Bret and Heather 88th DarkHorse Podcast Livestream\_ How Brea...

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**SPEAKERS**

Bret, Heather

**Bret** 00:14

Hey folks, welcome to the Dark Horse podcast live stream our 88th. Is that correct? Dr. Hyang?

**Heather** 00:21

That is correct. Otherwise,

**Bret** 00:22

I am Dr. Brett Weinstein, and we have many things in store for you today. This is obviously not the usual day that we do live streams. But anyway, thank you for joining us. Let us start with some announcements.

**Heather** 00:36

Yeah, well, first of all, we we will be starting once we get through the announcements and the ads for today. But talking a little bit about why we missed Saturday. And then we're going to dedicate much of today's episode to a discussion of food, which is in line with our discussion of chapter five of our forthcoming book hunter gatherers guide to the 21st century. So we'll be beginning that discussion with a fairly long excerpt from that chapter and then talking about some of the other some other pieces of the scientific literature that are emerging around diets and how we could all be helping ourselves by by eating in. And a better

**Bret** 01:14

way to be clear,

**Bret** 01:15

we will not be providing food, we will just be talking about it.

**Heather** 01:18

We will not be no nor can we do like Scratch and sniff videos or no like that. Not yet. No. So I think that's for the best, honestly.

**Bret** 01:24

Yeah,

**Bret** 01:25

I could see how that could go wrong.

**Heather** 01:26

I can't do yeah. So today, as has been well, I guess we've only done it once so far. But we are streaming on both YouTube and Odyssey. We are not going to drop the YouTube stream. But we encourage you to go over to the Odyssey stream if if you are on Youtube, that is that is where we are going to be moving as much of our content as as soon as possible. As we think makes sense. We have a new q&a system so we'll be doing this for something between an hour and two hours. We'll take a 15 minute break and then we'll come back with live q&a and you can ask questions by going to Dark Horse submissions.com and the q&a system should be self explanatory. It was very glitchy last time for which we apologize and we think we think those problems are fixed now but please do not hesitate to email our mod darcars moderator@gmail.com if it's if it's acting glitchy on you

**Bret** 02:23

we should change that to Dark Horse dominance and submissions just so we're like equally welcoming

**Heather** 02:31

Yeah, I suppose we should and just just a reminder that you know we prioritize answering questions based on what we think is most interesting the monetary value of the questions in the second half to sum up the order in which they come in. There's now a feature where and you can you can actually upvote questions that's a tiny tiny factor in in whether or not we look at the questions so there's no guarantee that your question will get answered if you do submit one on that site but but we will we will see them all we encourage you to join our Patreon to the next Sunday is our private q&a for this month which you can access at my Patreon and Brett has monthly conversations as well and you can also access the discord server there and we've got these Goliath t shirts which are selling like you know not so much hotcakes, but like Goliath t shirts at at store dot Darkhorse podcast.org. Now about now many things are available in short sleeve as well. And before we got to the ads, there were two things that happened this week that aren't directly about what we're going to be doing today that we wanted to mention. You have an awesome essay out and unheard. And also a terrific conversation with Tesla, right? Right here on the dark.

**Bret** 03:46

Yes, actually, Zack, could you show the this is the thumbnail for the test. Larry conversation tests. Laurie is with the bird group, the British ivermectin group, she is a data analyst. And she and I sat down and talked about, among other things, the effect of the study that has been questioned most prominently in The Guardian, we talked about what the effect on the meta analysis that she had been second author on was if you simply eliminate that study, and recalculate, and it's fascinating, so for all of those, including the Guardian, I think said something remarkable, preposterous and obnoxious about the elimination of that study, somehow reversing the conclusion, which it absolutely does not. And if you want to see what happens to the study, in actuality, you can just watch tests, remove the study and click recalculate

**Heather** 04:44

it. The problem may be that as you point out in that conversation, I've not finished listening to it yet, but as you point out in the conversation with us, Larry, people have been invoking Geico garbage in garbage out with regard to meta analysis and certainly if all of what you put into it was garbage and what you would get out was garbage. But if one thing that you put in is garbage, there's a good chance that you can pull it and get a good result. This may be even stronger than what you had before, which is, of course, one of the results that we see with that meta analysis. But with regard to journalism, it seems like Geico may be applying that with regard to that Guardian article.

**Bret** 05:17

Garbage The Guardian article, yeah, which reached a demonstrably false conclusion is, is clearly garbage now, what the state of the study that had to be removed is is unclear, there are reasons to be concerned about it. And it's not clear what what is causal there. So you know, I remain agnostic as to what the meaning of the, the worrisome bits in that study are. But nonetheless, the ability to remove it is actually a strong argument in favor of meta analysis because the point is, the method simply tells you how it should change your impression of in this case, the utility of ivermectin. Yep.

**Heather** 05:57

And then you also wanted to talk speak to this

**Bret** 06:00

access please. That was save this till after our ads and announcements was a little more to say about it.

**Heather** 06:05

Okay. Sure. So let's we have we have two ads today so Zach, if you want to, there we go. This week's show is sponsored in part by L form. A company that is making absolutely terrific custom sofas what makes a sofa terrific though well in this case, you can customize your size layout materials easily for a fraction of the cost of traditional stores. You pick your fabric color of both the sofa and the legs shape to fit your home and needs perfectly. They do arm chairs and love seats all the way up to eight seat sectionals and you can start small and buy more seats later on. which is which is an interesting I think fairly novel thing and sofas without needing to get a whole new sofa. All from sofas are delivered directly to your home with fast free shipping. In the past it would take weeks or even months to arrive and you would need someone to come and assemble it at your home. All form takes usually less than a week to arrive and you can assemble it yourself. No tools needed. We ended up with a beautiful sectional all forms sofa and whiskey leather although to us it reminds us a bit more of caramel than whiskey. And it's we we anticipated in advance that we would disagree as to whether or not we wanted yet another piece of leather furniture. I thought no way no how but this leather is so beautiful. And we ended up going with leather and not only is it beautiful, but it's also warm, you know in the way that most a lot of leather furniture is very cold to the touch. And this is not

**Bret** 07:32

durable and it's not in bachelor black.

**Heather** 07:34

It's that well we've never we've never done that we never we've never had black leather but so the four of us and and the dog and one or one or more of our cats pile on to watch and watch movies, some evenings and it looks gorgeous. And it's incredibly inviting and comfortable. Watch a movie, get some work done on the computer, read a book, take a nap. And if you order one and like it you have 100 days to say actually no thank you. And that's more than three months to ask for a full refund. I'll pick it up for free. And they offer a forever warranty literally forever. To find your perfect sofa check out all forum comm slash Dark Horse. All forum is offering 20% off all orders for our listeners at all. forum.com slash Dark Horse.

**Bret** 08:18

All right now on to express VPN. A few decades ago, private citizens used to be largely that private, but what changed the internet. Think about everything you've browsed search for or watched or tweeted. Now imagine all of that data being crawled through collected and aggregated by third parties into a permanent public record your record. Having your private life exposed for others to see was one something only celebrities worried about. But in an era where everyone is online, everyone is a public figure. To keep my data private, I go online with ExpressVPN Did you know that there are hundreds of data brokers out there whose sole business is to buy and sell your data? The worst part is they don't have to tell you who they're selling it to or get your consent. One of these data points is your IP address. Data harvesters use your IP to uniquely identify you and your location. But with Express VPN, your connection gets rerouted through an encrypted server and your IP address is maxed at mask masked. Every time I turn on ExpressVPN I'm given a random IP address shared by other Express VPN customers that makes it more difficult for third parties to identify me and harvest my data. And the best part is how easy it is to use. No matter what device you're on phone, laptop Smart TV, all you do is tap one button and you get connected and you have very fast connections. So if like me you believe that your data is your business. Secure yourself with the number one rated VPN on the market. Visit expressvpn.com slash Darkhorse and get three extra months free. That's Express vpn.com slash Dark Horse. Go to expressvpn.com slash dark horse to learn more

**Heather** 10:03

Alright, you want to say a few things about this essay that was solicited, right that you were invited?

**Bret** 10:08

We have one more thing, one more thing that we have to say about why we weren't. I thought that was gonna be next seven next. Okay, so yes, let's, let's go to this essay. So Zack, you want to put up the? So I published this essay in response to unheard query to me about how the world might

**Heather** 10:29

for those who are just listening? Ah,

**Bret** 10:32

yes, those of you who are just listening on heard as a British magazine, and they asked me to write a piece on how the world might end, which is a question I've thought about many times in a number of different ways. And I wrote one, the title of this one is how the sun could wipe us out. And it is on an important question that is known to many but not widely discussed, something I've been focused on since I first came to understand the Jeopardy that it puts us on earth to and the simple form of this is that a burst of plasma coming from the sun, electromagnetically charged, if it hits the earth and is oriented just so can induce massive currents in Earthbound electrical architecture. And that can have huge effects on things like our electrical grid. And so this essay is about what might flow from such an event and the likelihood of such an event occurring. And I'm hoping that you will check it out. I was planning to read the first paragraph.

**Heather** 11:49

Here it is.

**Bret** 11:51

Okay, so it starts, the world began to end on the 12th of may 2024. Though another 309 years would pass before our species finally went extinct. The Apocalypse was not the result of one thing unless that one thing was that we repeatedly ignored signs that industrial civilization had become incredibly fragile even as it grew more powerful. But our end very definitely had a trigger a burst of charge plasma from the sun caused a sudden simultaneous collapse of numerous electrical grids across the world, setting in motion a cascade of devastating failures from which humanity would never recover. Now, I will say I spooked myself in writing this, because it almost wrote itself. It is not that hard to see where the fragility in our system lurks even as the system is incredibly powerful under normal circumstances, I will also say that interestingly, I wrote this. I finished it I guess a couple of weeks ago and finalized it last week. And then on the 15th, and 17th, the sun threw off two massive coronal ejections. They happens to go in the opposite direction, they went where the earth is, at the moment, yeah, we are on the side where the earth is during the northern summer, and they were flung off in the direction of where the earth is in the northern winter,

**Heather** 13:18

they had it been December, we would have been affected

**Bret** 13:22

by them, we would probably or possibly have been affected. The thing that's hard to calculate about about this is that the sun throws these things off with some regularity, there is a cycle a solar cycle, which we are nearing the apex of it will peak it is it is not precisely predictable, but it will peak somewhere 2020 4075 13 year cycles, 11 years. And so we are just beginning to pick up solar activity. So this came very early, before the solar maximum. But in general, when the earth when the sun throws these things off, they're thrown off in effectively a random direction, and we don't tend to be where they are. So they don't affect us. It's not out to get us right every so often we are in the path. And then there's a question about the orientation of the injection as it hits us. And that affects whether or not it will impact earthly technology. So anyway, there's a lot of unknowns and uncertainties. We never know when these things are coming. We never know what direction they're going to go. And we never know whether there'll be oriented in such a way as to cause a big problem, or no problem. But the most important thing is the last time a really big one of these things hit us was 1859. Right? That happens to be a year a number of things happen most important to us is the publication of the Origin of Species by Darwin at tells you how long ago this was. And it did have impacts. It had impact on the precursor to our electric grid. It had an impact On the telegraph system, it induced currents in the wires. It shocked a number of telephone, telegraph operators that literally and metaphorically, yes, it literally shocked Tella telegraph operators who were touching this device connected to these wires in which suddenly massive currents were flowing unpredictably. Interestingly, some were able to send messages even though the system was not powered. Because the power had been induced from the outside. Apparently, buildings were set on fire. But in any case, the point is, that same storm hitting us today would have a very different impact, because in the period between 1859 and now the grid has gone from an exotic mechanism for sending important messages over long distances to something that virtually everything we use depends on the electrical grid. And what's more, the way the electrical brain is structured, causes these effects to, to spiral out of control. So anyway, I would have you look at that essay you might also look into, there's a piece on YouTube called the solar killshot, which describes exactly why I invite you, not by me, I just saw it after my piece came out, somebody pointed me to it, I had actually not been Oh, that's one of these things. You're never made aware of these storms. And in this case, because they were flung off in a direction where the earth wasn't it's an academic question at some level. But it does tell you something about the size of these risks. And the punchline to this story is, we are gambling, we have been for many decades, we are gambling that we will not have a major catastrophic, unrecoverable failure of the grid. And we've gotten away with it so far, but we're living on borrowed time, and now would be the time to address it. Right? If this is an addressable problem, it does not require us to confront some massive economic power that needs us to remain vulnerable, vulnerable, nobody on earth needs us to remain vulnerable. This is a problem we can solve without anybody even noticing the amount of money that would need to be spent to do it.

**Heather** 17:02

So there's no conflict of interest, but there is political apathy with regard to fixing the problem.

**Bret** 17:07

Yes, I think Unfortunately, there's no, there's no, fortunately, there's no force opposing are fixing it, as far as I know. But there is also very little incentive right to go after it. Because Because since most people are unaware of the hazard

**Heather** 17:21

of the credit, we don't get reelected on on, say, on protecting and fixing the system. Right.

**Bret** 17:26

All right, anyway, have a read. Yeah.

**Heather** 17:31

So we wanted to before we start talking about food and diet on the microbiome, we wanted to talk a little bit about why we missed our podcast this last Saturday.

**Bret** 17:41

Yeah. So we had a pet get very, very ill. And we described I described I don't remember what you tweeted that you tweet. I didn't say you didn't say anything specific. So I mentioned that we had a veterinary emergency on our hands, things did not go well. And we ended up in the very painful position of having to euthanize a beloved pet. She was Moxie was one of our kitties. One of our kitties. So you've seen here on the set. And that is, of course, a very jarring experience for the whole family, including the other animals jarring to the other animals as well. And you know, I you know, it's gonna be a little while before we even feel back to a normal state of mind, even though there's obviously plenty of normalcy even now and every day.

**Heather** 18:38

It's it's jarring. I mean, everyone has had pets and lost them knows knows how awful it is, but it to those who don't, they may think, well, it's an animal, you know, what's, what's the big deal. And, you know, one of the reasons to have a pet is because you do share love. But another thing that makes it so impactful is that this is someone with whom you live every day, right? And so do you miss an animal who you've been living with and interacting with, you know, on an hourly basis, especially, you know, you know, after, you know, a year and a half of hard to going anywhere, very acutely, there's just no forgetting the fact that, that she's gone, you're at home.

**Bret** 19:25

And in this case, this is an animal we got as part of a pair. And, you know, the other effects here is running around has been with his companion. We've, you know, they were in a cage together for many months before we even adopted them and so incredibly, tightly bonded and so anyway, it's been painful to watch him go through it. But I wanted to say a couple things. One, I don't really expect other people to care about the loss of a pet. I do expect them to understand the impact It has on people they pay attention to. And one of the things that really caught me off guard was the viciousness that I saw in certain places online when I said that we had a veterinary emergency, there was disbelief that that was a true story. There was speculation about whether or not one or both of us had contracted COVID and might be hiding, it was such a story. And I must say, this is such a bleak indicator about where we are the idea that people could have lost touch with their humanity to the level that they would engage in such speculation, even if they privately worried about it to say such a thing is, I don't know I find it I find it vile. So I would ask you, if you know that people watching this podcast are unlikely to be in that frame of mind. But I do wonder about the generalized loss of humanity that is being induced by the ways in which we interact online, and I hope people, all of us will take a step back and ask ourselves if something about that environment is causing us to lose touch with our most important capacities? Maybe that's all that needs to be said here. But

**Heather** 21:24

yeah. I mean, it's it's the more general thing has been said many, many times before, but people interact online in ways that very few people would in person. And one of the ways to try to return to our better angels, I think, is to ask yourself before you engage, if this person were sitting right here in front of you, what do you say this thing?

**Bret** 21:50

That's true. And I, we have a number of dedicated detractors, right people who reliably come after us, I must say, I was looking into one of them weeks ago, like long before this issue had had cropped up. And I noticed that this detractor who I really dislike, I find his critiques of us were dishonest. But anyway, I did notice that on his social media, he described the loss of a pet that had been with him for many, many years. And it did remind me that as much as I don't like the way this person fights, that this was a human being. I am right now, I would like to think I don't attack people that way ever. But it did cause me to remember that even this person who I find dismaying and their mode of interaction has another side to their life that I can relate to.

**Heather** 22:49

Yeah, absolutely. Yeah. All right. Let us switch gears. We as has become our want are working our way chapter a week through through our forthcoming book, which will be out in September a hunter gatherers guide to the 21st century. Last week, or an episode 87. We talked about chapter four, we read a brief, very brief excerpt from chapter four, which was a chapter called medicine. And this week, we're going to talk a bit about food. And really, you know, as the idea of this book, in part was that every single chapter could be one or more books unto themselves. And certainly that is true. Certainly that is true for this chapter. And this is this is a long excerpt this week, but I think, I think it's all it's all relevant and good. This is actually the beginning of the chapter. And it's, you know, by no means a majority of it, but it is a long excerpt. So, Chapter Five of a hunter gatherers guide to the 21st century food. What is the best diet for humans? People have been preoccupied with this question for a long time, especially weird people. Many of us have tried diets that are supposed to be what our ancestors ate. But the lens with which we do this tends to be reductionist and a evolutionary at best. From diets designed to alter the pH of your body to those based on your blood type to those that restrict your intake to one or a few kinds of food like grapefruit or cabbage soup. Weird people are both obsessed with and confused by the question of what to eat. Let's take just two diets that are popular in some circles, two that seem less crazy than money, the raw diet, and paleo. Those who advocate for a raw diet suggested is the healthiest, most natural way to eat. Cooking, they say as a modern bastardization of the human diet. This is simply wrong. Not only is cooking ancient in the human lineage, it also allows us to get more calories from food. And while it may be true that cooking can reduce some of the vitamins in the food that has been cooked, the benefits far outweigh the small cost. People on entirely raw food diets are often undernourished, especially if those diets are also vegan. They're generally thin, but that thinness is not inherently healthy. Others argue for the health of the so called pet paleo diet, a diet free of grains and most carbohydrates and high in fat. This may well be a healthy diet for some people. But those who came from lineages whose cuisine is rich and carbohydrates, people from the northern Mediterranean for instance, may not be best served or most healthy on such a diet. Furthermore, there is growing evidence that early humans reading a diet rich in carbohydrates from starchy underground vegetables, relatives of which include the African wild potato as much as 170,000 years ago. This suggests that while healthy for some the Paleo Diet is not particularly reflective of paleo ways of life, these are only two of today's many modern approaches to diet, but they reveal to similarly misguided assumptions about food. First, they imply that there was a fixed and universal answer to the question of what one should eat. Just as we discussed with regard to medicine, the chances of this being true are vanishingly small. Differences in individual development will render some foods healthy for one person less so for her neighbor. Demographics such as what sex you are, will affect what food is best for you. And the simple act of agent will change the answer as well. cultural differences which are often based on geography may well affect your optimal diet. And those cultural differences may have moved into the gene layer reflecting population level genetic predispositions to particular foods, as with the lactase persistence, of European pastoralists, and Sahara and Bedouin, again, remember the Omega principle which posits that expensive and long lasting cultural traits like cuisine should be presumed to be adaptive, and that adaptive elements of culture are not independent of genes. The second misguided assumption that many such diets reveal is that they seem to presume that food is merely for survival. The evolutionary truth is that food is for more than just survival. Food is more than nutrients, vitamins and calories. Like all animals, indeed, all heterotrophs we eat to acquire the energy and nutrients necessary to be alive. But the human relationship with food like that with sex has expanded beyond its original purpose. Humans no longer eat merely to satisfy energetic requirements anymore that we have sex just to make babies. And historic and a historical reductionist approach to diet attempts to replace food with its component parts. Take the supplement, eat that bar, drink the contents of that can, you'll get x grams of protein, a handful of alphabetically named vitamins, and that rush of energy you've come to expect to get you through your day. as is so often the case such an approach creates hyper novelty which then creates new problems of its own problems that we are too often defenseless against.

**Heather** 27:24

The mistakes inherent in this approach are many in the hubris abundant the 20th century saw the dismantling of Chesterton's cuisine. as suggested by Chesterton's fence we ought to have understood what cuisine was for before we took it apart, in its place without easily quantified and commodified pieces and parts that can be added and subtracted on a whim by the producers of processed food. instead of chasing the newest diet advice with processed food now with more b 12, we should be eating real food. Real Food is that in which the base ingredients are recognizable as coming from a living organism, there are just a few exceptions like salt. Some things taste delicious and flavorful to everyone. Rich and succulent, and salty and crispy and sweet and smooth, are combinations that are beloved across cultures. Our sense of taste evolved in an era when meat and other fatty foods salt and sugar world where our sense of flavor is thus evolved and important. This is true and it is true that our sense of flavor can be and is gamed, and a system that can easily create fat, salt and sugar and add them to any foodstuff it wants another manifestation of hyper novelty. Fast food tastes good to many people because it successfully games our sense of taste accessing single notes Fatty, salty, sweet, in a reliable uniform way that can be triggered anytime you order the same thing in any one of hundreds of identical stores. By contrast to plate of carne asada rice and beans with freshly made tortillas pickled the guy guacamole and pickled vegetables from a local taco standard from your own kitchen will always be more nutritious and more delicious to for many of us and for anyone who chooses to develop a palette that finds it so that plate of less processed more species diverse food is more nutritious than a plate of fast food. Just as it is more nutritious than taking pills are supposedly a match for all of the nutritional benefits you're getting from your food. The whole is greater than the sum of its parts. But why is the whole greater than the sum of its parts? Or to put it another way, why is a holistic approach often better than a reductionist one? Two reasons. First, the parts of a given system that we have turned into pills are usually not descriptive of the whole system. Remember the discussion of vanillin a component of vanilla and THC a component of marijuana from the previous chapter. Second, there is often emergence in the combination of food and it's less processed form such that our bodies can use food more effectively that it can use pills. This is especially true for those foods that have a long culinary history together, such as the three sisters of corn, beans, and squash traditionally eaten by Musial American peoples. When these foods are eaten together, they constitute a complete protein. Such a long culinary history points of the human discovery usually unconscious that just as smells good was a good proxy for good for you until recently, so too was tastes good. A good proxy for good for you. reductionism and our approach to food fails us as our bodies are not static simple systems, nor do all individuals have the same needs. There is no universally best diet for humans or can't be. In our varied environments of evolutionary adaptiveness there were a few staples in the Andes keen, warm potatoes were generally on the menu. In the Fertile Crescent of Mesopotamia, wheat and olives were among the foods domesticated early. In Sub Saharan Africa, sorghum and Guinea yams were significant early agricultural successes, there was meat sometimes in short lived abundance. There was fruit seasonally also in abundance, there was alcohol intermittently and botanically created stimulants in some places. in those places, those stimulants were regular but low key part of life. Even the ratio of macronutrients is not stable between cultures, and what have a high fat high protein diet with almost no carbohydrates, which is unlike almost any diet that evolved closer to the equator. given such variation, the idea of a universally best human diet seems patently absurd. In the 21st century, there are many foodstuffs available that will trick you into eating them. Even when parts of you are sensing that it's a bad idea to do so. Before the advent of cheap, always available, highly processed food, our ancient aesthetic preferences made a very good guide to what to eat. Those ancient aesthetic preferences aren't so reliable now. Hyper novelty has gamed our ancient rubrics about what to eat and what not to unless we must use our consciousness to separate the good from the bad.

**Heather** 31:26

reductionism in our approach to food also fails us in that it ignores foods ability to provide connection to other humans with the family and friends who cooked for with you or for whom you cooked. A reductionist, nutrient centric approach to food fails to allow for celebration or for grief, both of which are often accomplished through food. It fails to recognize and remember cultural tradition and to consider flavors that have come together through serendipity and experimentation. cuisines, old and new reflect both their terroir, the land from which they emerged, and their borrowing from other cultures and places. Those three sisters of corn, beans and squash are still dominant Mexican cuisine, limes, garlic, and cheese, all introduced by the Spanish people in the new world have been incorporated delicious Lee as well. Humans do not just need protein and potassium and vitamin C, we generally need those things in the food context and what's in which our ancestors ate them. We also need culture and connection. When we sit down to eat a meal together, especially when we are breaking bread that we have ourselves made, we gain far more than calories. Let us now look to our evolutionary history, how we ate and what we ate as a way to understand how best we might feed ourselves today. And that will be the next section.

**Bret** 32:34

You know, when I hear you read that section, I can almost see why our critic CSS simpleton grifters zealots, I mean, kind of comes through in that section A little a little. Yeah. All right. Yeah, that's a fantastic I, my one, I'm, of course, very curious to know what other people hear when they, when they hear that description, especially in light of the fact of it, not staking out a standard paleo position, right. And obviously, making rational critiques of current dietary fads.

**Heather** 33:13

Yeah. So I guess, maybe before we riff on this a little bit and before we get into some of the other literature, I want to I want to walk us through today, starting in chapter three of this book, and I haven't done it until now we have at the end of each chapter, something that we call the corrective lens in which you know, to the degree that this is in fact a hunter gatherers guide to the 21st century, we we give some some sort of operational advice on your what you might do that is apropos the topic of the chapter and, and so the corrective lens section for the food chapter is pretty long, but I thought I'd just share three of the of the many more than that bullet points from it. And let's, let's refine these let's see. Well, we begin this corrective lens section by saying we might call this section the new kosher. most ancient dietary laws are now out of date. But that does not mean that we couldn't use some rules around how, what and when to eat. Avoid GMOs. GMOs are neither inherently dangerous nor inherently safe. They are however different from the artificial selection that farmers have been engaging in for 1000s of years. When farmers chose choose plants or animals to breed promoting some traits and downregulating others they are playing within the landscape that selection has already been acting on. In contrast, when scientists insert genes or other genetic material into organisms that have no recent history with those genes, they are creating an entirely new playing field. Sometimes they will be lucky, and the result will be useful unkind to humans. Sometimes they will not be lucky. chimerical life forms that have been created by humans using hyper novel techniques are not inherently safe. anyone telling you otherwise is either mistaken or lying to you. We also have exposed expose children to a diverse range of Whole Foods, especially ones that connect them to your culinary ethnic background. eat the same food that you put in front of them and show obvious enjoyment of it. Keep seasonal produce on your calendar and let the children eat any fruit that they find they're encouraging them to develop their own preferences while they also learn how and when to explore a variety of Whole Foods. And do not forget that food is social lubrication for humans. eating alone in your car after visiting the drive thru is a novel situation as not helping us connect with our food, our bodies and their needs are one another. I think that's one of probably the thing that people will see coming the least in this in this chapter, most of which is about the actual stuff that we should be eating and preparing and how to combine it and such and the history of our doing so but the fact of food not being just about sustenance, not just being about calories and nutrients, but actually about one one of the ways that we connect with one another and see our ways through not just celebration and grief you know celebration and mourning festivities and and funerals, but also just the the daily cementing of bonds, right? The the fact that you can come to rely if you are, if you are lucky enough to live in a loving family, or in another situation in which the people with whom you share a living situation come together reliably with food over food that you have either made, or, or brought in, or go out to, to find together that those moments bring people together. in a way that's it's just easier, I think people have their guard down when they're sharing good food, and especially when it was prepared by one or more of the people who are who are sharing it.

**Bret** 36:39

Yeah, if you, in fact, had a list in front of you, of the people, you know, and the people with whom you have broken bread, you would find that the broken bread with list is a special list almost inevitably,

**Heather** 36:54

yeah. And maybe that's some, you know, at this point, especially, especially since we're still you know, close to run the near side of having been effectively forced into not interacting with people not into, into basically no travel for so long, that we now know many people. We feel like we know well, but we've never met in person. And the fact is, upon meeting in person, what you tend to do is break bread, right? We tend to do that. And that's not, it's not that we actually need to be eating all the time, we really don't, it's that that is a way to bond that is an historic way to bond and nothing about the modern environment should have changed that.

**Bret** 37:38

Right. And in fact, if you if this was anything but the modern environment, breaking bread with somebody would force certain things that it no longer does, right, you can break bread with somebody where you've sourced food from, you know, I don't know, a good restaurant or something like that. And so it still has the same symbolic value. But it's not the same thing as cooking a meal for somebody, you know, having them over and thinking about what you know, what you might want to eat with them, what you know, puts you and your family in their best light, some favorite meal or something like that. But I wanted to highlight something, you know, there are a couple of major themes in our book. One of them is this hyper novelty issue. One of them is the synergy of the various different levels of analysis. And then I think a third one is the recognition that we are stuck in this intermediate state where the ancient ways are not directly applicable, the modern ways are almost universally hazardous. And one has to figure out how to steer a rational course that recovers as much of the ancestral wisdom as is useful, and then rationally approaches the topics on which one can't have a traditional view in some reasonable way. And this is sort of mirrored by another phenomenon, an evolutionary phenomenon itself, which is everything I think this is logically true, everything everything we might call an adaptation has some initial cause some problem that it solved or opportunity that it opened. But many of these things especially in the human context, nowhere more true than in the human context. Many of these things have picked up other values right? So you read this about you know, sex not being just about producing babies now obviously at the evolution of sex. There was origin right sex, that's what it is right? And it really is that for most creatures, and then we get to a small list of creatures for whom that's not exactly true, right. For him, there appears to be augmentation and elaboration and a basically a borrowing of that mechanism for other things. But it's really a tiny handful of creates a kind of social glue, right? And then in human beings, we find something really utterly remarkable, right, which is that the primary purpose may, in fact now be in some sense, secondary, it's necessary, but the primary purpose may have to do with, you know, bonding, relationship maintenance and not with direct, you know, it's not that those two things are inherently different, obviously, in humans, because the babies are so labor intensive DeRay as well, a pair bonded couple or more a pair bonded couple in the family that they bring to the table are, you know, necessary to the proper raising of the children and therefore the social bonding phenomenon is reproductive in some very indirect way? But

**Heather** 40:48

more on that in two, three and four weeks? chapters? Yeah,

**Bret** 40:52

but but my point is, okay, so here you see it with food, right?

**Heather** 40:56

Actually, before you before you go on, I want to say that, to some degree, I think the fact that you've just posited the perhaps, obviously the, the, you know, the reason for sex to exist, as it is, is about reproduction. And it's possible that in humans, one could understand that to actually have become a secondary, a secondary function in many cases. And that would almost have to have been true in order for the level of confusion that a lot of society now has over we know what sex is and you know how fundamental it is and whether or not you can actually change what you are. So again, the sex and gender chapter is two chapters from now and we'll talk about it right fairly extensively, but

**Bret** 41:39

but I think what I was getting at is that this principle is actually so close to Universal across the important things of our modern human lives. Yeah, you know, I am struck by the fact that pets very definitely arose in human cultures multiple times, for reasons that were practical at first and we may not even know all of the reasons we know basically, that cats arrived pretty late and that they did so because the accumulation of grain obviously produced a problem with rodents and so you know, the sort of interesting semi wild creature that we now bring into our homes was you know, semi wild for a reason that he needed to do its wild rodent hunting thing near the grain stores and it's lovely that it gets along with people and doesn't attack him and children and you know, all the things that you would want it's helpful that the diminutive right but there's a reason that herding cats is the problem that it is which is their initial utility didn't have anything to do with them listening direction that had to do with them following their instincts over with the mice that were eating the grain. And with dogs we have a very different much more ancient story where this was a hunting partner and the basic point is you know, this is a collaborative hunting species wolf right which is actually an excellent hunting companion and you know yes, there's some story to be told about how wild wolves probably enjoyed greater and greater proximity to people and how they actually established a relationship and no doubt there was some situation where I don't know a mother wolf was lost and the puppies were just so adorable and it happened that by hand raising them all sorts of problems were solved but

**Heather** 43:25

whatever saying that both of these main these main stories of our of our domestic cats are about food actually right right about hunting and about agriculture in the case of dogs and cats respectively

**Bret** 43:35

right and actually dogs is the is the outlier here as much as it feels like cats as well dogs are the outlier of all domestic okay because it's the one that doesn't isn't fundamentally about farming right i think it is fair to say that all of the other major ones now there are cases where tariffs right it's

**Heather** 43:56

not clear what that's about right.

**Bret** 43:58

It's an interesting question. But of all

**Heather** 44:02

i guess i guess it feels to me like by and large we have two two kinds of companion animals and so there's a there's there's animals that are about animal husbandry and and we're basically breeding them for for their meat or their wool or you know their belly right their their work animals with whom Yes, we may come to become fond of but they don't it's not the same kind of relationship although i guess i guess horses do end up people do end up having that very close relationship with horses as well. So okay, I'll accept your you know, it might be somewhat snarky and outlier and that's not that's not a thing. But no, I see your point the dogs we know the dogs were domesticated a multiple times for for more many years in the past. Yeah, any of the other

**Bret** 44:50

more like 30,000 years rather than all the rest of domestic like less than 10 because of their relationship to farming in one way or another. But my the punchline of this story, I think, is in the case of cats especially, they are now completely free. Their reason for associating with us now as precious little to do with mice. And in fact,

**Heather** 45:14

they can bring mice into the house,

**Bret** 45:17

bring mice into the ads, we couldn't find their way in otherwise, yes, sure, eyeballs and the occasional vole, right. But, you know, they, you know, as we become socially disjointed, and we lose the connection to all of the people that a normal human existence would have us in contact with, and then we tenuously explore ways of being connected with people over the Internet that actually are simultaneously not satisfying, because they aren't like the original thing and are getting better than they were right, it is possible to have a real bond with somebody over, you know, zoom calls or whatever, right to develop a real friendship. But, you know, pets have taken on an almost perfectly social utility to us that, you know, you establish, to me what this feels like, is really unusual, asymmetrical friendships, right? these really are deep emotional connections. But, you know, what we get out of the animals isn't the same thing that they what they get out of us, you know, except at some very, you know, thin edge, right? We get emotional sustenance from each other. That's pretty clear. But, you know, but the fact is, having been removed from their initial utility to us, is a little bit analogous to food having become, you know, much more about the breaking bread, and much less about the providing enough calories to get you through the, you know, the next 48 hours or,

**Heather** 46:48

well, this, I mean, this, in fact, is one of the, I think this is maybe exactly what you were saying, but one of the themes of humanity is that we take things, we take adaptations that were for a thing, and because we have the ability to adapt so rapidly, and to create change in and of itself that requires further rapid adaptation. We, we, you know, for a whole slew of things, and up using adaptations that existed for something else for entirely new purposes. Right.

**Bret** 47:19

And so there was a big stir many years ago. Stephen Jay Gould coined the term exaptation which

**Heather** 47:26

was not going to I was not going to name the thing, but just go for it. Yeah.

**Bret** 47:30

Name it, is that in fact, at some level for some I encountered that it's like, well, you just named a category.

**Heather** 47:37

I don't I don't know that we've

**Bret** 47:37

acceptation is going to be something that evolved for one purpose and then gets used for another purpose. So

**Heather** 47:42

the modern thing that your said that the new purpose that you're seeing it as an exaptation, not an adaptation in goals, right formulation, because, you know, the thing that is useful for now is not the thing that was its raison d'etre, right.

**Bret** 47:55

And I find this to be an almost nonsensical category, because, you know, the nature of everything is going to be accepted once you get a certain distance from the origin of all of these things. And so, you know,

**Heather** 48:09

like, it's it's like instantaneous adaptation, and then adaptation, rather than adaptation and exaptation. Right,

**Bret** 48:15

exactly. It falsely it basically falsely corrals adaptation to initial cause, which of course, is very in keeping with what I think is Google's biggest error, which is that he was constantly trying to corral adaptation in certain so he could shove things into other categories. But anyway, but you know, long standing viewers of this podcast or the portal will have heard the term telomere 1000 times. But this is a perfect example because telomeres, which are these repetitive genetic sequences at the ends of chromosomes evolve at the beginning of eukaryotic cells where chromosomes become linear for the first time. So before you have eukaryotic cells, you have circular chromosomes which don't need a telomere nor do they have a place for one

**Heather** 48:59

eukaryotes, which have our eukaryotic cells have cell nuclei. Yep. And as part of those cell nuclei, then now those nuclei in case linear genome

**Bret** 49:12

multiple linear chromosomes and so at first you have basically single celled eukaryotes, and then colonial single celled eukaryotes like yeast, right?

**Heather** 49:23

But in a yeast, they just start collaborating, collaborating, collaborating,

**Bret** 49:27

right? And then at some point, you get a division of labor and you start to get organismal stuff but in that in your, you know, in

**Heather** 49:33

multiple multicellular organisms, would you say I mean, yeast is still an organism?

**Bret** 49:37

Yeah, yeah, yeah, I mean, multicellular organism stuff, but but the point is, in a yeast, the telomere sticks at a particular length. Its purpose is to protect the end of the chromosome, which has problems if it's free floating and carries genetic information because it triggers the repair circuitry and bad things happen. So you stick some aglet on the end. To protect it right? Like you burn the nylon thread, right? Right, right, it's like that. But the point is, at that point, you have a telomere. You've got the enzyme telomerase, and the enzyme telomerase is set to maintain telomere length, because there's no purpose to anything else. At some point, you get a really fancy organism with vital organs, and the ability to self repair, and now you've got a new hazard called tumor or cancer. And then there becomes a reason to have a telomere that actually starts shrinking. So not shrinking was the original state of these things, and then turning it into a counter is a secondary adaptation that basically takes a telomere whose purpose was protecting the ends of chromosomes and turns it into a regulatory mechanism to prevent tumors. And anyway, yeah, that's how all of this evolutionary stuff looks. Yeah, the

**Heather** 50:52

retooling is one of the amazing powers of evolution and mandating that it needs a different term, it isn't actually an adaptation actually just confuses the issue quite a

**Bret** 51:03

lot. Right. And, you know, you will have heard in several of the things that Heather has read from our book, indicates means, yes, they look them in the eye and look them in the eye when I said that, but in several of the things that Heather has read, you will have heard reflections already of the fact that humans have a very special capacity to upgrade software. Basically, it's a never ending sequence of what Gould would call x adaptations, and what we would call adaptations that we self generate, yep.

**Heather** 51:38

Cool, well, I mean, we're, let's, let's keep going. But also begin talking about I've got three papers, really two, we're just gonna sort of bundle together but three words to talk about. And you're none of them actually had I run into the point that we submitted the final draft of our book. So that's, you know, that's one of the both, you know, wonderful aspects of continuing to be interested in what you're thinking about in a manuscript and also, you know, mildly frustrating but of course, it's just endless You know, there's there's a ton more that you can discover at any, any time. So, we have to see if I can figure out where it is. Let's just show my screen for a second Zachary here. This is a paper from 2009 by Paul Clayton and Judith Robotham, called how the mid Victorians worked eight and died, published in the International Journal of environmental research and public health. So I'm not going to, if, if I may, thank you. Not going to read from the top of it so much. But the basic premise of this rather remarkable paper. And the premise is, is well, well borne out by what they present, the evidence they present, is that mid Victorian era Brits, which is basically between 1850 and 1880, and they say that the standard reckoning is 1850 to 1870. But they explained why they they take a slightly longer view so these 30 years, the first 30 years in the second half of the 19th century in Britain. You know, imagine for a moment this is not in the paper, but imagine for a moment what you think of when you think of, you know, a Brit living in this mid Victorian era 1850 1880 for me, anyway, I think Dickensian, right like this is I think, I think of any number of scenes from Charles Dickens novels and any pretty you know, these are, these are sort of people living out Hobbes's observation of lives that are solitary, nasty, brutish, and short. I think I'm probably have those in the wrong order. But you know, whatever Hobbes suggests, that's it. That's it. You know, of course, he was talking about humans absent civilization. And Hobbes is a couple 100 years earlier, I think. But that's sort of that's the that's what we imagine up at least I do when I'm thinking of that era. But these authors from this 2009 paper again called how the mid Victorians worked eight and died. Say that these these people were, quote, healthier, fitter and stronger than we are today. Their lifespans. And so I'm not going to go through all the evidence, I will, I will post this paper as always, in your links to these all these papers in the show notes. These are, I think, you know, pretty easy to access papers in terms of the language used. Their lifespans were equivalent to ours. Actually. lifespans then declined around 1880 with the advent of mass agriculture, and processed foods, especially tinned meats, and condensed milk, and canned fruits, which had a lot of sugar in it. And basically globalization that allowed things to be coming from far away, but preserved across oceans, and preserved with sugar and salt in particular, meant that we went from an era in which lifespans were almost almost what they are today to the idea of lifespan in the modern era in 19 119 100 is those Comparison point for many people who, for instance, will be talking about the ability to extend life endlessly this and you look at how much we've we've added to life since 1900. Well, that maybe they don't know that they're cheating, but they're actually going from the low point that the the short point in terms of human lifespan in maternity, with 1900. So

**Bret** 55:20

hold on. Yeah. When you say lifespan, you are undoubtedly talking about average lifespan, and there will have to be, there's one copy at least one copy. I can, I guess? Yes, of course, anyway, you know, you're not guessing. But no, I'm guessing. Okay, based on all the lifespan research that I've encountered, it would have to be I don't know what the point would be probably one year, it's actually Well, you make it to one year, before you get to average lifespan,

**Heather** 55:49

there's a number of ways to do the numbers. But yeah, basically, infant mortality was very high. And so you know, as as they, as they discuss in this paper, and we'll get to this a little bit, but one of the actual truly major advances of the 20th century, were improvements and, and maternity care, in birthing outcomes and in and decreases in infant mortality rates. So yes, both babies and mothers died at a remarkable rate in you know, in that era such that actually lifespans once you know, at once you got to either the age of one or the age of five and five is actually a safer number. Because there were also a lot of communicable diseases that were particularly the children, very young children are particularly susceptible to, once you get to the age of five, lifespan for both men and women was about what it is today with the interesting caveat that for women, it was actually lower than for men. And that's because of the danger of childbirth,

**Bret** 56:46

danger of childbirth, right? Which is actually a comparatively late emerging hazard not completely, but a late emerging hazard in humans, I think comes with agriculture,

**Heather** 56:57

right? So you know, many 1000s of years, but not many 10s of 1000s or hundreds of 1000s of years,

**Bret** 57:03

right? But it's actually it's a great indicator of the point you're making about starting the clock on human longevity at the turn of the 20th century,

**Heather** 57:13

right, we were at our sickest and least long lived yet,

**Bret** 57:17

right. So in some sense, we all have the wrong we will have several wrong ideas that we carry around with us about longevity. One is that in the deeply ancestral past, people, you know, 35 years old, and it's not true, this number is heavily dragged in that direction by very substantial infant mortality. And so if you correct for that, by saying amongst people who live to a year, or most people who live to five years, what is the longevity? And yes, indeed, there are many ways that you could die relatively young. So average lifespans have gone up. But maximum lifespans have not, right. And so and this infant mortality thing is the same way we all have the sense that even babies are large, their heads are very big, and they must be born early. And that this is all that all those things are true. They're born early in development because of the size of their heads. But we extrapolate incorrectly that the famous facts about the mortality of mothers in childbirth are a permanent feature of our bad design, rather than a novel alteration of our circumstances. After our design was pretty good.

**Heather** 58:26

Agriculture made us more sedentary with more reliable access to food throughout the year, such that babies were born bigger and fatter. Yep. And bigger, fatter. Babies are more likely to have trouble being born both for baby and for mother.

**Bret** 58:38

Yeah. Now some people remain fat heads into adulthood. Some do. I've met some of them online. Yeah,

**Heather** 58:44

I think you have I have to, I think so your advances in food processing things like those tend to meats and the condensed milk and the and the canned fruit and such promoted faster growth. And so there you know, there was a whole lot in your in the media then and still our understanding today of this era of you know, again, the mid Victorian era, because children are growing bigger and fatter, faster. That it was imagine that Oh, these are improvements, but adults were actually, you know, once the Advent, once a brown 1880 happened, and you started to get this, these new diets being dominant. Yes, young children, your babies in utero and young children are growing faster and faster. But adults were actually getting shorter. And lifespans were getting shorter, and people were less healthy.

**Bret** 59:33

Shorter, more British. And in the early 21st century, somewhat more nasty.

**Heather** 59:40

Perhaps perhaps Yeah. Okay, so I do have one quote to read here. You don't have to show my screen Zack from this article from this paper. Given that modern pharmaceutical surgical anesthetic scanning and other diagnostic technologies are self evidently unavailable to the mid-victorian Their High Life expectancy is very striking and can only have been due to their health promoting lifestyle. But the implications of this new understanding of the mid Victorian period are rather more profound. It shows that medical advances allied to the pharmaceutical industry's output have done little more than change the manner of our dying. The Victorians died rapidly of infection and or trauma, whereas we die slowly up degenerative disease. It reveals that with the exception of family planning the vast edifice of 20th century healthcare has not enabled us to live longer, but hasn't the main merely supplied methods of suppressing the symptoms of degenerative diseases, which have emerged due to our failure to maintain mid-victorian nutritional standards? Above all, it refutes the Panglossian optimism in the contemporary anti aging movement, whose protagonist use 1900 A Nadir in health and life expectancy trends as their starting point to promote the idea of endlessly increasing lifespan. These are the equivalent of the get rich quick share pushers who insisted during the.com boom that we had it last escaped the constraints of normal economics. Remember, this paper is written in 2009. Some believe their own message of eternal growth. Others use it to sell junk bonds they knew were worthless. The parallels with today's vitamin pill market are obvious. But there's also echoes the way in which Big Pharma trumpets the arrival of each new miracle drug. So, I mean that that seems apropos of our moment. Yes, rather a lot,

**Bret** 1:01:21

apropos of our moment, and it causes us to rethink the Victorians who may actually have been classy, prudish and fort. For two meanings strong. Yeah, yeah. All right, so I got it. I feel proud of that. I think nobody else must have liked it based on the crickets that I hear. But

**Heather** 1:01:41

yeah, but you can't hear them.

**Bret** 1:01:42

It's exactly why Yeah, yeah, I'm imposing crickets. Okay, so

**Heather** 1:01:47

let me just walk through a little bit of what these researchers need to continue to know you're just looking for, like, I need to respond to this classy, British and Ford,

**Bret** 1:01:58

classy prudish, and forked, classy, classy. Victorian. So let me just bring up some Victorians in your mind. And now I guess. You know, I now

**Heather** 1:02:06

wonder if you know prudish is actually accurate.

**Bret** 1:02:10

You know, it's one of those questions. I recently did a a deep dive on whether or not rubenesque was ever actually a thing as far as sexiness goes. And it turns out, that's more or less a myth. Really? Yeah. That was just like one model. No, it wasn't one models, but it had to do with the way models are sourced for. For nudes. Yeah. What? I now don't remember the logic. But basically, the idea was No, nobody ever thought that was so good. But really, right.

**Heather** 1:02:42

I mean, it's a little surprising, because b is obviously you know, in, in an era when food isn't completely reliable, yeah. Having a little bit more fat on you, is, you know, maybe may make you more likely to survive the next drought or famine. No, no, no,

**Bret** 1:02:58

no, let's be clear. Okay. Okay. First, let's be really frickin clear. Okay, there's what women's magazines want you to think, which is men want Far,

**Heather** 1:03:10

far later than rubenesque. I mean,

**Bret** 1:03:11

I don't write right now. But this is ridiculously thin. And it's not what men prefer, right? And then there's like healthy levels of curvaceous softness. And there's a wide range of these things. And then you get on up to rubenesque, which we are told was the preference of, of past arrows, and that these things have shifted, and the evidence is actually pretty good that that's not the case that it was a buyer. It was a it was a what is the artistic equivalent of survivor bias?

**Heather** 1:03:39

I don't know the way the models are, apparently. I mean, I guess I don't I don't know. It's been a lot. No art historian I don't know. But I mean, I think even within just the 20th century, we see changes in what expected you know, optimal female body for our according to the media, you know, just by looking at, you know, pictures of Marilyn, Marilyn Monroe, who everyone regarded as the epitome of female beauty and she was not relevant at all. Yeah,

**Bret** 1:04:08

she wasn't and male preferences don't land where we're told there do their due. English is not working for me so well today, but

**Heather** 1:04:17

yeah, okay. So we'll, we'll end up back there in a couple of weeks for sure. Yeah. So let's just a few things about the Victorians in terms of we've already talked about what changed around 1880 a little bit, but what did they do? Well, they, they moved a lot as part of their working lives. They were the opposite of sedentary such that actually their caloric requirements were 150 to 200% of what ours are today that we are currently at an historic low as far as we can tell in terms of what our caloric needs are just to maintain ourselves because we move so damn level. And, you know, you can say this without advocating for a work of hard labor, but just recognize that the fact of sitting Standing or lying and you know doing this you know that's not very much exercise the moving of the fingers on you know on your on your phone you got a typo yeah it's really it's it's not major muscle groups there so that's true and then overall they just had like their diet was of lower caloric density but higher nutrient density so they had a lot of onions and greens and roots and fruits and seeds and of course everything was organic and everything was free range and this paper doesn't go into you know, it cites some things you know the evidence for why that might be better but but there is a fair bit of evidence for why that might be better you know dried legumes and nuts pickled fish you know fresh fish but also pickled fish which is different from having a tin and being preserved for you know many years and being able to cross oceans even the very poor had in again 1850 to 18 at mid Victorian England had meat on a somewhat regular basis the very poor didn't tend to get the muscle but they got you know, they got other parts of the animal

**Bret** 1:06:05

I love the story about brisket Yeah, this one actually is perfectly emblematic of sort of hidden feature of culinary

**Heather** 1:06:19

so this is muscle but it's the bit you know, so muscle is pretty much in every cuisine, the thing that people want the most right all sorts of other parts of the animal and no waste happens in times of anything but modernity but within muscles so within suffered unless preferred cuts

**Bret** 1:06:37

right and so brisket which is now a fancy sought after cut was a you know, Jewish immigrants for example. It's obviously in black Southern barbecue culture. And the point about it is not that there's anything wrong with brisket In fact, those of us who like brisket tend to really like brisket, it's, it's awesome, but what it is, is so full of collagen, that in order to process it, you can't do it quickly, right, it takes a very long slow cooking process to get it to be that succulent, delicious meat that we know and so the thing is, if you're poor, what you tend to have is labor to spare and so you can take a cut not money to spare right you've got time you know exactly so you can take a cut that is disadvantaged by how much processing it takes to eat it and you can invest time into making it really succulent and anyway so it ends up in these these really deep cuisines where there was more labor than than money

**Heather** 1:07:37

well i would say i mean i guess it's not just labor and i think i think there's just two aspects to labor there is you know, there's de is someone available to do a lot of prep and with with cuts that have a lot of collagen cuts of muscle that have a lot of collagen between the fibers that require a very long slow cook a brace or a slow cooker steel or something you also need to have time wherein the person could be working on other stuff, doing childcare, doing laundry when you know the kinds of things that that women usually would have been doing when they weren't actively doing the prep but not only need to have the time to do the labor of the actual prep but then the time to be around and meet just like guard the fire like you can't you would need to have someone who didn't have to leave the house right right and that's actually that's a that's a huge thing that you know, the rich didn't necessarily you know, they imagined that they didn't have the time for that right yeah, they were too busy doing whatever they were doing. And it feels to me like there's there's a bunch more to be said about these. Oh, I know apparently also slow cooking meat under so for long periods of time under low heat with with liquid so like in a brace or a Sue produces far fewer of the now known to be carcinogenic compounds. That high heat you know that the kinds of stuff that you know tastes great when you grill it when you heat when you cook under high heat fast dry, you tend to get these hours it's like I have it here somewhere ag ease is what the acronym is, but I can't stand I can't remember what it stands for. You tend to get more of those and they are understood to be carcinogens and so you know the slower the slower cooking cuts, which people defaulted into out of not having a choice actually end up being healthier as

**Bret** 1:09:30

well. Interesting. Yeah. Yeah.

**Heather** 1:09:33

So let's see Oh, and I guess one other thing and we do talk a little bit about beer in in the book as well, but apparently the mid Victorians drank a lot of beer, but it was of a lot much lower alcohol content, then then it is then it tends to be today and this you know, this we know also from from the North American tradition, that especially when water might not Be safe isn't might have cholera or Giardia and it beers effectively a way of preserving both some nutrients. It's you know, it's a liquid loaf of bread, it's preserving nutrients, and it is preserving them in such a way that you can get hydrated safely because that that whole process of fermentation gets rid of things like cholera and giardia.

**Bret** 1:10:20

Yeah, it does deliver a burst of nutrients. And you know, the storage process is the basis of so much of what cuisine actually ends up being from, you know, pickling, to canning. All of these things are about how you deal with a boom bust cycle, you know, drying of meat, salting them. Yeah, it's all about boom, bust cycle. And the point is, it becomes the basis for cuisine. Back to our earlier point, right? You take something, you know, we talk in the book about the very special process of spoiling foods in a good way, so that they don't spoil in a bad way that basically you team up with microorganisms, fungi, or bacteria to cause dairy products to spoil. So that, you know, milk that wouldn't last, you know, would last a few days, on refrigerated in its raw state can be preserved sometimes for months or more. And that this is, you know, these are all basically hacks to allow you to do things like live in habitats where not much as growing over the winter, for example. And the point is, then these things become the basis of cuisine, and then we start doing crazy stuff, like transporting them so that they, you know, show up chaotically around the world. And we don't know what to think about them, because we tend to come to the conclusion, because of the way we developmentally encounter the foods of the world, that it's all just aesthetic, Oh, those people like that stuff. And these people like that stuff. Now, I kind of like a little bit of everything. But the point is no, those were all coherent cuisine somewhere. And they were responses to the hazards of, you know, these different habitats, and it is nice that we can access all of them. But, you know, all of the ancient stuff has an explanation for why it ended up

**Heather** 1:12:13

there. Yeah, no, it's again, those three sisters, you know, squash, corn and beans, were coherent. And there was some serendipity there and there was a lot of human ingenuity there. And then, you know, the Spaniards who brought the new in the old world into, you know, violent reconnection. But part of what happened also was that the people in the new world who survived it, were able to do a little cultural appropriation and pick up things like limes and, and cheese and, and what else was on that list? I can't remember. But garlic girl Oh, that was okay. So sex is with garlic. Sure, that sounds right. But and, you know, and make a new, a new synthetic cuisine, right? That's, we should we should expect that no, that's what culture is. That is that is what we do is we, as we bring the old and we look for ways to make it fit with the new environment, and every day is a new day, every day is a new environment at some level,

**Bret** 1:13:14

right? And you know, what would Italian cuisine be without the tomato? Right, right. Also, though, you know, it's obvious when you may know an eggplant right when you say it out loud. But you know, corns been then squash, right, that combination was imbued with mythological significance by people who didn't know what a protein was, right? Right. For the, the knowledge about why this combination is important is late emerging. The knowledge that it is important is encoded into a whole different layer. And you can you know, the crude, cartoonish way to think of it is people who grouped these things had an advantage over people who didn't. And it had to do with them, always having all the amino acids necessary to make whatever proteins they needed. And so nobody needed to know just as you didn't need to know the germ theory of disease in order to, you know, avoid unsanitary behaviors. You don't need to know what a protein is in order to establish a cuisine that completes them.

**Heather** 1:14:17

That's right. Let me just read a couple short excerpts from the end of this paper before moving on to the next ones. And I see I see we're already well over an hour, so maybe I'll move through this more quickly. Chapter Chapter Five. Section five of this paper is called What did the Victorians ever do for us and Omar's, I think to Monty Python, the Romans thus the authors write the mid Victorian experience clearly shows us that one degenerative diseases are not caused by old age the wear and tear hypothesis but are driven in the main by chronic malnutrition, or low energy lifestyles leave us depleted an anabolic and anti catabolic cofactors and this imbalance is coming encountered by excessive intakes of inflammatory compounds, the current epidemic of generic degenerative diseases caused by widespread, widespread problem of multiple micro and Phyto nutrient depletion. And so I'm wondering what you have to say about that. And too, with the exception of family planning and antibiotics, the vast edifice of 20th century healthcare has generated a little more than tools to suppress symptoms of digital degenerative diseases, which have emerged due to our failure to maintain mid-victorian nutritional standards. And there's one more thing but why don't you speak? I think

**Bret** 1:15:34

there are two things overlapping it's too much to say that wear and tear is not the cause. Because wear and tear is, in one way, unavoidably the cause. And it's not a cause in a simple has to be partially explanatory, right? And no nutritional supplementation or proper diet or anything can compensate for it. But what it does bring you to take Alexander who was our friend, and my PhD advisor, and effectively unofficial co advisor, for you. Dick used to he had so he was a he was a poet, an amateur poet. And there was this poem that he loved the one off Shay, no, I forgotten who wrote it's a fairly famous poem. And the idea is about this perfected vehicle. That's so good, that instead of having parts fail, it fails all at once, which is really the ideal state biologically speaking, what you know, when we have organ failure, that's one organ failing faster than the rest the ideal state, if you wanted to get to the maximum longevity, which would be somewhere in the neighborhood of 120 years for a human being a number that apparently has not moved. What it involves is everything failing at exactly the ideal rate, the ideal minimal rate, so that, you know, you basically are young as long as possible, and then, you know, the collapses all all sudden, at once and what we what, to the extent that that sentence you wrote or that that wrote, that paragraph you read implies that wear and tear isn't a factor. They're getting at some sort of novel way that we're in terror happens that is not ideal. And just like with childbirth, yeah, if you were to look into the ancestral past, people would age you'd notice it, and in many ways, they would age faster because Life was hard, but they would age more gracefully more evenly, right? What We Do you know, if you're, if you're working in a mine with a pic, right, you're, you're accelerating the aging of certain joints, right with that pick. And that means other parts of you may, you know, be comparatively young and some part of you is very old. And if you're, you know, if you're breathing stuff in that mind, your lungs will be exceedingly old, and you will basically have a very uneven chaotic senescence. But yeah,

**Heather** 1:17:52

they conclude, do not therefore, look to the drug companies to provide remedies for the appalling state of our health, nor to our politicians who seem unable in many cases to see far beyond the brims of their parliamentary troughs. Look instead to the food and beverage industries. and to a lesser extent, the supplement companies who may well step up to the plate with better designed foods and nutritional programs. Once the currently profound, counterproductive regulatory system has been redrafted. So interesting that they do not they do not reject supplements of hand, they do not reject the ability of the industries that are built up around food and beverages, which have largely created the epic mess that we are in today with regard to the modern human diet, they say look to them, it's not going to be the drug companies, it's not gonna be the politicians look at the people who are actually making the stuff that you are eating and drinking like that. That's they are the people who have the capacity. They are the that is the industry that has the capacity to actually help us find our way out of this. So that's, that's fascinating.

**Bret** 1:18:51

It is fascinating.

**Heather** 1:18:54

Okay, let's walk through a little bit of let's see these two papers if I can find them.

**Heather** 1:19:06

Okay, Zack, you can show my screen I just want to show the two papers. We have two papers, both written in 2015, one BY LOGAN at all called natural environments, ancestral diets and microbial ecology. Is there a modern paleo deficit disorder? part two, this is in the Journal of physiological anthropology. And the second one, oops, is called it's by the same first author and only him Alan Logan, dysbiotic, drift, mental health, environmental grey space and micro biota, again in the Journal of physiological anthropology in 2015. So these are truly remarkable. And specifically with regard to the second one first, the title of the paper invokes his word dysbiosis, as he calls it, dysbiotic drift. So dysbiosis is just it's defined as like a perturbation to the structure of the microbial communities with which we live. And it's usually specifically evoked to refer to perturbations, disruptions in our gut microbiota, and the microbiome in our gut. And as we've talked about here before, you know, the mainstream almost everyone until 20 3040 years ago, and I don't know exactly when how many threads were beginning to get on this bandwagon, really imagined that, you know, bacteria bad, and we know we are seeing you there beings. And and, yes, we now know better. But that, of course, raises the question of how much we still don't know. And so the first of these two papers actually walks through a lot of a lot of evidence that at least, at least one important guy, and a number of people who were paying attention to him in the first part of the 20th century, the first in the middle part of the 20th century, we're really talking a lot about the need to have to have engagement with the bacterial world out there in nature. And, you know, he and he actually was dubeau, I think was his name, actually came up with the first plant derived antibiotics. But, you know, as is, as was often the case, I think, with some of the most amazing scientists in the first and middle part of the 20th century, he quickly saw he quickly tracked what might happen if we started killing off all of our bacterial communities and say, you know, we got to be careful here. There's this reductionist approach, that puts us at risk, if we simply try to kill off everything, because who's to say that all of the things that are being killed off are, in fact, bad for us. So dysbiosis, which is what is referred to and in both these papers is, is that it's a disruption of what is normal in our usually gut, but really any of our microbiome? And of course, that raises the question of what how would you know what normal is right? And what what is normal?

**Heather** 1:21:55

And that that is that is potentially a difficult question to access, we have evidence, for instance, from the from some ancient teeth, from the from which we can tell what people were eating, we have evidence from pre industrial, a industrial modern people. And then we also have people who are living who have the most, the most restricted microbiomes, who are therefore appearing to be the most dysbiotic, the most lacking in their normal microbiomes. Gut microbiomes. And these are typically people who are economically disadvantaged, living in urban spaces that are called gray spaces. And this is not a term that I knew before grey spaces. And grey spaces are basically defined by a lack of nature and abundance of manufactured materials, gray spaces, as most people listening Well, you know, if you can immediately imagine up what gray spaces might be, you know, they tend to be food deserts, right? They tend to be places where it's very hard to get a whole food, unprocessed food, produce of any sort, you know, the food that is available for purchase tends to be at convenience stores way overpriced, and not particularly good for you. And there is abundant evidence. And I think we won't go through all of it here today, that eating that kind of diet is bad for physical health, and it's bad for mental health. The thing that is new in these papers that I am seeing is that emerging evidence suggests that the gray spaces are also and this is this is my term here. microbiome deserts that absent absent nature, and with a prevalence of manufactured materials on which the bacteria and fungi and such that would be living within any green space at all, these are effectively microbiome deserts. And you might say, okay, who cares? You know, are there more important things don't we need to get fruit to these people? Right? But increasingly, not just do we understand that modern diets have effects on physical health and mental health and, and those things that are correlated to modern diets include you know, all range of things from major depression to allergy as to heart disease, you know, just all sorts of things. But so too, is dysbiosis. Now associated with these maladies so dysbiosis, again being the a perturbation in what would be the normal, usually gut microbiome. So access to nature is also more broadly linked to the buffering of stress and improve cognition and social cohesion. You know, all of these things are true, but specifically, market shifts and intestinal microbiota, that is dysbiosis are associated with all of the following things. So you do not need to show my screen here, Zack, but this list is somewhat staggering. dysbiosis again, disruptions in the the gut microbiome are associated with acute and cumulative psychological stress, environmental pollutants, crowding, acoustic stress, heat stress, westernized dietary patterns, high fructose, high fructose and sodium, dietary Ag and food additives, he is advanced glycation end products that you get via processed foods, lack of colorful dietary phytochemicals. So things like you get in colorful produce carrots and greens, magnesium deficiency in adequate omega three antibiotics, excess alcohol, oral pathogens, when swallowed tobacco exposure, sedentary behavior, cert, circadian disruptions, sleep problems with functional constipation, low levels of vitamin D, and almost certainly, well, this is just slightly less certain, the use of artificial sweeteners.

**Bret** 1:26:00

So these are things that tend to accompany these depauperate environments.

**Heather** 1:26:05

This is now these are things that specifically are understood to be and there's just a ton of different references here. So in some cases, it's understood to be causal. In some cases, we only know correlation dysbiosis shows up with these things associated with these things. Yes, okay. And, and dysbiosis is also clearly an effect of living in one of these gray spaces. And so if you, if you link those things together, people who are economically disadvantaged are living in urban spaces with no access to nature, no ability to get their, you know, hands in the dirt, to to, you know, walk around barefoot, and get their feet in the dirt, because there is no dirt to be had, and it would be dangerous anyway, because it's not that kind of environment are almost certainly dysbiotic. And here are all of the other things that if you're dysbiotic, you're also either higher risk to be or to have, or you almost certainly already already are or have these things. And from there, then it's you know, it's it's an easy leap. And, you know, again, the evidence is in this paper, you know, to all of the very many known physical and mental health effects that are related to, to being to being dysbiotic to being in one of the living in one of these gray spaces, because you have not had, you know, pick because you are some combination of of unlucky and in and unable to get out of it. And now you're dysbiotic. And it's not just the food is, you know, food desert is a really striking term that I think most most of our listeners will be familiar with. But the idea of a microbiome desert, because we can't see it. And because we don't actively choose what to what, you know, for the most part, how to have our microbiome, it feels less important, but the evidence is suggesting that it actually may be as important or more. And furthermore, the sort of the reductionist approach, right is, let's figure out if we can give you a pill for that. Let's figure out what probiotics you need. And just have you take it with your morning, whatever, I don't actually I don't even I think probiotics, maybe you shouldn't take with coffee, your show, I don't know. But that, of course, is once again this like, let's let's take a feature of the environment that we've completely eradicated, find one thing in it that we think you need, and give you that. And what are the chances that's going to be sufficient?

**Bret** 1:28:34

Yeah, there's a basic problem of hubris relative to a complex system where Yes, what is certainly going to be true for any ancestor is that they would have walked around through the world in equilibrium with respect to these microscopic symbiotes. And what that means is that to the extent that there's an imbalance, it's a self correcting one, how would it be self corrected because these things are all around us. And so they would have mechanisms that to the extent that something has gotten out of balance would basically equilibrate. And the problem is if you live in an environment where these things don't exist, or worse, if your diet is is full of biometrically, active stuff I'm thinking of, particularly things like preservatives,

**Heather** 1:29:34

right? a preservative what you're saying preservatives are biologically active.

**Bret** 1:29:38

Well, in the following sense, it's a kind of ironic activity because what it does is it shuts down certain biotic processes. But to the extent that what your problem is your business problem is is a, the length of the supply chain for food, right to the extent that you need a potato chip to be able to last six months before it's actually purchased and eaten. If you're trying to solve a problem about, you know, what if something got into the bag, and so you, you've stabilize it, and the point is that stability is bound to interface in some novel way, with the processes by which we correctly break these things down in order to utilize them. And, you know, so And the problem is that the environment that should make these that should render these things safe, is incapable of it, right? Because how are you ever going to know if you know the preservatives in the, you know, the baked goods that you ate from, you know, the, the sharp at the corner, impacted, you know, gave you a metabolic problem or a cancer, you won't know. So you won't be able to, you'll never be able to sue. And so the point is, as long as that, as long as the chain of causation is complex enough, and the delay in the effect is long enough,

**Heather** 1:30:55

there's no negative and the inputs are noisy enough, right? abundant enough and therefore noisy, and

**Bret** 1:30:59

therefore noisy enough, the point is, the manufacturer is only know of the problem that they have to solve with respect to getting the thing to still taste fresh, when you open the bag, they don't know nor necessarily care about what happens to their customer having consumed these things. So you just want them to want to consume more, right? And so in some sense, the kind of I don't even know what to call it, I'm trying not to dismiss it as Woo, but the kind of sense of like, Oh, well, I'm going to buy my stuff at the farmers market, you know, obviously frees you from interactions with all of the stuff that inherently comes along with these longer supply chains. And the thing is liable to be compounded by the fact that your environment doesn't contain any of the normal elements that would allow an equilibrium to correct for an imbalance that you caused with, you know, food that's synthetic. So, yeah, it makes it makes sense to me. And I think, you know, ultimately, maybe 100 years from now, we might have a good accounting of, you know, the sort of many negative impacts of a large removal from an environment that looks anything like an ancestral environment. And it will involve some very complex interplay between the foods you ate and what, you know, what bacteria you encountered, walking around, and the basic problem is, okay, yeah, you're disrupted, you're disrupting many equilibria at once. And that is going to manifest in ill health, even if it's hard to predict exactly which thing will cause what phenomenon?

**Heather** 1:32:33

And that's and that last bit is kind of the crux, because the people, the sort of the techno utopians, the corny, Neo cornucopia, Ian's will say, Well, what are you afraid of? Or what's, you know, what's the risk? Can you tell us what it is that we will lose if we do this, and that onus actually isn't on those of us who are saying, we can point to aspects of our environment that we've been in for this long and this long and this long, and this long, and the longer that thing, that part of our environment has been stable, the more likely disruption of that aspect is to to be disruptive in some important way. And that's not you know, sometimes we'll get lucky, sometimes it will be fine. Just Just like I expect GMOs, like many of them will, will be fine, probably. And some of them will not.

**Bret** 1:33:28

So hope, I hope I'm not going to get this wrong. But you can imagine actually, a sort of skepticism is on the wrong side, basically, what we've seen is a an inversion of the correct burden of proof. You know, people will be familiar with the precautionary principle, there will be lots of pushback, if we save the progression, airy principle with, you know, any sort of reverent tone in our voice, because the practicality of the progression or principle in terms of applying it is actually a difficult problem. But you can imagine some primitive version of the same discussion before the discovery of proteins and amino acids. And before the discovery of nitrogen fixation, and somebody saying well,

**Heather** 1:34:09

which was the great Indus techno industrial revelation of the early 20th century that allowed us to suddenly you know, expand by maybe an order of magnitude, how much we could how much food we get out of a. an acre of land. Are you talking about natural

**Bret** 1:34:26

you're talking about the haber Bosch process, which allowed us to fix inorganic nitrogen and bring it in but use energy from fossil fuels to fix inorganic nitrogen which created a huge amount of more

**Heather** 1:34:37

protein than we had access to. So I jumped the gun you were talking about like legumes

**Bret** 1:34:41

I was talking about corns, beans, squash, and my basic point, well,

**Heather** 1:34:44

most only one of those things is going to be right beans are going to fix our

**Bret** 1:34:48

nitrogen. Yeah, exactly. And so my point is you've got two special things about this group of creatures you grow them together and it has an agricultural effect that we only very late come to understand. And it also has an nutritional effect that we only very late come to understand in anything like mechanistic terms. But ancestors figured this stuff out empirically, right? They were growing these things. Why? Because when you grow them together, you grow more of them and you don't starve. Why? Because when you grow them together and eat them together, you end up not having protein deficiencies. So,

**Heather** 1:35:21

voicings tastes good, because they help you not start. That's why

**Bret** 1:35:25

I want those things. Exactly. So you can imagine some primitive karma cornucopia, arguing that actually we could grow a lot more corn beans and squash if you want by, you know, separating them. And you know, because vary the, like, joined harvest is complex and all of that. So what if we just grow them in separate fields, right?

**Heather** 1:35:45

And you suddenly you see your corn, your squash harvest declining after a few after a few harvests? Right,

**Bret** 1:35:50

exactly. And so anyway, I think it is it is worth having in mind that primitive skeptic that doesn't know what they're up ending that we are now in a position to say, Oh, well, here's the reason that that's not going to work. And realize that we are there we are that

**Heather** 1:36:05

we are there. I mean, this is this is this is the hubris of maybe humanity at every moment. And the hubris is always particularly obvious at your current moment, just like why why do we think we've arrived? Like, why do we think we're at that moment, where everything that we think we know, now is accurate. And all of the errors of the past are errors of the past? And that was a different kind of human. But now we're there like, really, you look around and you think now we're here, we've arrived? Like, who were those people, right?

**Bret** 1:36:30

Especially biologically, right? If there's one system where we're still like taking baby steps, it's understanding the biological complexity that we are made of and faced with Yeah, and, yeah, that's a really bad place to make this error and think that, you know, we're in charge, indeed.

**Heather** 1:36:50

So Wow, it's okay. We're, we've been out for a while, let's just, I'd like to do two very quick things. Just bring it back to COVID. A little bit. In light of all that discussion about So effectively, I think I said at some point, we had there were people talking long before the hygiene hypothesis was on the table, the hygiene hypothesis, again, being you sterilize your world, you know, you you grow children in a landscape in which you've cleaned it too much, and you're going to get a rise and things like autoimmune disorders and allergies and things like that. And there is at this point, abundant support for the hygiene hypothesis. And so one might ask, what are the possible effects of all that cleaning and sterilizing that many of us were doing and some places are still doing during COVID? When it was thought that fomites were a, a likely and frequent mode of transmission? Well, there is. This papers, I can show it briefly. I Chen at all published, published in August of this year. Now online, it was published in April this year, called biocide, tolerance and antibiotic resistance in community environments and risk of direct transfers to humans, unintended consequences of community wide surface disinfected during COVID-19 question mark. And so I think that's really all we need to say about that. That paper and the paper is what you would expect, and it seems to be well done. But, you know, basically, of course, just like to widespread release of antibiotics creates antibiotic resistance, just like the widespread rollout of imperfect vaccines potentially creates a selection pressure for new variants that will then become dominant. By over overly cleaning your environment, you will breed superbugs that are resistant potentially to, to the kinds of cleaning that you were doing. Well,

**Bret** 1:38:58

there are two factors. One, I agree that, you know, too much cleaning creates a novelty depopulate environment and that is labeled have bad effects. But there's also a question about what you're clean with. Yes. And one of the reasons that I strongly prefer and have strongly preferred for a very long time, as you know, it's almost been a joke around here, cleaning with alcohol, right? is that it doesn't it's not likely to exert a strong selective effect, what it does is has a very intensive effect, and then it evaporates away now, will that be perfectly safe, I don't know. For one thing, it evaporates into your environment. And so you do a certain amount of breathing of it. And so we also have a strong bias around here for having windows open. So you know, to the extent that you might elevate the amount of this stuff in your environment, it actually dissipates out the windows at a higher rate. So you know, you can start to think about how do I disrupt the environment, least given the cleaning that I want to do, for whatever reason, but there's a very, there's a big difference between Something that intensively selects rather than something that neutralizes a surface and then allows it to be recolonized by the normal bacteria and isn't selecting for something specific.

**Heather** 1:40:10

Exactly. And actually, you know, vinegar, similarly, yeah, even

**Bret** 1:40:14

better.

**Heather** 1:40:15

Yeah, well, I think there, you know, I tend to use ISO propyl alcohol and then really innovative integral work, but why go with your, you know, nice vinegar when you could just get, you know, cleaning vinegar, or use white vinegar or whatever. And they tend to work on different kinds of things. But both of those are going to do a good job on a particular thing, and then kind of disappear into the environment. And it's, it's fine when they do Yep, they don't, they don't continue to side, you know, they don't continue to dash ci D kill lots of things in their presence. Nor do they either remain in a form which is toxic nor decay into toxic elements. Yeah, right. And then just one, one more thing, I have often brought up this, this issue that, you know, I look at the Oregon Health authorities, COVID emails whenever they come out. And I think a couple of weeks ago, I said I have yet to see a you know, I've yet to see. And one of the reports of deaths that someone doesn't have underlying conditions, they always say has underlying it had underlying conditions or the presence of underlying conditions has been confirmed. Now since I said that. I have I did see one. I did see one. So that's that's news, I guess. But I also found this paper. Zach, if you will, this is actually on the CDC site called underlying medical conditions and severe illness among 540,667 adults hospitalized with COVID-19. And the data are between March 2020 and march 2021. And so what it what it finds, if I may have my screen back sack, thank you. What it finds is that 90 and that's, that's a year, that's a year's data of over half a million adults who work who are hospitalized. Right, so this isn't all cases, this is hospitalized adults. 94.9% of hospitalized patients had pre existing conditions 94.9%. And specifically, the big risk, biggest risk, the biggest risk factors for death that they found were obesity, anxiety and fear related disorders, diabetes with complication, and then also the total number of conditions, the more of these risk factors you had, the more likely you were to die. But that's a that's a remarkable list. To me.

**Bret** 1:42:45

Yeah, I find the anxiety disorders particularly interesting. Yeah. How would that be playing in?

**Heather** 1:42:50

And I don't I don't have an answer. Yeah.

**Bret** 1:42:53

I can see a couple possibilities. It could be something about what we do with anxiety disorders, it could be medications that we apply, render you vulnerable, could also be something about a positive feedback, you know, extent that we see numerous circulatory disorders. I would imagine as you get very sick with this, it's going to trigger anxiety. And if you have an anxiety disorder, it might be an extreme form. But yeah, that is that is fascinating. It's remarkable. And as you've pointed out many times, it's weird and obviously medically counterproductive, that there is some stigma to discussing the just simple fact that these other conditions impact how seriously COVID is likely to affect a person. Yeah. Because it's actually something in which there's a lot people can do.

**Heather** 1:43:46

Exactly. And, you know, I haven't heard as much about it lately, but especially last summer, there was a lot of talk about racial disparities and COVID outcomes. Yeah. And there's some, you know, there's some thought about it being related to vitamin D production. Yep. Right. But there's also, you know, almost never mentioned the conflation of race and class. Yeah. That because of Yes, historic systemic racism. Black people, at least in America are more likely to live in underprivileged circumstances in these great these gray spaces, exactly the kinds of spaces that we were talking about before, which are both food deserts and microbiome deserts. And if you're in a microbiome desert, and you therefore have already are at risk for all of these other risk factors. Yeah. Then you are more likely also presumably to get COVID Yeah. So you know, it is there. an explicit racial component there might well be having to do with melanin content, your skin and, and a lesser ability to synthesize vitamin D. But I think far too often, there's a race class, sort of erosion of pattern and that we should be talking talking more about class. And, and, and helping people actually be able to get food and the microbiome that is a better match for for what they might have been eating and being exposed to pre industrially.

**Bret** 1:45:14

Well I think there's also you know, we are entitled to know in what ways we are advantaged and disadvantaged and to the extent that you know one doesn't necessarily realize that the circumstances where one lives or the food that's available there or the length of the supply chain to to source food in the first place has impacts on human health we have a right to start tracking this right yes, if you want to equalize something

**Heather** 1:45:43

Yes

**Bret** 1:45:43

No. meaningful this would be a good place to start. Absolutely.

**Heather** 1:45:50

Absolutely. Well, it seems to me that we should have a nice food thumbnail for today but that's that's the image that I that I tweeted out and we could at least show it because some people wanted to I wanted to know what this was so Zach, I don't know if this will be our thumbnail but this is this is the Taunton river which flows into the Willamette both rivers that I've been paddleboarding on of late and you don't walk on water you stand on the water I stand on water itself across it yeah yeah yeah I use an or either yeah yeah but this this this is the Pacific Northwest in the summer right here and well i mean i guess you know we never we never went personal on food in this conversation but my like brisket goodness Yeah you did you did you did you did do that but summertime in the Pacific Northwest will our river valley the the fruit that is being produced in this part of the world right now is just extraordinary and and the greens and the you know and and everything else that's coming out of the ground but really it's berries now in stone fruit and you know, eat it eat it while you can't eat it while it's local?

**Bret** 1:47:05

Yeah, now that we're on the subject yesterday you took us to a place on the river that you've had been frequenting and Toby and I swam across not expecting to find a bonanza on the other side but there was a there was a massive blackberry bush that was just not being accessed by people are for some reason birds and we had ourselves a little blackberry feast

**Heather** 1:47:28

so and we also found some all of us on the way there and yeah, there's just nothing like a sunkist blackberry in the mid afternoon and our son eating it fresh off the vine there's nothing like it I actually paddled past that place this morning I was out it was a different Yeah, it was early and it was gray out yet. And there were actually two turkey vultures there hanging out I don't know if they're defending the space or or what but they were they were sitting right there.

**Bret** 1:47:54

Yeah, when Toby and I was quite a swim across and as we approached there was a turkey vault drew popped out of nowhere, standing on a rock looking they're not the handsomest birds I have trouble trouble relating to them or maybe I should relate to them well,

**Bret** 1:48:07

but it's not the handsome this bird. But anyway, so you'll be interested All right, I liked your proposed thumbnail might be better than mine. But

**Bret** 1:48:15

without us having discussed it. Zack, do you want to show the thing that I sent as possible thumbnail Oh, it's paddleboard is on the Willamette.

**Heather** 1:48:24

So that's not anyone we know. But you took that at some point. You took that from a bike you must must have Yeah, there

**Bret** 1:48:29

I took that took that fight drown? No, no. That was bikepath overdose bottom.

**Heather** 1:48:36

That's great. Yeah. So that you know again, well, we'll end with the usual way that we sign off but is it time to do our sort of announcements and

**Bret** 1:48:46

yeah, I think I think we have arrived there. All right.

**Heather** 1:48:49

So we are going to take a 15 minute break and then be back with our live q&a. We will be back with episode in live stream at nine in which in part we will be talking about chapter six which is on sleep next Saturday. But in the meantime, you can ask questions at the by forgot to put it there at Dark Horse submissions.com and their instructions, facts they're considered joining my Patreon. The monthly private q&a is this Sunday, consider joining Brett's Patreon. Your monthly conversations will be not this weekend, but the following weekend. at both of our patrons you get access to our Discord server. You can ask logistical questions but not questions for a q&a of our moderator a dark horse that moderator@gmail.com you can get dark horse shirts and Goliath shirts and such at store dot Darkhorse podcast.org

**Bret** 1:49:51

and wear them were where you will encounter someone who deserves to be annoyed by them.

**Heather** 1:49:56

Absolutely. I don't know where that would be exactly. But outside Google had that Yeah if you happen to live you know, San Jose or environments in California and consider subscribing to all four of our channels at this point we've got two on YouTube two on Odyssey Brett Weinstein's main channel on both and then Dark Horse podcast clips on on both and like the video, share the video. And remember to be good to the ones you love and eat good food and get outside. You Well, everybody