



MACRO Voices
with hedge fund manager Erik Townsend

Mark Gordon: Why the age of oil abundance is about to end

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Erik: Joining me next on the program is Mark Gordon, the Chief Investment Officer for Ascent Oil Fund.

Listeners, you'll remember that I encouraged you last week on our show to watch Mark's [interview with Keith McCullough](#), our friend, the founder of Hedgeye. For anyone who didn't, a link for that is in your Research Roundup email.

We're going to do something a little bit different in today's interview format. I really feel like Mark is one of very few people in the industry who really is looking at the right issues in the oil market. Mark's got a whole pitch that goes with this. It was in the interview with Keith McCullough. We're going to assume that you already watched that and you've got that.

I do recommend that you first download the slide deck, which is also linked in your Research Roundup email. If you're not yet registered and you don't have a Research Roundup email for that link, just go to our home page at macrovoices.com, look for the red button that says [Looking for the Downloads?](#) next to Mark's picture on our home page.

That slide deck will be referenced extensively in Mark's interview with Keith McCullough. But Hedgeye doesn't give you the slide deck. We do. So start with the slide deck.

If you haven't already, watch the interview with Keith McCullough, where you'll understand the background of Mark's pitch and how he sees the oil market. I think he's looking at all of the right issues.

I just have different opinions on some of those issues. So we're going to go the next step after that interview with Keith and really get into the nitty-gritty of some of the places where we see eye to eye and some where we don't.

So, Mark, thanks so much for joining us. I want to dive right in to Page 4 of your deck here because you're really making a profound point with this slide.

You're showing that in the fourth quarter of 1998 and the third quarter of 2008, just 10 years later, you've got basically the same inventory conditions. On both of those dates, you had the same amount of inventory in the tanks in Cushing, Oklahoma and elsewhere around the nation. But, holy cow, it's literally almost a 15 to 1 difference in price.

How is that even possible? What's going on here?

Mark: I would modify what you said just slightly and point out that it's the same inventory in the days of forward demand, which I think is the correct way of looking at it. But, of course, demand would have grown over those 10 years, so the absolute level of inventory would have been a little bit higher.

But the days of forward demand is the correct way of looking at it. And, indeed, when we had oil at \$10 and we had oil at \$147, we had the same days of forward demand.

What that tells you is that inventory is not what's driving price. It's the larger regime around inventory, the framework through which you think about oil, which is driving the price.

So what's important is to recognize the framework that you're in and when it is you might move from one regime to another.

I'd also point out, on the next page [Page 5], that currently, today, globally we do have normal inventories. Although it doesn't feel that way.

And I think the oil price is below where it could be with the same level of inventories because of the negative sentiment or negative regime. And I think if you change regimes with the very same level of inventories, you could get a higher price.

I'd also point out it's not so much the level of inventories that matters but the direction of inventories. So draining inventories are very bullish and inventories that are increasing are bearish.

But if you go back to 2009 after the Great Financial Crisis, the oil price rallied right through 2009 while inventories grew. Which, again, sort of makes the point that it's the oil price regime that is driving what the price does and not necessarily what inventories are doing.

Erik: Well, Mark, I really want to salute you because I feel that you have just very succinctly described one of the most important concepts in the entire oil market, which is almost everybody gets obsessed with these inventory numbers as if that's the center of the universe.

Like, every Wednesday at 10:30 in the morning EIA releases the weekly inventory report and traders all act as if that's the center of the universe. And I think you've shown very clearly here that it's really not the primary driver of price. The primary driver of price is the much larger, broader set of expectations around the regime that people think we're in.

Now, back in that 2008 timeframe when we had \$147 oil, that was what you've termed the Peak Oil regime where there was a widespread expectation based on the predictions of Marion King Hubbert made way back in 1956 that we were going to reach a peak of oil production and,

once we hit that peak production level, it didn't really matter what you did. You wouldn't be able to produce any more. And if demand was greater than that, it could cause crazy gyrations in price.

And that's how we got to \$147 oil.

I think where we maybe have slightly different views of this is – I think we both agree that Hubbert's peak is real, that the predictions that Hubbert made about geology had some real basis to them. And I think that, for a while, the finance industry got overly obsessed with them and thought it meant only one thing, which is the price just had to go to the moon.

And they didn't really think it through and realize – as you so eloquently described in your interview with Keith McCullough – that, if you invoke George Soros' idea of reflexivity, it's the price going to \$147 that changes the game. And it brings a whole bunch of investment into unconventional production, which really changed the game.

And, of course, Hubbert's predictions were about conventional production. Because unconventional production, things like tight oil and CO2 injection and some of the other fancy technologies that exist for getting oil out of the ground, didn't exist in Hubbert's day.

Let's move ahead to this description of Hubbert's peak. Please refresh our listeners. How is it that you see the regime change from the "age of peak oil" to the "age of abundance"? I think we see it differently.

So let's start with your description. And then I'd like to add a little bit of contrast to that.

Mark: I think what happened – and I guess we're going to talk about how I think the market got Hubbert's peak wrong – but I think what happened is, as you pointed out, the oil price went up.

And that brought on a whole bunch of new supply, primarily shale or tight oil. But also the Canadian oil sands and we have some subsalt in Brazil. And then, on top of that, we have had this new demand paradigm that's being driven by concerns around global warming.

So I think we went from a focus on scarcity to a shift towards abundance. And, really, the two factors driving the focus on abundance are (1) tight oil or shale, and (2) it is concerns around peak demand from CO2.

So it's kind of amazing how you can go from scarce or not enough oil to a sense that we have too much oil. But that's precisely, I think, what happened from 2012 to today.

Erik: Well, I think we are in violent agreement that what has occurred here is we went from a scare era of the fear is we're going to run out of oil, which actually was never the prediction of Hubbert's peak. He never said we were running out of oil. It was a rate of extraction prediction.

But it caused the market to panic that, somehow, the world was about to run out of oil.

Now we've got this opposite fear that we're going to have too much oil and we're not going to know what to do with it.

I think that where things went wrong, as I see them, is Hubbert's peak was very real. And I think he very accurately predicted when conventional oil production would peak.

Now, a lot of people think that – you know, the peak oil crowd, and I was definitely one of those peak oil kooks that you alluded to in your interview with Keith – a lot of people think that we never saw shale coming, we never saw tight oil coming.

That's not true. We knew all about it back in 2009-2010. But, at the time, the analysis that went into it – and Art Berman was one of the people who had done quite a bit of it – was saying, look, tight oil (at the time people were calling it shale oil) was very, very real. We knew about it.

But, because it required so much investment, and because the decline rates in production were so rapid – you'd put these wells online, they'd start producing oil for two or three years, and then they were down to almost nothing.

The prediction was, in order for that to really make a difference, to offset the predictions of Hubbert's peak and what would happen with conventional oil production, you would need so much capital expenditure going into the oil patch that it would be nearly impossible.

Because what it would take would be a crazy environment where you've got all of the central banks around the world simultaneously pumping money into the economy so that there's so much easy money chasing the junk bond market and so forth that shale drillers would have a virtually unlimited source of capital to tap to drill more and more shale wells.

Well, guess what happened. In reaction to the Great Financial Crisis, we had exactly that bonanza of easy money. A lot of it did go into the shale patch. They didn't make a whole lot of money. There wasn't a tremendous amount of profit made in those investments. But it did flood the market with oil.

But it offset – if you look at the production graphs, really, conventional oil, the stuff that's easy and cheap to get out of the ground, the stuff that you can produce for \$20 or \$25 a barrel by drilling a hole in the ground or in shallow water and just pumping oil out without any fracking or horizontal drilling or any of the expensive technologies, that kind of oil really did peak in about 2005, in terms of production.

The additional production that's come since then has come from much more expensive, unconventional oil.

And I think where we differ a little bit in our views is I think it's mostly about a crazy spray of

almost unlimited financing to finance what I would consider to be mal-investment in the shale patch.

And my prediction is the next round – because what will happen is eventually shale will play out – the next obvious targets after that are deep-water offshore, and particularly Arctic offshore where you've got to go through the Arctic icecap before you get to the next oil discovery. That stuff is going to be super-expensive.

And I predict that, even if this monetary policy environment we have where central banks are providing incredible amounts of liquidity into the system, I don't think the free flow of capital into the oil market is going to continue the way it has.

Because I think investors have finally woken up and said, wait a minute, this tight oil stuff, it produces more oil but it doesn't make us a lot of money.

And I think that, when there is an even bigger investment in Arctic, deep-water, offshore rigs, there is not going to be a lot of investors lined up around the block waiting to invest in it.

So I come to many of the same conclusions that you do, but I think you probably don't see it the way I just described. You see a different set of reasons that the next time around, as we get to let's say –

I think we probably do agree that Arctic offshore is going to be the next thing after the shale plays start to play out. I think you have a different reason for thinking that those are not going to save the day, in the sense of continuing this age of abundance.

How do you see it? And how does it differ from the way I see it?

Mark: You gave me a lot to unpack there. And there are some things that we very much agree on and some things that we have a slightly different take.

I think you mentioned that, back in 2005, it seemed like conventional production had rolled over. Or maybe – I mean, there's a lot of peak oil people that back then recognized that. I can remember Matt Simmons following the data monthly. And we saw the 2005 peak. And that continued on for a few years.

But if you go back to then, you can think of Oman, which is the country in the Middle East, that was one of those shots across the bow of oil production (along with Cantarell in Mexico, the largest offshore field that started to decline quickly). If you look at Oman, what happened is everyone got surprised by production there starting to fall. And that was one of the things that drove Matt Simmons to think, oh, this might happen to the whole Middle East.

And there was this whole narrative about how Oman was drilling horizontal wells, and the water levels crossed the horizontal wells, and all of a sudden production started to fall faster

than what was expected.

And Oman was the test case for what was going to happen in Saudi Arabia and soon the whole Middle Eastern production was about to fall.

That was back in 2005.

Well, Oman last year hit a new peak of production. So its production dropped and then came back up again.

And I think that that is actually what happened to all of conventional production in aggregate. Especially if you include deep-water, meaning if you add in there the Brazilian production.

And peak oil also would include any conventional production from the OPEC countries that they had held back in spare capacity. So if you think of what happened in America, we did have a large amount of spare capacity with – the Texas Railroad Commission was sort of in charge of managing that.

And when Hubbert made his prediction, all of that spare capacity ended up being used. And we still peaked.

So I think conventional production has not peaked yet. I think it's been on a plateau since the early 2000s. Actually, I think it's grown just slightly. And I think that conventional production is going to hit this difficult spot in 2021 2022.

And part of that is clearly driven from the capex cycle. We had very large capex spend from 2010 to 2014 with the \$100 oil regime. And then what happened is, when oil fell in 2014, the industry really had the largest capex cuts in history – I have a slide on that that you can see – but we haven't recovered from that.

So what I think is that conventional production is going to start to decline in 2021 or right around then. I feel like this is quite predictable because you have not only the geologic issue that King Hubbert brought up, but you have a capex issue.

And the capex issue – you can count the projects.

And where we are right now at this moment is two of the very last projects sanctioned by the \$100 oil world – that would be Johan Sverdrup in Norway, which was discovered in 2010. That just came on in October and that's ramping. That's a very large oil field. I think it's the third largest oil field found in the, at least in the Norwegian shelf. So that's an increment of about 450,000.

And then the other one is Brazil. They're bringing on a lot of production right now. The interesting thing about Brazil is, since I had the Hedgeye interview, they actually put out their

production forecast for 2020. And they say it's not going to grow.

So the large number of FPSOs that they've put on are – they're going to show us some growth, I think, first half over first half. But on an annual basis we're not going to see it. So that's actually pretty shocking because one of the pillars of growth is not contributing growth.

Now, of course, Petrobras says that it is going to later in the future. But I'm a little skeptical of that because we're not going to have the same number of FPSOs coming on.

So, for me, we did not see a peak of conventional production back in 2005. We saw a dip. And then, with the high oil price, we were actually able to bring on more production. And this ties in with the modified Hubbert Curve that I have in my presentation.

I think, because we never ramped as high as we could have, we basically deferred the moment of peak oil. And I think that's just about to hit us now. And I think the irony is, back in 2003-4-5-6, everyone was focused on this and now no one is focused on it.

I think that's a large change.

Now, you talked about shale oil and how that was driven by, basically, a financial bubble. And I think there's some truth to that.

But I also think that, to a certain extent, it's popular to throw the shale model under the bus, even though this is where Exxon and Chevron are putting a lot of their capex right now. And they've literally validated the model.

So I think if people were to think about shale, the irony is their production profile, meaning the sharp declines, are the best model for production that you could hope for from an IRR perspective.

I mean, the oil industry is about spending money to get oil. And you spend the money on drilling and, with the time delay, you get the oil back. And what shale does is it gives you the oil back very, very quickly. You would always want to get the majority of oil back in Year One if you could.

The problem with the shale model is not the decline curve or the production profile. The production profile is actually quite good because you get oil back quickly. The problem is the amount of oil you get per well.

And so, if you were to compare shale oil to an offshore project, the offshore project, you spend five to seven years bringing it online, and then you get production for a very long period of time.

Now, it's always inferior to wait five to seven years to get the oil. But where the offshore

project benefits is that each well gives you an order of magnitude of more oil. So that's the improvement, that's why offshore can be better than shale. Although today probably – it always depends on each specific project – but I would think that the costs, depending upon the project, or at least the returns, are similar for both.

So I think shale has done an amazing job of taking down its costs. In 2010 to 2014 we would never have thought that the industry could be cash-flow breakeven more or less at \$55 oil. We would have thought that it would have taken \$80 oil to do that. So they've brought down their costs.

And here is the opportunity for these companies. If the oil price goes back up, they will produce a lot of cash flow, more than what would have happened without this correction.

The problem, though, is that their resource base is now a lot smaller than what we thought it was five years ago: (1) because we've been producing for five years and (2) because it has just shrunk for a number of reasons, which we can go into.

Erik: Well, I'm going to jump in then. And I want to highlight some of the really excellent graphs and charts that you've got in your slide deck which support the points that you've just made and which lead us into maybe our next discussion topic.

So, listeners, on the slide deck, be sure to notice on Page 9 that graph is showing just lower 48 states in the United States. The reason for that is it's where we have the best data.

But it illustrates such an incredibly important concept, which is the heyday of oil discovery was the 1920s and 1930s. The lag is decades after the discoveries occur before you get to the peak of production. And, if we're looking in isolation at the lower 48 United States, that peak in production was right around 1970.

By the way, predicted by King Hubbert in 1956. So that's, what, 14 years ahead of time. Really terrific prediction. He went on to predict that global oil production, for which there is much less robust data available, would probably peak right around 2000.

And, for conventional production, that seems like it was fairly close. Of course, we've continued to increase production thanks to unconventional production after that.

Moving on, on Page 10 you can see filling in those expectations. The heyday of discovery – and I think this is true not just of the lower 48 but globally – was decades and decades ago.

So, instead of sitting on the edge of your seat waiting for next Wednesday's 10:30 am inventory report to come out, just absorb these pictures showing us the big picture of the big discoveries are behind us. We're going to get to it becoming more and more difficult and more and more expensive to continue to produce the oil that we need. And we see that very clearly on Page 10.

As I move on to Page 12, we're starting to get to, I think, what has to be the next major topic of discussion, Mark. Because we see this a little bit differently.

You've got, going from Page 12 where we see Hubbert's peak, you're showing that we've produced less than the theoretical maximum.

And you go on (on Page 13) to project how we're going to continue to produce until there's kind of a point around 2019 to 2021 where you get to an inevitable decline.

I very much agree with you that this day of reckoning, if you will, is coming. And it's going to result in a major regime change where the mentality of the oil market shifts away from age of abundance to age of, oh shit, we've got a problem.

I think we see it differently in terms of how we get there.

I think it's much more capex driven, where you get to the point where, okay, we've used up most of the shale plays, we need another really big, major round of investment to build all of the Arctic offshore drilling rigs and so forth that are necessary.

I do think that you could theoretically continue to extend that red line upward, even beyond 2021, if you had unlimited capital, which I don't think we're going to have.

So I think we maybe see it a little differently. How do you see it? And why do you think the day of reckoning is coming sometime in the next few years?

Mark: Well, you just mentioned unlimited capital. You can see there was a peak in 1970 and then in, I guess that's late '80s there, is another peak. And the two things that were added here were Gulf of Mexico and Alaska.

So, in both of those cases, we sort of extended this plateau. And those were real large increments of oil that came on. But it wasn't until we got to shale that we were able to turn it around.

So I guess the point I'm making here is that oil is finite and unlimited capital doesn't always fix the problem. And I think, in a way, this is sort of Hubbert's point. But capital or prices in the industry have an impact.

On Page 12, from a global perspective, what I'm trying to show here is that we didn't ramp production up as high as we could have. So the consequence of that – I've got to step back here.

The way Hubbert basically did his theory is he observed discoveries in the lower 48 and said, hey, that has a bell curve shape. And then he said production is going to have a bell curve shape as well. And he applied a lag to it. And if you have a bell curve shape, you always peak at 50%.

The peak oil guys, back in the early 2000s, tried to use the same methodology. So they were always focused upon when is the 50% point? And so some had a 2003 forecast, some had a 2005 forecast, some were 2007. The center point of most of the forecasts was 2010.

And the reason they were 2010 was because the assumption was we had an estimated ultimate recovery of 2.5 trillion barrels. So that's what gave you 2010. And then when 2010 came and production didn't roll over, they basically said, well, I guess we have our estimated ultimate recovery wrong. It's probably not 2.5 trillion. It's probably 2.6 trillion. So maybe it's 2012.

Obviously, it's hard to guess what's under the ground. And that's always an issue.

But what I'm trying to show here is that, if you use the exact same estimated ultimate recovery, and you compare Page 11 with Page 15, you can see that you can get a peak in production at a much later period if you never ramp production as high as you could have.

So on Page 11, with the 50% point in depletion, production should roll over between 2010 and 2012.

And then on Page 15, if you assume between 60% and 65%, it rolls over between 2020 and 2024, which is more or less now.

Now, I don't have a good reason to say that it should be between 60% and 65%. It could be 67% or 70%. But there is some number at which gravity has to sort of pull it down.

So what I'm trying to do here is just show that using the same Hubbert methodology but accounting for higher price, which basically took us off what I call the theoretical maximum, you get production rolling over at a later time. But production is still constrained by the finitude of oil.

And I believe that where Hubbert is very right is there is a maximum that you can produce at any moment in time. That's sort of intuitive. It makes sense. It's tied to whether or not you have spare capacity at that moment in time.

What I like to point out (on Page 12) is we had the Six Day War and there was an oil embargo then. And price did exactly nothing. And then a few years later you had the Yom Kippur War and there was an oil embargo. And the oil price went up 4 x.

That just shows that there was this theoretical maximum on the way up. And I think that there will be a theoretical maximum on the way down. So I think you will hit a geologic limitation. But it's not going to happen at the 50 percentile point; it's going to happen at some point later.

I think that what the world has forgotten is that oil is finite. And I think we're going to be reminded of that.

And the problem we have now, compared to what I was terming the peak oil period – because, back in the peak oil period, people were anticipating this coming with a 10-year lag.

I remember the EIA commissioned what was called the Hirsch report. I think he was an engineer. He basically said that, if you prepare for this with 10 years, we'll have an almost seamless transition. But, if it sneaks right up on you and it just happens with no preparation, we're going to have a really difficult time.

And I think, despite his warning, we're back to that, it being upon us. Because I think that conventional production, whether it's capex or geology – and the two sort of go together – but I think that conventional production is going to have a hard time staying flat after 2021.

Erik: Okay, Mark, to summarize what we've discussed so far, you and I are in violent agreement that what we have here is a situation where most people in the industry aren't even looking at the right issues.

If you do look at the right issues, and you do look at the big picture, we agree that there is a regime change.

We went from the peak oil regime, where everybody was panicking that we were running out of oil, even though that's never what King Hubbert actually predicted.

Then we got into this age of abundance where everybody thinks there's just so much oil that we're not going to know what to do with it and there will always be too much.

We agree that there is a day of reckoning on the horizon where we switch to the next regime where we say, wait a minute, this really is a finite resource. We really are going to have a problem.

The shale revolution delayed it by a good solid decade, but the problem is not going to go away. And we get to, then, a perception change where we go from this age of abundance to this next age of supply fear.

But I'm sure that there are some listeners listening to this saying, dude, you guys just don't get it. You're not paying attention to Elon here. All of these problems go away because we're moving away from fossil fuels. We're not going to need oil anymore because electric vehicles are going to solve everything.

You and I don't agree with that. And I think we actually have different reasons for not agreeing with that.

So let's start with that premise that, hey, don't worry about peak oil supply, worry about peak oil demand. That we've got it seems like a 14-year-old Greta Thunberg leading the world into

this belief that the highest priority has to be eliminating dependence on fossil fuels. We're going to adopt electric vehicles. It's going to be the next big thing. The investment you want to make here is in the electric vehicle industry. Buy Tesla, forget about oil funds.

What's wrong with that line of thinking?

Mark: Well, first off, what I would say is that we absolutely need an energy transition. An energy transition is going to come.

But, for me, I think it's intuitive to understand that energy transition needs to come through the pricing mechanism. That's how capitalism works. You need a higher price to drive energy transitions. So if we don't get it, we're going to have a problem. And that problem has an impact on two sides, both supply and demand.

So I actually think that the concern about CO2 is going to cause an even greater oil price spike. The reason being is that the majors are not investing because they are concerned about peak demand out in the future. And I think that that's going to cause a larger hit to supply than it's going to cause to demand.

I mean, it was quite remarkable when a month ago we had a bid round in Brazil and all the majors decided not to participate.

So we're really setting up for a problem here because the investment is just so much lower than what it would have been otherwise. And, because of the lags, we don't really see it. But the hit from EVs in this last year was the impetus. It was about 35,000 barrels a day.

So it's all about what's going to happen in the future. And there is this sense that there is going to be a hockey stick up in the EVs. And I don't see that coming at all if there's not pricing signals to drive us there.

If you turn to Page 34 of my presentation, there is one really surprising fact here, which is EV sales right now in the third quarter are down year over year, on a global basis that is, and also in America.

But what really drove that was that China cut its subsidies in June. So the numbers in China are really quite shocking. I mean, in August, EV sales were down 16% year over year. That's a big number. But then, in September, it was 34% year over year. In October, it was 46% year over year.

So what happens is, when you don't have government subsidies forcing the shift, the market falls apart. And what you need is you need a much higher price to make people really consider EVs.

Another thing to think about is, if you look at SUVs on Page 33 of my presentation, you can see

how they have grown. In 2010 they were 17% of light vehicle sales. And in 2018 they went all the way to 38%. So that's partly an impact of prices not being high enough.

So the shift to SUVs has completely overwhelmed the shift to EVs that we've seen so far. And, if you extrapolate this out into the future and you assume that SUVs continue to take share as they have, they go to 50% over the next decade – which would be a slower growth rate than we've seen over the last decade – that would actually overwhelm the movement to EVs.

And there's one thing about cap safe standards that I think people don't think about. Governments globally are mandating cap safe standards.

I think the US government right now is against that. It seems irrational to be against wanting to have improving car efficiencies. But the main reason to be against that is that the way the manufacturers make cars more efficient is to make them lighter.

And when they're lighter and you have an accident, there's more deaths and maimings. And this is, I think, part of the reason people buy more SUVs. Because they're safer. At least the perception is they're safer. You're not going to stick your wife and kids in a small car if you can afford not to.

I am highly skeptical that we can have this transition towards electrical vehicles without a higher price.

And there's other limitations on electric vehicles that we're not thinking about. In particular, cobalt. I know that they're trying to engineer this out of the battery. But the reason they're trying to do that is because there is not a large enough supply of it.

Cobalt is essential to prevent the battery from overheating. And, also, it creates additional range. There isn't a good model of battery that gives a long range without cobalt. And the R/P ratio for cobalt is only 42.

I don't think you can get to more than 8 million EV sales per year – all the forecasts take you way higher than that – without finding a lot more cobalt. And if you're going to do that, you're probably going to need to do deep-ocean exploration because there is cobalt there.

But, again, you're going to need a much higher price.

So, if we want to have this energy transition, we absolutely need a higher price to drive it, in my opinion. And the lack of the higher price is going to inhibit the transition to EVs.

And it's already created a problem because the industry is not investing in oil supply because it's concerned about demand.

Erik: Well, Mark, I think I agree with almost everything that you've said. I'd like to add a few

points because I share your passion that, in the long run, the right solution for the world is to have this energy transition to where we don't depend on fossil fuels and we can run the whole world without them.

But I think that the investment community massively, massively underestimates what that's going to take.

And that failure of the investment community, I think, starts with the very widespread misconception that electricity is an energy source, which it is not. You've got to generate the electricity somehow.

Now, you can generate electricity from coal-fired power plants. That's the most common way of doing it.

When you do that, the energy it takes to drive your Tesla puts more carbon into the atmosphere than if you were driving a high-efficiency diesel vehicle. So you're not doing anything to help global warming or any other agenda by coal-fired electric.

You can generate electricity using natural gas.

Well, guess where that comes from? Oil wells. So you're still dependent on fossil fuels.

You can generate electricity a lot of ways. The only way you can really generate environmentally friendly electricity is if we have a nuclear renaissance. And that's going to require a new generation of nuclear power capability which is not uranium-fired boiling water reactors which do clearly have serious safety issues.

We need to use different technologies. Things like the liquid fluoride thorium reactor which does not produce weapons-grade plutonium as a byproduct of generating electricity. It doesn't contribute to nuclear proliferation. And it is much more compatible, I think, with a long-term vision of an environmentally friendly, safer, electricity-centric economy.

My point is simply that, even if you had all those things – and we politically are nowhere close to a nuclear renaissance – you would then still need a massive, massive buildout of the electrical power distribution grid in most countries (including the United States) around the world.

All of that will take decades. And billions upon billions of dollars of investment in things that people are not figuring into the equation.

So electric vehicles are totally, completely going to change the world 100 years from now. But people who think that the next 10 years are going to be where we forget about fossil fuels and the whole world switches to electric vehicles are completely, completely missing what it's really going to take to get there.

And I also agree with all the other things that you've said. I just wanted to add that to it.

But as we're starting to run out of time here – I wish we had three hours, because I'd really love to pore over every page of your terrific slide deck here – there is one more major subject that I want to hit.

Okay, I really agree with you that this day of reckoning is coming.

Your conclusion in your interview with Keith McCullough was you think it's probably within the next six months. And I want to point out too – although our mutual friend Keith McCullough is not an oil guy, he is a very accomplished macro guy – his reaction was to say, look, I don't even need all of this to be long oil. I think from a macro standpoint, if I look at growth and inflation trends, it's time to be long oil.

So he's definitely agreeing with you there.

But the one caveat I've got to throw out is, Mark, wait a minute. As much as I couldn't agree more that this day of reckoning is coming that transitions us to a new regime. One where the age of abundance is over and we're in the next what, from a price standpoint, will feel like the peak oil regime where the price is dramatically higher.

Couldn't all of that be delayed by at least a year by a recession?

Mark: I think that's a great question.

What I said on the Hedgeye interview is that I think the inflection point is in the next six months.

And the reason I think it's the next six months is because, not only do we have demand issues right this second, but we have this little last gasp of supply coming from the conventional projects that were sanctioned in the \$100 oil world – Brazil and Norway, which I mentioned.

But, once you get through the first half of 2020 and you're into the second half of 2020, you're going to be in a very different supply situation. And you're going to be looking forward to 2021. There's going to be no large projects coming on. So that's going to be very different.

And we haven't focused on this in this conversation, although I talked about it in detail with Hedgeye, but I think it's very clear that there's a shale slowdown coming as well. And so I think when you get to the back half of 2020, supply fears are going to be a predominant focus for the market.

Now, if we have a recession, I think what that does is it takes the oil price lower from here, it takes the stocks lower from here. Where I still think the inflection point is in the first half of the

year, I just think it happens from a lower level.

So, for me, the large factors that are going to matter, if you were going to time this over the next six months, are, firstly, you get a trade deal.

And I know that there's a sort of consensus out there among some people that think, well, we're going to get the trade deal and perhaps it's going to be disappointing and the market is going to go straight down. But what I would say is that, for oil, there is really nothing more important than the trade deal from a macro perspective.

I have a slide in my deck where I look at what has happened with global trade. You'll find that on Page 39 of the slide deck. It points out that in 2019 we had the fourth-lowest year for trade growth going back to 1980. But we had the 11th-lowest year for GDP growth.

So it's obviously much worse for trade, which affects oil.

And so I actually think that in 2019, although we've had a cut to demand, I think demand has run even lower than what the IEA says. And this sort of is a more complicated discussion. It ties in with the IEA's miscellaneous balance, which is effectively their adjustment factor.

But, to me, we have not seen the drainage in inventory that you would have expected in 2019. And I think that's because demand has been even worse than what the forecasting bodies think. So I think we've already experienced a pretty extreme recession for the oil world because trade was so bad.

Now, if we don't get a trade deal, which is anyone's guess I suppose, I think that that's going to be a large negative. But I would think that that would be felt immediately. So I think the stocks would go lower in the immediate future.

And then the inflection point – because an inflection point is basically when you go from the downward trend to the upward trend – I would still think the inflection point is in the first half of the year, next year. Just because when you get to the second half and you look forward, the supply picture is so dire.

Other factors on the short term will impact this inflection point. Of course, we're having the OPEC meeting in a couple days. And what they decide to do is going to be quite important.

Another near-term impact, which I don't talk about at all on the Hedgeye conversation, is IMO 2020 (International Maritime Organization 2020). I'm sure you're aware of the sulfur fuel regulations changing for ships. That's likely to give a one-time boost to demand. But I feel like that's not really important to this conversation. It's more of a larger, longer-term picture.

But I hear you on the recession point. And I think that that's a very important thing to consider. But I still think the timing now is just a question of from what level.

Erik: Okay, Mark. Again, I wish we had more time to really go deeper into this. But I think we're really in very strong agreement that the big picture here is what really drives price is not next Wednesday's inventory report. It's what regime we're in.

We went from the peak oil regime to the age of abundance regime. We both agree that on the horizon there is a regime change where we get to recognizing that supply really is finite. And that electric vehicles are not going to change everything.

I agree with you that it should be coming really soon, in the next six months. The thing is, in the last 10 years I've been feeling like this should come in the next six months. And it seems to always take longer than I think.

And, in the meantime, I do think, especially after the election, there is a good chance that we're headed into recession. I think we've been putting off an overdue recession for too long now, mostly through machinations of central bankers.

I think that is coming and it could delay things a little bit. But there is no doubt in my mind that all of this stuff comes true. And when we do get that regime change to the recognition that electric vehicles don't solve all of our problems, and that oil supply really is finite, I think it does take us to a much, much higher regime of prices.

What have I left out? What have I missed in terms of summarizing our arguments today?

Mark: I think that was a great summary, Erik. I think we're about to transition from an age of abundance to a return to scarcity.

On the supply side, tight oil, I think, is about to grow a lot less quickly (and the Hedgeye interview makes that clear). I think, additionally, conventional oil is about to roll over for both geologic reasons and capex reasons.

So I think the supply side is very clearly going to be a problem and I think the market is going to focus on that in about six months if not sooner.

And then on the demand side, you're right. We do need to be concerned about a recession. But what I would say is that the issues we have with demand right now are cyclical and not secular. That's going to get resolved.

And I think, additionally, the market is going to come to a realization that EVs are not the silver bullet for the oil industry and demand is actually going to be stronger than what people anticipate.

I think that – just to underline this point – that the concern around global warming is going to lead directly to an oil price spike because the cut to capex will have a larger impact on supply

than the impact EVs are going to have on demand.

Erik: Mark, you have taken all of these views, assimilated them together into a strategy for the Ascent Oil Fund, which, unfortunately for some of our listeners, is structured in a vehicle which is only available to accredited investors. But, fortunately, we have a very large accredited investor audience.

Please tell our accredited audience who are interested in finding out more about what you're doing with Ascent Oil Fund, how they can contact you in order to get your pitch book, and so forth.

Mark: Well, you can just email me at mg@ascentoilfund.com. I'm happy to share my pitch book or have conversations with people there. And, basically, I have a fund that is long-only oil equity fund. And I'm confident that when the thesis plays out it will go up quite a lot.

I feel like it's a very good hedge to have a position in the fund in case this turns out because, of course, what probably leads to the recession is an oil price spike.

We haven't had that yet, but most recessions have been driven by an oil price spike. And I think that's coming. And I think everyone needs to be concerned about that. I think that's actually what's going to ultimately cause the large problem for the global economy.

Erik: Well, Mark. I think you're one of very, very few people in the industry who are looking at all of the right issues. And I think you're exactly right that this regulatory change from the age of abundance to the next age of scarcity, it's when people figure that out and the psychology changes that the oil market is going to change, and change dramatically.

So I think you're on the right course and I wish you all the best with your fund.

We're going to have to leave it there in the interest of time. Patrick Ceresna and I will be back as MacroVoices continues, right here at macrovoices.com.