TTU Podcast Episode #90

Robert Carver, Author of Systematic Trading: A unique new method for designing trading and investing systems

Show notes at: http://toptradersunplugged.com/090/

Rob: You know, if I think of my own personal trading system, because I am running a fully automated system and I spend very little time doing it because I’m just using price data; I’ve automatic filters in place to catch bad prices. I spend about maybe 5 minutes per month per market. So if I had 1000 markets then it would become a full time job and it would be quite a boring full time job as well. I wouldn’t be interested in doing that. I could easily trade in 100 futures markets. There’s probably 150 really liquid futures markets out there in the world and if I had enough money I’d quite happily trade all of them because even if the last market I add only adds a few basis points, is that worth 5 minutes of my time a month? Yes, it is.

Niels: Before we find out who’s on today’s show I want to mention that today’s podcast is brought to you by Eurex and in today’s conversation I actually learn about a brand new contract from my guest that Eurex has just launched, which my guest finds to be very useful for many investors, and which you can find much more about by visiting the Eurex website.

Today I’m talking to Robert Carver, who’s both an author and a trader and who spent a good chunk of his career at one of the biggest European systematic trading firms, namely AHL before leaving in 2013 to write his newly released book.

Introduction: Welcome back to Top Traders Unplugged where the best traders in the world come to share their experiences, their successes and their failures. Let’s rejoin the conversation with your host, veteran hedge fund manager, Niels Kaastrup-Larsen.

Niels: …these two things have something in common yet they seem to be received very differently?

Rob: Yes it is an interesting problem. You are right, people have a strong preference for trading systems that generally make money every month and then every now and then lose a lot of money which is the exact opposite to trend following. I think I’ve a lot of emotional kind of bonding with these people. I feel that I really understand their pain because when I look at the returns on my own system inevitably, if I’m in a drawdown, I feel unhappier than if it is doing well.

And if I have a day where I’ve lost money, even though I know from an intellectual perspective, that this is just a random number - a draw from some unknown distribution of returns that hope has a positive mean. When I have a down day I feel slightly less happy
than if I have an up day. If I had an up day every day for six months, then I’d be much happier. So, I have a lot of sympathy for that point of view. I think the reason for the dichotomy between this emotional response and the emotional response to buying lottery tickets is to do with the size of the pain and the size of the pay off.

So if you’ve invested all of your money into a trend following fund, and you lose money for two-thirds (let’s take an extreme example), 2 out of every 3 days you are losing money. You could be losing maybe half a percent of your net worth 2 out of 3 days. No one’s probably going to buy that many lottery tickets. If I was to buy enough lottery tickets that would represent half a percent of my net worth that would be quite a few lottery tickets. So the size of the loss that we get when we buy a lottery ticket is sufficiently smaller that it doesn’t bother us.

Now if I’ve got this trend following system it might be that if I have an exceptional month I might make 20%. So you could look at say September 2008, and the big CTAs were making that kind of 20 or 40 percent, depending on their vol target. Now 20% of my wealth is good, don’t get me wrong, if you sent me a check with that tomorrow I’d be happy. It is also a lot less than I’d get if I won the lottery. Which would be, depending on the payout, many times my wealth. So I think that’s the reason - the size of the gain and the size of the loss skews our perception and makes one thing seem more attractive than the other.

Niels: Now let’s talk about risk and, as Donald Rumfeld said, the known unknowns and the unknown unknowns. What do we need to know about predictable and unpredictable risk in your opinion?

Rob: So the main thing to bear in mind is the risk has these two components: predictable and unpredictable. And the problem starts if you start to assume there is no unpredictable risk, or at least you ignore it or you forget about it. And you know Nassim Taleb spent the last 30 years writing books to make sure that we don’t forget about it.

Most of the time when we are trading we have some model of how we think returns appear. Which can be usually pretty simple and we usually say, “OK, I think returns are going to have the following standard deviation, and they are going to have the following correlation structure.” That implies that you will get returns coming day after day. You know you have a certain chance of a loss of such magnitude, and a certain chance of a gain of such magnitude, and so on.

Now that is fine and you can’t really run a trading system unless you do have some way of modeling what your returns are going to be. You can make that more sophisticated and more realistic so you can add in what the quantity guys would call higher moments so you could add in skew and ketosis, which means instead of having a classic bell shape curve of returns you’d have funkier returns which are more realistic for real asset markets. You could also do things in the correlation space so you can have things like co-skewness and all these fancy things.
Now that's fine. The problem is the fancier you make your risk model the more calibration you need to do. I think you mentally then assume that you must be capturing more of the expected risk that the amount of unexpected risk left is smaller, which I think is what happened really in the financial crises when we have these models of CDA prices, which were fairly sophisticated and certainly much more complicated than anything I could understand. But because they were sophisticated enough that people kind of assumed that they must be encapsulating the real world risk entirely, when of course they weren't. There was this huge tranche (pun intended) this huge tranche of risk out there which wasn't capturing the model.

So my approach is to use the simplest risk model that you can, which has no high moments, just standard deviation, just correlation, and then to know, mentally know, that I'm exposed to getting these things wrong. What I do in my own trading system is I do relatively simple things like say, "Well, what if my model for correlation is completely wrong and actually all correlations are going to be either one or minus one whichever is worse for the position I have at the moment, and on that basis how much I'm likely to lose." And then I kind of cap that exposure. If my exposure goes beyond that then I will actually automatically cut my positions.

So generally speaking it's hopefully your understanding about things that are simple that I can understand but also are robust. And in the way that I model handle risk is exactly that way. So I do think that if you have a simple risk model then you're never going to forget that it is a simple risk model and you're never going to put too much confidence into the assumptions that it's making.

Niels: I have a few more questions relating to the book and then I am going to try and seamlessly transition into some of my usual questions, so we will see how that goes. You touched, very early on in our conversation you touched on the importance of the… and I can't remember the word you used, but essentially the management of your position - so it's partly the position sizing but it's also how that position size stays, whether it's constant or whether it's changing along with the trade. Talk to me about why this framework is so important because you were actually saying that if you get this part right then the actual entry point is not so important.

For me at least, I would say that I think that a lot these systematic trading strategies to a large extent, certainly they're longer term trend following strategies, they tend to get into the same trades at the same time given plus or minus a few days or whatever. What sets one manager apart from the other is really one, to your point, how they manage the risk along the trend and the other thing is of course the exit. But let's take one at a time, let's talk about the sizing and the management of the position. I think, again, that this is something a lot of people may not see as important as you rightly put it.

Rob: So I think the problem is that people wrap up a number of different things together at the same time. So if you read a lot of trading systems that are out there they often say, for
example, that you should never bet more than a certain percentage of your capital on a particular trade. They then say you should always never buy more than a certain number of futures contracts assuming you have a certain amount of money.

This is kind of confounding different things that should be separated. So let’s take stop losses, because it’s something that most people understand. So the kind of big question is, how should you set your stop loss? If you actually follow the logic of the way that these systems are written, your stop loss will be different depending on how much money you have. If you are a small trader, you’ll only be able to afford a very tight stop. If you have more money, then 2 or 3 percent of your capital will be a much larger amount of money and you’ll have a bigger stop.

The market doesn’t actually know how much money you have and doesn’t care. The price is going to move around the way it moves around and in practice what that will mean is that the smaller trader will get stopped out earlier and the bigger trader will get stopped out later. What that means then is that the smaller trader will tend to trade more frequently than the bigger trader.

The point I make in my book is that the amount of volatility in the market and the correct holding period in the market have absolutely nothing to do with how much capital you have. So that these two guys should actually be trading in the market exactly the same way. What that means in practice is that you should calculate your stop loss based on how volatile the market is. So if the market is more volatile then you need a wider stop, and secondly on how long you want to hold that position for. The wider your stop is, the longer you will spend in that position. If the market is expensive to trade you’ll probably want to have a wider stop, and If it is cheap to trade, you can afford to hold positions for less time, in which case you can have a tighter stop. The point is that at no time in that calculation are you considering how much money you have.

And then the next step is to say, “How big should my positions be?” So at this point you really need to know how much capital you’ve actually got, and how much risk you want to take on that capital, and then how much risk you should take on that capital actually is not a cynical question. It’s actually about… I think I list about eight different things you should consider when deciding how much risk you should have on your capital. It’s not just what your appetite for risk is, it’s also how profitable you expect your system to be. It depends on what kind of system you are running. A divergent system can be run at a higher risk than a convergent system, for example, because of the properties of the skew of the returns.

So the points about these… the way I like to do things is very much about taking separately what the components of the trading system should be and then individually saying what should we consider when making this decision? Then moving onto the next step and saying well now we know how big our stop loss is, how should we then decide how big our position should be? You’ve got to separate these things out and calculate them correctly. And that’s something that’s usually done in institutional setups pretty well, although maybe not in the
same way or as explicitly. If you’re talking about retail traders, then very few of them will be using systems that have been set up in this way.

Niels: Sure. In your experience do you look at trades on a trade by trade basis meaning that you have specific stop losses for each trade or do you combine? You also talk about combining signals together in order to get different strength of a signal and so in some cases, obviously the other way of doing it is to say, “Well, actually we can either manage the risk by having a stop that takes us out at a particular point, but we could also manage the risk having certain different entry and exit points that essentially changes the signal from long to short or short to long and that’s going to be how we get out of a trade.” Do you have an opinion or a favorite of those two ways of doing it?

Robs: So in my own system I use the latter. So I like to call this a continuous trading system, so you never have a discrete position. If anyone ever says to me, “What’s your target stop loss on this trade?” I get confused because I don’t really know how to answer that question. It’s the concept of a trade doesn’t really exist. I just have a target position which is implied from the forecast I have for the price, and then if the target position changes then I trade. That, at some point, will take me from being long, to being flat, to being short and then the implicit trade is closed, but that is not how I think at all.

I do discuss, under the heading of the Semi-Automatic Trader, the alternative approach, which is what I would call discrete position management. This is where essentially you have discrete trades and you put them on and you don’t take them off until you’ve hit the stop loss. This approach is better in circumstances where you don’t have systematic trading rules, because by saying to the trader, “Right, once you put a trade on it’s not coming off unless you hit the stop loss,” you’re binding them into that contract and thereby forcing them to manage the risk and the profitability of the position in a way that is correct.

If you said to them, “Well you know you can take the trade off when you feel like it,” then there’s a risk that they will do the wrong thing and trade in a way that’s essentially going to break the very carefully set up systematic framework that they’ve put themselves into. The other circumstance in which that makes more sense is, for example, if you’re trading a system where your mostly buying options because you’re probably going to just want to buy the option. If you’re going to buy out of the money options then you pay your premium and that’s your maximum loss, so you don’t really have a stop loss exactly but you do have a discrete position where you bought an option, you hope it pays off, you’ve got a maximum loss, so you don’t have to worry about trading out of it.

The other reason why discrete positions work better, if you have a non-systematic way of looking at trades, it’s just easier. If you’ve got to look at a hundred positions every day and evaluate whether you should be in or out of them, manually, by looking at charts or fundamental data or whatever it is you are doing, then that’s obviously quite a lot of work and it’s much easier if you have this very simple binary concept whether you are in a trade or out of a trade.
Niels: You mentioned earlier on that a lot professional managers in this space, they would often have a volatility target of their portfolios of say 15%, or could be 20%, it doesn’t really matter. They will target that on a daily basis adjusting their portfolio accordingly. I just wonder isn’t that like driving a hundred miles an hour regardless of whether you’re on a motorway or in the mountains or in a city so to speak? Always having the same target of volatility of your portfolio, wouldn’t it be better (if you could) to adjust the target depending on the conditions or, if we are back to the racing analogy, whether you are driving on a track or whether you’re driving in a city so to speak?

Rob: And so I must have explained myself badly because that’s not what most of these managers do at all. The target… let’s say that the target is 50 miles an hour (to keep the analogy) that’s a target they expect to achieve on average over a period of potentially years. They wouldn’t expect to achieve it every day or perhaps even, assuming their trading reasonably slowly or even every month, and they may not achieve it over any given year.

The speed, the amount of risk you actually run is going to be driven by how much confidence you have in your forecast. So if your forecasts aren’t very strong then perhaps then just drive at 10 mph, but on the other hand if all the lights are flashing green and saying this is a really strong forecast and this market is going to the moon or to the ground, depending on which side you’re on then you drive at 100 mph. You would normally have a speed limit in place so in my own system my speed limit is 100 mph in the sense that I would never take… I’d never have an expected known risk of more than twice my long run average target. But I could go down to potentially to 10% or 15%.

That’s on the whole portfolio, which is made up of a number of different instruments. On any given instrument you may well have almost no risk or no risk at all, if there is literally no information out there telling you what your position should be. Now there are managers in different parts of the quantitative space who do have fixed risk targets, so it’s more common in the equity long short space for example. So those guys generally are always driving a 50 mph. The problem with that is, if you get into situations where potential returns are compressed.

So the classic case would be going into 2007, if you cast your minds back, and there’s a situation in which a lot of quantitative equity long short managers all had essentially the same positions on. The amount of juice in those positions was seriously reduced and they were making just a few basis points at quite high leverage. There was a couple of bad days in August of 2007 when everything went against them at the same time and that is the danger of running a fixed risk target.

Niels: Now let’s try and make that transition a little bit and jump into something that I would normally ask my guests about. Let’s start with organization and I just want to ask you this, you’ve obviously spent a lot of time doing research and you’ve worked in teams at large institutions. If you today were charge with the challenge of putting together a research team
for a systematic fund manager what would that look like? And do you need 50 PhDs or 2
PhDs how does that all go together?

Rob: So there are three considerations I would say: the first is the size of the team, the
second is the kind of educational attainment or general level of intelligence if you like, and
the third is the diversity of opinions and backgrounds. So team size, I do have to say that I
think the large numbers of researchers employed by many institutions are unnecessary and
indeed could be potentially damaging.

So generally speaking, if you were designing a systematic trading system and not one that is
going to need to be adapted regularly, as we have already discussed, it’s like building a
building. You hire a bunch of people to design a system and then, really once the building is
up, you are just going to need a few building maintenance guys to make sure the lift is
working. Similarly, you are not going to need, once the system is designed and working, you
are probably not going to need 50 people. Depending on the size of the fund and the
complexity of what you are doing and if we are talking about say a CTA with say high
hundred-million-dollar program, I would say a team of half a dozen good people is probably
sufficient.

The second is on intellect and educational attainment. So I should state out front first I have
no PhD and I try not to let it influence my thinking. It may well be that I have an unconscious
bias against people with PhDs. But what I will say is that I have worked with some incredibly
smart people and people who are many, many times smarter than I am. I think it’s fair to say
that if we have 6 super genius people on a team it’s probably going to be quite dysfunctional
for a number of reasons.

You do want smart people but I don’t think there is necessarily a positive correlation between
how smart people are or how many degrees they’ve got beyond a certain point. You don’t
want some guy who is maybe very bright, but has no doesn’t have the right kind of
mathematical background to cope some of the stuff we have to deal with. That doesn’t mean
that everyone has to have a PhD in Statistics or Economics or Physics or whatever – so,
people who are clever but not necessarily a team of geniuses because geniuses are quite
hard to manage and if everyone on the team is a genius then who is going to do the dirty
work?

Niels: I seem to remember a firm back in 1998. There was probably a team of geniuses and
a few Nobel prize winners as well.

Rob: Ah yes, I can’t remember the name of the firm but it was Long Term Something
Management so that’s an interesting example perhaps.

Finally, in terms of the kinds of the backgrounds of the people. If I look at AHL, for example,
if you go back to the early 90’s I think pretty much everyone they hired had a degree in
Physics from Oxford or Cambridge and so you had a lot of people who really thought in
exactly the same way. You know, there are probably a lot of hedge funds out there staffed exclusively with people who had been to the University of Chicago and with a kind of Eugene Fama doctrine hammered in their heads.

The problem with having a lot of people that all think in exactly the same way is… the old story is, you’ve got 6 people in the room and 6 of them have the same opinion and 5 of them are a waste of space. I do think you need a diversity of backgrounds. One of the interesting things about the business of systematic trading is that it does bring together a lot of different skills and unique people who know about IT and computing. You need people who know about economics. You need people who know about how financial markets actually work and who ideally have had some trading experience.

You need people who have got that type of statistical ability. So you do need people with a range of backgrounds it’s unusual to find people who do combine those. I’ve already said I’m a rare exception. That just means in practice I’m sort of not too bad at a number of things rather than being brilliant at any of them. I think in this business it’s better to have a team of people from different backgrounds who are going to think differently and not just follow the same train of thought and be exactly the same. There has been a lot written about things like herding behavior and you don’t want herding behavior on your team. You don’t want everyone coalescing around the same opinion.

Niels: I mean I agree with what you are saying. But it is interesting that there is still a preference I think for many institution investors to go with the firms with the larger teams, although there is nothing to suggest in the performance data that you know 50 PhDs is better than one. Obviously, there some other things that you do when you have large teams you usually have to accommodate managing and executing large amounts of money and that takes research as well.

Now, I want to ask you a little bit about track records - how investors should read them because not everyone has a 20 or 30 or 40-year track record. Even if you have a 30 or 40-year track record the system will have changed over time. People make changes.

That’s why they have research teams. On one side investors want you to be innovative, on the other hand, if you say you made changes, hmmm, they don’t necessarily like that either. So how do we put all that together and how should investors deal with historical track records?

Rob: So the biggest problem we have when looking at historical track records is this issue of statistical uncertainty. So it’s exactly the same problems that we have as researchers when looking at a backtest. We don’t know whether this currently really good backtest, or really bad backtest it’s just bad luck or good luck. And, you know, it’s the same problem that investors have. One of the things I like to do is actually plot the evolution of the estimates of portfolio means and correlations at the time. Even with 10, 20, 30 years of data, you’re never really in a situation where you have a significant difference between two portfolios which
actually are and in the long run would be quite different. So then that really hammers home to me the difficulty of this job.

Personally, if I was running a fund the funds business, then I would look at track records but I probably wouldn’t put a huge amount of effort into analyzing them to death. I mean I do think if you’re in the fund the fund business and you employ a smart researcher, and the first thing a smart researcher will do is take the 20 years of 12 month returns and do all kinds of amazing statistical analysis with them. You know, I think you can go over the top with these things.

I think I remember seeing once a presentation by someone in the fund the funds business who’d analyzed track record of three managers over ten years, and there were actually more slides than data points, which is probably going a bit far. The basic things to do, I mean look at the track record and it should be similar to the track record of people who are supposedly doing the same thing.

So if you if the guys trend following, and he lost money last year, then you should kind of have a big question mark. That might mean that he’s really bad, or it might mean that he’s not trend following at all, and he’s doing something else. If the guy did really well between 2011 and 2013, when trend following did badly, then again you should be saying, “Well, is that due to exceptional skill or is that because he’s doing something quite different from all the other trend followers and maybe he’s actually exposed to some kind of risk.”

I would if someone’s performance was really, really bad or really, really good, so well outside the distribution of what I’d expect, then I’d probably dismiss them - both being really good and really bad. So if someone comes to me and they’ve got a 20-year track record and they are doing trend following of futures with an average holding period of a month, and their sharp ratio is 3, I’d say, “It might be that you are a genius but, to be honest, it’s more likely you’re the next Bernie Madoff. So I’m really sorry but we are not going to invest in you.”

Then I would spend much more of my… I’d hire this smart research guy in the fund the fund business, I’d then send him to talk to the smart researchers in that business and ask them questions and make sure that they… I you wouldn’t ask them to give anything away but make sure they could explain what they were doing and what risks they felt that they were exposed to. It would be much more of a qualitative judgement, for me, rather than just looking purely at the track record.

Niels: So I remember from an e-book you helped me put together recently you have something called Explain Your Strategy in Terms My Grandmother Would Understand.

Rob: Yes, Exactly.

Niels: Now speaking about performance a little while longer, in the systematic trading world obviously we have the very short term strategies and we have the longer term strategies and we have all sorts of other strategies that can be systematized. Often people will... You know
I hear the point about, “Oh but there’s too many people doing trend following, or there’s too many people doing short term, or high frequency - that’s going to be dead because this that and the other.” Did you have an opinion about these concerns that people might have with these systematized strategies?

Rob: The main considerations are the kind of size of the systematic traders in that business versus everybody else. The style of how they are trading and whether their conditions are likely to change in the future. So let’s take high frequency trading, so high frequency trading is basically, as far as I can tell, a hundred percent systematized. There is no human being who can click… With some exception - there are some people who are being prosecuted for spoofing in markets who apparently have been doing it manually which is quite interesting, and have actually been able to take money off the high frequency traders.

Unfortunately, at the cost of doing something that is alleged to be illegal, but generally speaking the high frequency end is a hundred percent computers because humans just can’t compete. The things that humans are good at are completely irrelevant when the only thing that matters is the latency and the speed at which you are trading. These things aren’t doing highly sophisticated calculations. They can’t be because their main job is to turn around as fast as possible and update the orders they have in the market as new information comes in.

So will that go away? No I think that business will remain 100 percent systematized, but as to who will make money in that business? At the moment if you believe the media, then basically it is the higher frequency shops that are making the money and the people who are going into that market to execute, who are paying, effectively, a tax.

The third part of my earlier statement was will that market change? Well, you have things like, obviously, a lot of fuss in the U. S. about this Hilary Clinton’s high life that is a problem. You’ve got IEX, which is the exchange set up deliberately to frustrate HFT. The market will probably change, but my opinion is that there will always be high frequency firms out there. They will have to adapt, and they probably will adapt. The size and the profits they make may go down a bit, or may go up a bit, but I believe that that will always be a business which is profitable. That doesn’t mean to say any individual firm doing it will always be profitable or that any strategy that’s working now will still be working in a years’ time. That’s almost certainly not true.

Now if we go to the other end of the scow… Actually let’s go to somewhere in the middle of the scow let’s think about medium speed relative value trading. So let’s suppose that you are doing, I don’t know, long short equity trading. So you’ve got a bunch of equity factors. Let’s just make it simple - you’ve just got one factor which is book value. Obviously, the world is more complicated than that but that doesn’t change the argument. So you got a lot of firms that are cheap, you’ve got high book value, and a lot of firm’s expense have low book values, so you do you do a long and short strategy on those. You do that in a systematic way. Now if only 5% of the people in the market are using that strategy, then that is great and you will continue making money. But if 50% or 75% or 90% of the
people in that market are using that strategy, then pretty soon the opportunities are going to disappear.

The prices of the firms that are cheap will be bid up, and prices of the firms that are expensive will be pushed down until they are… In the extreme situation they will all be the same price. So in those areas the profitability of those systems… And it’s not even systematic trading, it’s more the profitability of that kind of investment factor is cyclical.

So there are times when you can make a lot of money on that kind of trading, and it’s normally actually after a market crash so it depends on the kind of crash. The dot.com kind of crash back in 2000, after that actually value stocks were that cheap because they hadn’t gone up that much in the tech boom. There had been all the growth stocks that had gone up. Whereas, in the more recent crash in 2009 you could pick up a lot of value stocks really cheaply because they were the businesses doing the things like house builders that were really being hammered and therefore value investing would have done extremely well in the two or three years after that period.

So that’s a cyclical business. It won’t ever go away because it’s just that it might go away over the next few years, but then something will happen and it will come back again. You can either take the view that you will just always be in that strategy over a very long period of time or you can try and be a little bit smarter and say, “Well I’ll put more money in when there is more value.” It’s a bit like driving faster than 50 MPH when the road is clear with regards to the earlier analogy.

Now let’s take something like a slower strategy like trend following. So the thing about trend following unlike a relative value strategy, is that if more people follow it, it actually becomes self-reinforcing. So, if when markets go up there are trend followers the market who will buy it, then the market will continue to go up.

So from that point of view having more people in the market may actually improve your returns rather than harming them. The issue then comes around execution, because if you have a lot of people trading more market who are all running the same model, and then the price moves against you, they’re all going to want to rush to the exits at the same time. There are probably futures markets out there which have quite high percentages of people in them who are running CTA type strategies.

At AHL we always made sure we were less than a certain percentage of the open interest. So I figure I can disclose, and it’s probably changed anyway, but let’s just say it was 10% (it wasn’t but let’s just say it was). That’s fine, but if you say are less than 10%, if you then have 10 large CTAs, all of whom are saying, “Well, then we’re going to be up to 10% of the open interest, all of a sudden you have a market that is 100% CTA. They’re all going to rush for the exits on a correction in exactly the same way.
The underlying returns of a trend following CTA type strategy, because it’s pretty slow, because it’s based on human behavior that I think, at least, shouldn’t change, will probably still be around for a long time to come. But there may well be periods when there are too many people in that strategy, it gets crowded, and that will mean that there will be these unexpected liquidity problems, at times. In the long run it should probably be OK.

Niels: Which is kind of why I certainly also feel in some ways, I think the exit, however you do it, the exit is another important factor in these strategies at least in order to avoid being caught up in when maybe a large part of the same strategies is going to get out at the same time. Now I want to ask you a questions that I’ve never asked anyone, really, because they may not be as in the details as you clearly are. I just want to… When you look at all things is there any one statistic you really like, that you think, this is just a great one to… You know, some people talk about sharp, some people talk about sortino ratio, omega ratio, all sorts of different things… Is there something when you do your analysis that you feel this is important and I’m going to put a lot of emphasis on that?

Rob: So I general look mostly at sharp ratio, and that's because it’s relatively simple to calculate and because I’ve generally looked to sharp ratio for the best part of 10 years. I have a very strong intuition as to what is a good sharp ratio, what is a bad sharp ratio. The disadvantages of sharp ratio are, obviously, it assumes symmetric returns. For that reason, the other thing I will look at is skew.

So the positive skew means that generally speaking you have more losing days than winning days but your winning days are bigger. So that is very much like a trend following strategy. A negative skew means that you are making money more days than not but when you have a loss it’s a big loss. That would be something like a relative value strategy or perhaps a carry strategy.

So the problem with skew is that without getting into technicalities, but the higher up you go in the distribution, the more moments you calculate, the more unreliable the statistics are the more they can be distorted by just one or two data points. One thing I’m very aware of is with a lot of negative skew strategies, is that they may not have had their big down day in a backtest, which economist call the peso problem - going back to the Mexican peso crises in the 1980s.

So I’m very suspicious of a strategy that has a high sharp, makes money more days than doesn’t make money, but it has never had a big loss. I’m always thinking, well this thing must be exposed to a risk which is out there. If I was in this hypothetical situation where I was working for a fund the funds organization, I would go to the manager and say, “Right, what keeps you awake at night? What’s the big risk you are exposed to? What can go wrong?” If the guys just kind of shrug their shoulders and say, “Oh nothing, it’s wonderful,” then I won’t invest in them because they clearly… But if they can articulate and say, “Well yes, this looks amazing and the backtest looks amazing, but we know for a fact that we are exposed to this
particular risk, but we’ve quantified it and we think that we might have a 20% down year, if it happens,” then I might actually be happy enough to invest in that strategy.

Niels: I’m going to give you a challenge Rob because I have so many more questions and I know we can’t get to all of them. So the whole next section which is where I wanted to talk about your own trading strategy I’m going to formulate it or at least I’m going to try to into one question. That is, taking everything you’ve done: the research, your writing, and all of that, how have you ended up, from a sort of 30,000 ft. point of view and maybe a little bit lower than that how, have you ended up with your own trading system? What does it look like today?

Rob: So I trade about 40 futures markets. They’re spread over all the main asset classes. As I said earlier, you have to be diversified in this game. Diversification really is the only free lunch in finance. So I’ve got a good spread of assets and geographies. If I had more capital, I’d have more markets. It’s as simple as that.

Niels: But just on that point, but how many more? I think that is a big discussion as well, because I find that certainly in some of the studies that I’ve seen and been part of there is a number where you really don’t get any more diversification benefit. So people that trade 200 markets, they do it because they need capacity, they don’t do it because they need more diversification. But I don’t know what that number is, whether it is 60 markets or whether its 70 or 80, I don’t know. Where would you like to go in terms of number of markets?

Rob: Well theoretically there is always a benefit to adding another market which is not 100% correlated. Now the question is what is the cost of having that market. So if I go back to my institutional experience at AHL, one of the things I did while I was there was add a lot more markets to their system - mostly OTC, interest rate swaps, and credit derivatives.

One day the COO called me into his office and said, “You’ve added all these markets, you know and is this really necessary?” I said, “Well, if you can tell me what the cost is in each of these markets, then I can say whether I think it’s worth it or not. It might be that the last market we added, and it was a tiny, tiny fraction of the portfolio and added only one basis point to our performance, one basis point on ten billion dollars is still… I can’t work it out in my head. If the cost of adding that market in terms of operational costs or back office costs or whatever exceeds that one basis point, then yes I agree, it’s a bad trade.” We discussed it and decided that I was right.

If I think of my own personal trading system if I add a market, because I am running a fully automated system and I spend very little time doing it because I’m just using price data, I’ve automatic filters in place to catch bad prices. I spend about maybe 5 minutes per month per market. So if I had 1000 markets then it would become a full time job, and it would be quite a boring full time job at well. I wouldn’t be interested in doing that. I could easily trade in 100 futures markets. There is probably about 150 really liquid futures markets out there in the world. If I had enough money I’d quite happily trade all of them, because even if the last
market I add only adds a few basis points, is that worth 5 minutes of my time a month? Yes, it is and that’s my own personal trade off.

Niels: So you’ve got 40 markets at the moment. Tell me about the number of different strategies and models that you decided upon on your own, and what kind of style trader did you end up becoming?

Rob: So everyone who has listened to this so far has probably concluded I’m obsessed with trend following, and my system would be 100% trend following. I’ll now disappoint you and tell you my system is only 40% trend following. It’s also… I’m doing a few different ways of doing that trend following, which are fairly highly correlated with each other, but it just adds a bit of variety. Then I have a chunk of carry, a carry system. So that’s going to be looking at the slope of the yield curve and looking at the roll down and the contango.

Niels: And is that both in yields or commodities, or mainly in commodities where there seems to be?

Rob: It’s across the board. So one thing I concluded is there is not really enough evidence to say that different systems work much better in different asset classes than others. There are some exceptions. So it does seem, for example, that trading trend following relatively quickly doesn’t seem to work as well in equity indices as in other markets, and that finding then follows through down into individual equities as well. Actually Andreas Clenow has a nice piece on his blog about this quite recently.

Niels: Yes absolutely, I saw that.

Rob: And you know, but on the other hand, if I actually look and be really statistically rigorous and say is there enough statistical evidence in the backtest and say, “I should run a different system with S&P 500 futures as with U.S. 10 year bonds?” I don’t see that so I take the simple approach of running exactly the same system in every market with a caveat that I do adjust for the expected trading cost of the market, and therefore on the really cheap market like NASDAQ or S&P 500, I will be trading more quickly than on something like the Australian interest rate futures, which is a relatively expensive market.

I have a systematic short bias on the two volatility index markets I trade, which is the VIX and the European equivalent, the V2X, and that’s because I believe that being short the implied versus realized vol premium is a kind of source of return. Ideally, I’d have the systems you can build to capture that more efficiently, but in my current trading space the simplest way of doing that is to have this little short bias in those two markets.

Niels: How much of the overall risk would you allocate to that kind of strategy?
Rob: It’s about between 5% and 10%. I can’t remember exactly. It’s not a lot because that obviously is pretty… That’s the dark, real dark side when it comes to risk properties. You know, these things have four times the skew of the equity markets they track and if
something like 2008 happened again it would be pretty dangerous. Because I’m also running a trend following and a carry system on those markets, if things really went badly I’d be out of the positions so it’s not too much of a concern.

Niels: In trend following, at least, my experience is that there is a disproportionate part of the profits in long term trend following that is being made from the long side of the trend of the trades. Have you looked at that and if so do you adjust for that fact?

Rob: I mean again, it comes down to statistics so part of the problem is, especially in the financial markets - so the bonds, the equities, the interest rate futures - there has been this massive long circular trend across 30 years which you touched on earlier. This means there isn’t really that many times when you know the market is going down. So it’s really hard to know if we have a less unbiased status, where there are roughly the same amount of bear and bull markets, that we could probably be able to make that decision a bit more easily.

You can try quite clever things like trying to adjust the history of the past to remove the circular trend and then refitting your system. You get this result coming through, but again, I’ve become a lot more rigorous in my old age. When I was younger I used to, if I saw something that looked good in a backtest I’d immediately put it in, but now my bias is towards doing nothing and keeping things as simple as possible, and the same across the board. So I’d need really strong evidence to suggest that what you said was true to actually put that into my system. There is definitely something there but, unfortunately, because we have this bias it’s rare but you will see a statistically significant difference between those two environments.

Niels: I have a little bit of a cheeky question I hope you don’t mind. You’ve been running your system for a while now with no PhD. How are you comparing to your old friends at AHL?

Rob: So, I review my performance annually, so after the first year, the first year I was running from April 2014 to April 2015. You know, looking at sharp ratio I think they had a sharp ratio of 4 - It just goes to show you what an incredible year it was for trend following - and I had a sharp ratio of 2.8. I was probably somewhere in the middle of the pack in terms the CTAs so there were some other CTAs I was doing better than.

This year if I have done, I haven’t looked at the numbers in a formal sense but I know I’ve outperformed them. I can do a little more analysis when I get round, to it but my intuition is that is because I do have this higher allocation to non-trend following strategies. So it’s probably not a fair comparison from that point of view. I would expect, however, over a long period of time they would outperform me mainly because they do have many more markets, and that is a key - a key difference between a small retail investor and a large investment house. That is the main advantage of large investment house definitely.
Niels: Let’s jump to another topic. Just touch upon that briefly and that’s drawdowns. We’ve spoken about a little bit. I have a couple of questions. What’s the best way of getting a gage on a system’s potential drawdown? Have you found any rule of thumb, or can it only be done through hours of testing? How do you find out what to expect on the down side?

Rob: So one thing you can do is to completely forget about your real data and just run experiments with completely artificial data. This has an advantage because if you have some real data you just don’t know if you’ve been lucky or unlucky. So it might be that your drawdown was exceptionally small or exceptionally large just through good luck or bad luck, and you don’t know whether that’s realistic to expect in the future.

That may lull you into a false sense of security or may scare you and you wouldn’t think about trading the system because it’s too dangerous. So what you can actually do is run a number of different account curves with random data, with some sharp ratio, with some skew, whatever it is you want to do, and then you can then look at the, measure the drawdowns in each of those simulations.

What you can then do is actually look at the distribution of the drawdowns across those simulations. So that sounds kind of a complicated but let’s take… If I give you a specific example, let’s say that you are running a system with a risk target of a 20% a year, and you expect your sharp ratio to be .5. Which maybe is a little pessimistic, but you know if your true sharp ratio is more than that - is 1 or 1.5 it’s not beyond the realms of possibility that over a ten-year period you might… I mean even if you look at the big CTAs over the last 10 years that’s probably roughly where their sharp ratio is.

You can then plot the distribution and you can… So for example if you plot the distribution of the average drawdown, so any given day in any of these random simulations your average drawdown is about 10%. So most of the time you should have a drawdown of about 10%. If you have a drawdown that’s, you know, two times that sounds a lot. That’s half your risk target. That’s kind of thumb, but there are also realizations - ten year periods where your average drawdown is 50%. That’s pretty rare but it could happen. So you need to have that in the back of your mind.

Now people probably don’t worry so much about an average drawdown, they worry about worse drawdown. What’s the kind of worse possible case? So if you look at worst drawdowns over a 10-year period, then the average is around 40%, so it’s twice your risk target. It’s also a good rule of thumb is that over a ten-year period your worse drawdown will probably be about twice your risk target.

So if you been running a system for a few years and it goes down 40% you probably shouldn’t panic, because that is kind of roughly what you should expect. But again if you look at the extremes then there are runs where you can have an 80% drawdown which the silence on the end of the phone indicates… That’s not impossible and to me that really just reinforces the message that you really ought to be in a position where you can lose all the
money you were trading. It could happen I mean you hope it won’t but it could. One, it would be extremely unlucky, if you’ve got sharp ratio of .5 or higher, you’d be extremely unlucky to be in that situation, but it could happen and that should always be in the back of your mind. So those are nice rules of thumb and that’s easier and better than looking at a backtest which, as I said, may be biased and give you an unrealistic picture of what the drawdown really ought to be.

Niels: Now being mindful of the time I want to jump again to just another section and just ask you a quick question before we end up in the last part of this conversation. Now you’ve clearly been part of many due diligence meetings, phone calls, investors wanting to ask questions about the strategy you are working inside, and so on and so forth. If you take that hat on, what are the things you find that investors should be asking but they never do?

Rob: Well one is the question I touched on earlier which is what can go wrong? You know, what keeps you awake at night? No one likes to hear bad news I guess, which is fine. It also seems, potentially I suppose, like quite a rude question to walk into a room and say to somebody, “Right, when are you going to screw up? How’s it going to happen? Tell me all about it.” But you know really that’s a very important question to ask, particularly if you have a strategy that’s exposed to a really bad risk that hasn’t happened yet.

The other question… I think I can probably go back to the three points I made at the beginning about over trading, over betting, and over fitting a lot of investors will look the risk properties. I think savvy investors understand or have a feel for things like leverage, and will know that if you make 40% in one month then potentially you have a high risk and you might be over betting there. They kind of understand that.

What they don’t necessarily understand so well is the over fitting. So this, obviously, is hard for someone who is coming from a different background to you and I and isn’t familiar with it. As you said earlier, explain to me in terms my grandmother would understand how you figure one-offs? What is the process you go through? If the researchers described a process that seems to involves a lot of iterations, then immediately alarm bells should be going off in your heads.

A better question is to say tell me about this particular model? If you ask them, how do you fit your models? They may just rattle of some corporate BS about, yes, we follow this very rigorous process blah, blah, blah. If you say, how did you fit this model? Where did the idea come from? What did you look at? Then you’re going to get a more honest answer out of them and you will get a feel for whether there is some danger of over fitting going on there, and if so how serious it is. And the same with over trading, I think very few investors ask about trading costs. I think it really is something that most people in the industry don’t pay enough attention to.

Niels: There is no doubt that transparency in these situations is very important. As you mentioned in you book, that goes also for politics.
Anyways, the last section Rob, we are almost there, general and fun. I’m just going to pick a couple of ones I think would be relevant for our conversation today because we have clearly touched upon a lot of the technical stuff. You’ve written a book but if you couldn’t recommend that, which other book would you recommend for someone who wants to get into this business or wants to learn to understand it better? Is there any book that you read that sort of stands out to you?

Rob: Yes My book wouldn’t be the first book you’d read if you’re interested in the systematic trading business. There is a book I read myself, about 15 years ago before I knew what systematic trading was, and it’s called The Predictors and so I don’t know if you have heard of Thomas Bass he is in Econo-Physicist and was one of the inventors of Chaos Theory. In his youth he did fun things like trying to build a wearable tech - a computer that would predict where a roulette wheel would land and try and make some money out of that. But the technology wasn’t sufficiently advanced, and I believe there was some electric shocks.

He moved and ended up in founding a hedge fund which was doing systematic trading. This was in the early 90’s. It’s is a very well written book. It’s not technical and I read this book and thought this is what I want to do.

It gets across really, the feel for how you do this job and the things you have to worry about. There are some great passages in there about… little anecdotes that really got across what over fitting is. The phrase is never used in the book but you really get a feel for what it is and how you have to worry about execution costs. At the time I just thought this is a really interesting book, a really readable book, and I just find it fascinating.

Niels: I’m not entirely sure which career, because you have kind of had a couple of different careers you could say. So you can relate the question to what you want, but what would you say has been the biggest failure on your side and what did you learn from it? I use the word failure loosely, because I think you’ve done pretty well.

Rob: I’ve made a lot of mistakes. So if I think about when I was working at AHL there were a number of times when I did things I would no longer do now. It’s quite hard to pick out the biggest one because there have been so many. Perhaps I’m lucky, I’ve never had a single kind of blow-up or disaster, if you like, that sort of really knocked me back. I’ve had a long series of small disasters which have left me still standing and able to learn from them without being completely knocked down. Arguably you could say that when I left Barclays where I was trading, that was a failure arguably, because I failed at doing the job that I’d been hired to do in the sense that I felt that it was not what I was any good at. Really, from that I learned that trading is not… I can’t trade. Discretionary trading is not something I can do and most people… A lot of people think they can do it, and I don’t think they can do it either, but I was fortunate enough to learn the lesson quite early on.

Niels: That’s an important one. That’s an important for sure. Now you told us an interesting fact about yourself which I had no idea about your stellar sailing career.
Rob: Long time ago.

Niels: Long time ago you say, but can you tell me a fun fact about yourself, something that even people who know you, let’s maybe exclude your wife and children here, but people who may even know you don’t know about you is there anything? Is there a different side to Rob Carver that we don’t know about?

Rob: Um, I have real addiction to trashy television.

Niels: Can you recommend any?

Rob: Particularly there is what I call trashy business programs. There is a couple I mention that run in this country and one is The Apprentice, which I think is international now. I know there’s a U.S. version which had Mr. Trump. But this program is absolutely appalling. It is completely unlike… You would not run a business the way this program works. It encourages people to behave in ways that are incredibly bad but great television. I don’t know why I enjoy watching it, I don’t know whether its “schadenfreude” because I’m thinking, gosh I’m so glad I’m not like these people. I never had to put myself through this or what, but its compelling stuff.

Then there is another program called Dragon’s Den which perhaps isn’t so well known outside of the UK, where people have to pitch ideas to some venture capitalists. Again, it’s a complete, slightly more realistic than The Apprentice but it’s a bit of a farcical representation of how the real world of business works. Of course the irony is if there were a highly realistic program about business it would be incredibly dull and I wouldn’t want to watch it either. So I understand why these programs are made. I hate them, and I hate myself for loving them so much, so there you go.

Niels: Dragon’s Den - in the U.S. they call it the Shark Tank.

Rob: Oh, OK.

Niels: That’s what it is over there. Now you mentioned you have children, and I was curious to know, if you could choose only one of your own skills to pass onto your children what would that be and why?

Rob: If I was to choose an attribute rather than a skill it would be that I’m a very optimistic person

Niels: Sure, that’s allowed.

Rob: I always think, I also never, never ever look back and regrets anything- that has happened in the past. So I think those two things, for me at least, go together. So that makes a life more fun and more tolerable. I think that’s probably of more use than saying, “Oh I wish my kids were as good at math as I am.” Not that I’m that good at math.
Niels: Sailing Perhaps? Apparently that seems to be a good.

Rob: Perhaps, yeah, that would be the attribute I’d like. That’s what I’d like to pass onto to them if nothing else.

Niels: That’s important, absolutely. Now were coming to an end, Rob. I have one particular question left. I asked earlier about what investors were missing out when they talked to people like yourself, what they should be asking so I’m going to turn it always on myself at the very end and say was there anything today that I missed? I want to make sure that I give justice to you and your book so is there anything you want to bring up at the end here that I failed to ask you today?

Rob: I’m just going to be really cheeky and plug the book some more and say if you go to www.systematictrading.org then you can find out more about it and there is also a link to my blog and a link to the publisher’s page where you can buy it if you want to.

Niels: Sure absolutely and I was going to absolutely mention that, and I’ll probably mention that at bit latter. As we wrap up I want to thank EUREX, the exchange, for sponsoring today’s episode. As many of you listeners today will know, EUREX is a great place to trade, especially if you are a systematic trader because there is quite a lot of liquidity in most of their contracts.

Rob: And they just launched a Mini-DAX feature which is a very interesting contract because the DAX is a bit large for retail traders at the moment. So that’s a little plug for that.

Niels: Well thanks very much for that because I was not aware of that. I’m sure they will be happy to hear us discuss that and promote that. From my side I also want to mention to our listeners that it might be a good idea to go to your smart phones and actuate the subscribe button because I’ve noticed that some of these feeds on the podcasts are no longer automatically updating the media players, so if you wouldn’t mind just pick up your smart phone and make sure you are subscribed to the podcast.

That really leaves me to thank you Rob. This has been a great conversation on a Saturday morning, a true master class in systematic trading, which I really appreciate. I also appreciate your willingness to share your insights and your views in this field. The book of course is Systematic Trading, as Rob mentioned, and I suggest you grab a copy or two of that. Of course the listeners can also find all the details of today’s conversation in the show notes on TOPTRADERSUNPLUGGED.COM.

So Rob, I hope we can connect at a later date and get an update on your great work. I really appreciate your time and what you have done. So thank you ever so much.

Rob: Thank you very much, Niels, it’s been great fun.
Niels: Absolutely, take care.

Ending: Thanks for listening to Top Traders Unplugged. 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 and subscribe to the show so that you'll be sure to get all the new episodes as they're released. We have some amazing guests lined up for you, and to ensure our show continues to grow, please leave us an honest rating and review on iTunes. It only takes a minute, and it's the best way to show us you love the podcast. We'll see you next time on Top Traders Unplugged.