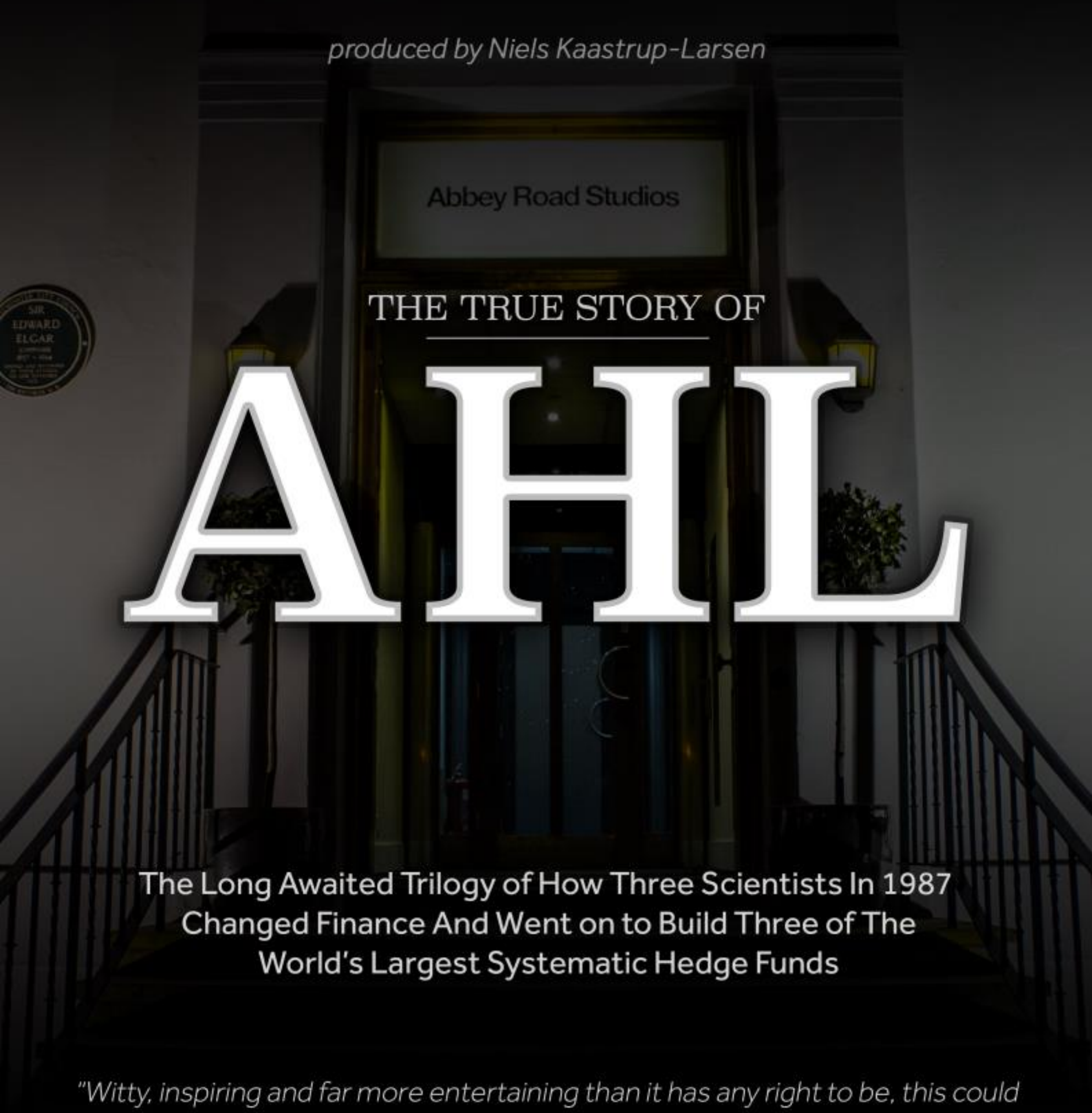
Michael **ADAMS** David **HARDING** Marty **LUECK**

produced by Niels Kaastrup-Larsen



THE TRUE STORY OF

AHL

The Long Awaited Trilogy of How Three Scientists In 1987 Changed Finance And Went on to Build Three of The World's Largest Systematic Hedge Funds

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CME Group
TOP TRADERS ROUND TABLE

Introduction

Welcome to CME Group's podcast series on managed futures. My name is Niels Kaastrup-Larsen, and I'm the host of the podcast Top Traders Unplugged. Today I'm delighted to welcome you to a series of short conversations with industry leaders in managed futures, brought to you by CME Group.

On this episode, our guests are David Harding, the founder and CEO of Winton Capital and Michael Adam and Marty Lueck, the co-founders of Aspect Capital. All three of our guests are the original founders of AHL.

Niels: Welcome to another edition of Top Traders Round Table, a podcast series on managed futures and alternative investments. My name is Niels Kaastrup-Larsen and I'm delighted to welcome you to today's conversation with industry leaders and pioneers in managed futures, which is brought to you by CME Group.

Today is another very special episode, not just for me but for the whole managed futures industry. For the first time, in a very long time, we have brought together some extraordinary pioneers of systematic trading and trend following strategies who really have influenced the whole world, when it comes to rule based investing, and have inspired countless firms to mirror their success.

First of all, welcome and thank you very much for spending some time with me today. I think it's safe to say that most people in our industry have heard of you. Since we are sitting here in the famous Abbey Road Studios in London, famous for its association with rock stars like the Beatles, I think it's fitting to describe you all as rock stars of the systematic trading industry.

Now, like the Beatles, you worked very successfully together for several years before parting ways. So, today we're going to talk about the time before and after the split. Let me start with a slightly different question and that is, how does it feel being back together after all these years or have you in fact kept in touch on a regular basis?

Marty: We do keep in touch. We follow one another's successes and areas of interest. Mike and I see each other often, David less often, but the three of us have gotten together a few times over the past few years.

David: Yeah, for the 20th and the 25th, is what I recall - two dinners in the last 10 years to celebrate AHL's founding.

Niels: Sure. Fantastic

Mike: David and I meet once a year, maybe, for lunch, to talk about Marty, obviously. (Laughter)

Niels: Of course, of course. Now, if my memory serves me right, Mike, your family business played an important role in the initial stages of AHL, when that was being born. So, take us back to the Oxford University days and how it all got started for you.

Mike: Well, like many successful outcomes it started from very unpromising beginnings. I dropped out of Oxford without a degree and thereby rendered myself, essentially, unemployable.

David: Like Bill Gates.

Mike: (Laughter) Yes, and there the similarity ends. (Laughter). For want of anything else to do, I ended up working in the family brokering business. At that time, in London, there were probably thousands of little broking businesses beavering away with their own franchises. The particular franchise of the family firm was selling the Mauritian sugar crop on the London market. In fact, a detail turned out to be quite relevant when we later got together with the Man Group with their historic connection to sugar.

I ended up in a back room doing the books by hand and drawing charts by hand. Then laziness drove me to automate my own job. A computer arrived in the office. There was no one else who was interested so they gave it to me and I created a database to draw the charts by computer on a flatbed plotter, and an accounting package to do the bookkeeping. That was the beginning of my interest in both computer programming and its application.

Marty: And making yourself redundant. (Laughter)

Mike: And making myself redundant - laziness. So that was the role that that played. I already knew Marty and met David. David was one of the few other people in London, along with the astrologists and other peripheral nut cases that, at that stage, said it was possible to trade markets systematically. We ended up working together for my father in the company. I think you should ask David and Marty, from their perspective, how that felt.

Niels: Absolutely. I was going to ask you, Marty. You only had a short time at NOMURA. What compelled you to join Mike?

Marty: So, I managed to hang on long enough to get a degree at Oxford. Then, in that era, we were launched into the milk round and it was pretty much expected that you would go to work for a bank, or an accounting firm, or something like that, so I wound up at NOMURA selling Japanese equities, and I didn't even know what an equity was. So, I did very well, so I'm told. I was the "young lion" of that year's intake of the equity trading desk.

I spent all my lunchtimes hanging out with my friend Michael, and during my summer holidays at University I learned to program - working in Washington DC for a Department of Defense contractor - and this was fascinating. This was just great fun, so rather than do a slog of a job, I went to have fun coding an early Hewlett Packard workstation with Michael working for his Dad. It didn't feel like work at the time.

Niels: Sure. This, I think, is before you meet with David. You started out trading a very small portfolio - I think 25,000 pounds, six markets (or something like that). How did that come about in terms of starting trading these markets using rules?

Marty: My recollection and Mike will correct me, was that Michael's father was pretty instrumental in saying why don't you boys see if there's anything in these technical trading models. So we bashed them around awhile and distilled it to what we thought was a useful model. At the time the only data that we had were physical commodity markets so the first portfolio was, as you described, cocoa, coffee, sugar and three base metals, and presented it to Michael's father and he sunk the family fortune - well, 25,000 pounds into that.

Niels: Sure. Now during this time, you meet David, and despite David being a Cambridge graduate you seem to hit it off straight away.

David, what were you doing at the time you met with Mike and Marty and how did you get to this point in your career?

David: I was working for another futures trading CTA, the biggest one in the UK which managed, I think, 4.5 million dollars and was called Sabre Fund Management. The job I had there - that was already my third job. I had started on the futures exchange, actually, I started trading the London International Financial Futures exchange but then moved to a commodity broker. When that went bust I went to work for a commodity trader. I had to draw hundreds of charts by hand every day - many more than I'm sure Michael had to draw. (Laughter) That was not really what I thought I was cut out for in life. It did give me a lot of time for reflecting on chart patterns.

Niels: Sure. Absolutely.

David: During my previous jobs I had become pretty interested in how you could make money by trading markets. It's not such a hard thing to be interested in when you're a young "sciency" sort of man: making a lot of money trading markets.

I read a lot of the books - I read all the books on technical analysis, and I had read all the books on bond math and so on, so I knew a fair amount about it. I had a pretty strong feeling that markets weren't efficient and that there was some sort of point to trying to forecast them. When I started talking to Michael and Marty we were trying to engineer a sort of combination of... The firm I was working for - the giant 4.5 million dollar CTA, and the somewhat smaller 2.5 million dollar Brockham - it was clearly very amazing to me that these guys had written software that was well in advance of what you saw in most of the banks and institutions. My fantasy, at that stage, was that they'd take my ideas and test them and turn them into reality. Practically, they didn't need all that much of my ideas because they already had perfectly good ideas of their own.

There were some... Eventually, when we got together, that was the attraction. I think I thought my ideas were better than they probably actually were. (We should all think our own ideas are good shouldn't we?) (Laughter) I don't think my ideas were useless, but the fusion of one of the amazing things was when I saw the places that... They put charts on the walls and you could see where the computer was saying buy, and sell, and it was almost the same places that the arcane science of technical analysis had taught me you should buy and sell. That was striking to me - that an algorithm could produce the same results as this body of expertise. That was very striking.

Niels: Indeed. If I could stay with you, David, for a little while. Science combined with finance is not uncommon today. I imagine, back then, this was not the usual cocktail that you would come across. When did you really realize that you could combine these two things successfully? I don't know whether it's science - in a sense that you initially thought of when you looked at the charts - or whether the science part came a little bit later?

David: I think scientists were starting to be recruited in growing numbers into the financial service industry from the early '80s even before the big bang in 1987. I can remember feeling, that I'd sort of failed, because with a degree in Physics and five years in the city, I wasn't earning 100,000 pounds a year. You remember that was the height with Mrs. Thatcher and I was supposed to be a Yuppie at that point in time, and I wasn't a Yuppie.

It wasn't like no scientists went into finance, but most of them were all easily drawn into the orthodoxy which was efficient market theory, stochastic calculus, partial differential equations - that turned out to be a fertile career option for people. Most scientists went into these branches of finance which I see culminating in the crash of 2008 - the over idealization of how the financial system works.

The mathematical theories at the heart of finance were wrong. We were all physicists, none of us were mathematicians, and none of us - even Mike - he tried to escape but he had physics training to some extent. As physicists, you are trained to have an experimental look at the world and the software they'd written did enable us to do experiments. We were all well trained and we did some good experiments.

Marty: That's what I'd draw out. I don't think we went into it thinking, "Ah, this is a problem that lends itself to these particular techniques." But, we had a mindset - we had an inquisitive mindset. As you say, empiricist perspective on the world which was juxtaposed, or was different, from the managed futures industry as it was in that era in the States. I'm making a gross generalization which may not be true, but my sense of it was it was predominantly experienced traders, floor traders, who had encoded their rule set using a computer and that was it. It worked for them, and now they could head to the beach, or go and do other activities and that was good enough.

We, without thinking about it, our attitude was, " Well, I've done this, and it looks good enough, but what if I try that? What if I expand this? What if I add a new market? What if I go faster?" Mike was reminding us about moving to intra-day execution. There was a constant inquisitiveness. I think that was born... Maybe it's just the people we were, but also an element of that scientific perspective.

Mike: Also, we were very lucky because technology arrived just at the right time. For the first time, you could get... I still have got a proposal that we should buy a new Hewlett Packard computer and they were incredibly expensive (now that I think about it), but never the less, relative to history, it was plausible to get some pretty serious processing power. I think a lot of the things that we did we did them because we could. It turned out that that made us unusual because most people simply couldn't run the experiments that we ran.

David: In the first three years we were always waiting for a new, more powerful, Hewlett Packard model to turn up so that we could run the experiment that was now taking 36 hours to run. When the new computer came we would get the first one in the country and it would run in 1 hour instead of 36 hours and then we would find a bigger fund which would require more processing power, and then we'd be waiting for another six months for the next computer to turn up. These weren't even very big computers, were they? They had to be affordable.

Mike: Now they seem pathetically weedy, but at the time we were running experiments which, when we showed them to other people: the questions we were asking and the answers we were getting, as far as they were concerned it was magic. I don't think it's ever really ever been talked about, but at the beginning of what we did, we didn't make money as managers at all. We made money as consultants. So, we were answering other people's questions.

I think we learned a lot from looking at other people's market-related problems that otherwise we wouldn't have learned and some quite surprising insights followed from that. We didn't approach that, I didn't anyway, because I was interested in markets. For me, I was interested in the technology and the challenge of writing the code. I think the other thing that really worked, between the three of us, is that David was the one who was absolutely obsessed with markets, which is good really because one of us needed to be.

David: You set out to recruit me, you set out to recruit me for that reason actually.

Mike: That is true. You were literally the only candidate. (Laughter) Yes, probably the less said about that the better. (Laughter)

Niels: Absolutely. So, anyway, David, you do join the Adam family business. What happens next? When do you realize, really seriously, that you're on to something? Is it, even in these early days, that you come up with these ground breaking discoveries that you probably are responsible for, at the end of the day, in this field?

David: When you discover something important and true, you know you've discovered it. You don't know that you're going to be sitting there, 30 years later, talking about it. You just know, at that moment in time... Just reminiscing about Mike discovering something earlier to do with time varying volatility and he came back and produced this result which was a normalization that you could use for making historical time series simulation more robust. I was joking with the guys before, I said to them, "That's brilliant!" They didn't know then that it was brilliant, but I knew it was brilliant... they did... I didn't discover it but I could see its significance and it remains and is one of the things that I tell people when they say, "What are the memorable moments in your career?"

There are two, or three, or four, discoveries like that which are really, really material. Unfortunately, another 10 great discoveries which have also been equally exciting which have all turned out to be wrong. So that sense of discovery is not necessarily confined to the things that ultimately turn out to be very important. I've had a few brilliant discoveries that have been wrong. What makes a discovery amazing is that it's elegant, and beautiful, and simple. If it's a very, very complicated piece of math leading to a very significant result it's probably wrong.

Mike: Yes, elegance and simplicity - that feeling that you've discovered something that once you've discovered it, it becomes completely obvious and useful and leads to great insight. So they're probably only two or three. I'm sure that David and Marty having continued at the cutting edge have discovered more since. I certainly feel that we were very lucky to be approaching this at a time when processing power came onboard, digital data - you get the data. We made very rapid progress in hindsight. But, I still only think we found three or four things.

Niels: Are these things we can talk about today?

Mike: They're pretty simple and they're all pretty obvious. I would perceive that they're well understood now.

Marty: Yeah, now it's finance 101, but we didn't have a framework for equalizing the risk across different markets.

Mike: So moving to using an exponential schema for assessing risk and for normalizing markets, which is now so widely used that it's now the regular true standard imposed on all market participants, which of course, is not what we had designed that measure for. So that would be one.

I think because we were doing work for Gilt market makers who were really struggling with the fact that they'd lost their franchises and no longer had a protected access to that market. We did some work for them and discovered that we could model their P&L to within +/- 1/2% per quarter by simulating it using a trend following trailing strategy. I always saw that as a huge insight because it told us that trend following is really a systematic way of thinking about market making.

In turn, I think that pointed us at, in which case, if that's what it is, we need to be concerned with the cost because we saw how important it was to market makers - what their cost of market access was - in a sense, they needed to be large and negative. They needed large spreads to make more money and if you squash those spreads they made less money and there's a strong relationship. That told us that market access costs were incredibly important.

We started measuring our full cost of market access from the point of sampling to the point of execution. We started looking at what we were paying to execute and that led us on a drive to set up a trading desk, to get close to the markets, to talk directly to the floor. So that insight made us focus on something that our competitors just weren't focused on, with real confidence that it was important. That also made us extremely unpopular with the brokerage community.

Marty: You're getting ahead in the story. (Laughter)

Mike: I think there are three of four things, but three or four simple things can lead to a whole set of subsequent insights that point you in a direction, give you confidence that you're worrying about the right things. There are probably a few others that I can think of, but those are the two big ones.

Niels: Sure.

Now you end up splitting from the Adam family business in February of 1987 to form AHL with a whopping 100,000 pounds (I believe) in assets under management. How did you make this work, both from a trading perspective - it's limited how many markets you can trade with that amount of money, and also from the business perspective? How did you go about growing that? Did you have to hustle in the beginning like all start-ups?

Marty: We always hustled.

Mike: Well, we did consulting. I think it was fantastic that we did.

Marty: That's right.

Mike: We did various bits of consulting and all of them taught us something. We did some research for a company in option replication and recycled that work when thinking about how to gear a guaranteed fund. It turned out to be really, really important. I don't think AHL would have been successful if we hadn't worked for other people. Also, I don't think Marty and I, because there was some question when we left Brockham, as to whether we would start a business at all. If David hadn't come riding back over the horizon saying, "You've got to be kidding! We've got to do something with this." Marty and I would have gone on...

Marty: Exactly, we were going to do computer consultancy or something like that. I think, as I look back on that, that there was an element of that we didn't know what we had discovered. Systematic trading, in those early days, felt like a happy accident. When things were going well you think, "Yes, we're so smart." When things are going badly it's miserable, and it did take many years to get the confidence in the underlying statistics and the body of work that we had all been involved in. I think we must have come off the back of some miserable period because we were ready to throw in the towel on the investment management business - this has to be done. Let's go start a business cleaning computers or something really entrepreneurial like that.

Mike: We had some really compelling accounting software and we sold that.

Marty: But David, you were very robust.

David: I had more confidence with what they had done, in terms of the computer software, was a significant finding. I had been out there and there were a number of jobs that had more exposure. So I was confident that they had developed, on personal computers, good color graphics and, for example, heat maps and this wasn't even that much of an innovative technique then. It was innovative on a personal computer in finance, but they were using it in weather and this sort of thing and it wasn't unheard of. You will see people using heat maps today when they're trying to blind you with science. Three directional graphs in which color is... That is still, today, used to be impressive. So when I did demonstrations, for my friends in the city, with the heat maps, they...

Marty: It's the only color screen that they'd ever seen attached to a personal computer.

David: Yeah, they were very, very impressed. It's also fair to say that we had some loyalish clients who traded with us from the very, very, beginning. There were one or two clients who were extremely supportive of getting the company going because they had already gotten themselves into bed with the old company, and the old company folding was a nuisance for them because they'd done all sorts of work. We had clients who conspiratorially wanted us to succeed and start a new company. So, I guess I had clients on my side as well, though not enough, as Mike said, to support the new business, but enough to create continuity in the track record.

Marty: We never borrowed any money. We used some office space from my Dad. We had friends that would join the company and did some of the donkey work that we promised to pay later.

Mike: And still remind me, occasionally, that they never ended up earning any of the business and barely speak to me... No that's not true (Laughter), not true.

David: Well, the six months, looking back on history, passed in a flash. At the time there was lots of stuff that happened in six months. We had people join, fall out, leave.

Marty: We hopped offices. We went from my Dad's office to a serviced office in the basement, to Sabre's. We sat.

David: Certainly six or eight offices in the first two years.

Marty: So we were very mobile. (Laughter)

Mike: The other thing that was so unusual was I don't think any of the three of us knew anyone of our age who would even contemplate starting a business. There was no sense that we were doing the right thing starting our own business. We just didn't know anyone else who was. So, there just wasn't that culture.

Marty: In fact, it was the other way around. All of our cool friends were getting fancy jobs in big institutions so we were the... the unemployable. (Laughter)

Marty: In fact, it was the other way around. All of our cool friends were getting fancy jobs in big institutions so we were the... the unemployable. (Laughter)

Mike: We were the unemployables doing the crazy thing, which is another huge cultural shift that is almost hard to remember the way that it felt to be starting our own business as three people in their mid-twenties who had no idea what they were doing back in those days. It clearly felt as if you were doing the wrong thing, or at least if you listened to advice. The world has changed so much.

Niels: Just about starting businesses, are there some of the challenges that you had back then, that you can relate to as you grow your businesses today?

Mike: Yes, it still, to me, feels uncomfortable to start something new. But, at least when I meet other people they think it's the right thing to do and assume you're going to be successful, so the difference is how it feels. The challenges are the same - trying to persuade people to work for you when all you've got is an empty room and that idea. It's really quite difficult. What do you think David, if you were starting Winton again today?

David: Well, the situation is different now, isn't it? Obviously, I like to say, generally, about my own career, if I'd known what it entailed I wouldn't have started it, roughly speaking. If we'd known what we were going to have to go through the answer is you wouldn't have done it again. You would have gotten a safe job. It's great to have been successful but it can be a bit of a bruising experience. Just the sheer... You think you just don't have an adequate level of foresight. If people knew what starting a new business would entail, no one would ever start a new business.

Marty: I think that's true. There is an element of...

Mike: We were certainly naive. We had that going for us.

David: Yeah, it's impetuosity, or recklessness, or naivety, or even (dare I say) a sort of greed, or something which gets you over the hump of doing something which is essentially not a rational decision.

Marty: The only thing I'd say probably seems to be a persistent feature every time you start a new business is the people. That's what has been the perennial feature, both for good and bad. If you pick the wrong egg it can be remarkably disruptive. If you get the right group of people it can be remarkably empowering.

David: You don't have that much power when you start a business - you don't have that much power. These days, when you fill a position, you can interview... like Mike joked earlier, I was the only candidate. (Laugh) For filling a senior position in your company now you'd interview 47 people, you get a short list, then you narrow it down and you get 6 people who you interview, then you have a better chance of ending up with a person doing the job who wants to do the job.

Mike: As three twenty-five-year-olds we were obviously making it up as we went along. I think that was a happy accident as well. We ended up... We couldn't possibly have recruited people with vast experience in banking and trading because, A, we couldn't afford them, and B, they were going to be older than us and therefore they were almost certainly not going to want to work for us. That's how we perceived it at the time.

So we were almost forced to recruit new graduates, young, unformed people. I think that turned out to be an advantage. Certainly, subsequently, whenever we employed anyone who had experience in markets we would really struggle to train them to unlearn all the things that they'd been taught that actually were completely destructive and inappropriate and clearly an obstacle to progress. Right from the early days, it meant we were recruiting raw talent and then inventing the ways in which we wanted them to work from scratch. I think that turned out to be a good thing, but it didn't feel like such a good thing at the time. It was an advantage we had.

Niels: Sure. Now, clearly, you had the scientific approach to trading. Is that what attracted Man Group to you in the beginning, or what happened and how and when did this all start taking place?

Mike: Well, the Man Group already had a very successful relationship with Mint - that was Hite, Matthews, and Delman. I don't think it's entirely accidental that there were three of them - Hite, Matthews, and Delman, that they were systematic and the Man Group had built a great franchise around a branded product that wasn't branded Man. They built a big organization around it. They're based in London. They saw three people - Adam, Harding, and Lueck - and they said, "We've been here before, we know how to do this." I think part of what attracted the Man Group to us is the analogy with Mint. We were valuable internal competition for Mint.

David: They bought 51% of AHL. I remember the meeting where they said, "You wouldn't consider selling 51%?" At least two of us, if not three, said, "Yes we would!" (Laughter) They bought 51% of AHL where they had 50% of Mint and Mint was a deadlock. So, it was in the minds of the deal makers at Man that they would buy a majority stake and use that to control the investment management half of the enterprise, which is what they did. It was an extremely well-executed manoeuvre.

Mike: There were two things that were in our minds: one was the obvious one which was distribution, which we needed to raise money and the Man Group clearly had a machine for raising money, so that was attractive to us. At least as big a motivation for us was market access. We figured out, as an outsider, we simply couldn't get cost effective access to markets. Whereas the Man Group was plugged into the market. So those were our motivations.

Marty: That created quite a tension because (my recollection) the original deal with Mint was forged by the brokerage division of the Man Group. So, it really was a case of the Mint model spitting out the orders which got faxed across to the brokerage unit and they just executed in their own good time. So, everyone was happy. It was spilling off money. It was over a billion dollars and it was at capacity. They really couldn't execute more. You say an element of internal competition. It was a case of that they were onto a good thing and could they find some more product which we looked like we represented. So, they got a surprise when we said, "Yes, absolutely, but we’re asset managers and this brokerage bit of the business has to get sharper”.

Mike: Yes, in hindsight, you talk about the tensions, we then had an uncomfortable few years, or I certainly did. It felt... We were on the fifth floor and they were on the fourth floor. It felt to me like a constant war of attrition because we were constantly driving to reduce the time between sample and execution; to reduce the cost per round turn of what we were doing so that we could trade faster. If you've got a tiny edge, then one of the ways to increase the probability of success is to roll the dice that you've got that's got the edge more quickly, but you can only do that if the cost of each roll is low enough. So, that worked completely counter to the natural instincts of the brokerage division who understood that having the freedom to execute with a secure order flow was highly profitable for them, as it was for any broker.

It seems strange now, but of course, everyone is now obsessed with the speed of market access and costs. No broker would ever say, "Send me your orders and I'll let you know when I've executed them at some stage tomorrow".

Niels: When you heard about Mint, is that the first time that you realized that there was actually an industry for what you were doing across the pond?

Mike: David already knew.

David: I knew.

Mike: David was aware of that.

David: I joined Sabre in 1985, but actually before I'd been developing trading systems. It was a tiny industry. In about 1985/1986 I went to the managed futures industry conference which was hosted by Mort Baratz, who was one of the founding fathers. It was in Orlando, in Florida. It was my first overseas business trip and I felt like a Titan of finance. There were about 50 people with Leon Rose and Mort and Marley, their wives, sitting behind a trestle table in the foyer of the hotel. In the neighboring ballroom was the DAF regional truck driver's convention. They had an ice sculpture. They had a huge buffet. They had armies of people. It put the managed futures industry into context - this little knot of people with an elderly professor and his wife sitting behind a bench on the one hand, and the DAF regional truck driver's convention with trestle tables laden with banquets.

Mike: As an industry, then, it was - I was going to use the word ridiculed, but it pretty much was. We were definitely at the edge of finance and were considered to be eccentric. In our first year of existence, the Economist wrote an article saying that we were wrong, doomed to fail, that the markets were efficient, and that we were essentially wasting our time

Marty: It placed us along side some institutions in the states that were doing pioneering work employing computers to measure and predict the financial markets, and the tone of the article was quite sceptical.

Mike: Completely. They completely bought into the fact that the markets were efficient and therefore what we were doing couldn't possibly work. The industry then was very much... If you used astrological charts to predict markets then you would be at the same conference as the early trend followers.

David: Well, efficient market theory was the orthodoxy and trading systems was the heresy.

Mike: Absolutely. It was right at the lunatic fringe. (Laughter)

Niels: Now, David, I got the impression from an earlier conversation with Marty that you were out talking to potential investors in the early days and I'm curious what were the conversations like back then? What arguments did you use to make them interested in what AHL was doing? This, of course, was a few years after Dr. Lintner came out with his white paper which, to some extent, still stands today. So, was this already part of your sales pitch?

David: Yeah, I took the software that they had developed and turned into a presentation which made an excellent sales pitch. From the brokerage community, we had instant interest - all the brokers were interested and a lot of people from the commodity markets were interested. There's a kind of schism, particularly in hedge funds, people who come from the securities houses, which is the investment banks and that's generally much more respectable. Then there are people who come from the commodities background and that's much more spivvy, generally.

I have to say that Paul Tudor Jones and Louis Bacon both come from Memphis Tennessee. Tennessee, you know, Paul Tudor Jones family was a cotton trading family, and Mike's was a sugar trading family. So the fact that these trading systems, and the CTA industry, and managed futures (John Henry comes from a soy bean farm), they all come from the commodity markets. I didn't come from that background at all, but I didn't come from the securities industry - I never had a serious investment banking job. That's where the hedge fund guys all came from, they all came from the securities industry, which of course boomed in the 1990s and 2000s to a Titanic extent.

We were sitting on a selection of gold mines in 1987/1988. Probably we could have gone a number of other routes and done very well because all of our consultancy, as Mike refers to. You look back on it now and it was all material and relevant, much more material and relevant. We were doing it to keep our heads above water, weren't we? We didn't do it because we felt, "We have a great gift to give the world."

Mike: We charged Alexander Laing & Cruickshank 60,000 pounds to do a piece of research to explain to them why they were going to go out of business. They paid us, and then they went out of business. (Laughter)

Marty: Not as a direct result.

Mike: No. We did absolutely tell them they were doomed, but luckily they paid us before we gave them those results. Yes, and they were doomed. Their business model simply couldn't work in the new world they were in. We did it because we needed the 60,000.

David: When Renaissance really took off in 1989, 1990, 1991, that's when the Watson people were joining James Simons, and Henry Laufer, and Elwyn Berlekamp. That was the exact moment that all this was getting on, elsewhere in the world and not just Renaissance, but other places as well. Stat Arb was evolving at exactly at that time, at Morgan Stanley, Robert Frye left Morgan Stanley, and other places...

The whole modern... Ken Griffin was trading convertibles out of his bedroom in 1990 in college. All those other firms were doing the same sort of things involving markets, computer simulation, and trading, and bringing to bear exactly the skills that the three of us had in combination.

Mike: It's sort of unsurprising because you get a world in which markets are opening up at least... Financial regulations, that's a whole other story. It's what happened next in regulations, and the emergence of technology and access to relatively cheap (though it seems expensive now) relatively cheap compared to history... It's unsurprising that simultaneously, all over the world, a number of people with similar sorts of backgrounds were doing this. I think the reason why quite a lot of that work comes from the commodities side is simply because the market structures in commodities happened to become a model for the way that other highly liquid markets then evolved. So, that became a template.

So, if you had experience in those markets you knew what to do when suddenly there was a Treasury Bond futures contract. Whereas if you're in the Treasury Bond market, you hadn't seen such a thing before and you didn't necessarily know what to do with it. We immediately knew what to do when a new financial futures market opened. There was one new one a week. We had a way of normalizing the data, so we could add it to our portfolio immediately and see an immediate diversification benefit, and know exactly how to exploit it.

I think that's the reason why people from a commodities background were involved in this around the world, in systematic trading, and that's because of the long history of futures markets and commodities.

Niels: Sure. Just getting back to the timeline. In 1989 Man Group decided to buy a part of AHL and you accept that. Five years later they offered to buy the remaining part. Did any of you, back then, think that so many years later, one, that the firm would still carry your names? It has really become an institution. Everybody refers to it still.

Marty: I remember us having conversations about building something that would outlast us, but I don't think we thought too hard about whether it would or not. There was an element both of being able to encode the rule sets of the money management that was more robust than any discretionary trader shooting from the hip. I think we also institutionalized the research and development process. I think there was a bit of a feeling of that's a nice-looking business. We went on to do different things.

David: I think, at that stage in life, I assumed when I left the room everyone else disappeared. (Laughter)

Mike: I certainly didn't think that AHL would go on to great success. Not particularly because I thought the Man Group wouldn't do a good job. That was clearly part of it. More, because at every stage in the life of AHL the dominant thought for me was always, "This can't last. We've found some things here and we've encoded them and surely that edge is going to be taken away from us at any moment." That always gave all of us a great sense of urgency. So we were always in a tearing hurry because we assumed that this would be taken away from us if we didn't keep moving and moving fast. I assumed that there was a very limited life in what we were doing.

When we sold to the Man Group I was extremely relieved because I didn't think there would be more than three or four more years in which it would work. Whether we were involved in it or not. Yes, I'm very surprised it's still going.

In hindsight, I can see that the world moves a lot more slowly than I thought it would. I'm now a musician and amazingly record labels still exist. The music business is completely falling apart yet they cling on by their fingernails, so things have a much longer life and are much slower to decay than I thought at that stage in my life. I was completely wrong.

David: I shared your paranoia about the future of what we'd done, but I had more faith that one could do further research and discover new things. I had more belief than I think you because I had more interest in markets. I didn't think that trend following would work if it has, but I did think that there was a world of other opportunities. I felt that very strongly.

I'm not sure feeling it more strongly would have helped anymore because I think I turned out to be right in the sense that, the one I pick on is Ken Griffin at Citadel. He was doing convertibles which is a completely different world - nothing to do with trend following and so-on and so-forth, but a lot of money was made in the 90s out of convertibles. I'm not saying we could have been Renaissance, but we could have developed Convertible Arbitrage.

Niels: Were you allowed to leave straight away when Man bought the remaining part? What were you thinking back then?

Mike: (Laughter) What were we thinking?

Niels: Yeah, in terms of your future plans, was there any of you that thought, "That's great, let's try and do something completely different." Obviously, later in life that comes into your situation, Mike.

David: We'd had enough of each other by that stage. (Laughter) Rather like the Beatles in 1969.

It's sad because the partnership was very, very creative. We can look back and wonder what might have been. It was undoubtedly a very creative partnership, but that's just the way it is. We wanted to do our own things. We own wanted our own solo careers.

Marty: I think the timing of it, when was it, '94 that Man bought out the minorities and then they IPOed and it felt like a fitting point. You left quite quickly.

Mike: I left immediately.

Marty: I hung around for about another year which felt painful because it felt like I was dismantling much of the overhead and the research team that the Man Group said, "What do we need all of these people for?" You had another research operation. We were kind of doing different things. There was no lock-up after that. I think there was a non-compete period after we left.

David: When Man bought 51% they did say, obviously, that they did this with the view of corporatizing AHL, which they did. It was a success for them, but it was a little painful for us as well because effectively they removed the entrepreneurs from their business, which was in the long term interest of the entrepreneurs and probably for the business as well, but it didn't feel like it was in our long term interest at that particular moment in time for any of us.

Marty: So, I don't think any of us felt encumbered by the relationship with Man. As I say, that transaction, for me, felt liberating. Then we moved on to do, shortly thereafter, you were the first with Winton. We started Aspect a year or so later. Mike, you were non-executive at the time and then joined the party later on.

Niels: I want to go to David first on this. What was your vision, for lack of a better word, when you did start Winton? What did you want to achieve with that?

David: Well, I gave you long a pause because I didn't have any good options after I finally left the Man Group. There were simply no good options. The objective I wanted to achieve was doing research in financial markets and for that, I needed a team of people to do it. I am not a computer programmer or a researcher myself. I direct operations, rather than do it. I suppose if I was a better person I would have gone off and taught myself programming and bought a computer, but I already had slightly grander ideas than that. What I could have done, I suppose, is teamed up with a bigger company and started larger scale, but in practice, I just teamed up with 1 1/2 friends and started at a very small scale, and Winton was very, very small scale for the first two or three years.

Niels: Yeah. What about you, Marty? When you started Aspect with Mike and a few others who were involved.

Marty: And Anthony Todd, and Eugene (Lambert)... For me, there was about a year and a half out of the industry, and Anthony Todd, who was an Oxford friend of Michael and mine was, by then, working for the Man Group and I credit him with catalyzing Aspect.

It was really a case of that lack of confidence that we had in feeling like how long would the miracle of AHL persist for. I think it was Anthony who played back to me saying, "This is a business. This is a business and it's also an underappreciated approach that institutions should be taking advantage of."

He'd been off to business school. He wrote a terrific business plan for Aspect and it grew from there. So we started something like September or October of 1997 and then took a year to establish the business and raise some money and then started trading the tail end of 1998, just after the Russian crisis which was very good for you, wasn't it? We went straight into the doldrums for about a year, but you were already up and running for a good year before that

David: Yeah, Winton was always very low key in February of 1997. We started paper trading in June, and then started real trading in September, and then went down 13% in our first month.

Niels: Your worst drawdown ever, actually, isn't it?

David: (Laugh) Yeah, yeah, not quite, but it was the worst month.

Niels: Worst monthly drawdown.

David: So that stage having a sort of disastrous end of AHL, from my point of view, and then a disastrous end with Man.

Marty: Somebody was trying to tell you something. (Laughter).

Niels: Now, rightly or wrongly my understanding of Winton and Aspect, in the early years, was that both firms had an emphasis on trend following within your strategies. From what I've observed, over the years, this seems still to be the case for you, Marty, at Aspect, but perhaps less so for you David. So let me come to you first on this one, David. If my observation is right, when did you begin to move away from the classical trend following approach, if I can call it that? Also, what was your motivation for doing so?

David: It's a question of degree. There's still a fair amount of trend following in what we do but when we were doing our research in the early 90s we did a literature review and looked at what else, what other opportunities there were and we scoured the literature. Time and time again we came across academic papers referring to what is now called carry - the phenomenon of carry. So we focused a lot of our research on that.

We developed a bunch of trading systems which used that and we even got as far as implementing those trading systems. They all went a bit wrong in the ERM - when Sterling exited the ERM. At that stage, we had quite a bureaucratic board process and it had become hard to take risks and so all those systems were taken out. The significance is that they went on and worked very, very well for the next 20 years - as well as trend following, actually.

So, we didn't use that until maybe 2005 or 2006 or 2007 but it worked extremely well. There were other things that we were developing back then, which also worked, subsequently. They're not in the form that we were developing. There are some things that we developed back then which we still use today.

To really fully exploit the potential of this kind of research you have to move into equity markets and it took me a long, long, long time to develop all the infrastructure and expertise to deal with thousands of equities, databases, corporate actions, and so on and so forth. By the time we'd done that the easy money in Convertible Arb was long gone, that was long gone - after 2008 really, with a number of other strategies, the easy money was long gone.

My own pitch is I just don't think the markets... There will never be no opportunities for people to do more research in science. Some people think that we're on the verge of a grand unified field theory of everything, and a grand unified field theory of efficient markets, and I just don't believe that. I know people who say, "Well, what it is then? What is the next big thing then?" Well, I don't know, that's why you have to do research.

Niels: Very true. You've stayed true to your roots to a large extent

Marty: To degrees, to degrees, Aspect was predicated on this trend following approach being an important utility that was begin overlooked by the investment community. It really did deserve a place in people's portfolios. The irony, I think (and this is all with the benefit of hindsight), the irony is that we spent a lot of time doing a lot of research in order to ameliorate some of the characteristics of trend following. Trend following can be quite a challenging utility, return profile, for investors to hold on to. Equities tend to go up, up, up, up, up and then kick you in the teeth and then recover and then go up, up, up. Managed futures have an opposite profile where they tend to make consecutive losses then have a very strong run that makes money. That's intrinsically quite challenging for investors to hold onto, but it's really valuable in the portfolio.

So, the irony was that a lot of the research we were doing was motivated by desire, if you will, to sugar coat the medicine. We put all these other features like carry, that David refers to, and other component pieces in small doses, as you didn't want to take away the characteristics of trend following. It was very much still focused on trend following as the core of the business.

These days we've gone on to do a range of other things because clients want a range of other solutions. I think the industry - we can talk about that - but I think the industry has matured, or the investors have matured that it's not (I don't know if David would agree with this observation) but it's not now as much a world of, "I'm the investment manager, let me tell you what's good for you," and just plonking the product on the table. I think it's much more of a consultative exercise where, within reason, investors know what's in their portfolio. They know what they're looking for, and firms like ours have the component pieces that can put together solutions or products that provide a lot of different utilities. So, it's no longer just one thing.

Niels: Sure. I can't help asking you if you think the decision to maybe stay true to trend following for at least awhile longer is kind of the reason that Winton has leaped the whole industry when it comes to size. It really is... There is a difference now.

I want to circle back to you David, on the question of size, actually. If my memory serves me right, and correct me if I'm wrong here, at some point you decide to lower the volatility of your program a bit. So, if that is correct, what was your thinking behind doing so? What was the benefit that it had for your business and for your clients?

David: Well, I think I'm always driven by the memory of October 19th, 1987. I remember that night very, very vividly and the next day. On that day the stock market was down 21% and the futures were down 30% because the carry broke free. So, as you're double leverage long in the stock market with futures on, and if that happens again you'll be down 60%.

Mike: You'll be called for margin.

David: I don't want to be down... I don't want my investors to ever be down 60% over an evening. That only happened one day in my life, but I don't ever want that to happen. So there's now what they fashionably call a "hard stop" on how much exposure I'm willing to put investors... I'm willing to undertake on behalf of investors. That's my way of dramatizing the fact I'm concerned about... I won't say the fat tails because that implies something that happens once a year. I'm talking about something that happens about once every 20 years.

Niels: Also, could you say that losing less when you do lose is the way you win in investing overall? Is there something to that?

Mike: This remains an area of interest for me but in a completely bizarrely... I'm still in the investment management business but in a completely different field - Deep Value Investing, which is also challenging for investors. Deep Value Investing consists of most of the time doing absolutely nothing, which most investors find extremely difficult. Investment managers find it even more difficult, I would point out.

So, last year the fund I think only did two trades, essentially, the entire year. That was it. So, I think the profile of what you do and the way it's perceived by investors, matching those two things together it remains...

I would slightly disagree with Marty. I think it's as psychologically difficult as it has always been for investors to do the things that they should do just because of human nature. If you take trend following or you take Deep Value Investing you could argue the reason they actually work is that they're so difficult to hold. They're so difficult to hold psychologically.

David: That's the contrarian view of investing. They have to be a contrarian to succeed.

Mike: So, managed futures and trend following are not the only contrarian investment approaches. I think that's the central challenge of maintaining a business around a contrarian approach in in investment management is how do you match that to the psychological challenge for your investors of holding what you're offering. It doesn't matter if intellectually they get that it's in their interest, truly, to diversify. Diversification is the hardest thing to do psychologically for an investor.

David: Sometimes I say to people, "Do you want to be happy or rich?" When you're out of step with social pressure you are unhappy, but it’s the right thing to do.

Mike: Yes, it's very, very hard to do. So I think that remains a challenge.

David: So my next life the answer will be, "Happy." I'm joking, but maybe rich makes you happy. It's a tough road to hoe as Michael said.

Mike: There are all sorts of reasons why. So I got back involved with Aspect, and one of the key events for me that led me to the conclusion that I should definitively stop, is actually, at Aspect, we had a market neutral equity program which was very successful. It had the opposite profile. It had produced a mediocre return with quite high probability and was going extremely well. Luckily, we were scared enough of leverage not to have leveraged as much as some of our competitors.

I thought, we thought, that it was safe. It was so unlikely to be taken apart by our counterparts because to break the back of the strategy would require a whole bunch of closely correlated stocks to be driven apart to the extent that surely liquidity would come in on the other side. We were completely wrong, completely wrong. At a low liquidity point in equity markets our counterparties did a classic squeeze on market neutral funds and wiped all of them out, interestingly. Pretty much except...

Mike: That's pretty much the event that led me to think, "I've got to stop doing this." Yes, I feel we were lucky enough. I feel we found two or three things back in the day. I thought if that strategy can be taken apart then I'm no longer confident...

Marty: It was time to be happy...

Mike: It was time to get out and be happy, but it was not a happy experience to watch, that market neutral fund being taken apart by our counterparts. I shouldn't go into detail as to who those counterparts are, and I won't go into detail as to how we escaped by the skin of our teeth. Let's just say if I needed a reminder of the challenge of doing this it's mostly psychological, both for the people doing it and for the investors in it. I think it's a constant and remaining challenge and one I could really do without, frankly. (Laughter)

Niels: Maybe on a related question. Historically, at least, the role price of a market has been the only input in systematic models, certainly in the trend following space. The universe of markets have also been very well defined, being highly liquid, exchange traded, like futures on CME. Tell me, how have you evolved when it comes to the data you use and the markets you trade?

David: We trade a lot of equities and we use a lot of other data sources, basically.

Niels: What could they be?

David: You got me there. (Laughter)

Most of the risk is on endogenous variables like price, intra-relationships between markets, and various convolutions of price, sectors, and this sort of thing. Obviously, we have all the balance sheet data, all the fundamental data, all the weather data, there are all sorts of different types of data. We have a lot of experimental systems with small amounts of money on them. I expect we have one or two bigger allocations with key data inputs, but those I'm keeping to myself.

Niels: What about you Marty? Are you looking in new directions when it comes to data and markets? Maybe I can follow-up because that's my next point I want to ask, is about are you also moving off the exchange? What's the motivation for doing that and what are the risks you have to take into account if indeed you are?

Marty: Well, so the first question is data and the evolution of the trading programs. Of course, we have an appetite for new ideas, new influences on markets, new effects. As David says, "If we knew what the next big thing was we wouldn't tell you and it wouldn't be research."

I think there's a lot of hype these days with machine learning techniques and all this just explosion of new data sources that surely the answer is in there somewhere. If you just leave it to the folks at Google the answer will become immediately apparent. My view is it's a little bit harder than that. There's plenty of work to be done and there's plenty of opportunities. So, I'm not going to claim that we've got some fantastic new system that employs satellite data and engages recursive neural net and presto we know what's happening tomorrow and next week.

So, no, it is overhyped. On the other hand, it is there. That data exists and there's more information out there than there's ever been, ever. You need to work out how to assimilate, how to digest and how to use that stuff.

David: One of the things that experience has taught all of us is danger of hindsight bias or over fitting to data sets. You saw this recently in a rich data set, or maybe 5 or 6 years ago. This Google Trends is a huge and rich new data set, obviously, a vast amount of data using Google's algorithm which forecasts when there are going to be flu epidemics. It made the front page of all the newspapers. It made the BBC News.

This is somewhere between irritating and intimidating when your entire career has been based around time series analysis and you see these claims being made. Obviously what we think is, "I wonder if they've really tested that?" Of course, it fell apart. It didn't work at all. It didn't work at all, because of over fitting. There's an example of Google, a company which is renowned for its engineering ability, mining a rich new data source, getting a massive amount of publicity, and then it completely failed. That's not a mistake that...

Mike: I think all three of us have a healthy paranoia around operating in markets that comes from real experience of, when I gave the example of even in an area where I thought it was safe it turned out that it wasn't safe. If I needed a reminder that one's counterparts in markets are not one's friends then that was the sharp reminder. I think those things have always applied and will always apply. You can't research those away.

David: There's a big difference between counterparty and client. This is something that the investment banks got themselves confused about back in the pre-2008 era. Counterparties are not clients.

Mike: I think all three of us have been good and learned on that score. I don't think that that is going to change anytime soon and I think a lot of the apparently new emerging science in the space is naive with respect to that.

So the number of times all of us would have heard this: A fresh faced researcher comes in the most amazing systematic trading strategy, each trade has a 66% probability of being right and you literally can't lose money. The great thing is I'm going to be trading in the FX markets so it's infinitely liquid and there's absolutely no risk. Then the question I would always observe is, "So how much money can you manage?" Let's say the answer was, "Oh, we can easily manage $200,000,000," or whatever the answer would be. The reply would be, "Do you think it's worthwhile to the people with whom you trade to steal $200,000,000 from you?" To which the answer is, "Yes, I think it is."

With a 64% probability trading signal, that is exactly what they will do because that's their job, which is to remove anything with such a high edge that the signal flow itself is valuable. The markets are brilliant at doing that and that's good because it makes them more efficient. So, when looking for systematic trading strategies what you need to do is find something that is fantastically mediocre. Because it's not useful as an individual signal to your counterparts. That means computers are really bad at finding those things because it's a real self-discipline to understand that that's the challenge you face in systematic trading. It's not to be really, really good. It's not to be useful to markets.

Niels: It sounds to me like you're a little bit sceptical about your machine learning.

Mike: That's why it's a difficult discipline.

Marty: Sceptical is putting it too strongly. It's cautious. Interested....

Niels: Are any of you using machine learning today?

David: Not in the trades actually, but in research.

Niels: In research. OK.

Marty: In some of the peripheral areas, you know how we allocate to different markets, like David, not in divining what's going to happen tomorrow.

David: I think I could make a plausible claim without stretching it too much that we were using machine learning 30 years ago. The research work we were doing in the late 80s is describable as machine learning.

Machine learning is a sub discipline of statistics and data science, isn't it? Machine learning is neural networks, it's definitely deep neural nets. It's a branch of science and what we were doing is a subset of that branch of science. If you go into the machine learning courses at university, today, they have lots of stuff on neural networks and financial markets and this sort of thing. But there are lots of other algorithms you can use in machine learning.

Mike: I think it's really interesting what's happening with Google Translate in terms of neural networks and that's a perfect example of where neural networks are incredibly powerful. There are no truly catastrophic outcomes, on the mistranslation of a piece of text. Admittedly you could say what if it was actually used by a machine to then fly a plane into a... Yes, you know, you could invent one, but broadly speaking there are no catastrophic outcomes.

But if you apply the same logic to financial markets and don't take into account the fact that human beings and greed are involved. I neither mean greed is bad nor greed is good when I say that, but people are highly motivated to find a way to make money from their trading counterparts. In that world a machine that learns how to do something in a theoretical world and then does it in a practical world is almost certainly going to have its head handed to it on a plate. That's what markets are brilliant at.

Markets are actually neural networks. They are hundreds of thousands of people motivated to make money, deploying capital and taking risk with a view to playing a game against each other in which they hope to be on the winning side. That's a neural network. That's a neural network operated by human beings and that has proved, through history, to be unbelievably efficient... unbelievably efficient at taking money

David: The stock markets are vastly powerful.

Mike: Maybe Google can replicate that number of actors motivated, but the way around I would put it is the world's biggest neural networks are already the markets and they are unbelievably good at what they do, so beware.

Niels: Yeah, absolutely. Very fascinating.

Mike: Do you agree David? That's what they are. As a bunch of brains - that's neural. (Laughter) With competitive algorithm where the survivors get rewarded with more money and capital. Which is exactly what a neural network does, it's exactly how it works. Human beings, it turns out, have quite powerful brains.

Niels: Good. Well, let's jump to another topic that I think our listeners will learn a great deal from. It relates to the importance of asset allocation. I think Ray Dalio, who runs the largest hedge fund in the world, describes asset allocation as the secret to his success.

How would you describe it? Also, how would you explain the asset allocation process that is built into your investment strategies as well as the benefit that investors have by putting a portion of their investments into strategies employed by your firms? Marty, why don't we start with you on this one,

Marty: Goodness, I guess the starting place is that the way we think about asset allocation is more about creating opportunities. So there's no inherent prediction of which assets are going to be the hot areas. What we're trying to do is trade as many diversifying opportunities as we can in as broad a set of opportunities. If there were no liquidity constraints we'd trade everything we possibly could almost in equal quantities.

Then you have to take into account liquidity constraints and the correlation between those different instruments. Then, what the model does (this is one of the beauties of the trend following approach) is it systematically identifies the opportunity set and does the asset allocation for you, ostensibly. So, I don't view asset allocation, actually, as a separate component of the model. The model dynamically identifies opportunities and moves risk in and out of those opportunities.

Niels: Sure.
How would you describe it, David?

David: I agree with Dalio. What we do is asset allocation, our systems are long or short the world's major asset classes and they profit or lose thereby. The difference between Winton and Bridgewater is that Bridgewater, I think, is philosophically based on economics and econometrics. Whereas Winton - I can't speak for Aspect - but AHL and Winton, are more based on mathematics and statistics, I would say. We have never, I can say, had any economics in our models. That may be to our advantage or to our detriment, but I just mention that because that is the difference. Otherwise, we are an identical firm to Bridgewater in terms of we do asset allocation.

Niels: Yeah, absolutely.

Mike: It depends whether you see asset allocation as something that you do before you start trading or something that follows from the way that you trade. I think that's a real misunderstanding about, certainly in what AHL through the years have done, and I know that Aspect has done, which is as Marty says, asset allocation is a product of a systematic approach to trading as opposed as an input into it. The whole point is, you're taking as far as you can, an equal risk allocation to markets but you instantaneously look at where your capital is deployed, it shifts like the shifting sands. That's the point.

It's moving money around very, very efficiently in a very evenhanded way without needing an analyst to make some call that the next big thing is going to be whatever the next big thing is going to be. That's a product or output of systematic trading, not an input into it. I think confusing those two things is very challenging. So, allocating between different systematic trading strategies is an extremely delicate and difficult thing to get right.

Niels: Is there any point where diversification, which is as you mentioned, it's the only free lunch - at least that's what we're being told in finance - is there any point in time where diversification becomes de-worsification where you cannot add more markets or models and get an advantage out of it?

David: Well, there's a mathematical answer to that question. What you're looking for when you're building a highly profitable portfolio are things which have a positive expected return and low correlation with the other things in your portfolio. But you never know what something's expected return is. There's always an uncertainty associated with that expected return. That uncertainty may be greater than the expected return. The expected return, the forecast return might be1and the uncertainty might be 10. In other words, over 10 years you have no certainty there's a new thing tied to the portfolio that is necessarily is going to make money, even in the next 10 years.

So, where all the quantities you are estimating - the correlations, the expected returns, the uncertainties - there's a lot of uncertainty in building. In knowing whether a new thing added to your model. Whether you're putting it in with the right. If somebody tells you what the return properties of the new assets are, and the return properties of your portfolio, then there's only one answer. If the return is between 0 and 1 then that will always make your portfolio incrementally better. It doesn't mean you should always do it. I think, mathematically, that's probably true.

Niels: Sure. I want to shift gears and I want to address the low return period that our industry has been in - sort of a drought of 5 or 6 years in terms of returns. David, you've studied market history going back hundreds of years. Can I ask you whether you can put this kind of market environment that we're in, in historical perspective? What do you think is happening in the market in this area right now?

David: I think, as Mike said at the beginning, we were trading quite fast and we didn't think that the opportunity would persist for a particularly long time. It's proven remarkably persistent. But over the years, the faster trend following systems that we used to use are not profitable anymore. I never believe it to be static.

In my view, these trading systems do get worse with time. I don't believe that our forecast Sharpe ratio from trend following or forecast quality of trend following returns is (given by the last 30 years simulation) I believe it is worse than that, which is why I believe you have to innovate and you have to struggle to innovate. I think it's getting worse. I think that what we're seeing is consistent with it getting worse.

Mike: To tell a story from back in the day, it relates... I remember David saying, as soon as central banks had begun to target low inflation, I remember David saying, "That will be a disaster." For many years, it didn't seem to be a disaster. Interestingly, I think it was only two quarters ago the economists finally, 15 years later, agree with you, "Gosh, that was a mistake."

I also remember you selling a flat in Clapham because you could buy two carts of silver and have financed the third Crusade. (Laughter) So it's almost impossible to tell the difference between... We've entered a low inflation, low-interest rate, artificially low-interest rate period for how many years now?

David: 10 years.

Mike: For ten years. History would suggest that the future won't judge this period kindly. That it has some very negative characteristics in terms of distribution of wealth, in terms of the motivation of those with capital to deploy it efficiently, its ability to elevate people from poverty removed because their debts inflate rather than deflate with inflation and it will end badly. The point is it will end.

There's another argument that says this is a temporary hiatus while the world learns again, for the nth time over, that this is a really bad idea - printing money and having zero interest rates. When it does it will end with a bang. When it ends with a bang it's going to end with some pretty steep inflation and trend following will make a lot of money, by which time there will be at least one client left who will be able to say, "I told you so."

David: Our ideas are consistent. I think consistent, I didn't necessarily say trend following is not going to work. By any means reduced its Sharpe ratio to zero. As Marty said earlier if you have three losing years and then one bonanza year you have a lower Sharpe ratio. In the old days, you wouldn't have kept clients if you had a losing year.

Mike: But then what were interest rates when we started? 14%, 15%, 16%?

Marty: I was going to make a slightly more upbeat perspective on that, lest our listeners go and sell everything, which is: number one, to David's point, about decay in the models that we trade, absolutely. The fortunate thing is, back to the early point, as scientists we all just started with the view that you could always do it better. You have to keep asking questions. You have to keep moving forward.

So, if you leave your static system alone, absolutely it will decay. If you keep looking for opportunities to improve it I think you can be confident that when those opportunities for trend following come along you will be able to exploit them. I think the second point is that we have seen periods of managed low interest rates before and they have been weak periods of performance. So post 1987 there was a very strong period of performance for trend following, and then a very challenging period while the Fed managed the aftermath of the Savings and Loan crisis. There were about 4 or 5 years of pretty ho hum returns for what we did and then there was a very strong period of performance. I would, number one, say, "It ain't over 'till it's over. There is still plenty of opportunity out there. Number two, you categorized this as five to six years in the doldrums. That's not our experience. I think there have been some strong periods of performance within there.

Niels: Sure. 2014.

Marty: Then the final observation is, if you give up on this approach (I won't say, "God help you") I think using scientific, quantitative, systematic approach to investing is the way it should be done. Nobody is promising you a guaranteed 30% a year returns on the program, but taking this approach of continually researching, investigating, innovating, is probably the safest bet.

Mike: Also, if you were to ask the question of investors, "Do you believe that the current approach to economic management at the central banks and the current approach of the regulators to financial markets is sustainable, or not?" Most investors would say, "Not." I believe that the real challenge, and it has always been the challenge is how you make it plausible, possible, palatable for investors to do the right thing. It's not that they don't know what the right thing is. It's just very, very, difficult to do the right thing - very, very difficult. A period like this makes it more difficult.

David: I can't help being reminded of your father who, when we were starting early out, in the early to mid-'80s, he was terribly disillusioned with the stock market, wasn't he?

Mike: Yes.

David: He was utterly disillusioned. That was his view. He took me aside and said, "I think there needs to be something better, and that's what you guys can develop - something better." What he didn't know was that it was the early years of a new bull market which was to go on for 15 years. I was no more bullish than he was at the time. He was very pessimistic because that comment was shaped by being in the aftermath of 15 years - the market didn't go up from '68 to'82 - so 14 years of sideways. That's what conditioned his recent investing experience.

Niels: Absolutely. I think it was once said that, "The biggest room of all is the room for improvement." By this I mean, when I look at your achievements, I see a continuing hunger for learning. What about the flip side, you touched upon it earlier today about unlearning. Are there certain things you've found important to unlearn to continue to improve your strategies? Were there things that you thought were good only to realize that they were in fact flawed and much riskier than you thought?

Mike: That's probably a different view amongst the three of us. I remember, in the early days, David had an office where what he would do, he was surrounded by data, there literally was this much. His desk used to be a complete chaotic mess full of cuttings from the Wall Street Journal and bits of paper and notes. My desk was always completely clean. I thought that that was because I was more organized and focused than David, and he used to say to me, "Empty desk, empty mind."

I've always believed that one of the biggest challenges in systematic trading is not remembering what you know it's having the discipline to forget what you know because applying what you know to the next thing that you do is a very powerful hidden form of optimization. I think that building into research processes the organized capacity and insistence that people forget. Also, recruiting people who never worked in the field before, always, always, feeding people who aren't polluted by knowing stuff is really, really, important.

On the other hand it's very hard to develop systemic trading if you don't have a real feel for the way that markets work, so there's this constant battle, I think, between what insights you have, what wisdom you have on the one hand, and yet have the abilities to forget the specifics. I don't have an answer to that. I think it is extremely hard to do.

David: Yeah, I think what you said is spot on. Also, with the other people we've recruited, the struggle has been to get them to forget the efficient market theory. You need clever people with good mathematics and computer science. Typically you get them because they've passed degrees and took exams and so on and so forth. They've often been taught the efficient market theory which is a beguiling theory because the mathematics is appealing and difficult so it's something they can master. Then having mastered that they believe it to be true, most of them - most people having mastered something difficult.

I think education can crush creativity. It's interesting that Steve Jobs didn't actually get a degree, isn't it? He went off and did a smorgasbord of courses including, famously, calligraphy. I think, sadly, over educated people probably can know too much to be creative. Having said that, to be creative in a field obviously, you need to know about that field and have a lot of education. So that is the paradox Mike was referring to.

Marty: Back in the day, I think that the lesson that we learned early, quickly, and has stood us well, I think David you referred to the tendency to over optimize. I think we had some brilliant forays into the world of over optimization. We could make those simulations go from bottom left to top right like a rocket ship. (Laughter) Funnily enough, when you start trading it, the inflection point was so remarkable. So I think that was a lesson. We unlearned our desire to optimize pretty quickly.

David: What I find annoying... We're all being craggy old men. What I find annoying is I frequently see big companies putting out simulations that are over optimized in the same way that our simulations were over optimized 30 years ago. Big companies will put those things out and they will sell them to investors and that's sanctioned by the authorities. What used to be banned, which is marketing simulated track records, has now, apparently, become legal - you just call it an index. It's frustrating.

Mike: It is. Looking at the various moves that regulators have made in response to various crises. They shouldn't be annoying, but they are. When you watch regulators doing things where you can say, "Now that's really, really, stupid." They just willfully do it and it has exactly the result you predict. It is annoying.

Actually, the good news is that the world is apparently pretty good at forgetting given that it keeps making the same mistake again, and again, and again. So, in a way maybe we're better at forgetting than we think and maybe that isn't a bad thing in the end.

Niels: Sure.

Marty, if you look at your own strategy and maybe David as well, what do you least like about it? What are the things that you would like to improve?

Marty: Gosh, interesting questions, Niels. The pat answer is, always be paranoid and always be paranoid about every part of it. You've heard me bang on about this before, is that any of these systematic methods or systematic investment strategies is only as weak as its weakest part. So you can't say, "Well, I'm looking for this fantastic new machine learning system that is always right, on tomorrow's trade"; A, as we just covered, you're unlikely to find that and you don't believe it if you do; and, B, how you put all those models together, how you risk manage it, how you execute it is crucial to having an overall efficacious system.

I'm not going to pinpoint one area of it that today I think is flawed. I think the whole thing is always in need of constant care and attention. We spent an awful lot of time and money on improving the execution of what we do and I think we got that to a really great place and I think that there's more that we can do. I think that the exchanges and instruments have moved on pace and we need to continue to invest and maybe turn the crosshairs more in that direction for awhile, but no single area, Niels. Everything needs to be improved.

Niels: Your thoughts, David?

David: Well, I least like the bits where we go down, and I best like the bits where we go up. I'd like to go up more of the time and down less of the time. Everything about my corporate strategy and that of Winton is designed to achieve that aim. It sounds a bit trite, but I'd repeat what Marty said which is that we are doing everything to try and make things better all the time, but it's a tough business.

Mike: I always thought that the major improvement we could have made in the business was to have no clients or employees. (Laughter)

Marty: So that's what you've done Mike.

Mike: That's what I've done! (Laughter) And it really, really works.

Niels: (Laughter) Good.

Well, let's leave this subject and go on to something completely different as we slowly start bringing our conversation to an end. All of you are relatively young and in good health, but one day, a decision about what's going to happen to the firms you've built has to be made. Is this something that you already think about and maybe have already decided upon?

Marty: Absolutely something that we think about.

Niels: I ask because some firms in the US, that we've known, that's been around for a long time, they have kind of done this succession already. It is coming, I guess.

Marty: What do you know that we don't, Niels? (Laugh) Yes, of course, one thinks about it. We talked about AHL earlier. I feel proud to be a part of having created a business which has gone on after A. H and L are no longer involved in it. I feel the same way about... I hope Aspect will live long after I have nothing to do with it. It will probably thrive. I can't tell you that this is the individual that's going to take over for me. I think that the businesses that we've built are substantial and that they have some really great people in them. I'm not supposed to say this, but I think if I'm not there no one will notice. (Laughter)

Mike: Well I tend to agree with that one. (Laughter)

Niels: What about you David?

David: I'm afraid I've got a bit of a pat answer which is that our board routinely considers succession planning as part of its normal governance process. The only thing that I would add is that succession planning doesn't mean my successor. At every level in the company, you have to consider if you can replace every person. Succession planning is a part of management philosophy, I have realized. When we used to talk about it I used to think that they were trying to get rid me, but I've moved past that. Of course, if you've got succession planning for everyone else in the company you've kind of got it for you by implication. It is an important discipline even if you're not actually planning to retire, which I'm not.

Mike: One of the great benefits of having a systematic approach is that it's not just a systematic approach because there's a piece of computer code that enshrines when you buy or sell something on a particular day at a particular time. If you look at the inside of a systematic trading business, it's also systematically organized in terms of the roles and responsibilities and who does what.

So of all the businesses in which succession is less of an issue, asset management and systematic trading is the easiest to imagine that it can have a life beyond the original founders because the reason the systematic trading business is successful is not just because of the unrivalled genius of the founder, but it's the ability of the founder to organize a business that has a way of doing things that is indeed systematic in terms of the roles and responsibilities, the processes that will be replicable going forward. I think that's true of Aspect, it's true of Winton. I think succession is almost built into being systematic.

Niels: Sure, absolutely.

If you couldn't leave any of your money to your children, but only a set of investment principals, what would they be?

I'll start with you, David, if you don't mind.

David: Well, I think you need to have an objective for what you're trying to achieve. If you're trying to help them look after their money and steward it and get more wealth, even if what they choose to do with that wealth - to give it away ultimately like Warren Buffet and Bill Gates. The main principle I'd direct them to is compound interest combined with Kelly's criteria.

Kelly's criteria is the answer to what you asked about earlier in terms of what's the ultimate level of leverage to operate at. If you leverage too highly, and you go down 100, as I alluded to, then your compound rate of interest will be zero. But you always get a bit more return by leveraging a bit more, so that leverage may be through the companies you invest in. In Warren Buffett's case, it's by deploying the balance sheet of Geico.

He famously doesn't borrow lots of money. I certainly wouldn't advocate borrowing lots of money to leverage up your returns, but you invest in leveraged businesses - so there's some leverage inherent in your portfolio. Compound interest is the 8th wonder of the world. At one point you can play on the calculator with the button, 1 point naught x to the y, 1 point naught x to the power of y.

Mike: Einstein said quantum physics, he got that, he could even contemplate the existence of God, but compound interest - No, he didn't get.

Niels: Anything to add, Marty?

Marty: I'd add the pat answer, diversification. I've certainly lived by a diversified portfolio of investments.

Mike: I think I'd say focus on what you do and not what you get. That would apply to anything in life including how you invest.

Niels: Sure, sure.

Now, with all the evidence that the managed futures industry (if we call it that) can show today, only a minority of investors still embrace this as a core part of their portfolio. Why do you think that is?

Marty: I think that there are two parts to it. I'm just launching into this. I'm sure you'll have the real answer. First of all, I think what's interesting over the arc of the 30 years, that we've been talking about today, is when we started talking about employing computers to analyze and invest in financial markets most people thought we were smoking something. Scroll forward to today and it's increasingly accepted and expected. You even have this concept of Quant-mental where discretionary traders are trading models that are informed by quantitative analysis. Go figure.

But the first thing is that it's still a learning curve. People are getting more comfortable with quantitative investment as they get more comfortable with some of the ideas behind it. When it was rocket science, when it was a black box I'm not surprised they couldn't trust it. They trusted it after it had gone up. They didn't trust it when it had gone down. That's the first thing. Answer number two comes back to the point that I made about the utility of it. Certainly, if you're talking about managed futures, I think managed futures predominately is the trend following space. An important diversifying utility, but it's hard to hold. That's the challenge.

Niels: What do you think, David?

David: Yeah, I agree with Marty. Managed futures is complicated and I don't even think that it's desirable for all of the investors in the world. Managed futures is pretty complicated. It doesn't have an infinite capacity. If everybody in the world decided to put as much money as we wanted them to in there wouldn't any capacity. So it will reach its own limits of growth and you can see the struggle with that now..

Niels: Sure, sure.

I'm going to shift gears and ask about your reflections when we think back over the last 30 years since you founded AHL. Within your long and successful careers, what would you say has been the most important decisions you've made and also what's been the decision that's yielded the most surprising result?

Mike: Wow. What's been the most important decision? The most important decision, for me, was when I went on holiday for a week and my father fired David and Marty. (Laughter) On my twenty-fifth birthday was the decision that I made in anger and without thought to pick up the computer which had the software on it and walk out with my father's words ringing in my ears that he would disinherit me to keep walking out of the door.

So it was the decision made in no time that completely changed the outcome of my life. So, it wasn't thoughtful. It was impetuous. It turned out to be a great decision, however it didn't feel great at the time. I would say that was the most important single decision in business that I've made.

Marty: And with probably the most surprising results.

Mike: Yeah, and it is the one with the most surprising result also. Yes.

Niels: What about you, Marty?

Marty: I thought that was great, Mike.

I sort of felt when the Man Group bought us out that that was the end of that experiment for me and I would move on to some new industry, so for me an important decision was actually doing Aspect and realizing... AHL, in a large part, was a happy accident. We were uncovering things all of the way and I think there was this sense of how long can this levitation continue for and then there was a bit of the realization that actually it may not be a miraculous levitation, but that this is something useful, both for me personally, and for the investment community.

So that was an important decision to do it, if I say, "Do it again." Of course we had a different utility, we had some different decisions that we made at the start of the business as I'm sure you did when you started Winton. You didn't want to make some of the mistakes that we had made along the line in AHL. So that would be my offering.

Niels: What about you, David?

David: Well, the media... Their current preoccupation, until very recently, was with us being robots, wasn't it? So that was intended to be derogatory - the idea of us being robots. Suddenly robots are in fashion because of this machine learning, artificial intelligence craze, so suddenly having been slightly dissed by the mainstream media for being robots, and quants, and systems, I now find, rather improbably we're fashionable which is funny, because, as you say, we're not doing particularly well now. When we were doing well that was a subject of great scepticism.

There was a survey done by the managed futures industry which demonstrated that hedge fund managers are a particularly disliked and untrusted category of individual. This is considered by the managed futures industry to be a great source of anxiety - that we needed a come-back with a lot of positive publicity.

One of my colleagues pointed out, when we look closer at the rankings, comparatively, hedge fund managers scored very low down, but they scored the same as film stars and professional athletes who are also widely distrusted and disliked. That made me feel a whole lot better because if someone said people were going to look at you like film stars or athletes then you say, "Well that's not so bad, is it?" People have an ambivalent relationship with people who have achieved a lot, or succeeded, or made a lot of money. I guess that adds into the media's coverage of hedge fund managers and robot fund managers.

Marty: Again, maybe I'm reading too much into it, but talking about the 30 year arc that went into that decision that Mike spoke about of parting company with his father to the inception of AHL and where we are today. We've been part of, and an integral part of, the growth of an industry. What was a quaint, as you described David, on the trestle table, somewhere in Orlando, industry.

If you generalize that managed futures, or I think what David and I do, has evolved into - the quantitative investment management space, it's big, it's important, and it's a crucial part of investors' portfolios and it's not going away. It's very important, but it's no panacea. I think continued research, continued skepticism and discipline on the statistics. David made a very good point about it's ironic that over optimized systems and models and indices - there's plenty of them around - quite an irony after all this time.

Niels: What about you, Mike?

Mike: I still think it's a permanent cultural challenge and I don't think that challenge has changed. I vividly remember being asked by a client, "So which way is gold going?" I said, "I don't know." (When I was CIO at Aspect) So the next question was are you long or short? To which I cheekily said, "Yes." (Laughter)

So, luckily we did have a computer to hand to give the answer. I said, "But, let me have a look." And I said, "Oh, we're long." So, they said, "Does that mean that gold is going to go up?" And I said, "Not really. It means almost nothing." So the counter cultural aspects of managed futures is not going to change which is it rests on something that human beings are very, very uncomfortable with which is it operates right at the margins of statistical significance. Each individual decision is spectacularly unreliable and almost useless in terms of any day to day decision making. It just runs counter to the way that human beings want the world to be, which is that it's orderly, that it's high probability - if you do A you get B with a high degree of certainty. So, I think that's always been the struggle with what we do. I think that it will always remain the struggle.

David: The majority of people are relatively uncomfortable with math and they're very comfortable with stories - narratives.

Mike: Yes, so they're very uncomfortable with understanding that actually a huge chunk of all of our lives is deeply uncertain, extremely unpredictable, and that means it's always going to be a challenge. That's fine. That also means that's one of the reasons why people get very well paid for doing it because it's not the systems are complicated it's that it's extremely hard to keep doing it in the face of that uncertainty. That's why the people that do it and do it well tend to end up being very highly rewarded for doing it.

Niels: Sure, sure, sure, sure.

As we come to the end of our conversation here, I just want to ask all of you if you would like to bring up anything with each other. Something that you want to ask, maybe David, about or vice versa, anything you want to bring up?

Mike: Well, I think that we reconciled the things that caused all of the traumas in our relationship many, many years ago, and actually remarkably quickly after the events that followed them. So from my perspective, absolutely not. I feel completely relaxed with Marty and with David and the way things have worked out for all three of us. That's my perspective.

David: Yeah, likewise.

Marty: I'd just like to ask you when we can a date in the diary for dinner? (Laughter)

Mike: The question I would have if we do that is who's paying? (Laughter) I think I'm actually very proud of the fact that through all that time of massive change where we challenged a whole bunch of things and we fought tooth and nail with each other over those issues because we really cared about them and with our counterparts - with the Man Group to drive change. As far as I'm aware, no one involved in any of those processes - I think everybody looks back on that time and says, "Bloody hell! That was productive!" That was amazing. So, I'm not aware of any bad feelings.

Niels: No, no. I think it leads me nicely into my final, final, question and that is what is the legacy that you want people to think of when they think of AHL?

Mike: I would love it to be... because there's always this sort of sense in the world that everything has already been invented and there's nothing more to be done, and there's no opportunity or possibility, or something different. When we started out in AHL we absolutely challenged the orthodoxy and did something that we were told repeatedly by people who were far more experienced and knew far more than we did that not only was it not going to work but it couldn't work. I would like the thing that people should take from that going forward is that the future is history that has not yet been written.

There's always opportunity for someone to come in and say, "Hold on a minute. Here's something that no one has ever thought of before." It doesn't need to be complex and it doesn't need to be mathematically challenging. It can just be that someone just comes in from stage left and says, "What about this?" I'd like it to be an encouragement to challenge the orthodoxy and ignore your elders and those who consider themselves wiser - so basically, I'm saying ignore everything I say. (Laughter)

David: Well, I think it's testament that the efficient market theory can be quite a bad model and that there's auto-correlation in markets and that has very significant public policy implications, which I'm not sure the economics profession has absorbed.

Mike: The *Economist* has gone through a series, like a recovering alcoholic, over the years as one after the other it has trashed its own history. I only take the *Economist* so I can wait for them to, one by one, knock down their shibboleths. There's been a great thing about the world being anti-expert and how can we ignore economists? Well, in my view, the definition of an expert is someone who just occasionally is right. Of course, economists aren't experts. All the evidence points to that. I do hold some grudges!

Niels: Marty, what do you think about the legacy?

Marty: It's a great opportunity to get together with you both and I think, again, that unwittingly we were at the leading edge of something that became a big industry - with David, what you've done at Winton, and what Man Group have gone on to do, and Aspect, and many other members of the diaspora. Of course, we'd like to say it was all down to our genius, but that movement has created an investment management industry that employs hundreds if not thousands of people, that does really useful things for people's savings and pension funds, that backs deep science in universities around the country and around the world. That's part of the early legacy of AHL.

Niels: Excellent.

On that note let's wrap up this historic and fascinating conversation recorded live at the Abbey Road Studios in London, in celebration of the 30 year anniversary of the awesome story of AHL.

Mike, David, and Marty, I can't thank you enough for doing this historic and epic podcast with me today. I really appreciate your openness during our conversation.

To all of our listeners around the world let me finish by saying that I hope you got a lot of value from today's conversation. If you did, please share these episodes with your friends and colleagues and send us a comment to let us know what topics you want us to bring up in the upcoming conversations with the industry leaders in managed futures.

From me, Niels Kaastrup-Larsen, and our exclusive sponsor CME Group, thanks for listening and I look forward to being back with you on the next episode of Top Traders Round Table and in the meantime, go check out all of the amazing free resources that you find on CMEgroup.com as well as TopTradersRoundTable.com.

Ending

Thanks for listening to **Top Traders Round Table**. If you feel you learned something of value from today's episode, the best way to stay updated is to go on over to [iTunes] or [Sound Cloud] and subscribe to the show so that you'll be sure to get all the new episodes as they're released.

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