Mike:	**00:01:03**	Happy anniversary.
Rodrigo:	**00:01:05**	Happy anniversary everybody.
Mike:	**00:01:06**	Happy Anniversary.
Rodrigo:	**00:01:08**	How is everybody doing? Oh my God, we got 100,000 live listeners.
Mike:	**00:01:13**	Live viewers right at the moment.
Rodrigo:	**00:01:15**	Oh my God, look at that.
Mike:	**00:01:16**	Make sure you smash up that like button.
Richard:	**00:01:18**	It's a little lower than we expected but it's pretty good.
Mike:	**00:01:21**	Well, there's the four of us watching ourselves. So we have those four people.
Richard:	**00:01:25**	Probably the four.
Rodrigo:	**00:01:26**	I'm going to open up the champagne.
Mike:	**00:01:29**	There you go.
Rodrigo:	**00:01:30**	I was going to say join me.
Mike:	**00:01:31**	I've already opened mine, and poured it.
Richard:	**00:01:34**	Cheers, guys. Happy one year, went by pretty fast.
Rodrigo:	**00:01:40**	What a great idea we all had to just start Riffing remotely due to COVID? Amazingly how that has happened.
Mike:	**00:01:48**	It was fantastic.
Richard:	**00:01:48**	Yeah. And it was interesting as I went down this grand memory lane. You can't really say it's memory lane because it's one year. So it's short term memory lane. Looking at the episodes I saw the pandemic portfolio podcast episode that we did, which was technically not a Riffs. But was exactly this setting the four of us sort of discussing the different macro narratives that were emerging through the heightened uncertainty that we went through as the pandemic broke out in March. And I think that episode went live in April, if I'm not mistaken, maybe it was May. I saw that as sort of the jumping off point to what later became Riffs.

Adam:	**00:02:34**	What Richard is alluding to here is the fact that he took on the task of trying to put the Venn diagram together for all the different episodes that we've done over the last year and has done a really good job of connecting the dots. So we're going to try and cover some of the major themes and put them all together but a big thank you to Richard for his efforts this week and to whatever extent this is a success or not, it's a success due to his efforts. It's a failure due to...
Richard:	**00:03:08**	Some of us are going to be pushing in one direction, others have explicitly told us they're going to be pushing in the other direction as per usual. So that's what makes Riffs unique.
Adam:	**00:03:18**	A perfect balance between order and chaos.
Rodrigo:	**00:03:20**	Alright, before we get down to it all let's do a big Cheers. Thank you gentlemen, always appreciate you, appreciate our honest conversations. Life would be incredibly boring without your company.
Adam:	**00:03:31**	And cheers to all of you who are listening and we hope that you are able to grab a drink and join us today. This is going to be even less formal than our usual conversations, trader chats. So we welcome you guys chiming in as you have all throughout the year and we've noticed that the engagement has continued to sort of creep higher episode to episode and week to week and for that we really thank you for your suggestions and questions to keep the conversation going. They are very much appreciated.
Richard:	**00:04:02**	Yeah, great words.
Mike:	**00:04:04**	Yeah, I'm going to tell people how I really feel today since we don't have any people on.
Adam:	**00:04:11**	You're supposed to hold back like you usually do.
Mike:	**00:04:13**	I do hold back on this. I've been criticized for that numerous times.
Richard:	**00:04:17**	Should we hit them with the disclaimers or?
Mike:	**00:04:23**	Sure. So yeah, a few things, if you're liking what you hear, obviously write a review, share, smash that like button, all that good stuff, comment, and we would like to make this episode particularly interactive. So if you've got thoughts as we discuss very controversial opinions on certain things in the asset management business and trend following and systematic versus discretionary and global macro, please chime in so we can continue and further into the

discussion of any questions you have. None of this is at all advice, this is going to be purely entertainment.

Adam: **00:05:03** Absolutely. Richard, maybe it makes sense for you to just paint up with some broad strokes some general observations of major themes and learnings and guests and stuff that we've experienced over the last 12 months.

Richard: **00:05:20** Yeah, for sure. I went down the episode list, roughly about 50 episodes, just shy of 50. And I tried to break it down into some of the more common themes that we had. And it was very evident from the junk that almost half of them had something to do with macro. And the reason for that is many fold, and one of the obvious ones is that macro is sort of this elemental soup where everything sort of happens. It's the backdrop and when you're talking about portfolio construction and sort of asset allocation it's always a tradeoff, you're holding equities in lieu of bonds or commodities and then you go down the strategy. So it's just this all-encompassing theme. It's also to do with the fact that we are global macro junkies if you will, even though we do things from a systematic lens but we're all very much interested in the theme and have been for many years. And it ends up being the case that we invite a lot of global macro folks. So having people like last episode was Juliette Declercq which was an awesome conversation and we can get into a little bit of that, but we've had guys like Mike Green and Bill Fleckenstein, Julian Brigdon, for instance going down the list.

Mike: **00:06:46** I think, Richard, when we talk about global macro, I think that stems from the fact that we are global macro investors. But there's a reason for that. There's a reason why we start with the opportunity to include every asset class possible on the planet, and then think about how those asset classes can uniquely contribute to a portfolio. And then step one in that context is to think about what the non-bet portfolio is, that if I could admit to myself that I didn't know anything about the future, which is tremendously difficult to do.

The reason I phrased the question like that, is because I want someone to postulate if you could admit to yourself when it comes to your portfolio, that you don't have any predictions, or you don't know the future. How would you think about positioning your portfolio? And obviously for us that comes down to many risk parity concepts and rebalancing and the rebalancing bonus that comes from having that macro consistent portfolio, and the way to look at the world where I don't know what's going to happen. So rates could go from 1% to negative 1%. That's possible. It's happened in other jurisdictions. And so when you start there, it makes sense that we would have some global macro people on people love prognostications. It's interesting to think about the consequences of those prognostications in a portfolio. So I'm not surprised that that we like that. I'm not surprised that some of the viewership likes that. But that stems from that initial concept of being global, and then harnessing some of the things about, just being humble about how we might think about the future, and then next thinking about that. Go ahead Rod.

Rodrigo: **00:08:33** Well, that's kind of how the journey started. A few episodes in, we're in the middle of this market crash and one of my favorite episodes was the do no harm, no what was it? What did we call it? The pandemic portfolio, where each one of us took a side as to what we think is going to happen, what the narrative is and if that narrative is true, then what would happen to the markets? And I think Mike went with bullish, one of you guys went with him bearish, whatever narrative, have you heard that episode? Because if you haven't, it's hilarious. We get the narrative completely wrong. Like none of us said that, the only bullish case was somebody discovers that the virus is benign tomorrow and then the market goes up. We just got the narrative completely wrong and the markets moved just V-recovery up. But it didn't matter from the perspective of we have no clue, we were clearly wrong in our narrative, the markets moved a certain way and risk parity portfolios that have this approach of not trying to predict, actually fared fairly well for, if you're updating your estimates fast enough, you did okay in March and you ended up positive for the year. It was kind of a non event if you look at the narrative of...

Mike: **00:09:47** And you did so well based on just having commodity exposure as a part of your overall structure. We didn't say I don't know what's going to happen in March in oil at minus $37 a barrel. I don't think there was many bullish people on commodities at that point. And the reason we have had some very good performance is because those asset classes were there. They were there all the time. And so it's not about predicting, it's about understanding how it fits into the portfolio and having some systems that maybe do some predicting for you, and attenuate those positions, and expand those positions when opportune. But hey, that resource market dominance kicked off probably in September if not earlier, then post the election you saw it accelerate. Copper stocks are up 300% and the NASDAQ is up 8. And the narrative, the Overton window on that zeitgeist, we're starting to shift there. We're seeing it now. But those positions were in the risk parity portfolio and those positions have expanded in positions where we take thoughtful, systematic, quantitative bets and portfolios.

Richard: **00:11:06** It wasn't a question of overweight right?

Rodrigo: **00:11:09** The emotions were so strong back then even when in our internal conversations. Everybody was just so negative during that period. And I remember just one of our key guests, Mike Green who was on a couple times, I think we decided to bring him on because of what he was saying at the bottom. Everybody was like, this is going to get worse, here are the job numbers. This is what's going to happen, the cascading effect, the knock on effects of people not being able to work. And then Mike Green is out there as a lone wolf saying, I actually think that we're going to have a massive bull run by the end of the year, first of all because of sentiment so bad and secondly because of this structural issue with indexation where the buying pressure just doesn't stop. And I remember thinking like that feels so wrong, we got to have this.

Richard: **00:11:54** It's probably going to happen, it feels so wrong that it is probably going to happen.

Rodrigo: **00:11:59** But it just, the reason I think we as everybody who's listened to our podcast knows, we gravitate towards systematic is because it's really tough for us to get away from the emotional side of things. So we started this by being like, we don't know. And even if we think we didn't know, we'd rather codified and have systematic rules around it. But we did have a big macro event this whole year, what do you think that's about? And they were pretty popular too. This can only ever be, gets macro?

Adam: **00:12:30** There's a couple things. One is that, obviously, storytelling fires all of the emotional triggers in the brain, like we're wired to respond emotionally to stories, we filter those stories through the prism of our own biases and realities and experiences at the time. And so there's something for everybody in macro. You can find anything that to confirm one or more of your biases, and that feels good and it's storytelling. But the other more concrete reason I think is that, what happens in the multi asset space is responsible for over half of what happens to the entire portfolio. So much attention is focused on individual stocks especially over the last decade, stock based stories have completely dominated the conversation, mostly because a handful of US equities were responsible for the entire gain in, or the vast majority of gains in total global market caps across every asset class over the last 10 years.

And only recently has macro taken on a bit of life again. But historically, what happens in the multi asset arena is responsible for well over half of what happens to your total portfolio growth over time. So you kind of can't avoid it, and it matters in a very concrete way for everybody. What happens to macro, what are the relative opportunities in stocks versus bonds versus commodities, within different commodities? How do you structure a portfolio to maximize exposure to all of the different opportunities? I think there's some emotional reasons and there's a very concrete financial reasons why people are fixated on macro.

Richard: **00:14:20** On the concrete side of things, I would take it one step further. And I think that since the great financial crisis, because of the role that central banks have played globally, and the tectonic shifts across the capital market space that have happened because of quantitative easing and taking rates all the way to zero and in negative territory for some countries, and all the dislocations of capital that have happened because of these moves, and then more recently since COVID, the fiscal arrows joining into the fore and becoming this driver of policy. There's no escaping the fact that for the last 13 years we have had massive governmental intervention in markets. And that has to get this sort of big macro shift even though perhaps some of the more popular macro strategies might not have been the strategies that have thrived the most because unless you were overweight mega cap tech stocks, you underperformed this NASDAQ benchmark.

But in reality, it is this move across the global landscape coming from central banks and then more recently the government purses, that have driven a lot of the dislocation that I think we've seen. And to your point earlier about the narrative coming from specific equities. I think in the last year and a bit with the gamification and minification of some of the stocks and the Tesla and the GameStop debacle. That trend has only accelerated. It's become this exponential gamification that has driven a lot of the narrative that has become really salient. And I think some of the guests that we've had that we call internally *guardians of the narrative* are some of the people that have been able to distill this narrative and bring it to this very cogent and clear framework for us all to understand. I'm talking about guys like Mike Green, Lynn Alden, I think, is pretty prominent. Bill Fleckenstein who...

Mike: **00:16:36** I was going to say Fleck. When we had Fleck on, it just happened to be the week after GameStop, where you've got all kinds of funny stuff going on. Keep going.

Richard: **00:16:47** Yeah, and his *End Game* series that he's been co-hosting with Grant Williams has delved into some of these very same topics. And so these are some of the guys, Ben hunt.

Rodrigo: **00:16:59** We had Ben Hunt a week into when Covid started.

Richard: **00:17:05** And he was deep into the COVID narrative.

Rodrigo: **00:17:04** He was in Toronto, and he was telling us how crazy it was that they let him in to the airport without testing him and like, what he was seeing and what's going to happen and how he's preparing.

Richard: **00:17:20** Ben was on our podcast before Riffs.

Rodrigo: **00:17:23** Yeah, that was before Riffs.

Richard: **00:17:26** And then he came on Riffs while we were all in lockdown. And he was deep into it because he had been following this very closely. And so these are some of the guys that we call *the guardians of the narrative* who have come on and sort of distill this in a very very clear way for all of us. And so that I think are some of the other reasons why the global macro conversation has feature so prominently in our episodes.

The Guardians of the Narrative

Mike: **00:17:52** And I think it's actually, a probably important or interesting to delve into what the *guardians of the narrative* means. It's that, that transition of belief, that Overton window, how it shifts from absolutely not, couldn't happen to, of course that's the way everybody does it. And how we've observed that happening over the last year in so many ways, on so many dimensions do you see the narrative changing, the narrative around COVID, the narrative around a shift to commodities. Would you have thought the drive to ESG would in fact drive money to natural resource companies. We have a massive drive to ESG and copper mining stocks are through the roof. And base metal stocks, due to the fact that they're connected to the potential batteries which are still being charged in a way in which however we generate electrons. That's how those cars are being charged. But it's just interesting that this Overton window is in constant flux and the guardians of the old narrative give it up slowly, and that new narrative is fought all the way up until of course it's commonplace. And so it's such a thoughtful way and the question there I guess is how many derivatives do you go down in order to get to what you think is the right answer, where you're at the nexus of the change in thought processes about the pricing of said assets, let's say in a portfolio, vis a vis where the adoption is in the narrative?

Adam: **00:19:28** Well, it's like Jason, our partner Jason Russell who was mentored by Ed Sakota and he recalls how Ed Sakota described trend following as sort of *the evolution of why*. And I think this has been a really great example over the past 12 months of how the narratives lagged behind price action. We saw prices, obviously Mike, you described how obviously it was a massive rally in commodities off the lows. Just a major snap back in all asset prices, major contraction in risk premia and all of that happened way before the narrative caught up. And so we've really only seen inflation as a meme as a like Google Search theme for example, really accelerate over the last three four weeks.

Meanwhile, the major moves in most of the inflation linked trades, happened over the fall of last year, and have sort of been bouncing around a peak for the last six or eight weeks. So, this is what's so great and we always focus on and have chatted about this even earlier, this discussion, but the focus on...I'm thinking systematically because by the time you catch up or the narrative catches up with price, the bulk of the move is over, oftentimes, or at least the bulk of this move. There may be other moves going forward, but this move's over by the time the narrative catches up. I remember Don Coxe, back when I sort of followed the macro path more religiously in the … used to talk about a story moving from page 16 to page three to page one, and you really wanted to. If you were going to follow macro, you wanted to be focused on the page 16 story that was moving to page three, and by the time it hit page one, you wanted to be lightening positions, right?

Mike: **00:21:25** When those that like it most hate it least, or something like that.

Adam: **00:21:29** For those who know it best, love at least.

Mike: **00:21:32** That's when you had to.

Richard: **00:21:33** One of the key ones that was behind the narrative was crypto. The theme that we saw was the disenfranchisement of individuals. If the vast majority of the population, the humungous wealth gap.

Richard: **00:21:50** And particularly millennials as a generation I think plays...

Rodrigo: **00:21:56** By the way, speaking of millennials, my wife told me yesterday because I was born in 1980 I was known as a *geriatric millennial*. Can I get a worse moniker than that, by the way is anybody, Oh my god, it's literally the worst. The millennials and me, the geriatric millennials. Some of the discussions that we were having throughout was about this wealth gap issue and how the people were going to rise up, and while we're having these discussions, you had a very in depth discussion with Mike Green, just kind of philosophically about this whole area. And at this time, Bitcoin was happening, but it wasn't mainstream, right? I feel like it became massively mainstream in January. That's when everybody was talking about it. And of course, that ends up being the peak. But all of that stuff was already happening years prior and specifically peak in mid 2020 and 2021 when they were being locked up, young people not even not being able to do anything except for voting with their $1500 monthly checks in GameStop, and Robin Hood and Bitcoin now. And Raoul Pal, if anybody hasn't listened to that episode, he really lines up how this millennial generation and the geriatric millennials are going to be able to hopefully participate in the next evolution of this asset growth and the revolution in technology.

Adam: **00:23:23** Hold on, does that make Philbrick a baby boomer or a geriatric Gen X.

Mike: **00:23:28** No, I'm a geriatric Gen X.

Adam: **00:23:29** You get both, alliteration though.

Mike: **00:23:33** Yeah, geriatric Gen X.

Rodrigo: **00:23:35** Maybe it's alliteration. I don't even get alliteration.

Richard: **00:23:38** For more reasons than one. He's a geriatric Gen X.

Adam: **00:23:44** I guess I'm a baby Gen X. I don't know how this works. `But that's funny, geriatric millennial, that is the worst of both.

Richard: **00:23:51** But I love the point you were raising earlier Adam about narrative having to chase price. Because obviously there are instances when you have some of these secular moves and multi-year trends, when price breaks out. Narrative follows, narrative loops and feeds back into price, and it becomes this virtuous cycle and a self-fulfilling prophecy to some extent, but a lot of times people who are in any sort of domain of knowledge that would know better will read a piece of news and will say, okay, they've got this all backwards. It's because mainstream media is trying to chase the story after it's already broken and they're trying to explain why copper has been ripping or the treasuries have been selling off, and they'll call a couple of traders and they'll try to make heads and they'll just write it. And this is a theme that we explore with Ben Hunt, who does a lot of work in natural language processing and has been on this theme of mainstream getting it wrong so often.

Adam: **00:25:05** Yeah, his cluster analysis of current media themes is, that was a highlight of last year analytically, just seeing how some of that that network analysis allows you to sort of see the cluster of means, how they're forming, how they're expanding and how they're contracting, and how they change through time, and how that might be used to inform different investment focuses and that sort of thing. So, we're still keen to try and figure out whether there's any forward looking information in that structure, and I'm sorry to interrupt.

Mike: **00:25:41** You've got to account for the survival, some survival bias or survivorship bias of the narratives, right? Because there's 10 narratives that are in incubation, in formation. And when you're in the one that's right, you won't know, it's not going to be obvious, and you're only going to be able to judge it as right and those who predicted that particular potential future out of hundreds of potential narratives that were pondered or considered publicly or internally. So you've got a survivorship bias there that's quite interesting. You say it's obvious in retrospect.

Adam: **00:26:20** That's why price is so critical, right? Like price is the ultimate arbiter. You kind of can't argue with it. You can spin as many stories as you like, you can make as many cogent arguments as you like, you can have the most coherent well constructed fundamental theory. But if it doesn't agree with empirical observation as arbitraged by price, then it's just plain false which is why, just sort of dovetailing off of Richard's point. The reason why the news chases price is because price is the confirmation of strangers. So you've got people with VCs, and then other strangers then confirm it by moving price in the direction of the story, or price moves and it confirms someone's thesis, and then they can go live with the story, because people are interested because it's been confirmed by strangers. So it's this natural interaction between price and the media. The media needs price action to validate or make credible their stories, and to give them a direction to look in.

Rodrigo: **00:27:31** Yeah, and the narrative flow will also create different types of lengths in that price movement and price bubbles. So some news may not have a lot of legs, and there's a pop up in price, that may be shorter term signals and momentum might be capturing. Other ones are driven by guys like Elon Musk, that can keep that thing going for months at a time. And I think what's interesting about this idea of like where is that narrative emerging from and how is that going to affect price action, part of the theme that we had throughout the year in the Riffs was also the idea of ensembles, Of not just having, well we've seen a certain type of look-back trend work, and over the last five years because maybe that was a dominant narrative trend that led that price movement, but rather set be at least broadly correct, rather than try and be specifically wrong and create a number of ensemble based strategies across trend momentum, mean reversion and all those things. We had Corry Hoffstein come in and really talk about the idea of different timing luck.

Ensembles

Richard: **00:28:41** The reduction of timing luck in your rebalancing, and you bring up a great point because a lot of our quant focused episodes, Matt' *Breaking the Market*, as well as Eric Crittenden and Rob Carver, all to some extent brought up the point of ensembles. And explicitly seeking out different points or different ways to measure any one parameter or indicator that you're trying to measure, and not relying on any single one, despite your biases or maybe you believe that you have that magic formula and you know how to measure whether it's trend, or whether it's the correlation matrix with your lambda decay, or whatever it is that you're using, you're always seeking out different ways to measure the volatility or what have you, in order to prevent being caught outside by relying on that one measure that could be specifically wrong whether because it was a wrong piece of data that was feeding you at the wrong time, or just because the data itself was incorrect or whatever.

Mike: **00:29:49** So I think this brings up actually a bigger point Richard, in the sense that when you think about discretionary thinking versus systematic thinking, one of the objections or counters we face is, well, you can't adjust quickly enough. Your machines don't know, the programs don't know. And I think someone that's a discretionary manager with their wetware, which by the way, you have no indication what they might do and how they might adjust to risk, and in that wetware in a discretionary managers head, there's no way they can contemplate the multi dimensionality of the problem and how certain things have implications to other things in the portfolio. This is where ensembling is key. If you're running an ensemble of various indicators, let's just be very simple and talk about trend, you are going to have short term trend indicators and long term trend indicators. The thoughtful design of systematic thinking actually accounts for the fact that you want your system to adapt to certain circumstances at some rate. It's actually thought about in the implementation whereas a discretionary manager cannot state that. You are just at the randomness of their wetware, and there's great experience and there's great discretionary managers.

I'm just saying one of the key concepts to being systematic about decision making, is to embrace an ensemble like system so that you're constantly adapting and that you have an adaptation network that moves along the full dimensionality of the problem.

Rodrigo: **00:31:35** And of course, the problem with that is that you always have when you're doing ensembles and you're broadly diversifying, what you do is that you always going to have strategies and systems that are killing it and you can see it, we see it in our dashboards. My god, that set of strategies is having a fantastic year, but you're always going to have a lot of stuff that's killing you. And if you take that out into the world of kind of discretionary management and global macro, there's always going to be big players killing it and being killed. And the ones that are killing it, become the guardians of the narrative, is that we're calling it, and it's really tough to compete with that when you're saying, well, we didn't do that bad, and we didn't do as good as the best ones out there but we did that because we are applying, we're applying this from it through a sense of humility, and humility and market prediction just don't mix very well. I mean, systematically today, seems to be the toughest thing to really sell out in the market there. Everybody likes big winners.

Adam: **00:32:38** That's such a hugely important and overlooked point that can't be repeated often enough. The managers that try to maximize signal to noise ratio, are the ones that are always going to be in the middle of the pack, by definition. So if you've got a trend manager who's taking a thoughtful approach to trend, an acknowledgment of the fact that you can't really know in advance which specification of trend is likely to pay off this year. And therefore, you're using a wide variety of specifications to get an average of the views of a large number of knowledgeable traders. But you don't know which trader is right at any given time, that's essentially what you're doing with an ensemble of trend strategies, or an ensemble of any other type of strategies. An ensemble of seasonality, day of the week, day of the month, week of the month, week of the quarter, quarter of the year, month of the quarter. There's all these different ways that you can aggregate this information. You have no idea which one of them is going to play the largest role in this particular performance cycle.

So you've got to play them all, and the average is much stronger than the signal to noise ratio and long term performance basis, than any single one. But in any given year, the ensemble manager is going to underperform the best manager in the class, simply because there's going to be a distribution of managers and how they specify these different phenomena. And some of them are going to be really lucky and some of them are going to be really unlucky. And the ensemble manager is going to be just above average all the time. So it's going to be hard for the ensemble manager to sort of stand out in the intermediate term, and you've got to have a really long term history in order to really prove that out.

Rodrigo: **00:34:22** Could you imagine if we allowed our virtual managers to write our newsletters? Let the winners write our newsletters, every time. The hubris of these robots would have.

Adam: **00:34:35** Totally that's a really good point.

Richard: **00:34:37** Yeah, I was going to say Adam, that the statement you were making earlier was incomplete, but then you added the conclusion there, which is obviously depending on the timeframe. So you're not going to stand out if you're looking at six months to a year because of this. You're always going to be underperforming that stellar asset class or that stellar strategy that happened to be lucky at any given point in time. But this also brings us to this idea of sizing. The conversation that had this topic was visited on all three conversations with Carter, Crittenden and not Matt Hollerbach, all the quant conversations, regarding how to size your positions appropriately. And as you develop these different tools that can allow you to overweight and underweight certain strategies and certain asset classes and become more nimble and more adaptive to the environment and to the signal there, you can then sort of deemphasize some of the things that might be killing you, for any given point in time.

Mike: **00:35:48** This is exactly what I what I mean about the multidimensionality. The problem is beyond the human brain. Because you've got that ensemble of systems, the contribution that ensemble of systems makes to the portfolio, and how are you going to adjust to that, and trying to figure that out in a human brain is difficult. You need other tools that are able to process the complexity and the relationships.

Adam: **00:36:17** Oh my god, how can somebody even begin to consolidate the information from just a small number of different trend signals without some sort of system, even if it's just a simple spreadsheet? Now add in things like different types of seasonality, or carry at different points in the curve, or god forbid, stuff like implied vol or dollar gamma.

Richard: 00:36:42 Or the two dimensional relationship that exists between any one of these. So the different permutations that you can start doing which is some of the avenues that our research has led us in the last year.

Adam: 00:36:54 Relationships between different markets.

Rodrigo: 00:36:58 Yeah. Ani, would you mind sharing my screen?

Richard: 00:37:02 I knew it.

Mike: 00:37:07 37 minutes. Who has 37 minutes? Let me go to the fan. Who had 37 minutes? I got it right here. Butler, you got it?

Rodrigo: 00:37:17 All right, I bet on Butler betting on me.

Mike: 00:37:22 We all bet on you. So you would have won that bet?

Rodrigo: 00:37:25 I don't know… So this is just kind of what we're talking about. These are different systematic factors on the global macro side of things. So long/short, futures contracts and the different ways that you can try and exploit or extract some returns. You got carry, trend, seasonality, counter trend, relative value which is just kind of like...

Mike: 00:37:52 Maybe tell Rod everybody what you're looking at for those who aren't watching.

Rodrigo: 00:37:57 What we're looking at is one of these kind of market quilts where you're ranking, normally, it's assets. In this case, we're showing strategies. These are kind of our own internal indices.

Richard: 00:38:08 Ensemble based.

Mike: 00:38:09 Ensemble based factor.

Rodrigo: 00:38:11 Each one of these squares, this is from 2000 to 2020, from each year ranks from best to worst. And what you'll see for those listening, is that every year, it's totally random which strategy does best in between carry, trend, seasonality, counter trend, relative value and volatility. So, again, there's a ton of managers that want to do one thing, and even the allocators who claim that they want for example, trend. Now, trend became a really big thing after 2008, because it did a fantastic job in the previous 10 years. If you look at the market quilt, it's near the top most years. But then of course, when it became super popular after

2008, it's had the worst decade that I've seen maybe since the 1930s, when we look back at some of these indices, and so you never know when it's going to stop working right.

Adam: **00:39:10** When it's going to press pause.

Rodrigo: **00:39:11** When it's going to press pause and we're going to give up on it the most. There's this belief that, for example, trend was it's going to be there when everything goes down. But long term trend didn't do so well in March of 2020. It didn't. A lot of people just pressed sell in April. And of course what happened? When did the big trend revival start Adam? In August? I think I saw an index from August to January that was up 60%. So people giving up on it in the wrong time. We feel anyway, that you're not going to be able to stick to anything just by doing one thing. So the idea of ensembles is what helps you kind of create a bit more stability. But nobody's ever talking to you about being the best thing out there. You're always in the middle of it. Anyway, I'll stop sharing.

Richard: **00:40:02** This was a really good point to sort of emphasize the importance of being systematic and being deliberate and kind of having your rules set out when heads are cool and not pulling the trigger and acting from the gut when bullets are flying.

Mike: **00:40:18** You have an established baseline that you cannot create in a discretionary brain. You can't establish a baseline for expectations if you can't sort of test your ideas.

Richard: **00:40:33** Yeah, and I think the great point that I think both Brian Portnoy and Dan Egan made in some of the episodes that we had within was not only, Dan Egan's episode particularly about the market psychology and diving deeper into the myriad of behavioral biases and recency bias perhaps the most pervasive and where FOMO comes in, and some of the other behaviors or misbehaviors that we see across the investment landscape. But Portnoy's point was really important to highlight that, it's not just retail investors. This is pervasive. And this is a behavior that happens in the institutional space. I mean, performance chasing happens across the board. There are very few institutions that are actually committed to sitting out a quote unquote *David Swensen type of plan*, and just partnering up with their managers and saying you know what? I have a 5-10 year plan and I'm going to stick with you, that sort of thing. Because of the recency sort of world that we live in today, probably a function of social media and our cell phones and all that, it becomes closer and closer, the immediacy of returns and the immediacy of results that we all need to see in order to be comfortable. And if we don't see it, we cut it loose and we sell and we look for the next best thing, whatever the new FOMO market might be. That sort of behavior which is expected in the retail environment. At the end of the day, institutions are made of people and it happens across the board.

Rodrigo: **00:42:13** Ted Seides is for those who haven't been to that episode kind of delineated that very clearly. And he talked about his mentor, the late great Dave Swenson who personified as close as a human can, the type of institutional investor that we all think exists. I mean, if you want a framework or understand a little bit of a framework to try to get closer to a disciplined long term, kind of long lived asset advisor investor, then you got to listen that Ted Seides' podcast and read his book. That had a lot of great insights and a lot of good frameworks that you could use.

Mike: **00:42:52** I think if we take a step back to the sort of base camp of why we selected more quantitative and systematic decision making, comes back to Philip Tetlock who's someone that we are pursuing vigorously to somehow get onto this podcast… You got to put it into the universe in order for the universe to respond. Anyway, maybe Adam you could you could sort of walk through the journey there because...

Adam: **00:43:24** I know that I love on Tetlock man, you know that he's my personal hero.

Mike: **00:43:29** I want to see you fanboy. I love it.

Tetlock and Predictions

Adam: **00:43:32** I will also mention that we are extremely fortunate to have Annie Duke on the show in the coming weeks, cohosted by Brian Portnoy. So, really looking forward to that episode. And obviously just dovetailing off of some of the work in decision making that Philip Tetlock pioneered. But yeah, just going back to Tetlock. Tetlock seminal work was in a book called *Expert Political Judgment*, and for those who don't know, Dr. Tetlock, after graduating with a degree in psychology, went to work in the intelligence community in Washington and he was charged with notetaking as sort of a secretary in meetings, in the intelligence community. And so he would be documenting the opinions and forecasts of the top generals and the top intelligence officials and top politicians and military officers, etc. And what was going on in the Russian Politboro and etc at the time. And, they would get together every quarter and he would be responsible for reading out the notes from previous meetings. And it became clear to him really quickly, that the forecasts that had been articulated in previous meetings were constantly being revised, and not just being revised directionally but being revised in terms of sign. Somebody thought it was something would expand in importance and it contracted, or inflation would increase and then it decreased, or what have you.

He quickly recognized the fallacy of forecasting in complex domains, that motivated him to go back to into academic life and perform this longitudinal experiment. He recruited these, call it 200 experts, and allowed each of them to answer about 100 questions over a period of about 15 years, and we're talking about genuine experts. People with like on average of 16 year's experience, average education master's degree, senior editors, senior intelligence officials, senior military people, etc, senior economists, forecasting in a wide variety of domains. And the questions were structured in a very specific way so that Philip was able to document not just a person's accuracy, but their calibration. So in other words, when they said they were 60% confident that something would happen, did that thing happen about 60% of the time. So if that's true, they'd be perfectly well calibrated. And so after about 18,000 observations, a list of conclusions, one of which was that nobody was able to demonstrate a forecasting ability better than random guesses. So there's not one person out of the 200 odd that were interviewed in the study, were able to deliver forecasts better than random guesses. People that were more popular, more cited in the press or in research were less well calibrated than those who toil in obscurity.

The average of experts was a better forecast than any individual expert. The most confident experts were less well calibrated with the less confident experts. And in general, he also ran some really simple systematic programs for forecasting alongside the experts. So for example, in the short term, the trend will persist, in the long term, the dynamic will regress to the mean. And what he found was that these systematic approaches vastly outperformed any individual expert or any group of experts and actually was able to deliver performance better than random guesses. And that was really formative because this extrapolation of trend in the short term was really consistent with this idea of momentum or trend following, and this idea of regression to the mean over the intermediate long term was really consistent with this idea of value or relative value. So it just mapped really directly to the quantitative finance literature and sparked an entire new adventure in the systematic quantitative realm.

Mike: 00:47:46

It's a sign of pervasiveness if you will, because it wasn't in necessarily just markets, financial markets. This is persistent across human decision making. So this is not any complex, adaptive, weird field where there's implications and feedback loops. This is how human behavior manifests. And so it is kind of a seminal point to why we've decided to move in this direction, and why a systematic portfolio will be on potential narrative long before it manifests, especially when we think about our commodity exposure as an example. It was growing, it has grown, it was there and grew long before there is this constant narrative of inflation, and how's inflation going to manifest? And how is that going to manifest through asset prices to your portfolio which are all very nebulous. There's not a straightforward type of, inflation goes up and thus these bonds fall and this happens, it happens in different ways. Go ahead Rod.

Rodrigo: 00:48:56

But much like what's interesting about all this, we talked about how Tetlock identified quantitative ways to be able to capture a signal and whatnot. When you read his book *Superforecasting,* what he's actually doing, is using quantitative tools to quantify people's understanding of news stories, and then quantifying their ability to Brier Score, their ability to actually predict and constantly modify their predictions so that he can identify some people that have some sort of edge in predicting the future. And it's all quantitative. A lot of it is trend following and all that. But what's been enlightening this year to me, is that even the systematic managers including ourselves were like what, something is off, something's different. Let's understand what's different and then when we understood what had changed or the areas of the market that are impacting price movements more than ever, we were able to then quantify and identify signals from that.

So I'm alluding to Corey's *Liquidity Cascade* paper and Mike Green's work on indices coming in and having certain flows that are consistently putting a bid on prices. You hear the global macro story, you dig into that story, you recognize that it's not a story, there are actually structural issues and things in the options market that made March, was it March 19th? That was a triple witching option expiry day, and that was the bottom. So when you start looking into all these stories, they end up having a structural reason that you can quantify. And once you're able to identify and quantify that, then you can create a signal behind it. So it's all driven by stories that then lead to the rules and those rules can be quantified and you can find something that has a slight edge.

Adam: **00:50:51** That' a really good point. Because, a big reason why we started having these conversations way back in the day was that we were genuinely curious. There were people who were being successful in the markets, they had a framework, they were looking at indicators and signals. And in general, they were they were looking at them in more of a discretionary framework. And our objective was to listen, understand, and attempt to codify the indicators and information sources that they were using to inform their framework and then apply a more rigorous or, I don't want to say more rigorous, but a rigorous data driven empirical process to examine just how confident we can be, that the conditions that were being captured by these indicators were reasonable at forecasting prices, in what markets and over what horizon and what shape those types of relationships take. So that's a really, really good point. There's a feedback loop between the more deterministic, causal macro framework that was articulated by many of our macro guests, like they're genuinely bringing to the surface novel intuitions and insights. And then the empiricists among us can then take those insights, codify them and begin to use them to inform our systematic strategies. So, really good point to emphasize.

Richard: **00:52:22** And using a framework that lends itself to be adaptive and flexible to the different micro structures, because at the end of the day as you were saying earlier, the ultimate arbiter is price, but price is determined by the marginal buyer and the marginal seller. And then you start going down that rabbit hole of what are the different micro structures, and so to Mike Greene's thesis which is so common now, of the price insensitive passive flows of ETFs that are just seeking to get exposure. Money comes in I buy, when it comes out I sell, those guys are buying or selling indiscriminately with regards to price or any sort of semblance of valuation, but you go down this rabbit hole especially in the multi asset space, and you're talking about commodities and the hedgers, whether they're hedging because you're a producer and they're selling, or they're a hedger because the commodity in question is actually a price input and so they're buying, to hedge against a rise in that price.

So you go down all the...when he talked about currencies and exporters and importers hedging the currencies, you get a whole swath of players in the marketplace that are doing, their acting whether buying or selling, because of reasons that go beyond what perhaps the traditional factor investment literature would tell us would be reasonable.

Adam: **00:53:51** It's a really good point. Sorry, continue.

The Dynamics of Overcrowding

Richard: **00:53:55** And so you're about to bring up the heavy character of my next point which is exactly Chris Schindler, which was one of the pioneers of the factor investment space with the alternative risk premia to use the institutional term here in Canada. And then his observation was that there was an overcrowding of the space that began in the 2014 to 2015 time period, which then precluded a sort of factor winter that we still see, in a lot of the factor based strategies. And that has a lot to do with this idea of marginal buy and selling. And once everybody crowds into a trade, everything's already sort of priced in when it comes to flow, everybody's already gone towards that asset or strategy or style. And so the marginal effect, the next step is likely to be a marginal outflow as opposed to an inflow, and so that's sort of reflexive dynamic is something that if you don't have a framework that lends itself to taking that into consideration, it can become really difficult for you to adapt once we observe a paradigm shift, or a change in who the players are at any given point in time that are buying and selling and establishing the new price equilibrium.

Adam: **00:55:23** I think the other thing that Chris really highlighted and maybe we had been on occasion a little bit overly critical of investors and described people on the other side of factor trades as sort of willing losers. The idea being that they are expressing behavioral biases or other sort of non-economic incentives.

Richard: **00:55:51** Naivete maybe.

Adam:	**00:55:56**	And I think Chris was helpful in reframing that in a more generous light where I forget who said it, but that everybody gets what they want out of the market, but in a very generous way, could be, but in a very generous way all of these other players in the ecosystem, whether it's Forex hedgers, or central banks or governments who are implementing monetary policy in pursuit of certain fiscal objectives, or farmers hedging their economic risks so that they can guarantee to afford to be able to replant for the next season or till the soil or rotate crops, there's all these people...
Rodrigo:	**00:56:42**	Hedging the timber costs.
Richard:	**00:56:44**	Industrial producers of all stripes that are having to account for the rise in the cost of raw materials and whether to pass that on with the rest of their margins, whether or not they've hedged. So yeah, absolutely.
Adam:	**00:57:00**	There's all these players in the ecosystem that are speculators who are speculating thoughtfully, are maybe providing a service to people who genuinely have a need for certain types of risk offset, of various kinds and for various reasons. And part of the profit potential for speculators is in time arbitrage and in the ability to absorb more diverse risks. Like think about a farmer, his exclusive risk is grain prices, and maybe the cost of certain fertilizer inputs, or some other non-tangibles. Whereas, we can absorb that risk because we're offsetting those specific risks against 70 or 80 other markets in our portfolio that are responding to different seasonality patterns, different carry patterns, maybe the carry is an expression of the cost of storage or under/overcapacity, in certain parts of the supply chain. But whatever it is, we are buttressing the absorption of one risk against the absorption of different types of risks that manifest at different times and for different reasons, and it's this diversification that allows us to absorb all of these risks, profit off of them, and then deliver a more steady sort of return stream to investors, which I think is a really important component of the service that we provide as financial speculators in markets.
Rodrigo:	**00:58:32**	All of this also lends itself to what Richard was saying earlier and to the conversations we had with Chris Schindler which is, these players that require certain services, new players come online all the time with new necessities and new services, new liquidity requirements. And so what's been interesting when you're labeled as a quantitative investor, or a systematic investor, a rules driven investor, is that they think oftentimes your thought of as like an Index Provider. Where you publish what your rules are going to be and you'd better deliver on that because if you change it, it means you think something's broken, or you're trying to re optimize because your back test was wrong. If you're a quantitative investor trying to create alpha, and you're not constantly looking for those new players that have new liquidity needs or structural needs that allow us to capture our own alpha, then you're just simply going to end up either reducing your

alpha to nothing, to a beta, to a traditional factor, or are you just going to die off. So active systematic I think, has shown itself to add value. We did a conversation about or Adam you did a presentation on the life cycle of...

Richard: **00:59:53** Post factor world, it's on our YouTube channel.

Transparency or Lack Thereof

Rodrigo: **00:59:57** Which I think got a lot of hits, but it was, it was this concept of you discover something, it has a high alpha, high expected Sharpe ratio, you kind of run it for a few years, then you publish a paper. Somebody else discovers in an academic, publishes that paper, it becomes popular. Everybody piles on, you get negative alpha, everybody leaves and then you have this long term expected kind of 30 Sharpe points similar to an equity risk premia return, going forward. Now, if you want to live in alpha world, you have to constantly be finding new quantitative strategies. So this idea of rules driven indexing versus quantitative managers finding new unique strategies, that is more discretionary, systematic, and it's a tough thing for people to really reconcile, which I've been finding more interesting especially in 2021, as there's so many more opportunities to be able to extract.

Adam: **01:00:56** You're so right. Well, there was a time, maybe 10 years certainly during this factor craze when the idea of transparency was of prime importance. Everybody wanted a white paper that describes exactly the process that you're going to follow. Then they expected you to follow that process to the letter and if you didn't, that was a firing offense. And I think what we've learned over time is that there's been some really great papers published just in the last two or three years about the decay that's experienced from systematic strategies post publication, and that that decay is absolutely monstrous. And even in a long/short context, it's very large on the order of sort of half to two thirds of the alpha goes away. And the alpha that's documented in the papers themselves are often overstated because they imply certain assumptions about for example, borrows the ability to borrow on shorts, the cost of borrows on shorts, transaction costs, that sort of thing, that almost certainly overstate the size of these premia.

But just publishing them alone, notwithstanding all of the other factors, has a profound impact on the return post publication. And that decay goes down very substantially. But that just means that if you want, for asset managers this this really strange place to live because you need to publish something that allows people to have, to grasp what it is that you're doing that should allow you to extract value over time in a consistent way. But then again, by publishing it, you give others the ability to copy it, and the likelihood is that that opportunity will go away over time.

Mike: **01:02:48**

I think it's even worse just by discovering the anomaly. The computational power that is scouring the financial markets as we speak means you have co-discovery, if you have discovered the anomaly, so have others. Publication takes it to the next level of course. But just by discovering an anomaly that you think is unique that no one else has, you should know that that's already been discovered.

Adam: **01:03:26**

Yeah, so the only real alpha is continuous, is engineering a process that allows for continuous discovery of anomalies. Exactly.

Richard: **01:03:40**

Because the anomaly is always going to be changing… Whomever is buying and selling in any given point in time and then some of these players die out, some of these strategies fade out and become so unpopular that the providers of those strategies aren't in business anymore and aren't providing the vehicles anymore. So at the end of the day, it's the idea that once it's once the anomaly has its Gutenberg moment and it's published and it's become mass available for everyone to index and commoditize, it is no longer alpha. You can call it smart beta, but it really is a beta. And for some people, it's an alpha because they're unsophisticated investors, they want to buy something that's different from just a buy and hold, they want to pursue some of these factors. But at the end of the day, in order to really provide true idiosyncratic alpha, you've got to live in these places that do not have the bonafide's of publication, oftentimes don't carry a behavioral intuition or an economic reason why they work. And this is sort of quoting some of the things that we read *in The Man Who Solved the Market* about RenTech and Jim Simons, and this idea of why they are so secretive in what they do.

Rodrigo: **01:04:58**

And we've moved to a world or I think we're kind of moving back now. But we moved over the last decade or so to a world that that demands full transparency. The ETF growth is about transparency. It's about people knowing what they're investing in. It's about market makers knowing what baskets they're supposed to arb out. And what we're seeing and when we had Erica … on the podcast, and we're talking about her, is the fact that everybody's front running her. Everybody knows exactly what she's holding, what she's thinking, What's the likely next thing that they're going to buy and everybody front runs her, she announces that she's going to do a space ETF and they front run her.

So the extreme transparency was supposed to be or is supposed to be something that's positive for investors. I take the other side of that in many respects where it may actually be hurting investor returns ultimately when you don't allow thoughtful managers to keep some secrets. And that probably that this is why the dark or the I don't know what they call it, the new ETF structures where you can keep your trade secret for a quarter or so, is actually an important move back to active, active that requires a little bit of secrecy, active that requires a little bit of IP to be kept secret while you can and be able to provide those excess returns to clients again. I mean, that's a good thing. It's not a bad thing.

Mike: **01:06:27** Well, if you think of, contrast that to a discretionary manager, what's the factor exposure of the discretionary manager? How is that stated? Where is it stated? It's simply not stated. It is the discretionary manager which is evident by the drift in the portfolio's exposures when you look at a discretionary approach. They have far more drift in just factually, in their exposures.

Adam: **01:06:59** There was a time when discretionary managers did have latitude to migrate from large to small, from growth to value, etc. And then there was a time when consultants would penalize a manager for...

Richard: **01:07:15** Being flexible.

Adam: **01:07:16** Exactly. And exercising their expertise at their discretion. And this style drift was penalized and a manager was at risk of losing their allocation. And I think to some extent that is reversing. But, it's hard to fault the institutions or retail investors for moving incrementally but steadily towards more index based or factor oriented type approaches, even if it's sort of a mix of hopefully multi strategy or multi factor type allocations. But certainly, you have to acknowledge that the traditional discretionary mutual fund, for example, or SMA program has not been very successful. And I mean, the interesting thing about mutual funds for the most part is that they do have very explicit benchmark. So you're a large cap growth manager and therefore you've got a large cap growth benchmark that you need to be. And they just in general haven't been very successful.

Now, I think there are some structural reasons and we talked about this extensively, internally. But again, it's so much is about flows and access, right? Like, who was it that says, I don't want to be a member of any club that will that would have me in it.

Mike: **01:08:38** Yogi Berra.

Adam: **01:08:39** Sounds like a Yogi.

Rodrigo: **01:08:41** … Chaplin?

Adam: **01:08:41** No. We're all going to get it wrong, but anyways, it's one of these weird things like if you can access it as a retail investor, then it's probably not worth allocating to. Because there's so many rules and guardrails on the product that the strategy is almost certainly commoditized marks, almost certainly commoditize beyond its ability to add value. It's why our products end up being in structures that are not as readily available to investors because we refuse to compromise on our ability to maximize profit creation. We insist on having a product that maximizes the probability of being successful rather than compromising and delivering a product that has greater accessibility at the expense of less flexibility. So I think that's a tradeoff that's not discussed nearly as often as it warrants in the investment landscape.

Benchmarking

Mike: **01:09:49** I would add that benchmarking is probably the most poisonous concept in investment management. It's deleterious. It doesn't matter to financial goals, the objectives of endowments, foundations pensions, what the S&P would do in any particular year, is not really a relevant feature for the asset owner. And that is just something that the whole industry is centered around. If you define the field of play as the largest 500 stocks in the United States as an example, it's going to be hard to beat that momentum portfolio, for sure at times, and at other times it may be easier to beat that benchmark as there's regime shifts and whatnot where there's actual...Go ahead.

Rodrigo: **01:10:46** Sorry Mike.

Mike: **01:10:48** Hit it.

Rodrigo: **01:10:49** I was just going to say it also provides the wrong incentives, asset management companies to what they're going to launch. When you have large companies defining what your benchmarks are and depending on whether you are or are not part of that benchmark, and how well you do to that benchmark, you are not successful at raising capital. So you got the perverse incentives from the individuals that are told the benchmarks matter not their long term wealth requirements. And then you have the perverse incentives given to us by major players to tell us what it is a benchmark should be and whether you matter or not.

Mike: **01:11:27** And we've talked about that a lot with Wes Grey, the idea that of how providers of products are not thinking about necessarily delivering you the purest exposure to the factor. They're thinking about offering you a scalable opportunity for a factor slant. And so you have to think very deeply or should consider that deeply. But you may want that actually, you may have a client that has such sensitivity to the tracking error that that's all that they could take is a small slant. At the end of the day, if you're truly trying to harvest, let's say the value factor, then you want the purest play on that factor. And thus, your portfolio when value's out of favor will do the worst if it's got the best exposure. It's going to be harvesting the true character and nature and thus, you're at the moment in time when that factor's most out of favor, you're going to be doing the worst and that's what they're supposed to be doing.

Adam: **01:12:31** Dude, I love that you brought that up. I absolutely love that you brought that up, because that is so misunderstood. People look across factor ETFs. And factor is out of favor, and they're like looking at the ones who've who are close to the zero mark, and they're thinking that they've outperformed the ones with the negative three Sharpe ratios. And I'm looking at some of these value managers were literally a negative two and a half three Sharpe ratios, like a perfect straight line down. And everyone's like, pulling their hair out going just how bad these managers must be. And thinking to myself, these are the managers that have the most efficient exposure to the very characteristics that you asked them to allocate to. You said you wanted a value strategy, you didn't say I like to have some value plus a bunch of noise. Can I get a little bit of value and a bunch of noise, because that's what the guys did have problems to zero with a bunch of noise. The guys who get, are giving you genuine value exposure, a little bit of a plug for Cliff and the boys at AQR. They've got this, looking at the equity line of their alt style premia fund from like 2018 to like the middle of 2020. And it was like a negative two and a half Sharpe ratio, like it was a straight line down. That is one majorly efficient factor strategy. It just happened that those factors were out of favor. And that's the way to get it.

Rodrigo: **01:14:00** And the competitors were like, well this competitor did much better than the AQRs. Well, you could tell why they did that right? Because they did compromise. They did make a market oriented decision to keep their ...

Adam: **01:14:14** Maybe, more likely this is completely intentional.

Mike: **01:14:19** It's incompetence potential. I don't know. It's just comes back to the institutional side being somewhat as human as the retail side when we think about Charles Ellis' piece, *The Murder on the Orient*, where they went and measured how the consultants fire managers and hire managers, and the managers they fired ended up doing better than the replacement managers, in part likely because of this very fact that Adam is alluding to is that they were actually getting really good, they had made the right decision previously, but they got to a point in pain and this is where it's important for the consultant or advisor or whoever is helping construct the portfolio, to make sure that the exposures are right in the sizing, so that you can make it through the dark times.

If you in fact give up on a strategy factor, etc. at the darkest moment, you get all the risk and you don't get the potential return. You crystallize the risk and you're not getting the upside. So making sure that you've got the exposure right, so that you can rebalance. We've done a lot of work on the rebalancing premium, the *Rebalancing Paper*, in fact, you want that deep value because you want to be rebalancing from your market cap portfolio to your value stocks, that dispersion and non-correlation of those factors is exactly what amplifies the long term rates of return. But this is hard.

Adam:	**01:15:56**	Well, there's a reason for the rebalancing premium. The premium is because you're rebalancing into things that are continuing continuously hurting you. You've got this thing that's performing well and you've got this thing that's performing badly and this thing that's performing badly continues to perform badly, you continue to sell the thing that's doing well, and buying the thing that's hurting you. So it's like this constant smashing in the face with a frying pan. Over time, that's highly beneficial, but it's painful and that's why you earn the premium for rebalancing, right.
Rodrigo:	**01:16:33**	Just a perfect example of this, CalPERS in 2020, early 2020 had a tail protection, was it CalPERS? Correct me if I'm wrong.
Adam:	**01:16:39**	Yes, CalPERS.
Rodrigo:	**01:16:43**	They literally took it off like weeks before the crash.
Mike:	**01:16:46**	Alberta Investment Co.
Rodrigo:	**01:16:47**	Because they were shorting.
Richard:	**01:16:52**	Whereas Wimbledon paid off in spades, because they kept to their portfolio. Yeah, their portfolio, predetermined strategy. I think a lot of this has to do with a little bit of preference falsification, or maybe an incorrect framing of the problem which is, people aren't buying a style because of the style, they're buying the style because they want something that makes them money. So at the end of the day when an investor invests with you, because they tell themselves they're investing it with a given manager or style because they like what you're doing, they think that your process is sound or this is the style, it's going to be making money into the future. At the end of the day, they're buying you because they think you're going to make them money. And so a lot of this has to do from a sort of behavioral standpoint, it's a very deterministic, not to go too deep into a sort of freewill Sam Harris discussion. But at the end of the day, we are all prey to our biases and to the deterministic nature of the way our brains are wired from an evolutionary standpoint. And so we are performance chasers, we do want that lottery ticket possibility. And so at the end of the day, the regulations and the benchmarking all the all of the issues that we know that are so damaging to investors' behaviors, those should be constructed with that framing in mind, understanding all these biases that we are prey to, and then working around them to nudge people in the right direction. But this goes into a whole other discussion about regulatory capture and why the regulations are all created to incentivize certain players as opposed to others. So this is probably not something that we're going to...

Adam: **01:18:41** It implies that you know the answer in advance. That you're going to nudge people toward a certain direction, it implies you know the answer in advance. This is the challenge I have with some of these robo advisors. Well, just so many of these solutions that rely on sort of behavioral finance and nudges and this is all the techniques that kind of fall out of Prospect Theory and a lot of the behavioral economics work is, it's one thing to want to nudge people towards productive behaviors. It's another to think that you know what the optimal behavior is. Because so many of these robo advisor platforms that I look at, they make noises about diversification and long term thinking and then they allocate to a 60-40 portfolio that is mostly US equities. And so they're speaking out of two sides of their mouth and then they nudge people away from trying to make reallocation decisions or behave in different ways. But the presupposition is that they're, the expected returns or the capital market assumptions that underlie their US heavily equity centric portfolios are truly optimum, end up dominating in a really subtle way. So you're nudging towards these ideologies, instead of like practical realities that are likely to be more constructive for the investor over the long term.

Rodrigo: **01:20:15** Nobody's knocking on Mutiny, like Jason Buck and Mutiny. None of these robots are saying, hey, that tail protection like...also, we've had Jason here on the podcast discussing the ensemble of tail protection, the rebalancing premium, speaking from our playbook. It's a perfect thing for even kicking for the VC side, like VC guys putting it into their portfolio, robo advisors putting into the portfolio, none of them are doing that. And if you really want that type of diversification, that type of massive rebalancing premium at the right time, you got to look into those areas that are becoming more accessible. And yet, nobody's buying or no major player is buying it.

Richard: **01:20:56** You raise a really good point Rod, and thank you for bringing us back somewhat on track because we did take a long tangent, I didn't expect this to come from you. I thought Adam...

Adam: **01:21:06** Me neither.

Richard: **01:21:07** Hell is back on track. So kudos to Rod again. But I was just going to say that we've had several guests that came on the podcast with their own sort of angle of viewing volatility and convexity and asymmetry. And so I would say Harley Bassman the creator of the *Move Index*, which is one of my favorite episodes, but Mike Green obviously, the name that has been uttered here the most, because his episode was so all encompassing. He dealt with so many topics, but Wayne Himmelstein, his former business partner, we also had Diego Pereira, who came on to talk about the bubbles and anti-bubbles conversation which was a global macro conversation, but really did encompass this theme to a large extent. Nancy Davis, with her *Eyeball Strategy*.

This has been a pervasive conversation obviously after a, such a large tail event in March of 2020. It was obvious that this was a topic that would be top of mind, but it hasn't just been that March 2020, but rather the last call it three to four years, we've seen a lot, we've had Volmageddon in Feb of 2018. And since then, we've had several of these events. And so I think the conversation surrounding convexity and creating volatility, and all the different ways that you can do so and minimizing the bleed through *Gamma Scalping*. So we've had several episodes that I think have addressed this question in many ways, and obviously the Jason Buck one where the ensembles, I mean to toot our own horn a little bit.

Rodrigo: **01:22:46** Somebody needs to launch that ensemble tall protection crypto strategy. Oh man, was that a brutal weekend?

Riffs Highlights

Mike: **01:22:55** It's funny that you mentioned crypto, we got the under underappreciated episodes which were, Portnoy we've talked a little bit about that, the institutional decision making and Danny again with the market biases and psychologies and then unrelated to investing, the Bobby Schwartz stuff was extremely..

Richard: **01:23:14** One of my favorites.

Rodrigo: **01:23:15** Whoever hasn't listened to the Bobby Schwartz story telling prop trader out of Chicago, like true old school prop trader become movie investor like...

Richard: **01:23:27** John McClane almost reaching across the table and punching him in a business meeting, and mouthing him to go f himself. And he and all he could think about it was oh my god, John McClane is personally… Sorry, I went straight to the character, because that's where his mind was. It was Bruce Willis across the table from me and he was like, Oh, my God, John McClane is trying to fight.

Rodrigo: **01:23:54** We've gotta have Bobby back for our marathon. He would fill four hours of storytelling, that guy.

Mike: **01:24:03** And then also in the underappreciated episodes were the number of crypto episodes that we did over the summer and into the fall, just talking about this developing technology universe with some experts and detailing the potential real ramifications for the real world and the implications that those have. And so I think that those have some shelf life and some value as well.

Adam:	**01:24:37**	Yeah, the Greg Fosse conversation I think was particularly insightful. What were some of the major themes that you guys covered? Do you recall? Because I know that was a really popular episode.
Mike:	**01:24:53**	I think actually going back to what was his name Matt and Rob … was quite insightful and Shawn Cumby but...So there was some real insights I thought, that were early on in sort of the adoption of the narrative if you will, so very early in that narrative...
Rodrigo:	**01:25:22**	The back page of the newspaper.
Mike:	**01:25:23**	Yeah, certainly was a back page story last summer, and has progressively made it to the front page. I think with Foss, although a very absolute person in his opinions. Here we have an old school credit trader talking about what the default, the CDS spreads are on the Government of Canada, as a double A credit versus what the printing of money and debt accumulation caused by COVID, and the implications of that are, and that not really squaring? And that one of the ways in which an investor can hedge that potential risk is through assets like Bitcoin. And how Bitcoin is maybe superior to gold or taking the mantle from gold as a potential store of value, bearer asset that resists the ability for any central government to confiscate potentially and or print, or create more of that asset.
Adam:	**01:26:34**	I'm going to go. I think the guests we've had in the crypto space over the last six or eight months, we're really introducing the ecosystem. Like we were climbing the learning curve, we were trying to get our heads around the idea of proof of work, proof of stake, the difference between Bitcoin as a store of value, Ether as a functional computational platform, all this kind of stuff. And that was really valuable and I think that certainly the last year or so has been really about that. I think what we're seeing going forward, and where we are seeing the real opportunity for us and for potential investors is in maximizing the value of the crypto ecosystem. You have an entire financial ecosystem that is operating in parallel with the fiat ecosystem, and the fiat ecosystem has a risk free rate of zero and the crypto ecosystem has a risk free rate in the neighborhood of sort of seven to 9%. And if you are thoughtful about how to harvest some of these risk free trades in a very diversified way across defi, across exchanges, across coins, etc, then the opportunity to deliver just extraordinary risk adjusted performance, is beyond most people's comprehension who are still sort of focused in the regular securities realm and in the fiat realm, and so really excited to bring on. I know we're dropping a podcast in the next week or so with a real leader in that space and looking forward to having a lot more conversations about people who are profiting in that in that domain over the next few months.

Rodrigo: **01:28:33** This kind of dovetails into our conversation about the individuals that are willing to do certain things that may seem non optimized or non-economic but are actually useful to them. So in the crypto exchange, really it's about empowering individuals that can't get access to capital markets, can't get access to quick transactions of currency internationally. What that's created is an ecosystem of 100 plus exchanges that are all being useful to those individual players trying to transact. But from the perspective of a quantitative manager, you're seeing massive dislocations from one exchange to the next, you're seeing massive dislocations in the term structure of the futures curve because now over the last even year we've seen a ton of derivatives being created, and a lot of these exchanges that are regulated and liquid. So all of a sudden when you're looking for these opportunities, we started up the curve with like crypto was interesting. Mike, you were in the game 10 years ago. But his address number is 1Z07065. ...

Mike: **01:29:48** Pineapple.

Rodrigo: **01:29:49** And all of a sudden, you've got to go up the learning curve and you realize, Oh, my god, there is a plethora of opportunity in this space. And we got to hit it hard. So it's been an incredibly fun learning curve. Listen to all the podcasts on crypto. Who you're alluding to is David Faucier from Nickel. He was interviewed by Corey Hoffstein a couple of months ago and that episode dropped this week on Monday. That was fantastic. Anybody who hasn't heard it, you need to hear him. He was so good in fact that we interviewed him twice, and put it into one podcast. And that's going to launch a week from now. So Part one is Coreys *Flirting With Models* podcast. And then Part two and three is all coupled together. And we were able to interview him on the day of the of the flash crash, to get his thoughts on, David runs a multi manager, market neutral long short series of managers, so multi manager portfolio, and his insights were absolutely amazing. So now we're digging deeper into the whole crypto ecosphere, that's worth a listen.

Mike: **01:30:58** And as we dig into it, it's interesting, it links back to what Adam was talking about earlier in the fact that there are structural limitations from a regulatory perspective on getting things that are new, novel and different into portfolios. So we're contemplating obviously, there's CME traded futures in this space, and we're attempting to contemplate how we might add those to a global risk parity portfolio. How does that fit into a set of asset classes now that it's a trillion dollar asset class in total, was 2 trillion, that maybe now wherever we're at sits up. Is a total asset class but...

Adam: **01:31:42** Have you checked this hour?

Mike: **01:31:45** Are you kidding me? I'm getting all these alerts for all these fills I got. I'm kidding. Not advice, no fills. But the idea, and this takes time and the regulatory labyrinth that you have to navigate in order to incorporate these things is substantial. And it differs across regulatory regimes whether that is the Canadian regulators, the US regulators, global regulators, UK regulators. It is exactly what you talked about earlier Adam, is trying to be non-compromising in trying to achieve risk adjusted profits on behalf of investors, and also realizing the limitations of the various structures and access points that various different types of investors are going to face. Even today we saw, was it Hong Kong that said that retail investors are no longer allowed to invest in crypto, which sort of reminds me of the SEC saying no to the Winklevoss twins with an ETF at Bitcoin 400. I know you guys discussed that with Eric Balcunas back when... so the regulators are doing their best, but there are career risks. They're doing the best in the construct or framework of their careers. It's not in their nature to be innovative. It's not in their nature to think about things.

Regulatory Challenges

Richard: **01:33:25** Career risk is very big, and the political potential for political backlash of allowing an ETF to be launched precisely at the time where our crash comes and retail investors get hurt.

Mike: **01:33:37** And who knows about the underlying political construct that's going on between the various other regulatory bodies, whether they be IRS whether they be Congress? We were speaking to somebody recently about this, it's not an SEC decision, this is a Congress decision, please tell us it's not our job.

Richard: **01:34:03** It's a hydra. It's not one head, there are so many different heads and it's different. You just have a steak with different textures, different incentives.

Rodrigo: **01:34:12** You got the Fed, you got Congress, you got the IRS, you have SEC, you have the CFTC.

Adam: **01:34:22** That's a credit to that, like there's been a lot of … about the fact that they've been so slow to approve ETFs and to make these products accessible and derivatives accessible to US investors. I mean, the fact is, if you observe the behavior of investors over the last several years but certainly last several months when the pressure has gotten largest and the cacophony of protestations has gotten loudest, obviously then preventing US retail investors from participating in some of these extremely levered derivative plays in the crypto market has saved them from a pretty miserable learning experience to put it generously over the last few days. I think the real lesson here is that regulations have intended consequences and unintended consequences. The intended consequence is to spare naive investors or inexperienced investors from participating in markets that they don't really understand. If you don't understand leverage and you're investing in crypto derivatives and you can get

10 to one or 20 to one leverage on your money. Like Buffett says these are weapons of mass financial destruction.

But in the right hands of experienced traders, the ability to run arbitrage trades and take advantage of sort of lending, and more risk free, assuming that it's done properly with diversification and appropriate governance and compliance and AML and all of the things that we've all learned go into asset management. If you have the experience to run a proper business like that, the ability to invest in these products opens up opportunities for, are actually relatively safe, in the context of if you're investing in equity markets right now you're taking a risk. If you're investing in cash and carry trades over a diversified set of exchanges with appropriate governance and compliance and oversight, then they have different risks. But I would argue that one risk is not much greater than the other, the one opportunity is demonstrably larger than the other. So this is I think, the tradeoff that gets missed.

Mike: **01:36:49** Yeah. I think it comes back to the point you made earlier too Adam with respect to regulators are trying to do the right thing, assuming they know what the right thing is. Remember you mentioned that earlier, it's like here we're trying to nudge behavior in this story, because we know it's right. Well, do you know that that's right. And did that help denying US investors the opportunity to invest in Bitcoin at $400?

Adam: **01:37:20** No, totally. It has helped over the last few weeks. But Bitcoin is back to where it was when, like January even back to where it was...

Richard: **01:37:29** And Ethereum has still more than doubled, or probably tripled this year.

Rodrigo: **01:37:35** To give credit to our home country, Canada. Those regulators. We had Shaun Cumby who's our ex head of futures trading who left us to start the 3IQ fund,.

Mike: **01:37:51** And we have Fred Pye, between him and we will have Shaun Cumby on. His schedule is quite full and he's a bit shy. But well, he's exclusive. Keep going Rod.

Rodrigo: **01:38:03** But my point is, for those who don't know what Shaun's role is, is like he was the guy who wrote back to the regulators and answered every one of their questions. Every page of questions he got, he responded with 40 pages of questions and was relentless, in trying to show the regulator's how valuable this actually was to investors. And this was back in 2017 when this whole thing started, right? That was like, this wasn't trying to launch something at the hottest point in January 2021. This was back in the day. I'm sure it was a hot topic, but not like it is today. So this is a guy we interviewed. He's been part of our lives for a long time. He's a fantastic guy. And he was able to give some give value to the regulators to give value to Canada and the world.

Adam:	**01:38:56**	Almost single handedly provided the educational background and persistence to get these products approved in Canada, and they have run flawlessly. I mean, it really is the ultimate example of innovation working exactly as promised.
Rodrigo:	**01:39:14**	And he hasn't stopped, he continues to innovate in that space. He continues to work with the Canadian government.
Mike:	**01:39:20**	When there's an opportune time we're going to have him on because he's working on all kinds of neat stuff. As I mentioned, we're going to have Fred Pye on who is the CEO of 3IQ as well, with the one who was the head of that firm to get that launched in Canada as well. So I think there's some really interesting insights there. And keep in mind that what it took in Ontario, was an application to the regulators which was denied and then subsequently a set of court hearings in order to appeal to the OSC and try and get them over the hump on getting these things approved, and that that that's a wonderful story. I can't wait to have Shaun on and have him talk about, that because it is no small lift.
Adam:	**01:40:11**	You’re right. Actually, that's a good that's just a really good story.
Rodrigo:	**01:40:13**	Yeah, for sure.
Richard:	**01:40:15**	And I think all this to say that our viewers can expect that more crypto fanatic episodes are going to be dropping both in Riffs and possibly in the longer podcast, the David Faucier episode, the guys mentioned earlier is in the podcast feed. And if anybody's looking for a coherent understanding of why this is important, I'm going to do another shameless plug and talk about our podcast episode with Raoul Paul. And I think that was a really just clear eyed explanation as to why this is so exciting for some of the OGs of global macro. The guys that have been at this game for a long time and have been very successful.
Mike:	**01:41:09**	And switching their focus you got … Raul Paul, you've got a number of people who were sort of global macro in the traditional sense who have switched their focus to this area of opportunity because of the opportunity set that I think Adam and Rod you alluded to, being so much more robust. And so yes, okay, so there's some what we'll call arbitrage trades that are risk free, but risk free in the investment sense. But there are other considerations, custodial, certainty, how custody works, all of these types of questions that need to be addressed when managing assets in this field. But in a frontier set of assets like this, but that's again where excess return lives. And we've talked sort of endlessly over a number of years about getting comfortable with being uncomfortable. The discomfort is where the excess returns often lie. And so I think that that is something that obviously we're learning and expanding knowledge and delving into this field and going to be incorporating as we can, subject to all the

regulatory approvals and things like that, this asset space into some of the things we do because of that.

And I think as you mentioned Richard, Raoul Paul is of great insight and the institutions, I mean, the early adopters are there. But those other institutions, they're still setting up paperwork, they've gotten the board approval, and working through all of the custody issues and the purchase issues and how and what and where does it live, and how do we how do we make sure that we keep those assets, those kind of unique bearer assets safe? And they're answering those and so that wall of money as Raoul puts it, I don't think it's actually hit this market yet.

Richard: **01:43:14** Well, it did. It did do the last few days, but it went other direction. They expected bigger walls.

Mike: **01:43:23** Yeah, that might have been a purge of the excess leverage.

Adam: **01:43:26** I just want to say too, Corey, for you to chime in at an hour forty, to chastise us.

Richard: **01:43:33** I just liked him and I just give a shout out.

Adam: **01:43:36** That is pretty gutsy. And I feel so bad but gave we gave you the full credit and a full plug on your podcast before. A little late to the party.

Rodrigo: **01:43:48** You're a little late. You know what? It is summer. I don't know if you guys want to call it quits. I could do this for another hour. But it is crazy how many top...

Adam: **01:43:58** I'm only halfway through my bottle of champagne.

Mike: **01:44:03** Butler's the guy who accelerates to do it. I'm done. I'm an early ramp.

Rodrigo: **01:44:08** He's about five minutes. But he's going to start getting interesting in five minutes.

Mike: **01:44:16** Get him get him through the two thirds level of the bottle and then it gets exciting.

Rodrigo: **01:44:21** So I just find it. You look through the topics because I actually didn't know how many episodes we recorded. I didn't see the summary of the topics until Richard did the work. It's crazy, we covered it all. We're done now. Right? What are we going to do next year? Oh my god. It's amazing.

Richard: **01:44:36** This is the first and last anniversary. I thought we were good.

Rodrigo:	**01:44:42**	It really is crazy how much we covered and I can't wait for what next year is going to look. You think about year after year. You think I can't believe this 2018 thing happened with Fed governor Powell doing what he did. That's never happened before. You know it's a onetime thing and every year you just have massive stories, massive surprises, massive industries that nobody ever expected to be created, emergent phenomena. I mean, it's a wonderful time to have a podcast, I got to say.
Mike:	**01:45:12**	I think it's an exciting time to be alive. I'm marginally concerned by this grasping or sort of embracing is the better word, of the sort of exponential change narrative. I think we're early in that narrative, but I think it's a very interesting time to be alive. I think that the parallel universe that is going on in crypto along with the implications for the real world, along with the sort of ESG and in particular the environmental side of things, and the embracing of that, just has so many implications that are regime changing. And it, I think it's going to be a very interesting world, I think about my kids who are 20 and 23 and what world are they going to be growing up in and how is it changing? I mean, it feels like things are going to change yet again, the internet changed things in the late in the late 90s and early 00s and now we have 20 years later, we have another very significant technological advancement that is going to change the way the world works. And there's going to be a digital world and there's a physical world and there's going to be the overlap of those two things. And it is really quite exciting. I think it's going to be a really interesting journey. I think Rod you always talk about this. There's never been a better time to be alive. The idea of that you people complaining...
Rodrigo:	**01:46:57**	Stop worrying about how things can go wrong and start getting excited about how things can go right. Thinking about things going right, Richard, I think you have to go to a party or something. Saying your goodbyes.
Adam:	**01:47:13**	Richard man, thanks so much for all your prep and guidance on today's episode. Definitely on hand contributed massively.
Mike:	**01:47:20**	Alright, so we're going to call it quits?
Rodrigo:	**01:47:22**	No, I don't want to call it quits. I have some more stuff to say, hold on a sec.
Mike:	**01:47:27**	That's fine. Let’s tripod this thing.
Richard:	**01:47:30**	All right boys, thank you. This is great.
Rodrigo:	**01:47:33**	Yeah, you're awesome buddy. Mike, show James West your Bitcoin shirt. Expand.

Mike:	**01:47:40**	I have one here. Hold on.

Predicting the Future

Rodrigo:	**01:47:43**	So it really is interesting what the next 10 years are going to bring. I think the ESG is going to … If I were to predict what's going to dominate next year, the topics and the amount of guests we're going to have, it's got to be the ESG. That's what I felt I was behind the curve on, and now it's just I can't believe even hit Bitcoin, right? I mean, I can see the parallels and whatnot, but ESG became a really dominant narrative late 2020 and then when all the way up the ladder to Bitcoin where it's the only thing that people talk about, and the podcast that we did with the two Bitcoin experts, I wasn't part of so I can't remember their names, the lady and the gentleman.
Mike:	**01:48:24**	Yeah, Mags and Foss.
Rodrigo:	**01:48:27**	We did address the issue of clean Bitcoin, the ESG Bitcoin where miners are using clean energy in order to mine, we're looking at projects that are mining clean...
Mike:	**01:48:42**	There it is.
Rodrigo:	**01:48:47**	Yeah, they're using clean energy in order to mine Bitcoin with energy that would otherwise be wasted or fumes that would go up in the atmosphere. So not only can you mind clean Bitcoin but you can also get carbon credits. So possibly attaching your Bitcoin to carbon credits. Maybe that's IP. I just came up with it, we shouldn't share. But I think that's going to dominate the themes for next year. Do you guys have any predictions of what what's going to be dominant and next six months?
Mike:	**01:49:12**	Wow, that's a good one.
Adam:	**01:49:13**	I don't like the visual of the declining heads. Do I need to like …
Mike:	**01:49:25**	Predictions for next year. Bitcoin to the moon. It's interesting. I wonder if it is the ESG moniker or it's an actual fundamental regime change with respect to whether it's the debasement of the monetary fiat system, and so assets that are hard are more valuable, combined with the potential for reigniting growth, because it's hard to square the ESG of batteries going through the roof where those are mining companies.
Adam:	**01:50:08**	Like a rare earth metals.
Mike:	**01:50:09**	Gold, copper, lithium, all of those metals, they're difficult to mine. They're pretty contaminants to the environment and things like that. So it's an interesting thing

to square for me. I'm like, Okay, well I get it, I guess we're going to make a lot of batteries but there's unintended consequences to those mines, mining those heavy metals from the earth and the tailing ponds. I mean, if anyone has ever seen tailing ponds and all of the things that obviously, there was that issue recently with BMP, not BMP, BHP Billiton where they're one of their tailing ponds, the dam broke, that's within the last kind of two or three years.

Adam: **01:50:58** Yeah, that happens all the time.

Mike: **01:51:01** And so you've got substantial environmental consequences to thinking about that. But again, you can think about Abaxx Technologies, the guys who are trying to be able to track and source those manufacturers and miners of the different commodities and being able to track back to, these are the most responsible environmental producers and thus, this is where you would like to buy your commodity metal from in order to manufacture whatever you're manufacturing. So there's this pervasive sort of thought process that we should be very cognizant of the environment and maybe that's a function of the millennials. Rod you as a geriatric millennial...

Rodrigo: **01:51:45** Geriatric, please get it right. Geriatric millennial.

Mike: **01:51:48** I know you guys are very concerned. You're concerned about the environment, unlike my baby boomer parents who didn't give a shit.

Adam: **01:51:59** And then claim that you can't recycle in our hometown? Like that's demonstrably false. I see the press, the garbage truck where they come like that's not a thing. It's like squealing and they're like my parents are like, no, I don't know what you're talking about.

Rodrigo: **01:52:21** I think the theme is going to be, I think ESG is going to be dominant. I actually think VR is going to be dominant. We bought VR sets for everybody in the firm, because everybody was started doing Zoom meetings for our firm dinners. And that kind of opened a whole new world for a lot of people. You were playing ping pong games remotely that felt real. And in fact, white papers came out that showed that it actually improved your live game. The whole people phenomenon like this ties into crypto, right? The fact that people, these artists have been creating art every single day for the last 15 years making no money. All of a sudden, NFT's come into play and there's a massive market where you have large auction houses auctioning off their art. But the key part about VR was that a group bought $2 million worth of its people's art, created a virtual gallery, a virtual environment that with my VR headset I was finally able to visit.

My wife's an art specialist. So I've been to many art galleries, I've seen a lot of interesting ways that art has been displayed. But Beeple’s 20 pieces were placed in this virtual world that wasn't just hanging art virtually, that you can walk around these rooms, but there were also Easter eggs and surprises and interesting videos. It was a brand new world that I can see the next generation, it will be hard for us to contemplate this. But to live a lot of their lives in this virtual world. And with sets this year coming in at such a cheap price, video games and environments and COVID forcing kids to interact more virtually than ever getting comfort in that. I think VR is also going to be huge next year.

Mike: **01:54:07** That's interesting. It has lots of implications too to longer term, the change and we had a long discussion with Jim O'Shaughnessy on the educational system and potential ways to improve that. And I think VR and online interactions with respect to educational achievements are very interesting. I don't think there's a one-year thing but I think over the coming years, you're going to see those types of education and you're going to see individuals with their accreditations from the perspective of the accreditations with respect. You do look like one of those guys with the eyeball in the middle. You look like a Minion.

Rodrigo: **01:54:56** You're going to see this geriatric millennial walking around like this in the office 50% of the time.

Mike: **01:55:03** What was I saying?

Rodrigo: **01:55:04** Sorry.

Adam: **01:55:06** That was a total derailer conversation.

Mike: **01:55:13** I haven't played. On the chain will go all of your academic credentials. Your academic credentials will exist on an NFT chain of some kind. So when you're applying for a job, you will just provide them with your...

Adam: **01:55:25** Not just academic, I think it's like, all of your body of work lives on chain. It is irrefutably and indelibly your own body of work. There's some sort of verifying or Oracle Process that that verifies that it is your work. How often have we been approached over the last few years by people who want to work at ReSolve in various capacities? And I don't know what your guidance, but my guidance is always *show me what you've done*. Like, show the world what you've done. If you're passionate about something, it means that you cannot help yourself. But, write code, talk, whatever about whatever it is that you're passionate about. So show me, where is it? Show me your body of work.

The people that we have hired or brought on to the team over the last little while have all been people that have just devoted themselves to sharing with the world. Like, I have a passion and I'm going to share with the world what I can do, and I think that the blockchain technology allows people to sort of combine that with tracking it through time, demonstrating that it's your own work, combining it with validations and credentialization from other institutions. And it's going to be the mosaic of all of these different factors that hopefully will factor into decision making about who gets roles, positions, projects, etc in the future, because this sort of antiquated credentialing model is...

Rodrigo: **01:57:21** Was it *Gatica*? Do you remember the book *Gatica.*

Adam: **01:57:26** Dude, I watched it with m y kids, like a year ago.

Rodrigo: **01:57:27** So what's crazy about that is that it was... No, but you needed to have a certain credential which was your DNA, fingerprint every time you go in, in order to be able to even be considered for a job. So the scary part of this is that there will be, there might be massive demand for people that can create a chai.

Adam: **01:57:46** That's the optimization of this ecosystem. Because that was unidimensional and also entirely deterministic. It's like your genes forecast your entire potential. And I think the ecosystem that we're sort of contemplating is, you have a chance to show what you can do. There's still going to be many, many, many people left behind and that's a whole other conversation that I'd be delighted to sort of get into, but because genetics does dictate a very substantial amount. And then there's this other quality with people with very prospective genetics, they get short circuited by not having an environment that either triggers the genes that allow them to realize their potential, or truncates their ability to demonstrate their potential for a variety of ways. If you can't afford to get into the right university or you don't have a computer, because you live in the slums in Bangalore or whatever. So there's, there's lots of challenges.

Mike: **01:58:54** I take the Gatica side, because the *Gatica* side I think is one of related to sort of CRISPR, and designer babies and that edge of it. We have some friends that are contemplating how they might have some kids and the series of choices they have, in order that they can make, in this circumstance is really kind of interesting scary. *Gatica* like scary. Because you can say, Well, I'm going to opt out of that, I'm going to opt out of improving my prodigy.

Adam: **01:59:33** It's like negative screening.

Mike: **01:59:36** Correct, it is negative screening, but still it's similar and that …

Adam: **01:59:43** So I don't undermine it.

Mike: **01:59:44** And that's the tip of the spear because the next step is, well, we're going to offer these enhancements. And by opting out, you are putting yourself at a competitive disadvantage, or you're putting your children at a competitive disadvantage.

Rodrigo: **01:59:56** So can I tell you the long term benefit of all of that. This is where I'm excited about my children. I'm talking to Mr. Butler. I can't possibly have a positive spin on this. But let me tell you what the positive spin on this. I say let's do more, let's get the smartest possible people, the smartest AI, with management about how important it is to take care of all of humanity, to be able to figure out a way to create something that allows every single one of us, from the people that maybe don't have an opportunity to participate in creating new efficiencies in the global economy, to the people they can continue to participate in that because that's our passion. They want to code, learn to code all that nonsense go ahead and learn to code, if that's your passion, do that for a living, do that for a living. But if your passion is to be the best crawfish fisherman and you fucking love doing that, you can't do that you have to go and be a construction worker in Mississippi in order to find an hour, half an hour to be able to do some crawfishing for yourself.

I have hobbies that I cannot do because I'm trying to do things for you guys and everybody out there and my clients in my place, I love what I do but I'd love to do more other stuff. Like that new game that I have in the VR set. So if the more people we have...

Adam: **02:01:26** …

Rodrigo: **02:01:27** I know you want to get negative on me right away let me finish. I'm almost there. I'm setting it up baby, I'm setting it up, just give it a second, let it just shower over you.

Mike: **02:01:39** Wash over you.

Rodrigo: **02:01:43** The smarter people we get, the more we allow smart people to create a society in which you create a universal basic income of some sort that, with in combination with a social program that teaches you to follow your passion deeply on a daily basis so that you can be fulfilled, doing what you do. Being social, creating communities and doing what you're most passionate about which is what I see in the crypto space, is the moment that you actually create a utopia society where everybody's following their dreams and it's not based on following the money, but it's based upon your dreams and we need a lot of smart people...

Mike: **02:02:26** Unless following the money is your dream.

Rodrigo:	**02:02:29**	That's what I mean. Coding is your dream do that, if a deep sea diving is your dream, then you get to do that.
Adam:	**02:02:38**	There's two dimensions to the point that you just made. One is that we should all be pursuing a society that supports everybody maximizing their own unique potential and interests and passion, which I would agree is potentially one definition of sort of a utopian vision. But the other is, the way to support that vision is that we're going to engineer a bunch of super intelligent humans that are hyper productive and are able to carry on their productive backs, the entire productive capacity of humanity, so that the rest of us can go about our vicissitudes, which I kind of like.
Mike:	**02:03:39**	Isn't that the way it's always been?
Rodrigo:	**02:03:42**	No. The way the educational system works today as a fact...
Adam:	**02:03:46**	But also not in engineering. The implicit present, or in your position there, and I like how Mike's, I'm going to poke you in the eye. I think implicit though is a point that we've been revisiting over and over this conversation, which is the presumption that we know what characteristics we should engineer for. We know what objective function will lead to or how we should prime the system in order to maximize the objective function. I'm not sure that pure intelligence…
Rodrigo:	**02:04:28**	You gotta randomize...
Adam:	**02:04:30**	That's what genetics does.
Mike:	**02:04:33**	Yeah, that's actual genetic. It's a genetic algorithm.
Adam:	**02:04:35**	The genetic algo is to maximize diversity in order to like, we're getting concentration to our strengths but we're also going to have a guy that insists on living at the top of the mountain. And he's the only guy from both generations. He ends up being the least productive biggest drain on social resources but every now and then there's a generational flood and his family is the only one to survive it. So it's hard to know especially in an ergodic system what characteristics we should engineer for in order to maximize the sustainability and happiness or fulfillment of humanity.
Mike:	**02:05:18**	I also want to come back to the game theory aspect which is where I was going with enhancing your potential offering. So you're not going to do it? Okay well, you're putting them at a competitive disadvantage and parents just generally don't do that. And so you are kind of stuck there.

Adam:	**02:05:41**	You see it everywhere, so to pretend like that's not the way that will end up in the event when this tech becomes omnipresent.
Rodrigo:	**02:05:51**	I don't know. My wife for example consistently pushes my children away from my optimization, and towards just doing what you want, do some art, you want to throw powder in the air and make a mess that's fine. You're learning about gravity. My wife would optimize for crazy, it's free association, non-mathematic, non-coding, non-optimization. Just to live life and be happy.
Mike:	**02:06:20**	How would that manifest Rod if you guys were deciding to have kids today and you were offered the opportunity from a CRISPR perspective, what would you do?
Rodrigo:	**02:06:34**	We would probably compromise. We would probably give it a bit of both.
Adam:	**02:06:38**	Mike, is that question what character traits would you optimize?
Mike:	**02:06:44**	One is yes or no. If yes then what?
Rodrigo:	**02:06:48**	I'd probably create the 11 fingered or the 12 fingered pianist. Remember that in *Gatica*?
Mike:	**02:06:54**	Yeah. I'm kind of reminded by that, the Bruce Willis movie where they all kind of live in their houses and they're in VR chairs all the time, and that the real world is this course of dystopic thing, and they're all living virtual reality and you're a different person in virtual reality like that fat guy who is a supervisor.
Adam:	**02:07:15**	Which movie is that?
Rodrigo:	**02:07:16**	I can't remember the name, but little do you know Mike we are living in assimilation, and on that note...
Mike:	**02:07:23**	I do not disagree with that. I think that there's, as VR approaches and you see the VR, you're like well maybe I'm in a VR.
Rodrigo:	**02:07:34**	This is a good move for the guys that think that people are realizing they already, we are given some VR sets.
Mike:	**02:07:42**	I think my prediction over the next year would be that the adoption of the crypto space, the applications are going to move in an exponential fashion that far exceeds the expectations currently, and that this is going to bleed into many normal parts of our lives in a way that is unexpected, faster than expected and probably in many ways that the average person doesn't realize. There'll be a lot of stuff that's happening under the surface where these technologies are going

		to be applied, and you may or may not be aware of them. But I think the adoption rate and the ability to scale and the ability to do things that are appropriate in that space is likely going to outpace expectations. This has nothing to do with price by the way, nothing to do with price. This has everything to do with how this technology can be applied if we just go back a year or any year before that, I think just the continuation of that, versus people's expectations is still going to surprise on the upside. So that would in my prediction.
Adam:	**02:08:55**	The medium that we are currently broadcasting over, Obviously a use case for the internet that is valuable to us personally. I do hope that the killer apps for the crypto space end up being more positive for humanity than the killer apps that have manifested for the internet age, the Facebook's, the social media, the social engineering and all of the bots and AIs that … yeah and potentially undermining democracy and whatever semblance of free will we might believe in so.
Rodrigo:	**02:09:45**	Oh my god I want to do another hour now but I have to go. We deviated from topic, but I love it. What a great anniversary episode guys? Thank you much thank you every single person, whoever still there.
Adam:	**02:10:02**	Thanks for sticking around.
Mike:	**02:10:02**	Mom thanks for sticking around.
Rodrigo:	**02:10:02**	Thanks Mom. I wanna give a shout out to...
Mike:	**02:10:13**	4 or 5 people who are left. Please smash, like and share and leave comments and please help us grow this channel and this opportunity to share these things with everybody and yourselves. Visit us at investresolve.com and all our various other podcasts and the Riffs that we've talked about today, and with that thank you for year one.
Adam:	**02:10:38**	And thanks all of you who stayed with us. Good night.
Mike:	**02:10:41**	Yeah, both of you.