Michael:

I've known about Perry's work first through his reputation and his books, then through my friends, and now I'm happy to say officially through video as well.

I love Perry's background in different fields as a polymath, and many of the people in our groups are wired this way. They're naturally curious, learning different areas, but a lot of people who are polymaths have trouble applying it and actually getting results. In every area that Perry has been in, he's been at the world class level. Starting in electrical engineering and going to start off a career in sound engineering, Perry went on to write several different books: his Ultimate Guide to Google AdWords has gone through five editions, 80/20 Sales and Marketing is by far the best book on 80/20 applied to sales and marketing. If you're looking to apply this to your business life as an entrepreneur, this is the number one book you want on that topic. And then he wrote a really fascinating book that if you looked at Perry's past, you wouldn't have predicted he would write this book next, Evolution 2.0. From that, he not only wrote a book and really, really went deep on the research, but he rose a $10 million prize for people who could figure it out. Perry, do you want to explain what it's all about?

Perry:

Where did the genetic code come from? That's a specific question, but there's actually a more general question, which is: "Where does information come from and where does intelligence come from?" Nobody knows. I think this is the most fundamental unanswered question in science that can be precisely defined. This idea, it ought to be solvable. So, we assigned a $10 million prize to it. I announced it at the Royal Society in Great Britain, with amazing scientists in the field. I just can't keep my grubby hands to myself. I'm always sticking my nose in places where maybe everybody doesn't necessarily want me, but it sure is interesting.

Stacking One Counterintuitive Thing Upon Another

Michael:

Maybe you could go a little bit into the story of that from a learning perspective, because you're at this point where you have an electrical engineering background, sound engineering, internet marketing and online courses and then to go into that new venture. I go into the field of academia, I've interviewed a lot of researchers and wrote in short articles. But you're really going deep into the science and it's still a really, really well read as an explainer for people so they can understand it. And not only that, you find holes and mistakes that the researchers are doing. And this is a big field. There's a lot of orthodoxy around it. I read Wilson's books on

sociobiology and I read about how people went after him, it's like going into shark infested waters. How did you think about doing that with learning?

Perry:

Well, this was a question I had to answer.

This started in 2004. I went to visit my brother and he had been, for four years at that point, a missionary in China teaching English. We are pastor's kids and both very devout Christians. I knew Brian had a lot of questions and the emails were going back and forth, and he was really not sure about a lot of things. I went to see him and I figured out he's bailed. He's not a Christian anymore. He doesn't believe any of this anymore. That was extremely unsettling, like a fracture in your family. We got into this argument and I retreated to science, which is what I know because I'm an engineer and I said, "Brian, look at the hand at the end of your arm, this is a nice piece of engineering, and I'm an engineer, you don't think it's an accumulation of random actions, do you?" He got his shields up, didn't want to hear about that 'nonsense' (I think almost everybody has had this argument some time somewhere). So, maybe five minutes into this discussion I realized (as I just moved 10 chess moves ahead of him) that I don't know. I have an idea, as an engineer and as a Christian, but I know a whole bunch of biologists would agree with him and not me, and I know they're not stupid.

I was racing through my mental files of engineering. There's some stuff in engineering that is way crazy counterintuitive, stuff you'd never believe if you didn't go deep enough into it to see how it all fits together. For example, in electrical engineering they use imaginary numbers and if you aren't into it, you have no idea what the hell would you ever use imaginary numbers for. So I just remember thinking, maybe biology has imaginary numbers.

Michael:

It's interesting you say that. I feel like that's a realization that one has once someone learns across different fields: the deeper you go into almost any field, you're stacking counterintuitive thing upon counterintuitive thing.

Perry:

You're right. The more you go across different fields, the more you see patterns across all of them, and that was one of those patterns.

Before I learned imaginary numbers. I could not figure it out. I'm an acoustical engineer, I build speakers. You can't figure out speakers without imaginary numbers, literally. And then when I did figure them out, it was like this whole universe opened up. So I thought, maybe these guys

know something I don't know. And this might be the most important thing I'll say all day: I was terrified. Why? Because I've built my whole world around a religious world view and it works, we take our kids to church, we read Bible stories, we know what to do, and everybody.

Michael:

You're walking a tightrope. On the one hand, you're going into it with a pre-existing belief that you're afraid of letting go and on the other hand, you're going all in and you're willing to really challenge a fundamental belief or be exposed to information, which is not something that almost anybody would be willing to do, to look into their deepest beliefs and then challenge it.

Perry:

Right. So I said OK, I am going to almost pry my white knuckles off the steering wheel, I am going to take a step back, I'm going to start assembling the facts, and I am going to follow the evidence wherever it leads.

Making Sense Of The New Field By Uncovering The "Bottom Of The Swamp" Fact

Here's what I knew. I knew what it feels like when you finally arrive at an incontrovertible bottom line, bottom of the swamp, foundational fact, that you can ground a bunch of other stuff in. I had an experience in engineering school of writing an acoustics paper, when I started it I was floating in a swamp, I had no idea where to go, left, right. I build stuff and measure it in the lab. It made no sense. I thought, "I don't know how this works and I finally won't go into it." But I finally figured it out, I wrote the paper and it all made sense. So now I understood it, that is the feeling that I am looking for. I know what that feels like, so here we go. Dive into it.

Michael:

From a learning perspective, I can really relate to that. I think about knowledge as a tree structure. Oftentimes when we learn something, we learn it just at the leaves level. When I'm writing articles, they often will take me 60 or 70 hours and some even over into the hundreds. Because to really write the article, even though it's on a surface part, I have to really go deep. But then once I go deep, I really know it. I can write that article, but then I can write 100 other articles. That's being willing to go deep and that can take a lot of time. You don't know how deep that hole is. Once you go there, that's an asset for your life.

Perry:

Yes. I leap Into the void. I'm buying all these books, I literally get home from China and I'm on Amazon and I'm buying books on the left and books on the right and books in the middle. And then, pretty soon I figure out the popular books have so much rhetoric and bad blood, you can't even read them, so pretty soon I was reading scientific papers. Now I have to learn how to read biology papers, a whole new language, I'll look up the terms...

Evolution Is A Digital Communication In Digital Code

I know what I'm looking for and I'm not finding it. One day I had this epiphany, my head exploded, and here's what it was. I had written a book in 2002 called *Industrial Ethernet*, about how the 1s and 0s go back and forth on an ethernet cable. I was trying to understand genetics and DNA and the genetic code and everything, and all of sudden, bam, I've seen this before. I know what this is, this is 1s and 0s. This is digital communication. Oh, my goodness!

I know digital communication. I've studied digital signal processing and I've spent six years in the industrial networking business selling networks that go into factories, I've been hooking up a laptop computer to a controller area network and watching the 1s and 0s go back and forth on the wire and debugging... I know all this stuff.

Michael:

It's like you travel to another country and you feel like you're in the middle of nowhere, and then all of a sudden you see some friends, or a store that you recognize as a McDonald's.

Perry:

Yes, that's what it was like. I knew how to do this. Evolution is a digital communication in digital code.

Michael:

I've always wanted to go deep into physics and biology. I took them in high school, but in my mind it's gonna be a long, deep dove so I haven't justified it to myself yet. But I feel like part of me always feels like I'm making a mistake. At that time you had a growing internet marketing business, you were raising children. How did you justify spending thousands of hours on this?

Neither Side Is Telling You The Full Story

Perry:

Well, first I had to get myself sorted out. What I found was, neither side was telling you more than maybe a third of the story. In fact, by the time I'd been in this for about two years, I had concluded this was the biggest untold story in science, which is a big statement. I still believe it to be true.

Here's what was going on, and it's still going on now. I grew up ultra conservative in Lincoln, Nebraska, Protestant Calvinist Bible teaching church, the Earth is 6000 years old, all the geology of the earth is Noah's flood and all of that. This is what I grew up on, and that's an extreme. Evolution's a hoax, it's not true, you can get micro evolution but there's no macro evolution... There's all this story on that side, let's make it right.

On the left side you had, "All you need is random mutations and natural selections. Once life got started, it was all inevitable."

They're both wrong. They are both an egregious misrepresentation of the truth.

OK. Addressing the people on the right: Botanists produce new species in the lab every single day. It happens all the time. I got a friend who produced a symbiotic merger between X bacteria and amoeba Proteus in 18 months, which is like a Starbucks merging with a Marriott Hotel lobby in real time. It's incredibly, incredibly sophisticated. And that stuff happens all the time. In cancer, it's evolution in real time. Viruses evolve. Evolution is not a hoax.

Michael:

You talked about going deep into this area. A lot of people want to be better polymaths. Because it's very easy to be a polymath and then spinning your wheels and not getting the results or getting to those deeper insights. Do you have advice for anyone who wants to do it, or anything that you've learned from your journey. Looking back onto it now, how can an amateur go into a field, look at the scientific research, come up with unique insights?

Perry:

Well, my perspective on that question is, engineering is the standard, and I think you can apply that broadly. When I say engineering, here's what I really mean. The shit's gotta work. Does it work? OK. I believe in being philosophically and morally congruent and all of that, but does it work? The gold standard of understanding biology and evolution is engineering.

Let's now talk about the people on the left. Traditional standard evolutionary biologists like Richard Dawkins, Jerry Coyne, Daniel Dennett and people like that who've written all the popular books about evolution that you find at Barnes and Noble, those guys hate engineers. In their version of evolution, it's a travesty. It does not work the way they say it does.

Put Your Ideas In A Big Anvil And Let Others Pound On Them With A Sledgehammer

Michael:

I'm pulling out general principles of being a polymath. One of the things I feel like you really see is that we think about knowledge as valueless in a way, but really there's a lot of tension between science and professional and government. Each sphere has a value system, and even within it there are subfields and competition between them. I think this is one of the things that makes being a polymath hard, you have to be able to integrate internally within yourself these conflicting things without going crazy, cause it's going to be overwhelming, and without being an outsider where you're completely looked at as an antibody into a system. How did you, on a practical level, manage those tensions within yourself?

Perry:

Here's how I did that. My brother Brian quit his missionary thing and he moved back to the United States two months later and he went to work for me at my company, which was great. He did not want to argue about this anymore, but I did. I talked to him for hundreds of hours and I wanted to talk about it more. He was worn out on the subject. Also, he didn't want to deconvert anybody. He wasn't some virulent atheist who wants to argue with everybody. He felt like he was done with this for now and hel just wanted to set it aside and live his life. He didn't want to want to argue with me, but I was all primed for a fight. I like it when iron sharpens iron. Most of your friends don't want to argue. I like a good argument, if it's calm and respectful.

Michael:

I noticed that on podcasts, with some co hosts the energy is all about finding where they have common ground, and in another podcast, a really good one, the host says, OK, let's look for the areas where we disagree and then sharpen our thinking.

Perry:

I said, OK, I could find all the sparring partners I could ever possibly want on the internet. I'm an expert on Google advertising, Google ads are really cheap right now, I'm going to do a little

tax write off. I'm going to buy a bunch of Google ads and build this little website to drive people into a signup page. They're going to get an auto responder, and I'm going to get every email that comes back when they reply if they're pissed off or they think it's great, whatever I'm going to see. All the replies. I'm literally going to take all my ideas and put them in a big giant anvil, and I'm gonna let anybody in the world who wants to pound on these ideas, pound on it with a sledgehammer. If something breaks, then I'm going to walk away from it, let me see what's left.

I got 175,000 people on that email list. I've probably spent a half million bucks on this project and at least half of it was on that traffic at that time. It was a lot of money. I wanted to know. I had a good reason to do it because I was writing books on Google ads and this was a weirder market than any other markets that I was in. It's like another petri dish. And it actually benefited me professionally to do this weird low cost per click nonprofit project where most of my clients are these for profit businesses

What happened was I would very consciously start advancing my ideas and then I would see, can anybody put a hole in this? About a year later, I got dragged into the largest atheist discussion board in the world. This guy and I were emailing back and forth. I was basically backing him into a corner. I was saying DNA is digital code just like ethernet. With all of the other codes, we actually know where they come from, somebody designed them, we don't know any way to get a code without designing one. So it looks like DNA is designed. And this guy was pissed off and I told him, show me a code that's not design, all you need is one. At some point he posted the link into the forum discussion board knee, and told everyone to be nice with this Perry Marshall guy while ripping him to shreds. My anvil is going to get pounded on now.

I started defending myself, there was literally one of me and 50 of them and they're coming out at me with sledgehammers and machine guns and everything. To make a long story short, seven years later, it was the longest running, most viewed thread in the entire history of the entire forum with well over a thousand comments, and they hadn't gotten anywhere. I would just keep saying, show me a code that's not design. All you need is one.

There was only one problem. The argument would go round and round in circles because we're arguing about digital communication theory with people that don't want to learn about it. So,I had an epiphany one day: Perry, you have to show them how to prove you wrong. Tell them what they got to do.

So I wrote a spec. Pulled most of it right out of an engineering textbook. I said, "If you pour chemicals in your bathtub and you get digital communication to happen, then here's how you prove that you did it, here's the table that you would fill out and all the stuff you need." I put it

up there and I said to somebody: “Figure this out and I'll write you a check for $10,000.” And you know what happened?

Michael:

I’m processing it on multiple levels and pulling back to the audience. One thing I saw in an Elon Musk interview where he talked about his biggest advice for entrepreneurs, the first thing he said was that you should seek negative feedback. When I first heard that, I didn't feel like that's the number one feedback, but over time I've really processed how important that is because there's a certain level of humility to realizing that we all have models of the world that are imperfect and it's unconscionable for people to give that feedback. Creating the conditions where you can get that feedback to improve your ideas is a high level learning concept. I feel like you're taking it to the extreme here and that you're not only saying prove me wrong on a very controversial topic that hits really deep for people, but you're saying here's how to do it, and if you do it I'll pay you money. It's fascinating. I mean, I haven't.

Perry:

Well, the response to that was silence. So I start working on this book, Evolution 2.0, and here’s why. You had that whole list of transposition and horizontal gene transfer, and basically what we're saying is that cells are phenomenally intelligent in sort of a Asberger's-ish, autistic sort of way. I mean, it's not the same kind of intelligence we normally think of, but in some sense it's way smarter than anything humans know how to do. There is no programmer in Silicon Valley who's good at writing code as bacteria. And nobody's talking about this. Nobody is explaining this, and this is the key to understanding cancer, viruses and everything.

Michael:

I'm thinking about it from a mental model perspective. The models of evolution are some of the most valuable to apply, I constantly think about it and apply it. It's a model that applies no matter who you are.

Perry:

Yes! So I started writing this book and my friend told me, “Perry, when this book comes out, you need to make this a $10,000,000 prize instead of a $10,000 prize.” There's another shift and this is really important. When it was a $10,000 prize, this was Perry wanting to bonk the atheist on the head. I'm here to win an argument. I'm sick of you guys insulting me and calling me an idiot. If you type in “Perry Marshall idiot” on Google, you can find a thousand atheist websites telling me how stupid I am. And also, my point of view started to shift. At the

beginning I thought there's no way anybody could ever possibly solve this and life is a divine miracle. Well, life might be a divine miracle, or not. To be honest with you, it looks like one, and I'm fine with that. But here's the thing, what I realized. There is not a scientist on Earth that can say: “Life is a divine miracle, this is my abstract, submit the paper, publish the paper, let's go out to lunch.”

Science And Religion Are Orthogonal To Each Other

Michael:

So you could consider ideas that people in science couldn't. That would be taboo for even scientists to consider.

Perry:

Yeah, it's like this. A scientist has a job to do, and the job is no different than Isaac Newton’s. If Isaac Newton had said, “Well, why did the apple fall out of the tree? God made it fall out of the tree.” — well, Isaac Newton would have never agreed with that. What Isaac Newton would have said is: “God made gravity and gravity made the apple fall out of the tree, but my job is to understand gravity, because if I understand gravity, I understand God. And if there's something, another layer of the onion behind gravity, then my job is to peel the onion, and maybe the onion is a million layers deep.” Science is an act of worship. You don't leap to God and call it science. God is just a justification for believing that the world is divinely ordered and science is finding the divine order. That's how I view it. There's this literally 200 year tradition of pitting science against religion. It's just completely the wrong way to think about it.

Science is What, religion is Why. What and Why are orthogonal to each other. What never tells you Why, and Why seldom tells you What.

Michael:

I'm pulling it back to the learning angle here. I'm sure at this point it's hard to get credibility in the world of science. How did you get credibility and build relationships? And is it harder than one would think to do that?

Perry:

I have consulted in 300 industries. Everything you can imagine from bowling alleys to stem cells, to software companies. Science is the most resistant to outsiders, the most political, the most ‘who you know, not what you know’ of any professions I've ever seen.

Michael:

Yeah, there is a distinction between the scientific method and the practice of science, they are not the same thing.

Perry:

Right now there are perfectly understandable reasons why it is that way. One of them is, most specialties of science are so deep, there's only 20 people that even understand what we're talking about. And in the public sphere, all most of us can do is trust the 20 people. From that perspective, science is purely social entity. It is not a method. It is a group of people that tell us what we want. We cannot figure out 99% of this for ourselves, we never could. Scientists have to trust each other that they're telling the truth because the chemist doesn't know whether the particle physicist is telling the truth. He has to take their word for it. So this is probably the biggest reason science is like that. It is very tribal, very political. It is very driven by factions, and as for the outsiders, the road I'm on is paved with dead bodies. There are so many people who have been so dissatisfied with the origins discussion and evolution discussion. If you want to go on Amazon and look for books criticizing neo Darwinism, you will find a thousand in there, not just by crazy conservative Christians there, but by every person you can imagine.

Michael:

Just thinking about Einstein or even Darwin, they were kind of outside, and probably a lot of other famous scientists haven't gone deep in this. But people don't realize they're actually outsiders to the science field. But then, post invention, they're claimed as successes of the scientific establishment.

Perry:

I'm not trying to be conspiratorial. It's not a conspiracy, it's just that the system of academic publishing and funding is such that most of the money comes from the government, and that's the number one problem right there.

Finding The Gems Through The Noise

Michael:

A lot of people struggle with information overwhelm, and one way I'm thinking about it is, it's not just in science. In every field it’s not going to be ideal. Think about journalism. I feel like the ideal of journalism is extremely noble, but it operates within a context. In a business context it

can be very political, focused on clickbait. The government as well. Theoretically, the government is very noble, but then it can also fall into politics.

So as a learner, you have to learn how to be aware of those political systems and see through the biases of that system. How do you think about that part of it, about understanding how all those incentives and systems work so you can get to the high quality information? Has it taken you a long time to even get there, to the right information?

Perry:

It took two years to find Barbara McClintock, and she should be in the first chapter of every biology book. She is so underrated, and what she really understood is still not understood. She had a fundamentally different view of biology than everybody.

So how do you do this? You develop a sense for when you've gotten to the bottom of the swamp, when you've really gotten to the bottom of a question, and I mentioned how I'd gotten to the bottom of this one problem and I know what it felt like. DNA is a code, that's a "bottom of the swamp statement". There's all these rules of information theory and codes, and it all applies to biology, so that becomes a constraint. Everything has to operate within this constraint.

Michael:

How did you know that was a fundamental thing when you heard it?

Perry:

That's a trillion dollar question. Because, so far as I know, it's inviolable. It's like it's like a law of physics. There's this concept called information entropy, which says: when you add noise to a signal, you destroy the signal irreversibly. It's as irreversible as toast getting cold in your toaster, which is thermodynamic entropy, and the math for thermal entropy is the same as in the math for information entropy. Therefore, random copying errors will never produce evolution. Not without intelligence picking what's preferable from what's not.

I immediately knew that this is a fundamental constraint such that everything you learn can run through this filter and it will be correct because this is bedrock.

Most people don't know that. They don't even know about these rules of physics, so they say things that make no sense. And they don't know they make no sense and they get baked into dogma. When you have baseline filters like this, you can go through an entire library and understand what book is garbage. *Selfish Gene* is garbage, *Why Evolution Is True* is garbage,

all these books are garbage. What's the truth? When I discovered Barbara McClintock, I had figured out that half of Richard Dawkins life work is garbage, and I am not exaggerating. I was tempted to be a creationist or intelligent design guy and not believe in evolution, and all of my cultural biases were saying, yeah, just go in that camp and then you'll be done. But something was nagging me, no, no, you've read too many books, you've seen too much evidence for evolution. It's not a hoax, you just don't know how it works. And then I find out Barbara McLintock figured out that a cell edits its own DNA in real time.

Michael:

It's really hard for a polymath with a lot of fields. A huge amount of time is wasted upfront, just trying to cut through all the noise. But then you find someone like Barbara McLintock. For me, last year in the AI field it was *Why Greatness Cannot Be Planned*. Sometimes you develop these intuitions as you're diving deep into the research, and then sometimes you find someone that suddenly ties all of them together and then it just speeds up your learning. I can relate to that feeling of finding someone like that.

Let's talk about some slides from your book, as it's hard, if you're just hearing about it real time, to be able to respond.

Perry:

Yeah. There's one where a germ is saying to another germ: "Hey kid, want to be a super bug? Stick some of this into your genome, even penicillin won't be able to harm you." And he's holding a strand of DNA. Germs trade DNA with each other very promiscuously and they do it all the time, so if you're taking antibiotics, you better kill that sucker fast because it's looking for code, he's looking to pump the poison out and to take that code that pumps the poison out and share it with all his bacteria friends. That's called horizontal gene transfer.

Applying The Understanding Of Evolution On A Practical Level

Michael:

You had a crazy quote here. You wenti into this talk by Dr. James Shapiro and he said: "When bacteria are comfortable, some mutations can be found in over ten billion cells. But when they're starving, the mutation frequency can go by a factor of >100,000-fold and they develop new adaptations so they can survive."

It made me think about life in general. We're going through the coronavirus, that's a stressor. I go to the sauna, another stressor. There's exercise, post-traumatic growth. Intellectually, we're almost wired that when we feel this, there's like a switch inside of us where suddenly we just

start trying everything. I have a friend who's in the small business field who has multiple small main street businesses, and he just texted me last night that the innovation that they've had to do in the past two weeks alone, they couldn't have imagined doing that in years before that.

Perry:

Well, life is fractal. One of my grids is fractals, one of my immediate go to thinking patterns is, "Where's the fractal pattern in this?" Pattern inside a pattern inside a pattern? What's the repeating pattern? So certainly to me, an archetype is a fractal person. In biology, there are cells within cells within cells, and there are ecosystems within ecosystems within ecosystems. I think the big thing that modern biology has resisted is the notion of agency and self. Every cell in existence is a being. It is a self. It has a will, a will to survive. It has the ability to change itself.

Michael:

I pulled some quotes that get across the different ideas you mentioned:

"Bacteria borrow segments of DNA from other organisms, the same way musicians borrow riffs and melodies from other artists. Just like software engineers borrow blocks of code from other coders. Almost unbelievable!"

When we think about reproduction and variation, we think about it mainly just at the two people level, but when you think about fractals at the cell level, it's crazy that you can share these bits across species, which is what we're having with coronavirus.

"Organisms are equipped to share information with each other the same way your favorite coffee shop is fitted with a wireless network and your laptop computer sports a Wi-Fi transceiver. They all speak the same language so they can share information. Horizontal transfer is known to occur from bacteria to bacteria, bacteria to plant, plant to plant, animal cell to virus, mammal to mammal and bacteria to invertebrate."

How would you recommend someone take something like this, which might seem interesting but not applicable? And how would you apply that deeper understanding of evolution on a practical level to get a better result in your life?

Perry:

I use this in business all the time. Right now we're in the middle of coronavirus. My phone is ringing off the hook. I've got clients whose business is on fire. I got three clients who laid off a

quarter to half of their staff this week. There's bedlam everywhere. This is where evolutionary concepts come right to the fore.

The traditional Darwinian evolution story that you're always told, first of all, it's about half wrong, but it's a gradual, incremental, little by little by little story. Gradual, incremental, little by little will never, ever get you the diversity that you see on planet Earth. You get diversity when you take two unlike things and you put them together. You have a eukaryotic cell and a blue green algae comes in and lives inside, and now you have a chloroplasts, and a eukaryotic cell with a chloroplasts is a totally different animal than what you had before, or either one of them by themselves. Everybody, all my clients, they're all massively pivoting. And here's what's going to happen. People are going to find unusual partnerships and unusual alliances. In 19 out of 20 times they won't work out, in one or two times out of 20 they will, and they'll be extraordinary. Coronavirus comes along and all these businesses are in lockdown, you're going to see the entire industry is born out of this.

In an evolutionary scenario you get new species from hybrids. Hybrid would be tiger and lion mating together. Do you get a liger? No. Do lions want to mate with tigers? No. They're not sexy. When do lions mate with tigers? That happens when there's a volcano, an earthquake, a flood, a drought, everybody is dead and there is no mate for miles and miles. Then, all of a sudden, that tiger looks pretty nice.

I know for sure that that exact scenario has happened a million times, in a million catastrophes, because the only way you get a new species, something radically new, is merging two things together. Then, after the merger, there's this thing called hybrid dysgenesis. The organism has to clean up the chaos that's going on in its genome because these two weird animals mated together and all the cells don't know what to do with all this DNA. They got all these extra coding sequences so what do they do with this? So, it starts cleaning up the mess, and a few generations later you've got a new species.

Business and biology are identical. They work on the same identical set of principles. Money is how humans feed each other. Money is the human equivalent of identifying adenosine triphosphate, which is the energy thing in cells, the energy molecule. Business is biology, all the things that happen in business happen in biology and all the things that happen in biology happen in business. One is reframing of the other.

Michael:

You're doing a subfield of biomimicry, that sure is one of the most amazing engineering feats ever by orders of magnitude. How do we learn from it?

Perry:

This is foremost in my mind when I'm doing business consulting. Basic evolutionary biology and The 80/20, and that covers about ⅔ of the questions that I ever get. In between that, a few marketing books and I got it covered.

Michael:

Once you understand that fundamental thing is equivalent to reading hundreds of books, so every time you read a book, you can really understand it quickly. There's gonna be a lot of repetition in the books because they're just leaves of a branch or trunk you already know. It sounds like you're doing a key thing that a lot of people don't do. You go to the trunk level and a deeper level, but then you're also able to apply it at a specific level. A lot of people don't do either of those, and very few people I know are good at doing both, getting that result and understanding something at a fundamental level.

Final question. In your book you talk about the immune system and viruses. You have a lot of scheme already that help you have a unique perspective on the coronavirus and what's happening. What perspective do you have on it that's not being talked about in the mainstream media or among epidemiologists?

Perry:

We don't know that much about how viruses evolve. There is a popular story that they just have these random copying errors and there's so many of them. Well, yeah, there's copying errors and that does have an effect. But viruses are subject to the same Swiss Army knife that I talk about in the evolution book. Viruses actually hijack the evolutionary capabilities of their host organisms and that causes the viruses to change and you get recombination. Viruses are related to transposons, which is what Barbara McClintock was studying. And there are these new protein sequences called orphans. And you know what? As far as I know, nobody knows where they come from. There's this giant gaping void in understanding even how the viruses evolve.

Most people will be content with the old traditional Darwinian copiers explanation. It's not correct. We don't know. There's this big giant question mark that we got to figure out.

Michael:

So when people say we're going to have a vaccine in 18 months, or this is not going to evolve, and when you're weighing the different probabilities of things, is there a surprising weight

that you'd have? Does it make you more pessimistic, less pessimistic? What do you think about re-infection, or mutation, or vaccine?

Perry:

I figure they'll figure something out. I don't think you have to understand how viruses evolve in order to make a vaccine for one that you know. But if you don't know how viruses evolve, then you don't know how to preempt the next one. That's probably as much as I can say.