2021-09-04\_EvoLensQandA95 - Your Questions Answered - Bret a...

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**SUMMARY KEYWORDS**

vaccines, question, point, social movements, fact, antigens, women, problem, male, advertisers, good, female, offspring, people, religion, variance, immunity, possibility, move, evolutionary

**SPEAKERS**

Bret, Heather

**Bret** 05:48

Hey folks, you've got questions, we've got answers. Welcome back to The Dark Horse podcast live stream number 95 Q and A section we are ready to go, we should warn you up top. We are several questions in here going to terminate the YouTube feed due to draconian authoritarian regulations on the YouTube platform. And we will be going over to rst where we can talk like adults about things that matter. So the link is in the description for the YouTube, feed

**Heather** 06:22

the YouTube if you're watching on YouTube right now, you will find at the top of the description, the link to the Odyssey q&a, which is concurrently streaming right now, and will continue to stream after we drop this one. So we're going to start by answering several questions that, at least as far as we can tell, are unlikely to irritate any sensors. And then we will give you another warning before we terminate YouTube feed. And then we'll start with the question from the discord this week and answer as many of the others here that came in that seem to be all on a particular set of topics that YouTube really does not want us talking about.

**Bret** 06:57

It's not.

**Heather** 06:59

Alright. So however first, while we're still live on youtube, what makes religion and social movements so damned effective at getting people to comply with set behaviors so damned quickly. I can't even get my kids to put their clothes in the hamper. And I've been training them for over a decade. Maybe I can pick up some tips lol thanks for your time. And here's another decade of trying.

**Bret** 07:21

Social media puts the dope and dopamine. And it's not bad. It's not great, but it's not bad.

**Heather** 07:30

I know that you it wasn't derivative on your part because you don't do that sort of thing. But I'm sure it's been said before. Oh,

**Bret** 07:36

no. Yeah, if not, the shame is on other people for missing it for

**Heather** 07:39

this everyone else. Yeah.

**Bret** 07:42

Right. Look, here's the thing, you've got markets, and those markets are

**Heather** 07:48

religion. I mean, you're not gonna blame religion, the efficacy of religion on markets or

**Bret** 07:53

you know, I'm sorry, it's possible that I miss misunderstood a word or two in the question,

**Heather** 07:59

what makes religion and social movements so down to effectively getting people to comply with that behavior,

**Bret** 08:04

heard social media. And that's why I thought dope and dopamine, please erase what I said. Now, in some sense, markets very efficiently, quickly find defects in cognition, because effectively you've got all sorts of people trying and those that land on a formulation that exploits some blind spot work, religion works, because over long periods of time, what you have is selection, searching for things that result in behavior that ends up being adaptive. So I take that that was targeted social media that was not targeted at religions. basic point is religions are compendiums of wisdom that has stood the test of time. Does that mean that they are up to date with respect to modern problems? It absolutely does not? Because we are in circumstances that the ancestral environments that formed those religions do not look like. I mean,

**Heather** 08:55

I guess, even more precisely to the question, I would argue me religion, the social movements are a bit different here. So you know, using the model that we were discussing in the first hour, religion, religious injunctions that get people to do things that the religion was not the individual might have another thing in mind, tend to be the most effective when they are in that sacred layer, when they are in that way. This is how we do things. If you were part of this religion, this is how you do things. And so it's not a matter of so quickly, actually, it's a matter of this is what you do if you are an ex member of this group. And, you know, social movements, I suspect are going to operate the same Well, there's less formalism in social movements than there is in there there are less established, received wisdom in the form of texts and social movements.

**Bret** 09:44

Well, I would add that basically these things function on two different timescales and which do you think religions and social movements, religions have an advantage arguably this advantage applies less and less, but to the extent that you are an ape that is born into a group that has teachings that it hands to you many of those teachings are the key to your success. And some of those teachings say very ominous things about what will happen to you if you depart from the sacred wisdom, and you are in no position to determine that those penalties may not actually be real. So what we have argued here and in the book and elsewhere, is that a belief in an afterlife, for example, is not a literally true belief, there's nowhere to go. On the other hand, it's an analogue for something that's very real and very hard to say. Right? So before anyone understood that there were genes that were trying to get into the future, there was a belief about pleasing a God who controlled something about you that would continue into the future, right? When you can't say, hey, actually, your genes need to get into the future. And in order for them to do that, well, you need to restrain your behavior while you're physically present. Because that will affect your descendants position in the universe, and they carry your genes even after you're gone. If you can't say that, then you can say behave well and get into heaven and live terrifically Ever After otherwise, really bad, like a fire stuff is gonna go on. And you don't want any part of that, right. So those extreme penalties and extreme rewards shape behavior rather dramatically, because life is short, and the afterlife ain't so you know, the calculus is pretty simple. Now at the point, people start saying, you know, maybe that afterlife stuff isn't an actual thing. Now you got a problem, because even the thou shalt, and thou shalt not now doesn't carry a calculus that makes it obvious that you could be striving for something. And those who depart most may actually do best in this life, right? Especially in the context of things that are not communities where your reputation precedes you, and dictates how people interact with you. But you walk away with this fungible currency. And you can do terrible things to people make a lot of money, and then go spend it somewhere and nobody treats you like a bad person, right? those opportunities are new. And anyway, so this is this is where we are the predicament is the old system in which people simply believe what their elders told them. And it was very frightening and very encouraging, depending upon what sort of person you were, that was pretty persuasive. Now, it's not so persuasive. And we don't have the substitute system, what we really have is people exploring what they can get away with and finding out they can get away with a lot.

**Heather** 12:27

Absolutely. And there's something you said in there that I had never put together before and I'm sure I'm sure others have. But the idea that the fungibility of currency paves the way for anonymity in human interactions is really important. Yeah,

**Bret** 12:41

it's quite quite bad. So the other thing about the social movement issue is that social movements are much shorter, you know, these aren't 1000s of years old, typically,

**Heather** 12:50

they tend to come and go, and they may, they may come back, they're more like fashion trends. And how that's, that can be taken out of context, of course, but they're, they're shorter term, and they tend to do resurgences as opposed to, like, we're here for good, but in

**Bret** 13:03

some sense, you know, there are traditions in which the rewards and penalties of the mystical layer come to you in this life and there are other traditions in which they await your death. And the social movements are more like in this life, you know, if you say these things and you behave in these ways, then you will be you will rise with our movement.

**Heather** 13:25

Well, and it's I mean, social movements are in general explicitly fighting for the material, you know, improvements in the material world, right, they're not they're not fighting for improvements in the afterlife.

**Bret** 13:34

Right? Well, that's it and, you know, to the extent that they work and you know, let's not forget that as absurd as the social movements that we seem to have are many social movements have succeeded in doing really important world improving stuff. And so there is a serious version, even if the our current versions are malignant. But you know, they have to work somehow.

**Heather** 13:54

Yeah. Okay, let's, that's one question. Let's try to get through a few more here. Why are women more prone to developing eating disorders? explanations, like sexism and oppressive beauty standards seem incomplete and shallow? If you consider that gay men make up the strong majority of male eating disorder sufferers? I would say that, you know, gay men and women have some some similarities, of course, and yes, the sort of the social, the social construct types of explanations, like sexism and oppressive beauty standards that don't include any evolutionary analysis are, as you say, incomplete and shallow, but it's not that they don't have the germ of truth there that, you know, sexism is like the pathological version of recognizing that there are sex differences and the sex some of the sex differences that we have include the fact that you know, men or women look different. And as we are moving from a more strictly polygynous past towards a more monogamous existence, we have not just female choice of male mates and male male competition, but also Male choice of female mates and female female competition and so focusing your attention as a woman on how it is that you look has been a decent stand in for you know as a decent proxy for Am I going to be able to win in the mating and you know dating and mating game and in competition but me are both in terms of attracting a male mate for talking about you know, and prediction also would be that homosexual women have lower levels of eating disorders. So in in terms of attracting a mate and also in competition with other women and you know youth, youthfulness and basically reproductive Vidal vitality, being indicators of fecundity, which have been indicators of which have been the things of course, that points to reproductive success in our history. Those are the things that women get focused on now eating disorders that cause women to become ever more thin, which frankly almost no one finds actually attractive and is not healthy and does not lead to reproductive success at all, is obviously a you know, it's beyond pathological. It's it's very much a disorder. But the idea that women looking to attract men, and to some degrees are men looking to attract men will use youth and sexual vitality as the thing in their head that they get ramped up and can focus only on that and that that's the you know, that's the error that they exaggerate as opposed to someone else who will exaggerate you know, something else. shouldn't be surprising, given this evolutionary framework. All

**Bret** 16:39

right, I'm gonna try a little sacrilege here. This is new, at least for me, but I kind of have the sensor some here, all right. This has to do with the fact that there is a lot to say about females being much lower variance that is much more likely to succeed. But the range over which success and failure exists is much narrower. And men are cross domains, cross domains and men are a huge gamble, right? There are lots of cross cross domain, there are lots of losers. And when men when they often win big, All right, now, the point is in that universe, right? Let's just take prototypical male, prototypical female, a male, if he invests This is in the ancestral past, a male who invests in male endeavors and succeeds, has a much higher chance, reproductive success wise, right? better choice of mates, those offspring that are produced are liable to be in a much better position to capitalize on opportunity and all of these things, right? So that male variance is of high value, it is of high value to females who are looking to improve the position of their offspring in the world, which of course they are, right. So female focus on what males are interested in, is a male can demonstrate his capacity, almost irrespective of what he looks like if he succeeds in the world in some way. that demonstrates insight ability to get ahead what we even if it's ruthlessness, whatever it is, right, that thing reduces the priority on male, you know, beauty standards, let's say, whereas females looking to improve the position of their offspring, by finding a mate who will be able to capitalize on the positive side of the high variance is a priority. Now here's the important part. important part is, that is all fairly straightforward. In this environment, you now introduce advertisers. Right now advertising works on the basis of triggering insecurities. What it does is it causes people

**Heather** 19:03

to stall. So you just introduced a hypothesis, which is that eating disorders basically don't exist outside of the advertising regime. I would think that's basically true. I think they're not it's it, you sort of introduced it as an assumption. But it could also be voiced as a hypothesis.

**Bret** 19:18

Let's voice it as a hypothesis. I'm not too worried about it.

**Heather** 19:21

But just anyway, it's it's it is necessary. It's necessary that that be true for I don't know where you're going. But I think it will be necessary that that'd be true for where you're going to go forward.

**Bret** 19:30

So advertisers adjust what gets bought. That's their purpose. Right? They can adjust which thing you buy in a sequence of things where you're going to buy something, or they can cause you to buy something that you weren't going to buy otherwise. But basically, the way they do this is by triggering dissatisfaction, right? If you're satisfied, you're not buying. If you're unsatisfied, you'll buy so if I say, Oh, you've got a problem, honey, but I've got the solution and it comes in this bottle right? Then if that's a persuasive pitch, then that bottle is something you want. I've succeeded as an advertiser Okay, so the point is, women are already attuned, very attuned to what men prefer, right? That's natural by virtue of the problem of human male variants being a key to the success of a female's offspring in an ancestral past, it has been exploited by advertisers, advertisers, who create a very false sense of what men actually prefer. This is well demonstrated that the degree to which men actually prefer very thin women is uncorrelated to what women expect men prefer, for example. And so the point is, you've got a runaway process where advertisers are triggering in securities and those insecurities basically set beauty standards that can't be met by a human female. In fact, there was this quite interesting dove commercial some time ago, where they showed how this very beautiful model was made to look levels of beautiful that she wasn't by virtue of Photoshop, and all sorts of other tricks in order to

**Heather** 21:07

so I'm not sure I feel like we need to move on. We're spending way too much time here, but I'm not sure what the new, I'm not sure what you're saying. So for instance, you know, we know that and indeed, it's one of these stories in the book, where I think it was, gosh, some South Pacific Island, where the beauty standards are for rather plumper women, and that when TV arrived, suddenly you get women who are dieting and have eating disorders. And so you know, this is actually it's, you know, it's it's well documented, that you introduce, basically the markets, the markets, which include Western beauty standards, and women who live in cultures that didn't have Western beauty standards start to try to adopt them. And especially if their internal beauty standards aren't the same thing, suddenly you have eating disorders,

**Bret** 21:52

right? So the model is because the degree of success and failure that has traditionally accompanied male realms of competition is high variance, and women get access to it through the perception of males, right, by attracting males. They're hypersensitive to what males prefer, which makes them vulnerable to advertisers portraying male preference in ways that it isn't in order to trigger insecurity. And so the basic point is, you have an epidemic of female insecurity that is causing behaviors that are very unhealthy. But really, that's advertisers interceding in a normal, asymmetrical kind of mate choice.

**Heather** 22:38

So I think I want to come back to this because I'm not I'm not seeing the connection between the high variance and the advertisers. This is not connecting for me. But I really feel like we're spending way too much time on two questions. And we'd already said we're going to spend a lot of time on Okay, Odyssey only stuff?

**Bret** 22:52

Well, let's go let's do the flip side of it. Okay. Let's say that a male is not physically, especially attractive. But he's very good at a successful hunt, or very good at spotting arbitrage, arbitrage herbal goods in the market, and therefore capable of demonstrating high value, right? A woman in a traditional system shouldn't overlook that. And so therefore, the superficial Okay,

**Heather** 23:19

so it sounds like you're not trying to you're not I thought you were explaining why women are doing this. It sounds like what you're actually displaying is why men aren't

**Bret** 23:27

No, I'm explaining the asymmetry between men and women and then saying, advertisers have a special there's a vulnerability

**Heather** 23:33

access to women, that the same access is not provided to men. Because the ways I mean, I don't think it's about the high variance, though, I think it's because the ways that men attract women is not primarily through youth and vitality, because that's not generally what men are offering, right. But it's hard, in part a greater diversity of things, including across the lifetime, that, that tend to be attractive in male in males as mates for women. So I don't see the connection to the higher variability, you know, across domains,

**Bret** 24:05

because if females are lower variability in terms of success, the range of success as a gatherer exists, but it's not as wide a range, then the point is what really dictates offspring that are very well positioned versus offspring that are very poorly positioned, is how a woman teams up because it's lower what what she does in the world has traditionally been lower variance.

**Heather** 24:29

So this is like taking mating and dating into lineage selection space and going like okay, how how it doesn't matter that the low variance means that maybe we can stop talking about women entirely with regard to every bit of success, except that lineage selection reveals that we actually need to focus on the f1, the f2, the f3, like,

**Bret** 24:48

predicts it predicts that women should traditionally have viewed the world this way, but I want to add one last game, which is that this mirrors the thing that we talked about, about the difference between socially mediated truth and physically mediated truth. Because the difference is, female value is socially mediated, which is what creates female value has traditionally been socially mediated which creates the vulnerability that advertisers exploited. Which then creates

**Heather** 25:13

this is really their female value is explicitly not traditionally, like, there's just there's competition over social space but the it's the actual physicality like Dude, we have so many questions to get through

**Bret** 25:26

variance I'm talking about not that not the absolute Okay,

**Heather** 25:28

I'm not I'm just I'm gonna stop responding. So there's like 10 questions that are pre Odyssey stuff that I really wanted to get through. What's with raspberries and other 30 fruit fruit to get you to spread their seeds, but thorns to add blood or just sweat? I just wanted to not necessarily answer this directly. But say that actually, my natural selections post for next week is about fruit.

**Bret** 25:52

This one's easy. Sure, okay. It's about birds. It's supposed to dissuade things like deer, which may poop out the seeds, feet away from the plant and encouraging birds, which will fly the seeds long distances, which is the whole point and

**Heather** 26:05

yeah, but raspberries are cute. Like we have selected raspberries to become a human thing. And we haven't selected out the thorns. So you know, the the fact that they're red, like red fruits tend to be bird fruits. Yeah, but we obviously there's lots of red fruits that we have selected to be perfect for our tastes and versions of secondary compounds,

**Bret** 26:23

right. But it may be that this is the genetic equivalent of sacred that thorns have been such a key and that lineage to not being dispersed by the wrong critter that they're very hard to select out. Or it may be that they actually keep our pests away. And that because we're humans, we're capable of reaching around thorns and figuring out ways to harvest stuff. And so that actually, the thorns have done our bidding for us.

**Heather** 26:45

Yeah, I mean, deer, deer love raspberries and blackberries as well. And they, you know, they seem not to usually come away with bloody noses. His nose to tail animal based diet, evolutionary consistent, is the question data seems ambiguous. So I don't know what consistent means. What I don't understand question yet knows that they are animal based diet. So when you're eating the whole part of the the entire part of the animal, I think I mean that there's kind of not quite enough words here. But yes, if you know it is it is very likely that eating more parts of the animal will actually make a person healthier than just eating the muscle, which is largely what humans do. But there are, you know, organ meats are very popular in many, in many cuisines. And frankly, some of those organ meats are almost certainly really not good for you, you know, the things that are literally detoxifying, you, you know, livers and kidneys are rarely going to be very, very healthy for you.

**Bret** 27:43

I don't I don't know about this. There are cases in which this is true carnivore, liver, for example, is no good, right? I think this is it's certainly true that to eat liver involves a cost, right? Is that cost worth paying? Probably in general. But I would say the missing piece,

**Heather** 28:00

it's awesome. It's also high in for instance, iron, which in some environments is limiting,

**Bret** 28:05

right? The real question is this, why would you ever leave calories on the table, and there are really only a couple reasons, because those calories are tied to something hazardous to you like a toxin, because those calories are too expensive to access. So they're actually net negative, right? There are lots of things you could eat, but you know, you would have to spend too much hunting effort to get enough of them. Or they're too deep inside some bone and you can't get it easily. So the real question is the mystery is why do we not eat certain parts of animals? And the answer is not worth the cost in one way or another either because of toxicity because of difficulty, because there's a better use, right? If you're partnered with dogs, it may be that liver is perfectly good for you. But it's better spent on your dogs, which increase your success at hunting or something like that. But the basic answer is going to be calories or calories. They come with downsides. And there are opportunity costs like are you feeding, you know, would it be better given to the chickens? Would it be better given to the dogs, that sort of thing, but by and large, you should expect no waste of calories? You should expect the best use of calories the optimal use.

**Heather** 29:16

My dog got fleas while camping. Do you have thoughts on the best flea treatment or prevention? Thank you.

**Bret** 29:25

I would be ultra cautious about the stuff that you put on the surface of animals. This is a really frightening trend. Because you can't control where it goes. It's obviously extremely potent stuff and you're basically depending on the fact that it interacts catastrophic Lee with the physiology of the parasites, and not at all with the physiology of you and your kids and whatever that come in contact with the animal. And in fact, it is, you know, and also any animal that grew itself is going to be consuming this stuff. So I would just say the opponents,

**Heather** 30:03

especially if you've got children, I'm just gonna come it's gonna, it's gonna come on to your children who are playing with your animal. Yeah. Most of the systemic stuff is really, really toxic as well. Yep. There's one thing that we have used in the past on occasion. I can't remember the name of it offhand. Because in part, you know, we had some grass where we lived in Olympia, and we don't have a lawn here, we don't have any grass. And we don't have any fleas. And obviously, fleas preexisted lawns. But it does seem pretty clear that the that the concentration of fleas that a lot of modern pets have is associated with grassy lawns. And so we haven't had to we have not had to deal with this for many years now.

**Bret** 30:50

Yeah, that's, that's true. I would also say, the ugly part of this is you probably should do the calculation. Do I prefer some harm to my pet to protect the humans in the environment? And I think it's the right thing to do though. It's not a very

**Heather** 31:12

Yeah, we have and I guess what I just one other thing is that I used to there's some efficacy to the botanical pennywell, you can buy pennywell oil, and I would spray it by the cat door by the dog door. And it seemed it seems to keep some of the fleas at the door, as opposed to coming inside. Yep. This is just a nice comment. love how you both engage breadth and depth in all that you discuss as a seven to 72 year old Australian female I look forward to being in your book.

**Bret** 31:49

Let's fight over this one.

**Heather** 31:52

And this is funny is there a difference between mostly sunny and partly cloudy? is a scientific looking forward to reading your book? I suspect it's a percentage thing you know, meteorologists must have some like description, and they just haven't bothered to tell us because it's really the same thing. It's completely ridiculous, but I think it's a percentage thing.

**Bret** 32:11

I think it's undefined. And I think an amazing number of statistics that get reported you cannot chase down what they mean because they don't actually mean this

**Heather** 32:21

isn't a statistic this is this is a category that meteorologists right but but I think why I will be shocked if it's undefined. I'll bet it is variable, across across places, let's

**Bret** 32:32

but then that is undefined. Right? If one app calls it one way, and another app calls it another way, then that's an arbitrary choice. And it's there's no standard to appeal to, but I would say even you know, something obvious, like an 83% chance of rain. Yeah, it is not obvious what that means. Is it raining at any at any one? My son is telling me there's a very simple answer. In the area. Well, I was I was gonna ask I don't believe that that holds up across invocation. So great. 83% chance. Okay, but in a day in which 83% of the territory is being rained on at any given moment? Is all of it going to be rained on at some point during that day? And isn't that then there's 100% chance of rain there tomorrow. Right? Right. So there is a problem. Either it is defined as something that most people would not be able to derive, right? It was definitely going to rain here tomorrow, but it will only be raining over 83% of the territory at any given moment. Really. That's what it means. I thought it meant something very different. So yeah. Yeah, lots of this stuff is not well defined. Yeah.

**Heather** 33:49

Okay. I've noticed the songwriting process seems disturbingly evolutionary, which also made me think of how music inspires music is music life?

**Bret** 34:01

No, but but you're absolutely right about how thoroughly evolutionary it is. And it's really in some ways. Yeah. First of all, I should point out the puzzle was spotted by Darwin. The evolutionary explanation for music, it absolutely demands one. The explanation was completely punted by Steven Pinker, who dismissed music, or he dismissed, dismissed music as the equivalent of cheesecake. Saying that was just a bunch of good things that we like in such abundance that we can't resist it, but it doesn't have any evolutionary meaning. Which is nonsense. But

**Heather** 34:36

anyway, I mean, he's right about what cheesecake is.

**Bret** 34:39

cheesecake is what the differences cheesecake is novel, right? And music sure ain't.

**Heather** 34:45

And not ubiquitous. Right? There are cultures without cheesecake.

**Bret** 34:49

I feel terrible for them. But But yeah, there are cultures without cheesecake and there are no cultures without music. And really, music would be utterly ubiquitous. Every human would have the experience not only of listening to music, but producing music themself. Yeah. Until very recently. So anyway, yes, it's a it's a really cool puzzle.

**Heather** 35:06

Yeah. Okay, one more question. And then we're going to drop the YouTube stream and and start answering other types of questions. You may have answered this before. But what are your thoughts on Jared Diamond's hypothesis about the relationship between geography, culture and innovation?

**Bret** 35:25

I am trying to derive whether that you're talking is this I

**Heather** 35:31

feel although I'm not I'm the addition of innovation there. strikes me as maybe it's also some of what's in one of his later books. I'm looking at collapses right there on the bookshelf?

**Bret** 35:40

I don't think so. I think we can get all that from guns, germs and steel, I would say tremendously positive. Yeah, undoubtedly, there's the devil in the details in some places. But it is amazing how much a few parameters like the location of domestic bull creatures, which most of us think lots of creatures are domestic herbal, and the ones that haven't been domesticated, haven't been domesticated, because nobody's tried. But in fact, there's a pretty good list of the characteristics you need. And those animals that were domesticated were highly concentrated in Asia. And Asia being laid out east west allowed them to be moved without moving out of their climatic zone.

**Heather** 36:22

You can move across longitudes without inherently changing climate and ecology, but you can't move across latitudes without doing so. Right.

**Bret** 36:29

So basically, you had both animal and plant farming accruing in certain cultures that were blessed with advantages like domestic couple creatures, and crops that had been moved from wherever they were domesticated to wherever the population was, without being disrupted. And that created enough surplus that you could have things like specialists and artisans rather than having everybody participating. And so anyway, I'm, I would say, I'm quite compelled that this is at least a major fraction of the study of why populations differ in their tendency to have invented things is it basically comes down to non random distribution of useful stuff that gave some populations advantages over others so that they were hundreds or 1000s of years apart in technology when they met and thought,

**Heather** 37:15

yep. All right, we are going to drop the YouTube stream now. And welcome to Odyssey for those of you who just joined us here. The question from the discord server this week, and then there are a lot of questions that came in on the normal q&a channel as well. is all about COVID. Alright, so this question from Discord. Imagine a mRNA vaccines eradicate SARS, COBie two cautionary is and skeptics are likely shunned and shut out from a scientific enterprise, thereby creating even more rigid authoritarianism, or be vaccines cause unforeseen catastrophe and conspiracy theorists and traditional vaccine skeptics claim victory, trust in the scientific establishment collapses. Is there a way forward? where science doesn't lose?

**Bret** 38:02

Yeah, there clearly is. It's not clear we're going to get there because as you point out, there are two quite bad scenarios here. Now it wasn't me pointing it out. I know as as you on discord or slack.

**Heather** 38:16

I know you have something someplace to go here. But I, the only, the only hesitation I have about this question is I don't that's not a complete solution set. Right? Right. No, it's not because those are two very bad scenarios. And boy, do we absolutely 100% need the route through that. That is a third scenario,

**Bret** 38:33

right? Well, the second one is a bad scenario by virtue of the fact that it requires terrible things to happen in order for it to unfold. The problem is that what unfolds there, while terrible is probably necessary. We do have a scientific establishment that is not delivering science, and is endangering us. And I don't like it any better than anybody else. But we do have to wake up to that fact. And pretending that it's not true doesn't make it not true, it's going to continue to endanger us until we realize the thing is corrupted and it needs replacement or repair and repair is almost unthinkable at this point, the degree to which it's corrupted. So I would point out something, you need to separate the science and belief in science from the institutions in which science is traditionally housed. And the key is we do have science being done properly. And the way you can tell is predictive power. Right, a good model can predict things that other models cannot. And so for example, there has been lots written on Garrett vandenbosch and his whether he has a conflict of interest, whether he's a crazy person who misunderstands the immune system, but what you can't say is that Garrett did not successfully predict a pandemic of variants many months ago. before it happened, right? He sure did. He sure did. And so the basic point is look, alright, maybe the dude got lucky. But the burden of proof is on those who say he got lucky. And the answer will be, then he shouldn't be able to repeat that success of predicting what will happen to the extent that he keeps predicting what will happen. It suggests his model is actually good, even if it sounds crazy to you. So it is that kind of thing. Who has successfully predicted where we would end up that ought to tell you who's really doing science versus who's pretending now the one caveat I would have is in your pair of scenarios discord, you paint a picture in the first case in which the vaccines succeed. Now that would

**Heather** 40:46

succeed in eradicating rightsize. Coby to

**Bret** 40:49

believe that's impossible, actually, these vaccines are incapable of it for a couple of different reasons. One, actually, three reasons I would say, one, the effectiveness of them wanes rapidly over time, too, they are so narrowly targeted, that they are driving resistant variants driving the evolution of resistant variants. And Damn, what was the third? I don't know, a lot of second. So you've got narrowness of the targeting, you've got the waning of the immunity, and you've got the difficulty of getting them to all populations. And so the point is, they are incapable

**Heather** 41:33

of difficulty If not, apparently in possibility of why application across the entire world right at least at the same time, and if not at the same time, then you've got the the first problem, which is you're going to drive the existing mutants into being more dominant strains, right. So

**Bret** 41:51

the point is, they're incapable of doing that, but let's just say maybe there's something wrong in that analysis. And let's hope that they do control the pandemic, that does not say that the risks associated with them war, the right risk to take, in other words, it could turn out, there's no antibody dependent enhancement, that the variants, you know, move in the direction of more transmissible,

**Heather** 42:15

but less virulent and right and that the vaccine, fellow travelers get

**Bret** 42:19

ahead of them or something like that. But the point is, there were lots of risks that were taken here, you know, deploying the vaccine into an active pandemic, the, the narrow targeting the possibility of a D, which had not been ruled out by the testing process, all of those were dangerous. And so you cannot do this in the form of like, well, this thing happened, therefore, the people who advocated it were right, and, you know,

**Heather** 42:44

well, I mean, I guess, you know, you invoke your at vandenbosch. And they're, you know, he's not alone. There are many of us, and I include us in this. There are many scientists who have been saying our but But wait, and so most of us are not within the establishment at this point. And that is telling, and that could have a number of, of origin stories. There could be a number of reasons for that. But you know, that you that you can't speak what you think is true, if you're within within the scientific establishment at the moment, that is one possible reason that we are not hearing more establishment scientists banging the gong on this question. But like you're saying, the vaccines themselves, you know, seem seem powerful in some ways, and they seem capable in some ways. And that is not the same as saying that they could eradicate SARS, COVID, to which frankly, I, I actually can't even find anyone specifically even making that claim. Well, they will. I mean, this is a point that you've been making, like, did they at the point that they were bringing out the vaccines that they already decided that we weren't getting rid of this pathogen?

**Bret** 44:02

I think the problem is it was strongly implied Oh, there's implications I'll override but that's the point is it had to be implied because it couldn't be said because to the extent that the and

**Heather** 44:12

allows you to backtrack, as you said, Well, I you know, I was suspect of that thing over there. But I you know, of course, it could have been the case i along like all these people talking about both sides of their mouths and covering their asses, and being unwilling to take risks and being unwilling to make predictions and frankly, prediction is one of the core things in the scientific process. So the people who have predictions that they're keeping quiet, and who are wearing the mantle of science, are dishonouring science and and, you know, doing a disservice to all of their their

**Bret** 44:44

indicting their own credibility. But at this point, it is clear that these vaccines are not a plan for controlling the pandemic. It's not a plausible plan, especially boosters that contain the same antigen or contain the recipe for the same antigen It makes no sense. We've already I mean, really, the way to think about it is, these vaccines are a spectacular success as a prototype, right? they prove two platforms for delivering a vaccine rapidly. And those platforms do offer the possibility that one could insert information that is targeted at a particular pathogen, right. And that one could leave the platform in place, this is actually potentially a big deal. But then they vaccinated a huge fraction of the population with the prototype. And the prototype has failed again and again and again. Right, it's very short lasting immunity. In my opinion, it did not contain enough antigens. If it contained three antigens, the chances of the thing evolving away very

**Heather** 45:49

clear and what you're saying because you know, the earlier versions contained more but of the same thing. So when you say not enough, you don't mean not enough abundance of the one you mean not enough variety of antigen, let's put it this way, no buts very

**Bret** 46:02

precise ly Now, the difference is a vaccine that contains a narrowly targeted antigen will cause evolution because anything that deviates from it will have an advantage. If you were to load let's say, three different instruction sets for three different antigens into the same vaccine, then even a lucky mutation that caused the evolution of escape from one of the antigens would not have a big advantage because the other two would catch it.

**Heather** 46:33

That is true, but what you said first could easily be misunderstood to suggest that you want more of the same thing. And in part, we have a difference between Madonna and Pfizer, for instance, in terms of the actual amount, I think it's like Pfizer is like 30 somethings or something I don't remember what and and Pfizer? No, Pfizer is 30. Madonna has 100. And the initial dosages were even higher. And adverse effects seem to scale with with dosage. So you specifically are not taught you when you say more, more can mean two things. And I am I just want you to be very precise about what you mean.

**Bret** 47:12

But yeah, I do not mean higher dosage, I mean broader in their targeting so that evolution doesn't have such an easy time getting around these things. So the weakness of the vaccines, the fact that the immunity that they do create fades, the fact that they targeted a protein that has toxicity that it doesn't stick on its own. Yeah, the cell membrane the way it is supposed to at least some fraction of the time. As bio distributed. Yep. And the fact that it was one sub unit of one protein makes this a six, you know, proof of concept. This worked. The actual ability to control the pandemic, it doesn't exist in these vaccines. And the problem is that there was every possibility that there was never a plan to control the vaccines, knowing they could control the pandemic with these vaccines. Just not capable of it.

**Heather** 48:05

Alright, I'm gonna read a bunch of these if there are any that you think that we shouldn't answer, we'll just move on. Okay. Would you take a vaccine and vaccinate your kids? If there were no prophylaxis options for COVID? Which is the case in many areas and countries? If so, which vaccine and why?

**Bret** 48:22

All right, I'm going to suggest that we, because of the dynamic that has been set up in the world, we need to stop answering hypothetical questions of this type or really any other with respect to what we will the world

**Heather** 48:37

world as it is, and we're going to provide you this world what would you do?

**Bret** 48:42

or What will you do bla bla bla bla bla, yeah, this is now a weaponized environment in which personal well being is at stake. And I believe, as well intentioned as the questions may be, it's not a position that we should put be put in and we shouldn't allow ourselves to be put in it. So I will politely declined to answer that one.

**Heather** 49:05

All right. Should the vaccinated consider use of ivermectin as a prophylaxis to prevent an infection or vaccine induced enhancement of the virus if they get

**Bret** 49:17

the evidence and ivermectin is noisy, it is still, in my opinion, strongly persuasive, that it has a positive impact on COVID whether people who are vaccinated should take it as prophylaxis or they should treat aggressively after they get an infection is an interesting question. Does mild prophylaxis so the dosage that is recommended has gone up as delta variant appears to get past the original prophylactic dosage? There's a question about do you you know, this is the drug is unknown in its long term effects. The indications are probably positive in the sense that it's a very safe drug even when people have mistakes can only take in large amounts of it. So it's probably reasonably safe long term. But that is far from certain. So there's a question about whether taking a bit and reducing the severity of COVID. Whether taking the full amount to prevent breakthrough cases makes sense. But in the end, we are left with the possibility that if you ignore the public health narrative, and you look at what doctors who have actually worked on the question of how to treat COVID have discovered that this is now a very treatable disease. And the fact is people who have availed themselves of that treatment very early in the course of disease, have done well. Right. Joe Rogan is taking a lot of crap for having gotten COVID. On the other hand, he got COVID. And he got better very, very quickly. Why? At least part of it has to do with the fact that he didn't wait any treated aggressively,

**Heather** 51:01

treated aggressively with a number of things, including ivermectin,

**Bret** 51:04

right, and we can say, you know, Donald Trump got COVID during the election. Here's an old guy, not in great health doesn't take wonderful care of himself. He also got over it very quickly. Why? Well, he had doctors who prescribed things that work.

**Heather** 51:23

Yeah. And we I don't know, I have no idea if he got ivermectin. But the fact is, if if with early aggressive treatment with with the full panoply of what's available, tends to result in quick recovery, even for people who you would otherwise expect to have a quick recovery. Why are so many people being told if you get sick, go home? And you know, wait until you get sicker? And why are so many people still so sick? Like what what treatments are being kept from people? And more importantly, why? Why is any treatment that is working for some people being held from others, right, especially

**Bret** 52:01

ones that are comparatively safe? Yeah. And I would also point out, you know, Donald Trump got better quickly, Joe Rogan got better quickly, peer Cory got better quickly, these, you know, yes, they're anecdotes, but these are people who didn't hesitate to treat it early. And the thing is, if the, if the standard of care remains, go home, until you're really sick at the point, you're really sick, all of the tools that we might deploy are diminished in that capacity to help

**Heather** 52:26

exactly given I mean, clearly, the vaccines at the very least, Rick are going to require a lot of boost during to maintain efficacy to the degree that they have efficacy, there needs to be a focus on treatment. With treatment, we can begin to get our you know, the planet's life back. And the idea that there are treatments that are being mocked and derided rather than actually used for people is criminal. That's two questions. If I'm concerned about the potential for ADHD, how should I be taking care of my double vaccinated and immune compromised parents? Should they be doing boosters? Or what are some other options?

**Bret** 53:13

Wow, that's a tough one, in part because ad E is most likely as immunity wanes. And so I think hence the question about boosters. Right, but I think I'm just not in a position to know what the best. Let's say it's at least

**Heather** 53:35

we also don't know the person asking what they're, you know, if the person asking has natural immunity, because they've had COVID. Right, they're in the best position with regard to their immunity to the disease.

**Bret** 53:48

Yeah, I don't know. I would say the one thing that we can say for sure is that being extremely vigilant about trying to keep COVID away from your parents is in order and that it's it's a genuinely difficult question with respect to something like boosters. Indeed.

**Heather** 54:13

If facts education account response to your Malone Kirsch video, claimed that no long term effects are possible since the vaccine is completely excluded from the body after two weeks response.

**Bret** 54:26

Nonsense. And here's how you know it's nonsense total nonsense that the vaccines themselves, under the best case, induce long term immunity that tells you that the fact of X, Y or Z being excreted does not limit their effect on the body. And there you know, ADP is one possibility to have

**Heather** 54:44

it both ways. These vaccines provide immunity for six months, and there's no possibility of effects that we don't want after two weeks. Logically impossible, right? You can't have it both ways.

**Bret** 54:55

So two possibilities have a huge number. Write up their auto immunity questions in play, but two possibilities are add. That's one potentially longer term effect. And there's original antigenic sin in which the immune system is tracked into a narrowness surrounding an encounter with an antigen that it has already had, where it would react more broadly in the future and counter if it had been naive. So we can debate about what the chances of those things are, but we can't debate they are not possible. They are clearly possible, and they are long term effects that do not depend on any component of the vaccine remaining beyond any period of time.

**Heather** 55:39

Yeah. Val Neva, which is not one that I'm familiar with the Val Neva shot is stated to do a to be a whole attenuated virus, and created by traditional methods. Could this better address issues such as immune escape and possible long term effects?

**Bret** 55:56

There are hazards but yes.

**Heather** 55:59

Well, so the question of immune escape, it's not clear to me that the platform itself deals with that so much as the actual rate at which it reduces transmission. Right. Well, how leaky is it? Is that yes, that it's that number of effectiveness? And you know, if it's accurate, that's going to be the most relevant with regard to whether or not the vaccine could drive immune escapes, is it not?

**Bret** 56:24

Well, I can't say 100%. But I can say, if the description here is right, and attenuated virus, whole attenuated viral attenuated virus is going to have a diversity of antigens that are going to reduce the potential for immune escape. That's true.

**Heather** 56:43

Yeah. Okay, that makes sense. So it's, it's basically the generalist versus the specialist vaccine.

56:49

Right. Right. Exactly. Yeah.

**Heather** 56:53

So immune escapes, and possible long term effects. Yeah, you know, it's a traditional platform, about which we have many, many, many examples of vaccines that have been deployed for many, many decades. And yes, there are occasional problems, but but, but yes, the traditional platform is should cause less reason for concern, at least in the abstract than a novel platform for a vaccine.

**Bret** 57:26

Yeah, and I should say, as much as attenuated viruses carry some theoretical possibilities that are very frightening, right? Like the reinvigoration of these things through recombination. Many of our best vaccines are of this type. Yeah. All right.

**Heather** 57:55

I am just looking for more questions. I don't know the answer to this. Maybe you do, or the phase three, Pfizer or Madonna clinical trial participants still being monitored, monitored, or are those studies over? Thanks. Love you both.

**Bret** 58:12

I know that the control group was treated. I believe in the Pfizer trial, maybe both, but the control group was treated, eliminating the ability to run an ongoing comparison between the two.

**Heather** 58:27

In both cases, both moneta and Pfizer. I

**Bret** 58:29

can't say in both, but

58:32

that's possible. Okay.

**Heather** 58:37

Can you provide a framework for non biologists to decide the safest timing and spacing of established childhood vaccines? We may soon visit family in India with very young kids. Yes, thanks for your courage. Oops, I don't know I just did you know what, what we did is is you wait as long as possible, just you know, that the younger the organism, the more fragile they are, and, and, and spread it out as as much as possible. And if they think I think our children ended up getting their full, you know, they're full slate for tropical travel. When they were like, seven and nine. Yeah, like that was a yellow fever. And that was pretty Yeah.

**Bret** 59:21

Which was earlier than we wanted. Yeah. You know, there was a trade there were seven

**Heather** 59:24

and nine when we first went to the Amazon with them. And they and they already had their full, you know, their full gamut of other childhood vaccines. But, um, but you know, very early on, we are often told, I mean, that's that's what I assume you're talking about. It's it's things, you know, it's diseases that you that children are not normally inoculated against, if they're just staying in the US, but which, if you're traveling into places with, you know, it would be a malaria vaccine if, if there were any, but there's a question also of prophylaxis. If you're going outside of the cities. This was this was a big issue for us, actually. Um, the malaria prophylaxis is highly toxic and you want to wait longer for that and you're still hopeful on a malaria vaccine but so far no go

**Bret** 1:00:11

I want to make clear young organisms are fragile but it's also a question of how much of their development is behind them at the point that they have an encounter with something absolutely. So there's something to be said for to the extent that their encounters with pathogens are low or very likely to be nil delay doesn't have a cost with respect to that. So you know, you have to set the balance but later is better. And there are also questions which I don't think we can answer about how many times they are going to be challenged with the edge events that alert that basically agitate the immune system to trigger it to react. Yeah, which may have consequences.

**Heather** 1:01:00

Yeah, no, and there I mean, just as measles, mumps and rubella are all given as a single shot as the MMR it might you know, it might make more sense to to combine these so that you have one you know so so that that runs against the spread them out in less you know, spread them out if they're multiple shots. But if you can get them all you know, if you get more of them into one shot that could be could be better long term.

**Bret** 1:01:23

I also wonder and I don't know there may be this may have been researched, but I also wonder if there ought not be a whole bunch of advice about avoiding encounters with allergy producing antigens within some period of time of these vaccinations. In other words, the idea that you go into your doctor and you get a shot and you walk out and you behave normally. Maybe that's not the right advice maybe the point is there certain things you should avoid for a while because your immune system is in a hyperactive state as a result of

**Heather** 1:01:55

Yeah, like either even explicitly simpler diet for a little while so that you don't give yourself some you know, lifelong dietary allergies,

**Bret** 1:02:03

right? Who knows? Possibly, but it's interesting it's at least worth asking the question yeah, let's put it this way. From a trade off perspective it's very unlikely that causing your immune system to go on hyper alert is free In fact, right it's not going to be free

**Heather** 1:02:20

not going to be free. But you know how to make it a little cost and as more and as much benefit as possible Yeah, obviously. Let's see where is good data regarding natural immunity?

**Bret** 1:02:41

Well, I wish we had it at our disposal but there was just a how there are there a good paper that emerged on this

**Heather** 1:02:47

boy we there's like there's like three good papers at least and we've talked about two of them on on the show before and have linked to them and actually if I ask another question, I can go find those I can I can find those two papers while you're answering but the most recent one I just I'm not gonna be able to find right now. But I can go I can find a question and then for you to answer and then see if I can find those other two papers.

**Heather** 1:03:22

How about something entirely different? Any other examples of species dependent on foster carers for offspring like the cuckoo

**Bret** 1:03:31

Yeah, not you know there. First of all, there are lots of what are called brood parasites where one species lays its eggs in the nest of a different species and the offspring are foster parents are in voluntarily foster parent. And then their choice of theirs. There are cases of things where animals agree to brood their offspring. So for example, ostriches brood their offspring, which means that several ostriches will turn their offspring over to one mother ostrich, who presumably gets the benefit of having her babies in effectively a a school, right? They get school advantages against predation. So there are cases like that as well. And then there in birds, there's at least one weird case in which there's no parenting, right? This is something that never happens in mammals and almost never happens in birds. But the bush turkey example, in which bush turkeys lay their eggs in a mound of leaves that rot releasing heat. And then the babies emerge with no parents around is another one. So this is got to be the most pre pre programmed of birds because they don't meet their parents. Yeah. Yeah, how you doing?

**Heather** 1:04:51

Um, I think I just got it. We have this was Episode 89. So you can go into the show notes for Episode 89. But I can also sack you can show my screen. It's not coming up, though. Why is our internet connection just really wonky at the moment? I don't know what? Well, it's not it's not coming up normally. Hold on just a second. Okay. Yeah, so we got these two papers, both of which we talked about in Episode 89. And the links to them are in the show notes to Episode 89. longitudinal analysis shows durable and broad immune memory after SARS could be to infection with persisting antibody responses in memory B and T cells. And also discreet immune response signature just SARS COVID to mRNA. vaccination versus infection. And here's a little trick guys, which I'll just do alive. If If you have something that is relevant, and you're looking for something else, and you pull it up on Google Scholar, and then it says it's cited by three is are either any of these the paper that you're thinking of that are brand new, that's brand new? I don't think so. Unfortunately.

1:06:08

I'm looking for it. Okay.

**Heather** 1:06:13

Well, oops. Let's see. I need the questions back. I destroyed I lose. Oh, Zack. I think I may have lost my questions. Somehow. I don't know. I tried to make a new All right.

**Bret** 1:06:31

I should warn our viewers that if we cannot recover the questions that will force us to sing and they'll begin to

**Heather** 1:06:44

get American. Why is the screen the Why is the camera still just on me while your father's talking? Because

**Bret** 1:06:48

that was on his phone? Well, yeah. Looking for a paper. I'm legitimately on my phone. Yeah.

**Heather** 1:06:55

Okay. Just okay. Okay, it's, it's fine. It's, we're good, but I only have a couple more questions to ask you. Can you can you get lay off? Okay, Zack. I mean, Brett? Yep. Which one? are you?

**Bret** 1:07:11

I am Brett. That's right. Yes. Got it. Alright. See? You picked it up right away. totally

**Heather** 1:07:15

easy. Yep. That's that's that's humans for? Yeah.

**Bret** 1:07:19

That's humans for you. Okay.

**Heather** 1:07:24

Yeah, so there is a new there's a new paper, but those two that I just showed are are quite good, as well. Chronic next question, chronic illness can lead. Chronic Illness can lead to being homebound, resulting in low vitamin D. Vitamin D is strongly correlated, but not the cause of physical fitness. With these confounding factors, how to COVID and vitamin D studies separate them. For I don't even know,

**Bret** 1:07:51

I think some of the vitamin D studies measure vitamin D levels.

**Heather** 1:07:57

Right? But the question is,

**Bret** 1:07:59

oh, if your vitamin D levels are high, because your sizing

**Heather** 1:08:03

problem like it was so your vitamin D is likely to have been low if you already had chronic illness of some sort. And Hi, I know you want to stop now. How do you how do you deal with the possible confounds? Well,

**Bret** 1:08:26

obviously, to the extent that you're aware of the confounds, you can control for them by measuring the parameters. Right? For those who have not been ill, for those who have been outside, for those who live at different latitudes, you can basically just see what the, the degree of contribution of each of these factors is. And

**Heather** 1:08:47

I just oh, I was gonna say, like, I don't, I actually can't pull up into my head. Like, I don't remember. I don't know what the vitamin D research looks like. I feel like what I've seen, like what even is, what is what is the evidence around vitamin D? I'm not remembering like, Where, where that's coming from or what that research looks like at all?

**Bret** 1:09:04

Well, maybe we should. Maybe we should put together a proper answer to the question.

**Heather** 1:09:14

Well, I don't I mean, I, I don't know that we're gonna be able to answer this question. But the question of exactly what is the evidence for vitamin D being important in in predicting bad outcomes from from COVID? Alright, let us so I'm not gonna I'm not gonna address these hypotheticals. people asking, you know, I'm being forced to vaccinate, which one should I? Which one should I take? I don't know the answer to this one. Do you have thoughts regarding the protein subunit technology and the Novavax vaccine, how does it compare to j&j? I do not.

**Bret** 1:09:57

What I saw was was an indication that the Novavax vaccine is not going to make it that there was something miscalibrated about it,

**Heather** 1:10:08

but not necessarily having to do with the protein subunit.

1:10:11

Correct.

**Heather** 1:10:14

Totally different question. Any advice for a 19 year old who is curious about the world, but wary of captured universities? Thank you for both your inspiration.

**Bret** 1:10:24

Yeah, it's a tough moment. You know, on the one hand, the world is waking up to the fact that the thing that it has deemed essential for an educated mind is not only not essential, but may be counterproductive if it's feeding your nonsense about, you know, two plus two equals five and men can get pregnant and stuff like this, how good is the education you're going to get from an institution that swears those things are

**Heather** 1:10:50

true, abolishing the police will make a safer society? Well, that's another

**Bret** 1:10:53

one of these tropes. So it might be I mean, the problem is you have to have some, you should invest in tools, you want to be well equipped for the future world, it is very likely that there will be tolerance if the future world makes any sense at all, it is very likely that there will be tolerance for people who couldn't stand that environment and decided to educate in some way that didn't force them to absorb that nonsense. In other words, you could imagine let's say that the world fixes its current problems enough to gently transition to something else, right, that would be maybe best case scenario. Well, in that world, let's say that you were the equivalent of an employer, assuming employer is still a thing, right? Probably be a thing. So if employer is a thing, and you were looking for someone to do some job that wasn't just basically a cheap replacement for a robot you can't yet afford or doesn't yet exist, right? If you actually want a thinking person working for you to solve some sort of problem, you might well be looking for somebody who was allergic to that collegiate environment and did something else instead. But you don't want somebody who opted out and became an educated you want somebody who self educated or who found some structure outside of that collegiate environment and teamed up on co educating each other or something along those lines. So I find it hard to imagine that in a future world that makes any sense, there's not going to be an awareness that there are people who couldn't stand it, who are actually the best people to employ, because their minds are less polluted. I think that's, that's likely,

**Heather** 1:12:35

okay, but what to do.

**Bret** 1:12:38

The problem is, you got to stop asking what to do. Because there's nobody on earth who can tell you where we're headed, right? We are, we are headed somewhere you cannot predict. And therefore the only thing you can do is invest in things that are likely to be valuable, no matter which of the plausible places we might end up we are actually headed to. I really think if the idea is you want somebody to tell you well, I've got a pretty good idea, we

**Heather** 1:13:05

learn real things that will translate across to some degree across space and time be those physical skills, like rock climbing, or carpentry or baking, or intellectual skills, like interpreting philosophy or, or evolutionary biology, right? Or, you know, just your reading expansively. And any other moment in time, I would say, if you have the capacity travel, go be among people who do not remind you of yourself and who grew up in different circumstances from yourself and learn from them. Engage, observe, befriend, learn. And that's, you know, that's much harder at the moment, hopefully, hopefully, that becomes possible again, soon,

1:13:53

I would say, avoid the Unreal,

**Bret** 1:13:59

right? If it's unreal, it's not a good bet for translating into the future. Even if it's wildly successful at the moment, you want to default to things. As Heather and I have said frequently default to things where it is not socially decided whether or not you have succeeded. So you know, computer programming might seem not real, but it is real. Right, it compiles or it doesn't based on the fact you've either gotten it right, or you haven't, and it accomplishes the goal that you set out because you programmed it correctly. That's real enough. But you know, if you invest in carpentry, and you do so with high tech, carpentry tools, and the high tech tools fail, your education will not fail with it, you will have an understanding of how to work with with primitive tools. So invest in things like that, that no matter what happens, your time will have been well invested and the future world is hard to imagine functioning without those sorts of skills

**Heather** 1:14:58

and you know, learn to code. Also Write, write the old tools and the new. But you know the tools that actually have real meaning in the world as opposed to the entirely social ones. Okay, let's just do two more. This next one is probably just a comment. But I will read it you may know, you might know I doubt it. Do you know the story of this doesn't look like a name to me. But plenty coops who led the Crow Nation through a period of cultural devastation in which their values could no longer be embodied? If not, I'll send you Lear's book radical hope, letter 2006. Sounds interesting. And then final question for today. Why didn't wheels ever evolve biologically for the purpose of movement? Oh,

**Bret** 1:15:45

I love this one. Yeah, okay, it's

**Heather** 1:15:47

good place to end.

**Bret** 1:15:48

First of all, I don't think it's so much wheels as axles, which may seem like an arbitrary distinction. But the reason it's important is because axles did evolve, right, but they only exist at molecular scale inside of cell membranes where something has to turn. And this is an indication of why they didn't evolve. So if you think about, let's say that you were trying to make an axle out of meat, and bone, right, or maybe you're making an axle out of bone, and then you're going to put a wheel of meat and bone on that axle. How are you going to get blood on to a rotating axle, in order to get the meat on the wheel to be infused with blood to be able to regulate its temperature to be able to feed its cells? You can't, right? Because the rotation will actually tear anything, that would be a conduit for these things, right?

**Heather** 1:16:47

It would have to be like a very temporary connection. And the movement of the wheels would have to be very in short bursts, sort of like, you know, the breathing of lizards, because of what's called carrier's constraint where they can't run and breathe at the same time, right? Only they can only run in short bursts, because then they actually have to get on with the business of breathing of respiration. And so it would have to be that sort of very intense trade off. And it's very, it's hard. You know, as Dawkins has said, failure of imagination is not an argument, right? You know, what, what kind of connection would be possible that would allow for both circulatory and neurological communication and more of an immune and you know, all sorts of things that was then totally broken in order for the wheel to actually do its thing, right?

**Bret** 1:17:32

So the answer is to to create a wheel you think wheel based on all the things that wheel can do. But the point is, because it would have been a really sucky wheel to the extent it could work at all, because of this issue of how do you get stuff onboard and off board to keep it perfused of oxygen, get the co2 out, get nutrients in and you know, neurological information? Yeah. And I would point out that there's an analogous problem with respect to a wheel with energy needs on board. Right? How do you get electricity on and off a wheel? My grandfather

**Heather** 1:18:07

for that, you know, you can have a circuit that goes, you know, that is connected and disconnected? Yes, that's right,

**Bret** 1:18:16

you can do that. But there's an even easier way, which my grandfather taught me when I was a kid, which is you can use what's called a brush, right? So you've heard of brushless motors? Well, that's a fancy way of doing something that you can do in a much cruder fashion, which is if you have a metallic item, you can spring load it and you can put it to a metal contact on a rotating something or other. And the point is, it's never out of contact, even as the thing is rotating. So electricity flows freely, even though the thing is in motion, which works

**Heather** 1:18:43

for electrons, but wouldn't work for blood. What work for synapses exactly, might actually work for synapses. But it wouldn't work for blood. Yeah, we're at least liquid,

**Bret** 1:18:51

what we can say is it's not that you made me put on solve these problems, somehow, you might build a problem somehow. But the question is, is it? Is there a slope where you can go from a primitive one of these that provides advantage to something really sophisticated that provides a lot of advantage? Or do you have to get to the solution, which is discontinuous from the starting point, so that evolution can't find it?

**Heather** 1:19:12

So is it you're basically saying, Is this the rare case actually, where the intermediate forms make no sense, and therefore selection can't see it?

**Bret** 1:19:19

Right, exactly. And my point about this, the fact that accident actually do exist at molecular scale is that these problems don't exist, because diffusion does the job.

**Heather** 1:19:30

Right? diffusion does work at micro scale. Right, but it doesn't work for

**Bret** 1:19:33

you know, we'll have any size. Yeah. So I think that's the answer.

**Heather** 1:19:37

That's cool. Yeah. Yeah, I like that. That's good. I think that's a good place to end for this week. By the time we see you next week. We're going to be just days away from the publication of our blog. I'm really excited about this. Please join us then for Episode 96. One week from today, right here. And in the meantime, subscribe. And like and share and to, you know hear on Odyssey where you are now if you're seeing this here on the Dark Horse, podcast club channel and also on YouTube and consider finding us in any of the other venues we're at Patreon is subscriber only but we've got some fun benefits there for people who want to participate in like a two hour private q&a on mine or some smaller conversations that Brett has his next one on his Patreon is tomorrow. I've got this newsletter where I'm writing about things like friendship and flow and, and fruit called natural selections on substack where you can read everything for free and you can pay something to hear the audio transcripts. You can get stuff at somewhere. Remember, what's the store called? said again? Oh, it's on the screen?

**Bret** 1:20:52

door dot Darkhorse podcast.org indeed, yes. And you might consider picking up a copy of the book if you haven't already. Well, you can't pick it up. But you could order it. And then it would. I know it was so proud to actually have

**Heather** 1:21:08

actually we finally got this yesterday. Yeah. Yeah. Just the one. We just have the one we could share it. Yeah. I mean to each other, right. Yeah. But yeah, we will see we will see you next week. And in the meantime, be good to the ones you love, eat good food and get outside. Be well, everyone