Your Questions Answered - Bret and Heather 99th DarkHorse Po...

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**SPEAKERS**

Bret, Heather

**Bret** 00:05

Hey folks, welcome back to the dark sea horse pod cast q&a during the pandemic section of Saturday. All right, that was not coherent.

**Heather** 00:17

No, but I think actually given when we started and why we started so far every single one of our live streams has been a during a pandemic. Yes, if we are to, we should you know, the common understanding of what a pandemic is in light of

**Bret** 00:32

that I think we should rebrand them. Still Alive streams. Okay, right.

**Heather** 00:40

Yeah. Okay, let's, let's Okay, so we are gonna we've got a bunch of great questions, we're going to start with many that have nothing to do with. Sorry, I just lost my place that have nothing to do with COVID. And they were gonna drop the YouTube stream and we're gonna address some of the COVID questions. But you just reframe, Ahmed, because I just lost a question. I was trying to find a riff

**Bret** 01:08

you forget that not so coherent feeling when I get sorry, I don't know what to say. Okay, fair enough. Right. Okay. I mean,

**Heather** 01:17

that you know, you weren't Okay, okay. So I did not share this with you. But I saw that what do you think we

**Bret** 01:26

can admit that it did not work? Yeah, attempt to just simply start riffing. Fair enough. I've

**Heather** 01:32

already I've already forgotten about it. Me as well. This game is a surprise to me. disappointing surprise. And I have not shared it with you yet. But I will read it here and then I will show what I have done animals will see if you have a suggestion for something else. All right, loved 1491, the Charles man book but unfortunately man dismissed your book based on the Guardian review, called you Evo Devo, guys who don't consider archaeological evidence of variety of ancestral social environments, which is quote inimical to the idea of a single rigid human nature. And then this person writing in gives the Twitter The URL where this came from and says thoughts. Yeah, and I thought, oh, for Christ's sake so I went you can show now Zack to the the terrific Charles man tweeting this awful dishonest Guardian review, saying memorably tough review of new Brett Weinstein, Heather Hein book on how society today doesn't reflect human nature as it evolved. Quote, little of it appears to be based on actual research, the sciences, the kids say is just a vibe and quote. So I haven't just seen this just responded to man's tweet, saying we love your work and recommend 1491 is further reading in our book and deed. It's one of the very first books that we that we recommend is further reading in here. I say I continue, I say to him, you have taken a dishonest critique seriously, if you read our book, I'm certain that you will find much on offer there, we destroy the idea of a quote, single, rigid human nature and quote, among other things. So what else? Yeah, it's just Well, it's so disappointing. Right? Yeah. I mean, and, of course, a big, you know, a big paper will publish a garbage review, and some people will only read the review, because that isn't part of the point.

**Bret** 03:21

Right? Right. But I think the thing is, in man's case, yeah, right, what he has done, the reason that we recommend 1491. And the reason that it was transformative of our thinking is that he challenges the conventional wisdom with respect to the peopling of the New World, in remarkable form. And so I fully expect, you know, as you suggest, that if he engages the material, he will come out somewhere very different. And I'm looking forward to that, because there is a, a new synthesis to be arrived at what happened in the new world is the Greatest Story NEVER Told. I mean, well, he

**Heather** 04:03

I mean, there are many actually practicing paleo anthropologists, and archaeologists, but more paleoanthropologists who are who have been doing this work for a while, but he is really the guy who helped bring it into a conversation that more people were having. Right getting, I think was I can't remember was Atlantic or Harper's, that the first I mean, the first time I ran into his work was in that I think it was an excerpted piece from the book called 1491, which is an article that I was teaching with for many years. And then we both started assigning the actual book we have in our programs.

**Bret** 04:35

I think the the point is what i what i find lacking, and it's not like it's absent from his book, but what we haven't done the reason that the new world is so important, is that the new world because all of the behavioral evolution that took place in the new world, is happening in isolation from everything that happened in the old world that it is actually the only place where we have a an ability to understand how Humans evolve, that we have looked too much to the old world that has biased us too much in the direction of morphological evolution. And the story that we really need to understand is the story of our cognitive evolution. And because that takes place because the story of the peopling of the New World takes place late, right after the morphological evolution is effectively all done, right. And it starts at a moment when the brain genes as they walked into the New World, walked in with stone age technology, they would have had control of fire, they would have had, you know, Flint nap tools, but they would not have had written language, mathematics, agriculture, any of those things concept of zero, and the concept of zero and those things all were invented in the new world invented or discovered in the new world in total independence,

**Heather** 05:51

with the discovery or invention in the old world, sometimes many times,

**Bret** 05:55

right, it allows us to see how human beings actually function. It's the only place where we're going to get the story right. And

**Heather** 06:01

well, and I mean, this point that you made, which I don't think we explicitly make in the book, you know, why why do we start with and then to some degree and we like bracket the book by talking about the peopling of the new world is precisely as you say that, that Thank you, Zack, that the morphological change by and large, that reflects who we are as humans was long sense over, you know, we we do we are not experiencing vast anatomical and physiological change at the point that call it 10 to 30,000 years ago, right? Given the evidence we presented last week, it looks more and more like between 20 and 30, maybe even earlier than that. That, you know, human humans already looked human. So what is it that has happened to change dramatically? The impact that we have had on the planet and the number of ecosystems we've expanded into how is it that we have become the ultimate niche switchers? It's about cognitive evolution. It's about mental and psychological and emotional and intellectual evolution, which is no less evolutionary. But it doesn't fossilize.

**Bret** 07:12

No, it doesn't fossilize. It is the genome has offloaded the work of evolutionary change to the software layer for a good reason, which is very visible in the new world. I want to take back one thing I just said, though, okay, I said, it's the only place that you can get the story, right. Yeah, there's actually one other place that you can get this Oh, I

**Heather** 07:30

was gonna say, I mean, you can get it right every place, but you have to look more carefully.

**Bret** 07:33

Well, you have, the problem is you don't have the isolation, except in the new world, which is necessary to see the story clearly.

**Heather** 07:40

Before you say I'm going to see I'm not going to answer for you, but I'm gonna see if I can I can, I can guess where you're talking about? Like, I have two possible answers in my alright. It's one of them. It's probably is. I'm not going to tell you. Yeah,

**Bret** 07:52

so Australia. Yeah. Okay. Yes. The story is not as diverse as I understand that there aren't as many cultures that arise from the introduction. But there's a great deal more richness culturally speaking, than the crude story that we are told about Aboriginals. So it is similar in that way,

**Heather** 08:13

it is similar in that way. I guess. So that was that was what I thought you were talking about. My other possible answer is actually two and maybe more depending on how you count, which is thinking about things like floor, the habits of fluoresce, and Dmanisi, not the habits of Dmanisi, but you know, these these different, more recently than we would have thought 20 years ago, hominins hominins, I believe, that show actually very, some very different anatomical and physiological stuff. So you know, maybe that actually makes the opposite point in some ways. Yeah, I

**Bret** 08:46

think it's a very different story. I

**Heather** 08:47

think we have I guess, we have very little, we don't have as much archaeological evidence from them, because they're just tiny populations, right? Tiny

**Bret** 08:55

populations. We have a few fossils, and one has to infer much. But yeah, I do think that they tell a very important story. And it's a different story. Yeah, right. The story, the morphological evolution, in those cases is the story. The story in the Aboriginal population in Australia, and the Native American population in the new world, is the story of human cognitive evolution, and basically adaptive radiation.

**Heather** 09:21

So why why not Europe? So I guess, it seems to me like the new world, and Australia, because there is one, one place of entry ish, right? And so it makes for a cleaner story. There's less recursion from other populations, you know, you don't have a sort of a constant stream of people out of Africa, into Australia into the new world, the way that you went into Europe and into central and near Asia. Well, I think this is just it's just the cleanness

**Bret** 09:55

of you, but the cleanness has an importance that is not going to be obvious the importance is that because the evolution we're talking about is software layer, it's contagious, right? And so an individual with an idea, dropping in from somewhere doesn't leave a mark. But the idea suddenly shows up the the isolation of the new world population and the Aboriginal population in Australia tells us that didn't happen. Now, it will have happened between populations. But the point is, you don't have to worry about where the idea came from. It was organically developed in both cases. And so the, I guess what I would say is adaptive cognitive radiation is the key to understanding humans niche switching and our massive diversity, right? That's the process that we don't yet understand. And even the fact that we don't even understand the basics of it to the extent that we can't specify, you know, as a field, we can't specify the relationship between that cognitive evolution and the underlying genetic evolution. Right? We've punted on that question. For various reasons, some of them political, yeah, right. And some of them just based on a confusion about whether this is indeed a new primeval soup or not. But But the point is, you want to understand how humans work and why we're so successful. The new world tells that story in the most glorious way possible with it didn't have to be true. It could have been that there were many introductions to the new world. And it turns out, there are really two, right? Or at least that have the modern application. Two or three. Yeah, but

**Heather** 11:36

yeah, less than 10.

**Bret** 11:39

I think the point is, you have a major introduction, you have an Arctic second introduction. And the clock starts at a moment when the morphological stuff is largely finished. And the major inventions haven't yet been discovered, or at least some of them. And so anyway, you can see the whole thing unfold here.

**Heather** 12:01

Okay, I kept monarchs for the first time this summer, and witnessed the explosion of over 51 pattern, I observes that they all form the chrysalis and a closed in the first couple hours of morning. Do you have any thoughts on the selection process? And what happened to the ancient monarchs that emerged at night or later in the day? So I know very little about the monarch lifecycle. And I wouldn't have known without this question, that, that ancient monarchs were typically emerging at night or later in the day, nor because of the ambiguity in the way it's phrased, is it clear to me that there was in fact, a pattern. Right? So this so to answer this question, the question seems to hinge on there was one pattern, and now it's different in captivity. And I'm not certain enough that that is the case to, you know, to, to want to wade in particularly. But, of course, it is true that monarchs in captivity are not going to behave the same way as they will in the wild. And we in fact, give one example of this in the book, although I can't remember exactly. It's, you know, it's in service of sort of a reduction of explaining that a reductionist understanding of what it is that we need to do to, for instance, keep animals alive, will often limit what they can do in life.

**Bret** 13:20

So is the implication of the question that monarchs taken into captivity lose this pattern, the way poisoned dart frogs lose their toxicity, or is the implication that captive monarchs have evolved a change?

**Heather** 13:33

I think it could be either. I don't think the person asking the question, David here is specifying what so I would say it's not clear to me that there is a difference. And the catch was put upon my water. So that water has been sullied. Do I want more? Sure. Yeah. I would like to know for sure that there is a pattern in the wild. That is that is not that is different from the pattern. So what we know for sure is that David here is reporting that he saw a pattern of, of eclosion in the first couple hours in the morning. interesting observation for sure. What I don't know which is presumably known is is there a pattern in the wild have a different but relatively narrow time of closure, the mics typically engage in, if there is then you are asking which of the two hypotheses are we would then want to distinguish between two hypotheses, which is that monarchs in captivity have changed much as dark poison frogs. Take them into captivity and they lose their toxicity because as it turns out, they're building the, the lipophilic alkaloids, that is, that is the poisons that they make from building blocks in their native diet of ants and mites and there's nothing that you give them in captivity. That will provide the building blocks. So they overtime, they add this, they already have their their color on their apps, my coloration, but they lose, they lose their toxicity. And this is true for both dark poison frogs in the new world and the mentality that I studied in Madagascar or right, that was one and then the second possibility was was that

**Bret** 15:18

a captive population has evolved a change right now I'm guessing it almost has to be the former.

**Heather** 15:26

Especially since you know, he's saying I kept my eggs for the first time this summer, you would know that was captured them? No, I mean, I presume that there's a captive. I'm, I doubt that anyways, hopefully no one is collecting monarchs from the wild, it was

**Bret** 15:39

well, but somebody captured them, but they can't be very many generations down the road. So that would be very rapid evolutionary change. So I'm going to guess that it's got to be the loss of the pattern, which is almost certainly going to be the result of some confusing signal in captivity, like it could be, you know, the temperature, that there's an optimal temperature, which does not suggest a strict temporal pattern. Yeah, in the wild, it would suggest a, a empirical measurement that would cause

**Heather** 16:09

temperature, I mean, the obvious one, it could be as just photo period. And, you know, actually making sure that you're, you're mimicking the photo period of when they would be doing, you know, engaging in this in the wild and really not not breaching that by turning on the lights. Random moments. Yep. All right. What are your thoughts on tongue tie? And its effect on like, lactation and speech? I have I meant to look up, I have to remind myself every time I hear this term, which I've heard before, what tongue tie is, do you know offhand?

**Bret** 16:47

No, I'm not sure I've ever heard the term tongue tie and it's

**Heather** 16:51

very quick. Ankle diglossia from the Mayo Clinic, is a condition precedent birth that restricts the tongues range of motion. So in which the What is that? Whatever it is the mid the the medial membrane that connects the tongue is basically thicker or tighter. Oh, apparently, it's called the lingual frenulum is shorter, thicker or tighter than it ought to be, and tethers the bottom of the tongue stick to the floor of the math. So this is something that is I suspect, a modern thing that very few babies pre modernity had, although I don't know that for sure. And so the question is, what are your thoughts on tongue time its effect on lactation and speech. Really, all I can say is what I just said, which is I suspect that this is something happening in development as a result of something about what majority is doing to fetuses in utero. But what will its effect be on lactation and speech? It seems to me that well, lactation, maybe not so much because the tongue? Actually I'm not sure I can't I'm trying to envision where the tongue is supposed to be as a baby is attached. suckling and I can't quite do it so

**Bret** 18:11

well, I think it's gonna reduce the efficiency of it. Yeah, mother tongue is part of the suckling. And, yeah, I mean, basically, it, it can't it can't help the kids. Oh, it's going to disrupt from something like a minor level to a major level. Yeah, but I would expect I mean, it sounds kind of serious, frankly.

**Heather** 18:33

Yeah. No, and I think it I'm not gonna just continue to read what, what other people have said about it, but I think it is often surgically treated and, and then, you know, relatively short lived problem. If, if done so, so sorry, we can't say much more about that. I was stung by 20 bees. I'd never known myself to be allergic A week later have developed hives. That's apparently rare. Any idea what variables may be in play? Also, do you have any good hives remedies?

**Bret** 19:04

Right, stung by 20 bees

**Heather** 19:06

did had not known himself to be allergic. A week later, he developed hives.

**Bret** 19:11

Well, okay, so I was sorry, I was throwing the word hives in the context. Bees caused my brain to throw a massive error, but I'm back. Yeah, okay. Thankfully, it did not cause me to collapse, or in other ways need any sort of assistance. But here's the thing. The immune system is an amazing, dynamic, beautiful system replete with many vulnerabilities. And as I've talked about before, the major trick that the immune system does is distinguish self from everything else, right. And the problem is that self non self recognition when it works is the key to not being afflicted with pathogens all the time. But it can go wrong in one of several different ways, you can either start attacking self, and this can potentially be induced by a pathogen that is being favored to look more like self, because that causes it to avoid immune surveillance to lead the immune system in the direction of reacting to self in a way it wouldn't have before. You can have the failure of the immune system to see something. So HIV, for example, essentially dug a hole in the self non self recognition system that it is then inhabited, right? It basically went after the cells that reacted to it, leaving an absence of cells that reacted to it, which gave it free rein, you can have the potential triggering of the immune system against stuff that isn't you but is part of how you interact with the world, like your food. So there's lots of stuff and the B thing is that the bees in a deuce a toxin to you, which is somehow in a zone where overreaction, basically allergy is a very likely phenomenon. But the key and I think the answer to your question, which actually has a lot to do with why your first dose of vaccine at gets a different reaction than your second dose of vaccine, as we've seen, is that your first dose alters the immune system. Same thing with a bee sting, right? The bee introduces this foreign molecule, the immune system has its reaction to it. And then it may remember that reaction memory is part of how the system works, right? That's why you don't get the same pathogen twice is that it remembers so the fact of having been stung by many bees, having a bunch of foreign protein dumped into your system then causes your system to say, Oh my god, there's a problem with that protein, it's indicative of something. And you know, your immune system isn't a thinking entity. So it can't calm itself down necessarily, it may assume that those proteins were the result of some pathogen, right? The B is not a pathogen, but the immune system doesn't necessarily know that. And so, yeah, I

**Heather** 22:11

don't I don't hear in your answer, though, an explanation for why why such a delay would occur, absent an additional exposure to the toxin. In this case, they'd be saying,

**Bret** 22:23

it's not in my answer. But my guess is, it's in the complexity of all of this, because what you have, you know, as we were talking about in the main podcast, these systems have to have simple rules in order to work, right, you're a being of 30 trillion cells, but you don't have a huge library of rules, it has to be, you know, you've got 200 cell types or something like that. And so, what happens is, you get the introduction of something foreign, the body takes a guess at what that is, it ratchets up a set of responses, like histamine responses that cause inflammation, they cause the flooding in of immune cells, etc, then, you know, things unfold over time, as garbage collection happens, macrophages collect bits of stuff, any cells that seemed to be infected, which would not be the case in the beasting instance. But in the case of a pathogen, it would be all this stuff happens. And so the point is, there's a trajectory that takes a bunch of time. My guess would be that what happened is the initial response to the BS was such and such. And as that response end, it revealed something else, right. So if something like that be my guess,

**Heather** 23:39

hives remedies,

**Bret** 23:41

right? Don't have any. Well, you know, hives are an inflammatory response, I would super caution you about antihistamines, which have very potent effects, many of which are bad. Benadryl turns out to be connected to dementia. You know, cumulative way very bad stuff. So anyway, you can intervene, but your interventions will have consequences that you can't necessarily foresee. There are things there are natural anti inflammatories, like turmeric, which are liable to be much safer,

**Heather** 24:21

you know, of all of these sort of pharmaceutical interventions. I would say in general, in this case, topical is a possibility. So topical versus systemic is likely to be somewhat safer and something like a topical corticosteroid while not certainly 100% safe is likely to have lower risk than say topical Benadryl or anything systemic. Yeah. Now this, I read, because it invokes Pink Floyd which as you know, I am a huge fan of and and know the lyrics to many of their songs and It provides a lyric that not only Don't I know I don't I don't even recognize all right,

**Bret** 25:04

so I'm ready.

**Heather** 25:08

I often reflect on the line in the song Pink Floyd echoes part one. So it's an early album, quote and no one forces down our eyes and quote as others look up so I feel a little bit like a playing name that tune here like there's not quite enough words Yeah. To quite place it plus it's an early album which you know I at least have most people have less familiarity with and then the later Syd Barrett album I think so if I if memory serves, yeah. Yeah, I think the few like three maybe are the ones listed Barrett, and then we know the later ones, once he turned into an orange or whatever happened to him. So sorry that we did not know I think in his case, is that what he thought had happened to him? That was someone's uncle? Did you don't know what to make of us?

**Bret** 26:08

No, I think I still don't know the song.

**Heather** 26:12

Yeah, I don't know the song either. And, yeah. And then this one, too. What riff did you wish to share on the podcast, but never found the right moment? Wow, I

**Bret** 26:24

don't remember exactly what That's right. So

**Heather** 26:26

I actually until I read that out loud. I assumed that this was in reference to something very particular that we had said, and now I think maybe it's just like a sort of a general Is there something you wanted to talk about, but never find the right moment? In which case this is your, this is the

**Bret** 26:38

moment this is the moment? Wow, yeah. Which you know, paired better for that question.

**Heather** 26:44

Sorry, baby. Yo, try. Try again. Again, later. Alright, um, okay, we have several more questions, and then we will drop the YouTube stream. And I have for me, it looks like obviously broken. Okay. Okay. Okay, well, in which case, I think we're not. We're not going to go COVID. Probably, if we're on YouTube, Because?

**Bret** 27:19

Because YouTube is not a place for adults.

**Heather** 27:23

That's right. That's right. Which is a perfect segue for the next question. Is there an evolutionary reason for popping pimples? and picking scabs?

**Bret** 27:34

Great question. They

**Heather** 27:37

see. Yeah, yeah. Yes, totally.

**Bret** 27:41

Yeah, why pimples? don't pop themselves? I don't exactly know.

**Heather** 27:44

But I mean, they do. They do. But not always. Yeah. But in time, one has

**Bret** 27:48

the sense that for a skilled pimple popper, who knows when to do this, it is an enhancement over what happens naturally. And what I would say is what one finds inside a poppable. Temple, Oh, wow. That's where

**Heather** 28:02

we're going. Okay.

**Bret** 28:03

What one finds in there are presumably surface pathogens, in crusted in white blood cells. That's what passes. And so the idea is your immune system has correctly found some bacteria in some pocket in your skin, and it has encrusted it, and then you are getting rid of that pathogen by expelling it into the world, which is good,

**Heather** 28:33

right? So yeah, so you want to get rid of that. What you don't want to do is get rid of that with, you know, fingernails that themselves may have similar surface pathogens on them. You don't

**Bret** 28:43

very, very clean, right? You don't want to get you don't want to give yourself an infection and you don't want to drive it inward, right? The whole thing works if you expel it into the world, and right, so

**Heather** 28:56

and then with regard to gam scabs. I mean this, one of the things that I think of here I mean, this is, the answer to this question has to be gross. Let's just go. That's not on us. It's on blankety blank slate, who wrote who wrote this question. Just got Tuesday. Yeah, so blankety blank slate is is who to blame here for for discussion here. I'm reminded, and I actually haven't heard this from a veterinarian in modern times. But when I was little, and my cat would get herself into fights because she was a badass who got herself into fights and she would get just torn up and think of these like deep deep lacerations that would scab over the veterinarian would say, take the scab off, let it you know, let it ooze because otherwise you're likely to get an infection that's deep and if you keep on letting it expel what what is in there, it's much more likely to not need further further work from any of us being the sort of the veterinary professionals at that point in the, like 70s and 80s. And it did work, right. And in general this, this, this is likely to be at least part of the answer. So let's put

**Bret** 30:13

it this way. I think scabs are very often picked, badly picked in error. But that the instinct Yes, yeah, yes to earliest, right. But then in some sense, if you think about the classic, scraped knee, yeah, right. Classic scraped knee is going to involve a lot of stuff, you know, not stuff embedded in the skin in the wound, right. And you can pick out the big stuff, you know, which we picking scabs at that point, so that I know I'm gonna get there, I'm gonna get their point is you first skinned your knee, right, you get all kinds of little gravelly stuff in there, and you will be driven to take out the stuff that you can find with your fingers, right? little little rocks and things. But there's lots of stuff below the scale that you could access it. And, in some sense, I mean, I do think wound healing is, as far as I know, I've gone looking for evidence of what we understand it feels to me, like we know very little about this process. And that basically, it works and we know how to augment it and protect it. But we don't know a lot about the magic underneath. Maybe, hopefully, somebody will point us to some large compendium of information, but the point is, one of the things that is true is as you are healing, things are moving in various directions, right cells are forming, things are being pushed, and my guess is that that layer of that matrix of stuff that makes up the scab contains stuff that has been pushed to the surface, right? And so that a process in which you pull a scab at the right moment is actually removing things that need to be or may need to be removed

**Heather** 32:07

helping the conveyor belt of healing happen. So I mean, I guess I would just add that there's a very valuable and perhaps necessary for complete healing part of what you do at the point that you've say gotten Road Rash that is necessary that you didn't mention which is sort of a Yeah, you know, use use your fingers use the tools on you to get the macro stuff out, but then flush it, you know, if you've got running water, either from a faucet or upstream as long as it's, it's clean, so as to get some amount, a larger amount of the microscopic stuff that you have no chance of dealing with, with your fingers. And, you know, depending depending on where you are and what you have access to and what it is that you destroyed yourself on. flushing with hydrogen peroxide, or, or alcohol can also be useful depending on how deep it is, etc. Yep. But that, you know, the flushing of it will mean that as the scab is is setting, there is going to be less, it's less likely that there will be a lot of things that need continue to continue to be evacuated from the wound.

**Bret** 33:14

Yeah, although in both the case of the zip and the scab, yeah, part of the point is that actually your body has a way of dealing with this stuff if you don't get it out. And it's not so elegant. Right? So yeah, it can wall. It can wall off stuff, they can just permanently live in your tissue. Or I can dismantle it molecule by molecule, right? Those aren't nearly so good as Hey, that's a macroscopic thing. Let's just get rid of it. Yeah, I would also just point out though that we do something which I think in many ways is positive. But that interrupts this whole wound healing scab formation we humans we moderns. Okay. The Daily shower thing. Yeah, right. So that has an interface with this that's most unnatural and so I guess the question I would have

**Heather** 34:07

one specifically the daily shower with soap so which, you know, takes away all of all of the bacterial stuff on your skin, most of which is beneficial,

**Bret** 34:20

right? That's true. But also even just the warm water breaks apart the stuff so the point is just just as in our book we talk about the A if your bone is aligned, you might not need to cast question there's some ancient way that scabs work that presumably does not result in every hunter gather picking scabs too early but them knowing exactly when Yeah, they should actually be pulled off

**Heather** 34:47

without without daily showers. Also, the scab is likely to become hardened sooner and perhaps then be read you know, have a have a few iterations more than you know if you're if you're regularly softening it with your shower. It's a different kind of a beast.

**Bret** 35:03

Right? That's the thing is that we I don't think we have a good sense of how that changes things. Because Yeah, it's it's pretty rare that you're in a situation where you don't have a shower.

**Heather** 35:13

Yeah. What are the ethical ramifications of colonizing other planets when there's a possibility of that planet producing intelligent life?

**Bret** 35:25

Now, this depends a little bit on what they mean by colonizing. Does that mean sending people named column or it's spelled

**Heather** 35:33

differently? We'll be sending people in colon.

**Bret** 35:38

Of which there's

**Heather** 35:39

been a bit that he's that spelled differently to it just pronounced the same? Oh,

**Bret** 35:43

okay. Well, yeah, yes. Now, what do you call it? What is the F? Well,

**Heather** 35:51

I mean, at one level, this is this is exactly one of the themes of the science fiction book that I that I wrote that is not yet out in the world. But I think that there is an really important distinction to be made, at least as far as I'm concerned with life, a planet that might already have or be well on its way towards having intelligent life, and a planet that could conceivably or on which some very, you know, basic unicellular forms have even been discovered that just I think that our, our responsibilities are different in those two cases. And where you draw the line is going to be up, you know, that's going to be the sort of the Astro ethicists domain, right? Not that that's a thing yet, but but I think, figuring out what that line is, as opposed to saying, any planet could produce life, therefore, we should never go there to me strikes strikes me as an arbitrary line. That is way too in wonder way too much money.

**Bret** 36:50

Yeah, it's way too cautious. A planet that has no life on it. Even if it has the potential for

**Heather** 36:57

life, because it's in the Goldilocks on whatever, right, I locked.

**Bret** 37:00

Yeah, I mean, there's even an argument to be made for altering the conditions to enhance, you know, sort of 2001 style. But as far as planets that have like a, I think the primary if you found unicellular, or its equivalent level of complexity, life on some planet, the primary obligation is not to screw it up. Right? You know, even if present technology can only get you so much of an understanding of what you're seeing future technology might get you farther, so not disrupting it. So that whatever other example of life we have is still available to be understood would be a huge ethical obligation. On the other hand,

**Heather** 37:41

well, then maybe I mean, maybe, I think that you are coming out with a much more conservative approach than because I think, you know, colonizing another planet, not that, you know, we're, of course, nowhere close to this technologically on, you know, on any of the domains that we would need to be. But, you know, actually getting people to live and thrive and reproduce and create culture on a different planet would surely disrupt whatever, you know, unicellular life was already there.

**Bret** 38:11

Yes. I also think it's, people just need to calibrate their expectations here, it's hard enough to get a arbitrarily large bias fear to function down here on earth. And, you know, in terms of meaningfully colonizing and an ongoing form some other planet that doesn't have a pre existing life that would be useful, and even if it did have life, it would be almost certain to be useless to us in most regards. You know, welcome to not nearly complex enough systems.

**Heather** 38:51

Oh, right. Yes. Excellent. Okay. PS This is a second part of the question, maybe but

**Heather** 39:04

it says I pre ordered hunter gatherers guide in June with Amazon EU, but they just canceled. canceled, so sad.

**Bret** 39:16

canceled,

**Heather** 39:17

that's what it says. See here.

**Bret** 39:25

What does that even look like canceled if the book is still being published? That's crazy.

**Heather** 39:28

Yeah, I don't I don't know. You're trying I mean, so I've now hit dia, we answered that question. So I don't see who it is. But try again. And if you have a screenshot that you would send to Darkhorse moderator@gmail.com that would be useful because we're trying to collect we've got stories from all over of people have been pre ordered in June and now saying they're not going to get the book until November. It's the first time I'd heard. Just cancelled but perfect sec. Artificial rock and climbing walls good. The times I've climbed natural faces without safety equipment seem more true and memorable? Yeah, you're absolutely, absolutely and absolutely the second part of your question, I would say I'm not I mean, I'm just bouldered some I've never rock climbed with, with equipment or anything, but I guess, you know, if you've got very young kids and you're in a place with one of these artificial climbing structures, I, I, maybe it's a failure of imagination, but I have not been able to perceive the harm right, in less at yo so long as you remind the child at the point that they're able to internalize this there's likely to be as much as the designer of that thing may have tried to avoid this there's likely to be some regularity in the thing that you're climbing that you won't find in natural rock and also some regularity and natural rock that you won't find there that they're you know, climbing real stuff that changed over time due to the forces out there in the in the universe will be fundamentally different and you will be able to apply those lessons from natural face to natural face to natural face in a way that you may not be able to claim sort of the monkey brain lessons from an artificial rock to a real rock.

**Bret** 41:19

I think this is true and at a very extraordinary level and I would argue it's actually an interesting analog it's a funny analog for what you and I say about so are you

**Heather** 41:30

talking now sorry, I was just trying to change the camera.

**Bret** 41:35

Oh, got it. All right, that was weird. Oh,

**Heather** 41:39

you were talking and yet I was seeing my face right.

**Bret** 41:44

The thing that you and I say about the importance to education of engaging physical systems artificial climbing walls are physical systems Yeah, but they lack a lot of the advantage of Iraq system now the rock system is a lot more likely to kill you right it's very dangerous Yeah. You know, it really takes a lot of understanding so I did do a bunch of rock climbing and the first two weeks of the course I took involved a sitting in a classroom reading from a book that catalogs all of the accidents from every year and describes what happened

**Heather** 42:18

and this is like you having to pass the written test to get your driver's permit before you're actually yeah behind the wheel

**Bret** 42:23

yeah except the written test for the driving thing is not all that useful in terms of being a good driver the going through story after story of people who got maimed or died

**Heather** 42:37

this was useful so useful so and I suspect now that you tell me that that this is what primed you to become an addict of what could go wrong

**Bret** 42:46

in some ways it is the same instant but you know I mean, imagine that it's a it's a it's a it's like a dry government document about the accidents right? And it starts with like a list of contributing factors and it's like, you know, alcohol, no hard hat sleeplessness ease. Oh god right okay, you know, it's like okay,

**Heather** 43:07

that's like that's the three that you remember near the top of the last year

**Bret** 43:10

they were all different but you could kind of see the thing unfold you know the person you know in one of them kicks a rock that hits the person belaying them from below on the head and then falls you know, right so anyway, you got it is the what could go wrong rock climbing edition. But anyway, the point is, yes, rock climbing is actually dangerous because you cannot control for example, am I about to climb into some Bs and well, I you know, keep my wits about me as I escaped the BS that I can't get away from nearly fast enough. Right? So anyway, there's that but the point is, the climbing wall is has the same problem as the person at the front of the room telling you Yeah, you got it, or you don't get it yet, right, which is, it's a person and so you're sort of looking through their narrowed eyes and if the person at the front of the room is very, very good, then that will be somewhat useful, but it's not the same as engaging a world of real phenomena that interact in ways that will inform you of things and that's right. So you know, for example, if you've faced one of these climbing walls, you can be pretty damn sure there's a way up at

**Heather** 44:20

a climbing wall as opposed to a rock face

**Bret** 44:23

rock face right now you

**Heather** 44:24

may want to write no guarantee there's a way up

**Bret** 44:26

you may know on the rock face because it may be in a book and somebody says sorry there's a route over here and there's a route over there but you come

**Heather** 44:32

across a rock face in a place that you've never been and you don't know if anyone else has although what are the chances of that these days? There is no guarantee Yeah, there's no well the world was not put here for your pleasure. right but that rock wall was

**Bret** 44:46

right and so I think the thing is, that the climbing wall rather is apt to get in trouble. Okay with lots of very fit people but the, the rock the artificial rock wall, maybe Very well be good for practicing certain things. I'm sure it is and it's great for strengthening certain things. But it's junk rock climbing. Yes, you know like junk sex and junk food

**Heather** 45:10

a hell of a lot better than just watching videos of people doing.

**Bret** 45:15

Oh for sure. Yeah.

**Heather** 45:16

So I have a I have a story that I reminded of not about not exactly on topic but about bees and climbing. So I like I said, I never rock climb But as you know, I learned to to climb trees in the tropics with this guy, Joe Maher mayor, I actually think mayor's How is pronounced he's he's dead now. But he was in Panama. When I was leading study abroad trips there, he was associated with the Institute for tropical ecology and conservation, which is the field station that I based my study abroad trips there at. And on. One or two, maybe maybe both, but maybe just the one. So he taught me to he had been a print journalist. And then he had retired in his 60s, he became both a spelunker and a climber. And then came to know tropical rainforests and used his climbing skills to to get up into trees. And there was a he and another guy had built a platform near the top of I think it was a Sabre tree, about 110 feet up, I think if memory serves, I may be conflating that with the one it took a teeny but and he would, and he had harnesses and ropes and everything. And he would, he taught me and then when I brought my students down, he taught us to go up. And I have some pictures of a few of my students in high up on this platform. And it's just really extraordinary to get a view of the tropical rainforest from from high as opposed to at at ground level. But a story about him is that with you at some different moment with some different students, he was climbing, and not that tree, not a tree with a platform, but they were up at some point. And the two students who were not very experienced climbers, were coming down and came down through some bees, and they were Africanized, which means they didn't give up. And so one of one of them started to get stung. And Joe, basically this guy who at this point, he was in his 70s incredibly fit, but a guy in his 70s managed to prioritize getting the students out of the trees out of the tree and safe. But he got just ravaged, so that by the time he got to the ground, he had, you know, dozens, if not hundreds of bees on him, you know, managed to get you know, scrape them off, get into the waiting vehicle, whatever and rushed to the hospital and spent quite a few days recovering. And you know, amazing that a 70 year old but a very fit 70 year old was able to survive that kind of attack by Africanized bees. But what he had done was he'd saved he'd saved the people in his care. He'd saved the students in his care. Yeah, that's

**Bret** 47:51

that's an amazing story, as bees are incredibly frightening. Yeah, I've had an encounter or two have always gotten away from them. But terrifying. Brown. Yeah,

**Heather** 48:01

you hear you hear them? Oh, boy. Yeah,

**Bret** 48:03

it's really frightening. Yeah.

**Heather** 48:06

Okay. Apparently, I already clicked. We already did that question cuz I don't see it here. Why do some people not get fat? Why wouldn't every human be programmed to overeat in the presence of abundance? I think those are two separate questions. And so the first question, why do some people not get fat? The premise is some people could not even get fat provided the right conditions. And I think I think I don't agree with that premise. If it is, in fact, what the question hinges on the second question is, why wouldn't every human be programmed overeat in the presence of abundance. And this also the premise ish here is that what causes obesity is simply how much you take in as opposed to there's a metabolic there's, there's a metabolic disorder that is being facilitated by our modern diets, such that it is possible that you could eat as much as you want, if you're eating a diet that doesn't have, you know, the shelf stabilizers and you know, all of the fillers and everything that you find in the middle of the grocery store, and you might still not get fat, and let's see if there's there is growing clinical and research evidence for this more refined understanding of what makes people fat as opposed to, you know, calories taken in and calories expended through movement.

**Bret** 49:29

Yep. One answer is that they're trying to make the rest of us feel bad. Another. Yeah, that's not a very good answer, but that's my answer. I think the thing that I want to point people's attention to is the informational question, right? So what is the right number of calories to store on your body? That depends on what kind of environment you live in. Right? So one fact about abundance is that if things are truly abundant, if your system gets this idea that food is available, whenever You need it, then carrying it around with you isn't the smart thing to do, right? And so there's a sort of lineage level calculation where you shouldn't want to consume calories that would be usefully spent on somebody else if you don't have any limit of calories in the future, right? If food is always going to be abundant, yeah, then then actually dial it down, dial down your desire for it, right? Because then every step is cheaper, because you're not carrying it around with you, right? So the things that cause the metabolic syndromes are likely to be information that suggests that storing a lot of extra fat on you is a good idea. Right? So anyway, inflammation is the hidden feature here. And undoubtedly, in my opinion, information early in your life information that may come in, in ways that have nothing to do with how you've behaved, right, so hormonal information that comes in from the cows that we've tried to fatten up in order to get more for them at market, right, that information, because you're a mammal, and the cow is a mammal, and the hormones are, you know, cross reactive, may inform your system in ways that you had no control over. It may be that, you know, things like dieting, send a famine signal and cause your body to record. The hazard and in a particular way could be I mean, there's one little puzzle that I've always thought was kind of interesting, which is, how does your body know how many calories you've eaten? Right? In other words, the process has to involve something like you are measuring with your mouth, the taste of something, which gives you some sense of the admixture of what's in it. And then there has to be some sort of a feedback after you've eaten it, that gives you an ability to calibrate how much that was worth.

**Heather** 51:49

So is what is what you're asking in the short term, like, How does it know when to send the satiation signals? Right? Okay, so not I was first like, long term like, well, there's, I don't know what's in those black boxes, but there's stuff going on in the gut that is assessing.

**Bret** 52:04

But my point is, I'm predicting that there will be an interaction between these things that the somatic experience of eating Yeah, in order to do your ancestors, the most good, would have to have been connected to a feedback that says, Okay, this had that many units of, you know, this kind of joy and that kind of joy. Oh, and that netted to this many calories. And you know, this much protein and so anyway, you would get a feedback that would tell you the value of what you had encountered, and therefore what to crave properly. And basically, we have a chaotic system where we have way too many foods, so we can't, you know, we don't get a chance to sort of assess the value of something that we have eaten, because it tends to come in some chaotic sequence with a bunch of other things. And anyway, so my guess is we are wildly miscount calibrated, because

**Heather** 52:54

there may be like, an onboard measurer that is helping assess when to stop eat, and when to keep eating, etc, that is going to basically have an impossible time with the diversity of food that we have in modern times, and not just not just take take out of the equation, all of the garbage that reading all of the non food molecules that we end up that most modern send a beating. But just the fact that you might have Turkish food one night and Spanish food the next and hamburgers, the next and spaghetti and the you know, the degree that there's some sensor trying to assess how much was that how much value was in that, like I give up, it's too It's too divergent too much.

**Bret** 53:32

Yep. And I would also point out that in a natural circumstance, this would be connected to a, the term in ecology is optimal foraging. But that basically figuring out how best to spend your time in the pursuit of food involves a lot of detailed information, right? So some food may be very rich in nutritious value, but so expensive to collect, either because it's distributed in tiny little bundles, or the bundles, it's distributed and are really good at running away from you, or they're guarded by bees, by to the right and may come with hazards. And so the idea is, you know, let's say that there's a patch of mongongo nuts, and they're, you know, five kilometers away,

**Heather** 54:15

which for those of you who have not read either nissa, or the other amazing book about the gong, that I've been, which the name of which I always forget, but mongongo nuts are actually one of the preferred foods of the cone.

**Bret** 54:28

Yes, in fact, I forgotten which person in the book is asked why they don't farm. And the answer was something like, why would you farm if there's so many middlemen. But anyway, if there's a patch of mongongo nuts, five kilometers away, and then it is liable to yield, you know, six ripe fruits, you know, per visit. And the question is, well, how does that investment of time and that reward rank compared to Yeah, I'm going and looking for Kudu right, right? Yep. So anyway, there's an awful lot of place for information to improve your foraging behavior. And we are making it all so noisy that we suck at it and it makes us fat. Indeed.

**Heather** 55:19

Yes. Okay, well, we're just getting we're still having Odyssey problems sec. Oh, okay. Well, we've already been at it an hour, haven't we? Yeah, I'm okay. Hey, there. I'm just going to keep up with the non COVID questions. And then at some point, we'll switch and maybe just do a couple. Cody ones. The National School Boards Association has called on Feds, FBI, Homeland Security, etc, to act in a coordinated manner against CRT objectors. It's unsettling. I just, I think actually, someone emailed me about this this morning. Maybe it's this person just ran into this. You've heard about this. I just barely know anything about it. And I think I have to, I have to look into it more. I think we may be we may talk about this next week, I guess not next week. But next episode. In the meantime, yeah,

**Bret** 56:15

let me just say, the, there is a kind of bloodletting that happens, where one settles upon witches, and then one hunts them. And there is something going on in our system where we are having a, an ongoing discussion about who the worst witches are, and in what ways we might properly punish them. Yes. And you just got to step back and look at this and say, really, we're going to do this to each other, again, right to be learn nothing from history. That's what's going on. And so you know, CRT objectors is a pretty good measure of willingness to confront bad thinking. And if you're involved in selling bad thinking, or wielding bad thinking, you might want to find those people and get rid of them, which is exactly what happened to us at evergreen and exactly, you know, the point was a will of course, it was the evolutionary biologists who were teaching about race and sex and all of that in a useful way. Of course, they had to go because it was getting really inconvenient for the garbage narrative that was necessary for the takeover.

**Heather** 57:33

Yeah, yeah, we were critical theory hesitant, weren't we? You better

**Bret** 57:37

believe?

**Heather** 57:41

What are the evolutionary advantages behind learning a new language? Love the book?

**Bret** 57:47

I would say being able to communicate with people who speak that language is Oh, man, it's so good. I so wish I was good at this.

**Heather** 57:59

Right? I don't actually remember, Drew Scheidler, our research assistant and friend and former student research assistant for the book said at some point and I think we may have left it in as a as a footnote in the book I can't remember said You know, there's such a such a push right now, to get kids to be bilingual young, because we know that there's this critical period during which picking up a second language is much, much easier. Once you have a second, it's much easier to pick up a third or fourth or fifth, etc. And certainly, it's one of the ways that I have long considered our parenting sub optimal is that we did not you know, we tried ish, but neither of us ourselves have influencing the second language. We did neither of our children are bilingual. And I, you know, I certainly assumed before we had children that you had the point that we had children, we would do everything we could to make that happen, it didn't happen. And drew said, you know, what about the trade offs? like no, we never hear about the trade offs. It's just, it's just promoted as obviously, this is a good thing. And it seems like it's a good thing. It makes the world more accessible. It makes us all able to reach across more more boundaries that seem unbreachable if we can communicate with people with whom we don't share one language, but we do share a second but might it not make you know, might that generalism make you maybe somehow a little bit less deep in your home language in your native language? It's possible

**Bret** 59:35

Yeah, I don't discount the possibility that there are downsides. My guess is we're so far from the efficient frontier that the downsides don't manifest it's so much upside Yeah, that you just it's it's well worth it even though a very efficient system would reveal that of course, it does have cost I can't not Yeah. But yeah, what the advantages, I would say are I would say it's an extension of the advantage of travel itself. Right? People who have never been anywhere else, are in a much worse position to know what the world is. Yeah,

**Heather** 1:00:16

right having what they are have their own culture is everything about themselves, you

**Bret** 1:00:20

have to you have to find those things out through interaction. And of course, those of us who have figured them out, at least are in some position to know that we're limited because of all the cultures we haven't seen, but we can at least extrapolate to what might be there. The thing about language is, the better you are at a language, the better positioned you are to look through the eyes of somebody who speaks that language natively. And the more people whose eyes you can look through the better you understand what the human experience is, but if all the eyes you look through, well are people with whom you share a native language, then of course, you can get pretty good sense of, you know what English speakers are, but it you know, it has a it has a not only a limit, but a bias. Yeah, you're biased in the direction of things that people who speak that language, which you know, of course, many of them will have shared history of one kind or another. So it is it is profoundly limiting. But I think it's basically an empathy limit.

**Heather** 1:01:22

Yeah, good. Jason asks, Why am I bald with bad teeth when my brother is perfect? Thanks. I feel like Jason probably did something to deserve this. Right?

**Bret** 1:01:34

I actually blame the brother. Oh, okay. Not quite sure why, but I think somehow,

**Heather** 1:01:39

yeah, perfection is always suspect. Hmm.

**Bret** 1:01:43

So suspect? Yeah. Yeah. Well, look, the simple answer, to the extent that there's any truth at all on your story, and that you are indeed full siblings has to do with the edit on the genome that each of you got.

**Heather** 1:02:05

Yeah, yeah. So I mean, in both in both senses, right, like the particular you could be anything from an exact genetic copy of your brother, even if you're not twins to actually sharing 0%. By common descent, depending on what half of your mother's genome you got, and what half of your father's jam you got. It's much more on average are 50% related by common descent, but also the Edit at the epigenetic level? Yeah, you know, through development.

**Bret** 1:02:30

Right. Well, I mean, I meant the the edit that you were describing, like the genetic edit. Yeah.

**Heather** 1:02:36

Which it just usually isn't. Edit usually isn't the word that's used there, which is why I thought it was worth Yeah. spelling out.

**Bret** 1:02:42

No, I mean, well, okay. There are two things in play. One is the siblings full siblings are 50% related, on average, but it can be anywhere from zero to 100. But to the extent that it is actually very likely to be near 50%, what 50% is potentially radically altering in terms of how similar you seem. Now my guess about this brother, knowing very little about him is that he's completely insufferable. No doubt. And you wouldn't want that. So in some sense, I think yeah. Yeah, totally.

**Heather** 1:03:23

Yeah. Okay. Could you speak about the evolution of binary thinking when it's useful and when it goes astray? Thanks so much.

**Bret** 1:03:31

I think you need more categories there.

**Heather** 1:03:35

There were binaries, no oral sex is one of them. And then there are a lot of things that are not binary, but it's easier because categories are useful. And many categories are real. And even many real categories have fuzzy borders. And it's hard to both keep in our heads category. But fuzzy borders, therefore category real category real. Oh, boy, what happens at this interface between them? reasonable people might disagree about which category it belongs

**Bret** 1:04:01

in. Yeah. And you know, I would say there's a larger principle here. Which I used to, I used to say to students, which was, there are lots of things that contain a very important truth, but you need to be very careful not to overly fall in love with that truth because it will obscure some other truth. So like, you know, ants, and hives are an organism. Right? An ant nest is both very much organism, like you have to see that in order to understand what it is, but it's not completely true either. And so because you have to be able to hold both things, and not I guess the point is categorical thinking is occasionally exactly what you need. And more often than not, it is more confusing than it is helpful and being able to facultatively be categorical is the way to go. Yeah.

**Heather** 1:05:00

Okay, Zack, you want to drop the YouTube stream? And you

**Bret** 1:05:07

know, okay, well, maybe.

**Heather** 1:05:10

Okay. Well, there's actually one question here that just came in that we will answer his last question. Sorry, we're not we're not going to address the COVID questions on YouTube. Because we're because it's not a place for adults. That's why it's not a place for adults. So we're going to answer this one more question here today, and then we will see you all in two weeks. What do you think? And I think we actually already addressed this at one point, but let's let's do actually, we

**Bret** 1:05:40

should just clarify that. So the people who have filed these questions, don't think that we are ignoring them. The problem has to do with the Odyssey stream not being reliable. So we can't just go there, we would answer them. Yeah.

**Heather** 1:05:53

And in fact, I'll go through after we're off and forward to our next stream those questions here that I think we really are going to try to get to next time on Odyssey online, because it's clear that, that we can't have those conversations on YouTube. Yep. So final question for today. What do you think about people voluntarily submitting their DNA to services such as 23andme, or ancestry? Both of these companies are now either publicly traded through me or BlackRock, there was a recent veritasium video. So I don't know about that last part, and really publicly traded or not, you and I have been concerned about these for a long time. And, you know, as they were becoming popular, we were encouraged to submit our DNA to them and did not

**Bret** 1:06:43

Yeah, I think a they're not as useful as you think and be the hazards are many and hard to even fully define.

**Heather** 1:06:53

Yeah, we can't know what all what all might be done, you know, dis, collecting all those data and using them in a disaggregated form. So that no individual ID was possible is one thing. But I am not aware of any assurances that that is the limit of the use to which those data might be given, I can infer what the right verb is there. Put Thank you. And I mean, I guess maybe let's just say a word or two about the first part of your answer, which is, it's actually not clear how useful they are this, this is one of these things that promises big, because it feels like, well, it's your genes. It's your genetics. And we know you know, we've got the human genome, everyone remembers the Human Genome Project from what like the late 90s, early aughts, like we've got it. And it doesn't mean as much as we think it does. And there are lots of things that will hide about our ancestry in places where we don't even know to look yet. And so, you know, obviously there are things that are revealed by these by these services. But it's really not clear what the Well, really either either the accuracy or the precision are on them.

**Bret** 1:08:09

Yeah, I mean, even if they are accurate and precise, it's not clear what it means. That's the problem is that, you know, the nature of genetic identity is that it is quickly atomized into a population and therefore reading meaning into ancestry. It's an interesting curiosity. If I could do it in complete safety. I might as well although pretty sure I

**Heather** 1:08:35

know, yeah, I think we've talked about this before. Like, I think in your case, it's not very interesting. You're not much of a mutton. Alright, I kind of like to know. Yeah, for me. Yeah, totally. Anyway. All right. That's it. That's it. Well, I guess that's it. I guess that's it. We can't we can the Odyssey stream is not working. I think we will,

**Bret** 1:09:03

given that it's failed multiple times. I think it's a mistake. We'll

**Heather** 1:09:06

stop. We'll stop here for today. And we'll hope for for two weeks from now, we will be able to do that. And we'll devote some time we'll plan to devote some time, not just as an afterthought in the q&a to just answering questions on Odyssey for adults. All right, so thank you for being with us. Consider finding a hunter gatherers guide in the 21st century available, some places that books are sold, but it's supposed to be available everywhere that books are sold, the audio book is available, but really the hardcover. So the audio book, we're pleased with and we read it and and people are really enjoying it, but it doesn't have the references and it doesn't have the recommended for the reading and it doesn't have the glossary and there's at least one more thing that it doesn't have. So it's not The complete but you know it, it could give the sense of there's a lot of claims that are not actually, you know, really fully referenced in the book. And if you're the kind of person that I am, who when they read something interesting often wants to follow that and make sure that it is what the author's claimed, etc. The hardcopy allows you to do that in a way that the audio book does not. So if if you want it keep looking, well, there's just

**Bret** 1:10:24

there's keep looking. There's also they don't charge you until they send it yeah. Oh, yeah, Amazon and we know that books are in the pipeline. So presumably, if you order it, it will come at some point and probably sooner than they say, based on how many books we know are headed in the direction of

**Heather** 1:10:42

the and we have actually heard a few anecdotal stories to this effect that they were told people people who had pre ordered in June we're now told they weren't going to get it until November and then received a copy of this last week. So so so place in order if that's what you want to do, and you may well get it before you're being told you will. In other news, your Patreon conversation is happening tomorrow. We have we are going to have some new merchandise after many many months without any some Welcome to complex systems, shirt or shirts coming soon. So the store where you can get those things is at store dot Darkhorse podcast.org if you want to read about seahorses, go to natural selections that substack calm and other things and and find us on YouTube and on Odyssey and go to the ones you love and eat good food and get outside

**Bret** 1:11:47

while everyone