Actually wonder you know, the thing about cats is many of their vocal vocalizations. domestic cats are targeted to humans. Yeah. And it is possible you know, things like PR which is not targeted inherently at humans. Are there if you think about a purring kitten a purring kitten is giving a kind of information to its mother that doesn't transmit very far right? So in other words, it's not putting the pair in danger in order to it's conveying something without putting something in danger, right. So it's sort of like sort of oj communication. And you might imagine given that the relationship of domestic cats to people is a you're gonna have little things that I can't get my hands on. And I'll supplement your food right? That in such a relationship it might be that a cat that can't get to an item out there is trying to send some message

**Heather** 1:31:43

I didn't know where you're going okay, so it might be communication too. It's a bone right

**Bret** 1:31:46

like let me I'm gonna go eat those right yeah. And anyway, I will say that we have one way this one This is crazy. One cat Fairfax, who

**Heather** 1:31:59

are epic is

**Bret** 1:32:02

totally reliable. If you open the silverware drawer such that the silverware which catches the light from our bad kitchen lighting, and reflects it back up onto the ceiling. He cackles at the reflections on the ceiling. Yeah, it's crazy. It's a

**Heather** 1:32:19

real light and you can do it like five six times at some point he tires and he just sort of looks dejected. But yeah, open cackle was

**Bret** 1:32:27

expecting him to grow out of it, but he hasn't. Yes, it's amazing.

**Heather** 1:32:30

It's extraordinary. And he doesn't really he doesn't cackle through glass doors at critters outside he'll sometimes asked to go out but he doesn't actually do it at the animals.

**Bret** 1:32:40

Yeah, not the silverware.

**Heather** 1:32:43

Yep. All right. Well, that was that was long.

**Bret** 1:32:46

That was long.

**Heather** 1:32:47

That was long. We will be back. We'll be back next week. Same time, same place probably for the less time I'm thinking. Join Brett on the discord tomorrow at 10am for our conversation. Joining us me at my patreon to get access to private q&a check out clips on the Dark Horse clips channel join Brett on his Patreon for our monthly conversations and be well be good to your people. And everyone else eat well go outside all of it yeah

**Bret** 1:33:23

all that tell you what I will pick up another invite and I will distribute it to some deserving person on the discord tomorrow somehow. So anyway, be well we'll see you next time.