

The Great Simplification

Nate Hagens (00:00:33):

(00:00:33):

I would like to welcome back to the show, Art Berman. Art is a friend, a colleague, a petroleum geologist with over 40 years working in the petroleum industry. Today we talk about the expansion of the BRICS nations. And how Saudi Arabia and Russia account for a large amount of global export capacity of oil. We talk about the strategic petroleum reserve. Is that a big deal? Is that a good decision to be drawing it down? We talk about the state of the world oil supply and the United States shale plays, including the Permian and decline rates. And how shale exists all over the world, but the United States situation is special. And that we probably won't access much of the rest of the world's shale. As usual, Art is honest and insightful, and this was a great conversation. I expect to have him back every few months because oil, as Art says, is the economy, at least for now. Please welcome, Art Berman.

(00:01:37):

Señor petróleo, Art Berman. Good to see you again.

Art Berman (00:01:54):

Good to see you too always, Nate.

Nate Hagens (00:01:57):

I think we should probably have you every three months or so to give an overview on oil, energy, and interesting things. Guests, or viewers, probably don't know, but you and I have lots of discussions in the background. And texts, and complaining, and opining, and questioning each other on various things. So you haven't been on the show in a while. We have lots of energy-related topics in the world. Since I've been traveling, I have very few episodes in the cookie jar and I called you up yesterday, "Let's do a podcast." So here we are.

Art Berman (00:02:38):

Here we are.

Nate Hagens (00:02:39):

I would like to do an overview of three things. One, have you give us an update on what's going on with the world oil situation, with this new additional countries to

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BRICS, Russia, etc. Also, a second thing I'd like to talk about is the SPR, The Strategic Petroleum Reserve has been getting a lot of news in the United States. How critical is that? What's going on? What's the history? And then third, can you give us a depletion update? What's going on in the shale basin? And what does peak oil and Peak Cheap oil in the next decade or so look like from the perspective of geology? And then, Lizzy pointed out to me that although you've been on the show three or four times since your first appearance was over a year ago before I had this format, I've never asked you the closing questions that I ask all my guests. So we'll try to make time for that today. Let's get into it.

Art Berman (00:03:44):

Yeah. For sure.

Nate Hagens (00:03:44):

What's going on in the world? Oil was down \$4 a barrel today, but it's been close to \$90 the last month or so. Give us an overview.

Art Berman (00:03:53):

Yeah. Well, so today, I think oil's just following general markets lower. I mean, we've had some sell-offs in equity markets, and God knows what. But I don't want to get bogged down in the details of oil, because it's only interesting to people that are bogged down to begin with. The big picture on oil is that we are in a situation of enforced scarcity. That OPEC and its friends and neighbors called OPEC plus, that mostly includes Russia and a few others, have systematically removed pretty nearly 4 million barrels a day of crude oil, and a few other products from the market over the last 12 or 13 months. And that's a pretty big chunk.

Nate Hagens (00:04:44):

So, it's enforced. So this is not geological depletion, this is their choice for economic or geopolitical reasons to constrain their exports, and production?

Art Berman (00:04:56):

Well, yes. And it's a little bit of both. So in other words, what they're doing is they're choosing to accentuate a supply problem that would not be very great at the moment, were it not for them making it a very great problem. So they're accelerating a problem, which is pretty much inevitable. And the problem is as simple as, demand is

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recovering or has recovered back to pre-covid levels. And supply has not. And so they're making sure that supply absolutely cannot and will not by removing 4% of world export product from the market. And that does a lot in any commodity market for sure.

Nate Hagens (00:05:52):

Is it 4% of the exports? Or 4% of the total production? Well,

Art Berman (00:05:56):

Well, that's a great question. And the answer is, we don't know. But they say they're scaling back production. But what that translates to is, some factor times their production that equals exports. And since those are big time exporting countries, it works out to be... Maybe it's not 4 million barrels, maybe it's 2.8 or 3.2. I don't know. Nobody really knows. We can measure the seaborne cargoes. We can't really monitor the pipeline stuff very well. And these days, the complexities, particularly of getting Russian oil to points other than Russia, is beyond anyone's ability to extricate. I mean, they're transferring from tanker to tanker. I mean, it's a mess. But it's working for them, it's not working for us.

Nate Hagens (00:06:55):

So with the help of our friend, Pedro Prieto, I made a chart showing the difference between world oil production, of which the United States is one of the top three countries. And world oil exports, which is how much is available to purchase after a nation's internal consumption is used. And the United States isn't even on that chart. And with the addition of Iran, and Brazil, and UAE, along with Russia and Saudi Arabia, the BRICS, or what's being called BRICS Plus nations now account for over 50% of what's available to purchase in the global oil market. Is this just for economic reasons? Or is this also having to do with geopolitics, the petrodollar, the relationships between these political nations? What are your thoughts on all that?

Art Berman (00:08:05):

Yeah, it's all of the above. And just a bit of credit to our former colleague, Jeffrey Brown and his land export philosophy or theory way back, gosh, 2006, 2007. I mean, he was pounding the table about precisely what you just described. And Pedro helped you with way back then, and only a few people were paying attention. And his point was, gee, as exporting countries like Saudi Arabia for instance, become developed

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countries, they're not going to have nearly as much oil to export because they're going to use a lot more of it internally. And that's going to be a big problem for those of us who import a lot of oil. I mean, who's got enough cash to pay the price of what's left? And the answer for Jeffrey, way back when was, well, probably not the United States. Probably China, or somebody else. And we don't have to hold him to account for those decade old predictions, but he was notionally dead on.

Nate Hagens (00:09:16):

But this is a challenge for a lot of places in the world that are unable to print their own currency. And they're also having to exchange whatever currency they have to buy US dollars to buy oil, hence the petrodollar. Do you see any possibility of an alternative oil backed currency emanating from BRICS? Or is it too small, and not powerful enough to make that happen?

Art Berman (00:09:49):

Well, I'm certainly not a monetary expert, although I do understand and talk about its relationship to oil. My sense is that it is happening, it will happen. I think it's going to happen a lot slower than some of the people that are making a lot of noise about it. And for the listeners who have not yet listened to your brilliant discussion with Luke Gromen, that I think just was released today. There's a lot of good discussion in there about some of the reasons. And many of those reasons have to do with just how much US debt is out there in the world, versus how much debt can China, for instance, muster. And that's just one factor. You guys talk about gold, and that's another one. But bottom line is that's where we're going. And so we can split hairs about, well, is that going to be important in five years or 10 years? I don't know. But that's where we're going. And it is important, and it will become increasingly so.

Nate Hagens (00:11:02):

So what you're saying is we have 4 million barrels removed from global supply because Russia, Saudi Arabia, and some other countries decided to close the taps. So without that, if they would've had the taps open, we would have significantly lower oil prices.

Art Berman (00:11:23):

Yeah, it's almost hard to see a different outcome. And so the question that you're really asking, or that you asked before was, well, why are they doing this? And the

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currency piece is certainly important, but I think there's a broader perspective that we have to take, and that is, what is the future of oil, at least in the popular mind? I mean, I think people like you and I believe, for better or worse, maybe more for worse than better, that oil is going to be with us a lot longer than many people think it will be, hope it will be. And I think that includes us too, if I can speak for you on that. But yeah, we're not getting off of oil anytime very soon, if really ever. But that's sort of a philosophical, or futuristic, I guess, kind of thing to talk about. What's real out there is the perception in the investment community, and in the public as well, that oil has kind of a limited future. Or if it doesn't have a limited future, it has come close to resing the end of its investible future. And so what happens is when oil prices cycle, like they have... Pick a time. But anytime over the last five years, but let's talk about the last six months. I mean, you read the oil press, and people are cheering, "Oh, this is great. Oil is almost at a \$100. Oh, it's terrible, it's at \$70." But that's the kind of thing that makes investors say, "I'm staying out of this thing that gives me anxiety. I don't know where this thing is going. And when it's good, it's good. But hey, we're investing in long-term, and we can't deal with that kind of volatility."

Nate Hagens (00:13:32):

Well, staying away when prices are up or down means that future prices are going to go up a lot, because we're not investing in the upstream capacity.

Art Berman (00:13:42):

Right. That was exactly where I was going to go. So you have a problem, which is some scarcity, whether it's natural, enforced, or even perceived. And then because of the way that financialized, which is to say futures markets for the most part, not exclusively, the way they kind of accelerate or accentuate how quickly prices can move, then you get an anxiety level that starts to be built in. And investors say, "Well, we're kind of scared to make the longer term investments that are needed to get rid of the scarcity that we've got." And that tends to accentuate the scarcity, which as you then point out, ultimately leads to higher prices, in a perfect world.

Nate Hagens (00:14:36):

So let me level set here. Please correct my rough interpretation. Most, or all, of the growth in oil production in the last 13 years since the end of the great financial crisis, was the US shale and tar sands. Is that correct?

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Art Berman (00:14:58):

Yeah, pretty much. That's it.

Nate Hagens (00:15:02):

So the last 13 years, the rest of the world, all the other countries have been flat?

Art Berman (00:15:08):

Well...

Nate Hagens (00:15:08):

And a lot of them have been declining, because some of them have been increasing.

Art Berman (00:15:12):

Net flat, okay. I mean, some countries go up a little bit.

Nate Hagens (00:15:15):

Net flat.

Art Berman (00:15:15):

Yeah, net flat. The only discernible growth trend is in North America, and Mexico is not part of that. So it's Canada and the United States, and that's been the case pretty much since 2010. So you're right, it's been 13 years or so.

Nate Hagens (00:15:35):

Well, Mexico is part of North America, but they're not part of growing oil production because they're in permanent decline after Cantarell, etc.

Art Berman (00:15:43):

Well, and they call the rest of us norte-americanos. So they don't consider themselves part of North America.

Nate Hagens (00:15:51):

Is that right?

Art Berman (00:15:51):

That's true, yeah.

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Nate Hagens (00:15:53):

I didn't know that.

Art Berman (00:15:54):

Oh, yeah.

Nate Hagens (00:15:54):

Oh, but NAFTA still exists. We consider them part of North America. Yes?

Art Berman (00:16:00):

We consider them part of North America. They consider us somebody who they'll sign a contract with with great mistrust, because of the way that they feel like they've been treated by los norte-americanos. But that's a cultural thing.

Nate Hagens (00:16:17):

Well, you live close to a border with that country, and I'm on the other end. I have a border with Canada. So, all right, so given that with the United States, this is what really worries me in this domain. I have plenty of worries in other domains. The US used to have a very good relationship with Saudi Arabia. And obviously if you look at the oil triangle, a 600-mile triangle, like two thirds of the world's remaining oil reserves is there. Saudi Arabia, Iran, etc. And now the shaking the hands and the fist bump with Biden and MBS, and now Russia and Saudi Arabia are getting closer. Saudi Arabia and China are getting closer. If anything that trips this up, could massively change the amount of oil on the global export market available to the Global North and West. This didn't used to be the case. It was always like there was an oil bank account in the Middle East, and that seems incredibly tenuous to me now. Depletion aside, just looking at geopolitics, what are your thoughts there?

Art Berman (00:17:37):

Yeah. And you know I hate to rag on people and things, but since you asked the question. I mean the United States has so thoroughly bungled foreign policy since... Well, I'll give Clinton a break, although he kind of goes both ways. But really since the first President Bush. And so let's just step back briefly into the mists of history, and recall that President Roosevelt on his way back to the US from Yalta made a stop on an aircraft carrier in the Suez Canal to meet with the king of Saudi Arabia to create a security agreement, whereby the United States would guarantee the security of Saudi

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Arabia. Now, this was 1945, the state of Saudi Arabia was only 12 or 13 years old at this time. So really tenuous kind of situation. The United States will guarantee the sovereignty of Saudi Arabia, if Saudi Arabia will guarantee a future supply of oil to the United States and its allies, and therefore the New World order. Which was being written in places like Yalta by Churchill, and Roosevelt, and Stalin, and others.

(00:19:09):

And that was absolutely the centerpiece of American foreign policy from 1945, until the younger Bush decided to screw it up by invading Iraq and Afghanistan. Now, recall his father, the first Bush did kick Saddam Hussein out of Kuwait and then stopped. And he stopped for a very good reason. And that was he wanted to honor America's principle guiding philosophy in foreign policy, which was don't screw things up in the Middle East. And by, not only invading but occupying Iraq and Afghanistan, the younger Bush thoroughly screwed things up, completely changed the balance of power. Gave huge power to Iran. Saudi Arabia and Iran have hated each other since the son-in-law of Mohammad wasn't chosen to succeed him. And that's a whole nother thing. And then comes along Obama, who decided that we don't need Saudi Arabia, because we got shale. He listened to all the wrong voices in the room, as Bush did, on foreign policy.

(00:20:34):

We don't really need shale, and what we need is to... I'm sorry, Saudi Arabia. What we need is to get into a better relationship with Iran, which of course is Saudi Arabia's arch enemy. So immediately Saudi Arabia was completely pissed with Obama and the United States. Obama also decided it really wasn't worth supporting Israel, because what's Israel got to offer us. So he just cut the cord on our traditional allies in the Middle East in favor of... And I'm not saying he was right or wrong, I'm just telling you, well, I did say he bungled it, but I mean this is what happened. And so Trump comes into office, and let's give him credit for making Saudi Arabia the first foreign stop he made as a president. But let's think about what he was doing there. What he was doing there was he wanted to woo the crown Prince Mohammad bin Salman, who at his vision 2030 was planning all kinds of sports events. Okay. And which now he's buying golf leagues and soccer leagues.

(00:21:44):

And Trump wanted in on that game. He's a hotel kind of guy. And so he was there, in my opinion, for as usual, a lot of the wrong reasons. He didn't have any comprehension of oil particularly. And so we've got this really rocky relationship.

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Trump is trying to do something in a weird way. Then Saudi, they get their main refinery center blown up, presumably by Yemeni rebels, backed by Iran or whatever. And nobody from the State Department even calls and says, "Geez, we feel your pain, man." Just ignore it. I mean, it's like a bit of death in the family. So Saudi Arabia has at least 20 years of reasons to think, "Man, you guys in America, you suck. You have not been our friend. You have not had our backs. And yeah, we're glad to buy weapons from you and stuff like that, but we're looking elsewhere." So that's the state of affairs, to answer your question in not a very simple or short way, but that's the simple answer as I see it.

Nate Hagens (00:23:02):

Well, there's nothing...

Art Berman (00:23:02):

It's the simple answer as I see it.

Nate Hagens (00:23:02):

Well, there's nothing simple, but there's lots of things perilous about our global energy and geopolitical situation. You just described Saudi Arabia and their mistrust and fraying of relationship with the United States. I let you in on a little secret. Russia is not all that enamored of the United States at the moment.

Art Berman (00:23:28):

No.

Nate Hagens (00:23:28):

And between the two of them, it's 42% of world oil exports between those two countries.

Art Berman (00:23:34):

Well, you're precisely right.

Nate Hagens (00:23:37):

So I think, and this is a huge risk that we just assume that there is a global market for things and global cooperation and fungibility and letters of credit and overnight

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supply chains will always exist if there's a profit. But there's a geopolitical trust is probably depleting faster than oil is and it's a real thing, Art.

Art Berman (00:24:06):

Well, it's not only a thing, Nate, but let's think for just a moment about, I mean, I just described to use your term, the energy blindness of three or four American presidents. And by the way, Biden is absolutely following in Obama's flawed foreign policy footsteps. So my criticisms are not political at all here. I mean, we could talk about that in a different time, but I'm just talking about how four American presidents have completely failed to grasp the central importance of energy. Not just because it's important, but as the core of American foreign policy as it was set out by Franklin Roosevelt and fully understood by every president, even the evil Nixon. I mean, they all got it and then somehow we forgot it.

(00:25:04):

Now, to your point though about Russia and where I'm going here, if you for a moment, if anyone for a moment thinks that the leaders of Saudi Arabia are energy blind, I got news for you. I mean, energy is their gig. I mean, that's what they do. They may not always make the right decisions, but it's not for lack of knowledge and information. And Vladimir Putin, as we have discussed, I think on this channel once before, I mean this guy has, I don't know if it's a PhD, it's different in Russia, but he has a degree in resource economics. He wrote his dissertation or his thesis or whatever you want to call it, on basically how the Soviet Union fell for failure to understand its energy infrastructure requirements. And people will say, oh, well, he didn't really write it and it was a crappy... I don't care. The guy knows a lot more about energy than four American presidents put together and his counterpart in Saudi Arabia does too.

Nate Hagens (00:26:18):

I mean, the real squeeze in the near term isn't even the United States because what are we consuming 20 million barrels and producing 18 all in or something like that right now?

Art Berman (00:26:29):

Well, 20 million barrels of products, we're producing something pretty close to 13 million barrels of crude oil and condensate. And we don't want to get into the sleight of hand that you and I discussed before.

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Nate Hagens (00:26:42):

Yeah, yeah. The green paint.

Art Berman (00:26:43):

The green paint. Right, right, right. But, yeah.

Nate Hagens (00:26:46):

So we are still a significant importer if you net everything out.

Art Berman (00:26:51):

And we're a significant exporter of products, so let's not forget that either. And we do export, we're exporting something like four million barrels a day of crude oil on top of all that. But yeah, net-net, we are a consumer. We're not a net exporter.

Nate Hagens (00:27:09):

Right. On oil. But on gas, coal and oil combined, were at the near the highest point of energy independence in quite a while around 90%, which is much better than Europe, which doesn't have the shale revolution that we had. Real quickly on that, you and I talked a few weeks ago, there are shale deposits in Europe. Which people who are worried about oil, peak oil and oil depletion in the future are pointing out, yeah, we'll develop those. But didn't you tell me that a lot of those are right underneath Paris or in the heavy population areas and therefore won't be able to be drilled? Can you give a quick FYI on that?

Art Berman (00:27:58):

Yeah, so I mean, there's a lot of shale in the world, but the only shale that counts is marine shale, shale that was deposited in the ocean. So right away you can take, I don't know what the number is, but let's just say for argument's sake, half. You take half and throw it away because it doesn't have the necessary organic components to make oil or really very much natural gas. You say, well, how much of what's left is actually at the right burial depth to cook it into mature oil? And you can throw away something like another half. And then of all of that, how much is in a place where you can actually get to it commercially? Or like you say, what if it's under the city of Paris or under the Grand Canyon? So there's a whole lot of areas that get excluded.

(00:28:54):

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And in Europe you've got a pretty high population density. People usually don't like to see oil rigs or coal mines in their backyards. And then you factor in on top of that, that the United States and maybe Argentina and Canada are some of the only countries in the world that have private ownership of mineral rights. And so there's absolutely no benefit to a citizen living in, let's just say France, since you brought up Paris. He doesn't get a thing if somebody drills an oil well on his property. He just gets the damage of having to deal with the roads and the mud and all of that. So there's no incentive for people to say, well, this kind of sucks, but at least I'm going to make some money. So you start adding it up-

Nate Hagens (00:29:44):

Unless it's force majeure and the government just comes in and says, sorry, buddy, we need the energy.

Art Berman (00:29:51):

Right, right. Well, yeah, that's certainly possible. But the point is that geologically, there are lots of reasons why there's still only a fraction of the shale in the world that's really worth going for. The United States got real lucky. I mean, the Middle East got lucky on conventional oil. The United States and Canada got lucky on unconventional oil. There's no good reason for it. It just is. But no, so the idea that everybody can do what we've done in the United States, it's just not true.

Nate Hagens (00:30:27):

Here's a question I'm curious. I don't expect you to have the answer, but when the oil was formed, was that, or at least some of the oil, was a lot of land together or were the continents different and the oceans different when oil was formed and you said the US and Canada got lucky, I mean, it's a newer province, but where the oil is found was ancient oceans. So when the oil was initially laid down as dead phytoplankton and algae and such in the oceans, were the continents much different? I mean, it wasn't Asia and North America then, was it?

Art Berman (00:31:14):

Well, okay, so geological history is long. So I think I've told you this before, ask a geologist almost any question, the answer is it depends. So if we're talking about 400 million years ago, well yeah, the continents were kind of all together. If we're talking about most of the oil or the source rocks that have generated the oil today in North

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America, most of those were laid down during the Jurassic, which was the period of dinosaurs, if you will.

(00:31:53):

And by then the Atlantic Ocean had opened up and a lot of the source rocks were laid down. And this gets back to some of your discussions with ocean scientists in waters that became stratified and effectively dead to life, lack of circulation, the kind of thing that's starting to happen in the world oceans today. That's an awesome place to lay down source rocks. It's a terrible place for anything other than algae to live. But so in the Jurassic, in North America, we had and, parts of the Cretaceous, tremendous areas where there was just this nasty stinking black muck that was accumulating on the bottom of the ocean. That made the source rocks that was good for oil. It didn't happen everywhere.

Nate Hagens (00:32:45):

So the stratified oceans and the death of hundreds of millions of years ago enabled the energy surplus that fuels Las Vegas junkets and smorgasbord today.

Art Berman (00:32:58):

That's what makes good source rock, lots of death, lots of things dying. And algae have this awesome ability just to consume oxygen like crazy. I mean, that's what they do. So yeah, it's not a pretty story. You wouldn't want to go to a beach resort during the Jurassic, probably not a good suggestion.

Nate Hagens (00:33:22):

So I don't think you can see this *per se*, but this is from an ancient ocean. This is actually two billion years old.

Art Berman (00:33:30):

Wow.

Nate Hagens (00:33:31):

These are cyanobacteria fossilized in Jasper. It's called Mary Ellen Jasper, and it's a stromatolite. These little stacks are where the cyanobacteria moved up towards the light and did photosynthesis. These things were alive two billion years ago. I get them wet, then I can see them better. Anyways.

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Art Berman (00:33:52):

And you would not have wanted-

Nate Hagens (00:33:55):

I want to get to the SP-

Art Berman (00:33:57):

You would not have wanted to be on the beach that those stromatolites were living on. It would stink to high heaven and be toxic as hell.

Nate Hagens (00:34:05):

Well, I wouldn't have been able to live, I don't think.

Art Berman (00:34:07):

No.

Nate Hagens (00:34:08):

We didn't have an oxygen environment then.

Art Berman (00:34:09):

No, that's true. Yeah. Right.

Nate Hagens (00:34:14):

So I want to get to the SPR. But maybe since you brought up shale, where is the peak discussion? Not that I care about the peak, but the peak so far in global oil was, to my knowledge, fourth quarter of 2018. And we've almost hit it again. And a lot of the shale plays in the United States are in permanent decline now except for the Permian, which is a monster and keeps increasing. And some people say there may be decades more growth in the Permian. Can you give us a little sense of how all that fits together?

Art Berman (00:35:03):

Yeah, sure. So you're absolutely right. The Permian is a monster. Saudi Arabia is a monster. This is just the luck of the draw I suppose. But the Permian... So there's two cases here. There's the geological case, which is sort of the upside, which is to say that there very likely could be, let's just be conservative and say, let's say there's at least a

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decade of plenty of more oil in the Permian. That's the good news. The bad news is, well, yeah, but where's the money? Where are the credit markets, the capital supply that's needed to fund that investment? And the answer is, they're nowhere to be found. (00:35:50):

And you add into that the fact that investors have told these companies, and today a lot of the big operators in the Permian Basin are familiar names like ExxonMobil and Chevron and Occidental. I mean big oil companies. And there are others too. I'm not excluding anyone. And their investors have said, hey, we want returns. We don't want this growth thing anymore. And so even if there were more money available to invest, investors are saying give them to us, we don't want you to spend it on exploration and development. And so if you take that lens, which is really a much more get back to your force majeure kind of thing, I mean, I suppose the government eventually could come in and say, we're not going to have any more of this. We're going to be drilling like crazy here, but that's not where we are today.

(00:36:51):

So my sense of it is that, geologically we are reaching kind of a plateau. I did a study that I think you saw a bit of back in the early part of this year, which says that the average, well, new well in the Permian is maybe 15 or 20% not as good as one back in 2017, 2018. So that sounds pretty bad. But then you start looking at the economics of it and say, holy cow, I mean you can make a ton of money on a well that's only 15% less good than something in 2018. So my point there, Nate, is there's plenty of-

Nate Hagens (00:37:38):

With oil at \$80 or \$90.

Art Berman (00:37:41):

Well, actually the break even that I calculated, and this was all costs in and like an eight or 10% return discount rate, those breakeven prices were in the mid to upper \$40 range. No, I mean, so that's why these shale companies are making money hand over fist right now at \$80 oil because at least based on the way I calculated their costs, let's just say it's 50. I mean they're making 30 bucks a barrel. That's pretty darn good.

Nate Hagens (00:38:14):

So let me take a side tangent there and involve the climate discussion. There is large pushback, and admittedly from a systems blind perspective. But there's huge pushback

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that the vacillations of oil price when oil price is high, some of these companies are making egregious profits. And personally I think that's similar to Intel or Home Depot or other places making profits. It just so happens to be the hemoglobin of our modern life that these companies are extracting and refining and selling. But do you have thoughts on that? I mean, how do we go from a year in 2020 when oil was negative \$30 a barrel briefly, and if it costs you \$50 a barrel to get it out of the ground, obviously you are in a world of pain to then the flip side when there's some scarcity and Saudi Arabia and Russia turn off the spigot and that raises oil prices and therefore profits for companies. What is your sense on that? Because the environmental pushback seems to be growing.

Art Berman (00:39:35):

I think you're right in what you said, and that is that we have learned to hate oil companies, and I'm not going to get into whether they deserve it or not, but that's just a fact. And because it's so present in our lives, I mean, every time we go to fill up our car with gas or diesel, we're painfully aware of what it costs. But oil companies are no better or worse, really, than any other kind of corporation that's in it for the money. I mean, that's the system we've got. It's not a question of whether I agree with it or not. Nobody asks my opinion the way capitalism works.

(00:40:19):

And we have to remember in fairness that, I mean the oil companies, they've had a decade before all those higher prices of terrible prices when they were losing money. And I mean, so I'm not an apologist for the oil industry, but since I've worked in it, I'm here to tell you it's a tough business to survive in, both as a company and as an employee. It's not an easy place to be. And I'm not asking anybody to feel sorry for the oil companies. I'm just asking, like you say, think of Home Depot or Intel. I mean, they have bad years, they have good years, and they need the good years to make up for the bad years. It's just that simple.

Nate Hagens (00:41:07):

I agree with you. Getting back to the best case. So the geology, the decline rate. And by the way, have you updated your US decline rate of the majority of production? I've been using one of your charts showing like a 35 or to 40% decline rate if we stood still. Is that still valid?

Art Berman (00:41:33):

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It is. I just recently did that. And this is again for all wells, not just shale. Every stinking, well that's drilled in the state of... I took the five or six biggest producing areas in the country that include Texas, Louisiana, Oklahoma, North Dakota, Gulf of Mexico, New Mexico, and those account for like 85% of all US production. When I did the decline on that, I came up with 36%, and that's a production weighted decline. So that's not a simple average of all those states. So that's the number and that's not hugely different than before. So all production is fallen off a cliff if you don't drill a ton of wells to replace the oil that's being used.

Nate Hagens (00:42:33):

We have four components, not to get overly complicated, we have the decline of our legacy wells, all the wells that were drilled before today, if that's all we had, and that was at a hundred, it would decline by 36% in the next year. Then the second component is we have new wells that we're drilling and adding that to this declining amount, and then we have global exports, which we can pay money for and buy other people's oil. And then the fourth thing is, on top of all those three, we have the strategic petroleum emergency oil bank account, which we can draw from and supplement those other three. Is that a correct summation?

Art Berman (00:43:20):

You nailed it. Sure. Yeah.

Nate Hagens (00:43:24):

Okay. So what is the best case in your view? Best case on geology and technology, assuming there are no credit disasters and that growth continues and that we don't have a nuclear war with NATO and Russia and that we have international cooperation with all the relevant countries, what is the peak oil update as it were?

Art Berman (00:43:56):

I think that we are at a point where decline is the only thing that I see out there, and we can argue about it. I think I actually made a forecast that I shared with you, and it's kind of similar to one of BP's cases. I didn't copy them, but one of the BP cases has oil production declining like 20, 25% over the next 15 or 20 years. It's not as extreme as the net zero roadmap, which isn't meant to be a projection by the IEA. It's less optimistic than the US EIAs kind of business as usual forecast.

(00:44:47):

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And that's not to say that we won't reach and do peak temporarily, but the big picture long-term is that we're just not going to have the supply, which doesn't mean that it isn't there to be developed. We're just not going to have it available to us because of some combination of geology, lack of investment, et cetera. And then you bring in this angle of higher oil prices, and I mean that's ultimately what kills not only oil demand, but economic activity and economic growth. And so at some point you get to a price where can you, and I just say, geez, I'm going to leave the truck in the garage today. I don't need to go out all that much. And so we start cutting back and that has a ripple effect first through the oil market. But eventually, since oil pretty much is the economy, or at least GDP and oil correlate as perfectly as you'd ever want to have two things correlate. At some point you start using less energy

Art Berman (00:46:01):

and oil is the master energy resource, at least for now, the economic activity of the world is going to go down, then price goes down, and et cetera, et cetera. And those are the kinds of things that... And again, this is ignoring the catastrophe scenarios you just mentioned. But these things happen. They're real. And we only have to go back to the 1980s. Oil prices were as high as they'd ever been in 1980. Oil was something like \$120 a barrel in today's dollars and demand just cratered. And we had 13 years of super low oil prices. And that was one of the main components of Ronald Reagan and Paul Volcker's success story, Reaganomics and all that. They didn't have high oil prices to deal with.

(00:47:01):

Now, the flip side of that is all the developing countries in the world like South America and Africa that were saddled with US commercial bank debt that were in a depression. I mean, that's why a demand went down so much. And so, again, talking about interest rates and the things that are going on in the financial world right now, we're not going to repeat the 1970s and '80s. Don't get me wrong, I don't believe in that kind of stuff. But we are absolutely set up for triggering a real depression in a lot of debt saddled countries outside of the United States and Europe. And that's going to really hurt demand for oil and therefore, the global economy.

Nate Hagens (00:47:50):

Peak demand.

Art Berman (00:47:52):

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Well, for a lot of reasons, yeah. It's not peak demand because people are sick of oil and they want to buy a Tesla. It's because they just can't afford what they need.

Nate Hagens (00:48:03):

So, what I love about our conversations is even though we know each other quite well and we compare notes and ideas, you always lead me to asking questions that I didn't anticipate to ask. So, here are two. I wonder because of, like you said, the relationship between oil and the economy, economic growth is incredibly tightly linked. You have a chart, it's like 0.97 R-squared or something, globally. And the fact that a barrel of oil does, depending on the handicap for efficiency, four or five years of our labor, so we have between 300 and 500 billion fossil workers added. As we raise the cost of those, there is a leveraged multiplier effect on our productivity. And that ends up leading to recession or depression as you point out.

(00:49:08):

But also what's happening now is we have become dependent on artificially low interest rates, which also have a leverage multiplier in the economy. And interest rates have just had their largest six month increase in history. The 10-year note is approaching a 5%. And that also has a ripple effect on demand. Today, the average national mortgage rate is approaching 8%. So, you've got higher oil prices and higher interest rates. These are the two things that really impact Jill and Joe Six-Pack's ability to drive and consume. And with \$33 trillion in debt and interest rates going up where we're going to have to spend over a trillion dollars on debt, I don't see a way out of this other than some sort of stagflation. Do you have any thoughts on all that?

Art Berman (00:50:12):

Yeah. I mean, I made a slide that I sent to you that I think its title is something like high oil prices are the silent killer of economic activity. And it's not a tagline that just sort of sounds good. It's an empirical observation from 40 some odd years of doing this kind of work, and looking back and saying, well, has this ever happened before? I mean, can we go back in history and find real examples where this occurred? And I just cited one. I mean 13 years of most of the world or a lot of the world being an economic recession in the 1980s and 1990s. That's pretty terrible. And it's complicated. It's not just high energy prices, but high energy prices are the dominant factor and/or the trigger. And it's just that simple.

Nate Hagens (00:51:13):

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And if that happens again, that we go into a global recession or depression, and oil, despite it being incredibly valuable is down to \$10 or \$20 a barrel again, then that will be also a feedback that keeps companies from investing in more production, meaning it will accentuate the decline rate, *ceteris paribus*. Yes?

Art Berman (00:51:39):

Totally. So, when oil prices got super high back in the 1970s and the very earliest part of the 1980s, companies went and did a lot of expensive exploration in places like the North Sea, in Alaska, in Mexico, in Siberia, places that they knew about forever, but would not have gone there at lower oil prices. They discovered a whole bunch of oil. We had a glut of oil, sort of like we did with the shales when they came in and in the first part of this century. And so, not only did we have a global recession, at least in developing countries, but we had an oversupply. Okay, that made oil prices low for 13 years or so.

(00:52:29):

And so, what kind of things did companies go and look for after that? Well, they had to be monsters. You had to go find elephants, giant fields. Where were those? 5,000 feet of water. 6,000 feet of water. That's where all the exploration was. There were no more Alaskas. There were no more Siberias or Mexicos. Those had been found. And then the shales came along because oil prices got high again. So, the question is where do we go next? What's the next geology or technology that works us out of the scarcity cycle that I described in the beginning of this conversation? And we don't know, but the hope among many people, including those who want to get off oil, is that it's renewables.

Nate Hagens (00:53:26):

The Arctic.

Art Berman (00:53:27):

Oh, well, yeah, good luck with that. But yeah, there are lots of possibilities, but not with low oil prices. I mean, so the question you just raised is, okay, so if we crater oil prices, then what's out there for us? And the answer is, it better be renewables. Isn't going to be geology, at least not that I know of.

Nate Hagens (00:53:50):

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The answer that you and I think and have come to the conclusion is less energy consumption is the answer.

Art Berman (00:53:59):

Sure. Absolutely. That is the answer.

Nate Hagens (00:54:01):

And the other thing is interest rates. Go ahead, Art.

Art Berman (00:54:05):

It's not an answer anybody likes and people criticize. And so, well, no one's going to do that voluntarily. And, "Geez, I never thought about that." Yeah, of course, we're not going to do that voluntarily.

Nate Hagens (00:54:16):

Right. No, I know. So, the other thing with interest rates though is interest is the largest expense for many renewable projects. So, when we moved from 1% to almost 5% on 10 year notes, this has a major dent in the affordability of scaling renewable energy unless things change with financing, et cetera.

Art Berman (00:54:40):

But there's a parable that we need to remember, and that is shale and renewables. I mean, they couldn't be more different in some ways. But if we go back 10 or 13 years and look at shale, it was all about growth. Investors were piling into shale because there were huge multiples and they could make a lot of money on the stock, and they didn't care so much about whether these companies were profitable until they did, and then they all went away from the shales. Well, renewables is right there right now. It's all about the growth and not about the returns. And that's just fine with investors until it won't be.

(00:55:23):

There'll come a time when the renewables are going to reach the same day of reckoning that the shales did. And investors are going to say, "Well, where are the returns, guys?" And then the multiples go down. So, this is sort of the logic that I go through when I say that lower energy consumption is inevitable. If the next greatest

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thing is going to possibly repeat the same cycle as the last greatest thing, then we're talking about a decade or so and we're going to be out of answers again.

Nate Hagens (00:55:59):

Let me put you on the spot, Señor Petrolio. And if you don't want to answer this, we'll just skip it and get to the SPR. But the conclusion, which to many of the followers of this podcast is obvious, that lower material throughput is an inevitable reality that could happen much sooner than we think, but it's coming in the coming decades for the United States and for the world related to energy. But most of the global authorities, and experts, and international organizations who are considered the foremost go-to places on this data, the World Economic Outlook, the International Energy Agency, the Energy Information Agency, couldn't... Even if they believed it, could they really say there's going to be less and less energy and oil available? Or do they have to, for political status, glass ceiling reasons, somehow obfuscate the story with peak demand or net-zero narratives that embed this decline in a different sort of story? What do you think about all that?

Art Berman (00:57:30):

Yeah, well, I mean, we've both had anecdotal experiences over the last couple of months that, I think, are parallel insofar as... There are a few people out there, political leaders and climate, and ecological activists, and opinion influencers that understand that, "Yeah, I mean, all this net-zero stuff is probably not going to work so well. And renewables are probably not going to work the way some people hope. But we got to keep telling people that." But I have to say that the most people, they really believe this stuff. I mean, whether they're policymakers or whether they're climate scientists, or whether they're transportation engineers. They truly, truly believe it. I just gave a couple of talks a few weeks ago, where I pissed more people off than I think I have in 10 or 15 years back when I was given the shale talks.

Nate Hagens (00:58:44):

That's saying a lot.

Art Berman (00:58:46):

Yeah. I've been really trying to be a good boy and not piss people off. But basically I was-

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Nate Hagens (00:58:51):

Why?

Art Berman (00:58:52):

Why am I doing that? Well, because I'm-

Nate Hagens (00:58:55):

No, no, no. Why did you piss them off? What did you say?

Art Berman (00:58:59):

I told them that all these climate solutions were simply not going to work. That they needed to understand the human predicament and that their carbon focus, their climate change focus was a narrow view that they weren't thinking about the bigger picture. They weren't thinking about the planetary abuse. They weren't thinking about the kinds of things you and I are talking about, like the economy, and interest rates, and treasury bonds. I mean, all this matters. And climate scientists, bless their hearts. I mean, I love them to death. But they live in a very limited kind of world. And when somebody who's not one of them, and I'm not, gets up there and says, "Guys, I mean this is a noble effort, but everything I see is, this ain't going to work the way you think it is. There are no solutions." They hate that. They hate hearing that. Surely there have to be solutions.

Nate Hagens (01:00:05):

There are responses, not solutions. But the reason I think people like that, and I get similar response in my presentations, believe that is because we've just gone through 50 years of lower and lower interest rates, ubiquitous available of credit, and growing oil supplies. I mean, we had a phase shift all the way to the 1970s. We grew at 6% per year. And since then, it's been 2% per year or something like that. But it's been growing. So, all of our visions of the future are supported by our emotional memory of what the last 50 years were. And those interest rates, and those oil prices, and the oil amount are going to imply a much different future when they go the other direction. So, yeah, I mean, this is why we have to have these conversations because I don't know what to do. But I think we need a lot more of those climate activists, university professors, politicians, civic leaders, community organizers, working on real viable responses, and not pie in the sky ones that aren't going to materialize.

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Art Berman (01:01:26):

I mean, the environment of abundance that we've been in my business, the one I know the most about, which is oil. When there's optimism about abundance, prices tend to move in the direction of the most efficient operators with the lowest variable cost. Which is why we were hearing in the early days of the shale revolution, "Oh, the breakeven costs are now only \$60 a barrel. No, now they're 50. Now they're 40. Yay, this is great." Well, that's not the world that we're in anymore. Now we're in a world of relative scarcity. And where does price go in that environment? It goes to the very highest level that consumers can bear. And we're no longer interested in the marginal price. We'll go however much higher it goes until consumers say, "No." And right now, I think oil prices are about \$20 over the marginal price. I'm not saying the market's wrong. I'm saying, well, I'm agreeing with myself. We're way above the marginal cost because we're not playing the abundance game anymore.

Nate Hagens (01:02:40):

A lot of people like the Singularity Institute say that we're headed for an era of abundance, and the scarcity mindset is dangerous. I've thought about that, and I actually think that the answer is a subtle one. We are headed for a global era of scarcity. But as an individual human, you can adopt, train yourself, meditate, change your behaviors so that you personally perceive the world in a way of abundance, even if there is physical scarcity generally. And I think that's an interesting asymptote to aim for. "I'm not there yet, but I'm trying to go there." It's like a Buddhist economics within a declining capitalist system. I don't know. Do you have any thoughts on that?

Art Berman (01:03:38):

Well, I had that conversation with all sorts of people, a lot of them, very young people in the last two rounds of talks I gave. One was at a climate conference at a University of Texas, and the other was an energy group at a different university in Texas. And for those that stuck around long enough to get past all the cherished belief arguments, that's where we got to is, look, we're not talking about life as we know it ending. We're talking about going back to a standard of living that you and I grew up in back in the '60s, '70s, and '80s, which was a lot lower than it is today.

(01:04:27):

But as I remember, I didn't want for too much. I mean, life was pretty good. And I'm not saying everything is going to be great. There's obviously going to be going to be

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lots of problems. But so much of it has to do with what can I learn to be satisfied with? Can I learn to be satisfied with what I have? Or am I always wanting something more, which more than likely is something I actually don't need? As you say, it's something you train yourself in.

Nate Hagens (01:05:00):

So, hold that thought because I called you yesterday, let's do a podcast on the SPR. And here we've talked an hour, and we haven't mentioned the SPR. But I do want your reflections on advice and advice to young people, et cetera. So, take a pause. Tell us what is the Strategic Petroleum Reserve? How did it come about? How much oil is in there? How much oil have we drawn down? How relevant is that? How accurate are the scare stories out there? I mentioned earlier we have our declining oil, which is declining at 36% per year. Then we have our new drilling, and then we buy extra oil in the world market. But then there's this SPR. And in order to reduce the price at the pump, we've also been pulling oil out of that to reduce the prices. So, give us a story about the Strategic Petroleum Reserve.

Art Berman (01:05:59):

The Strategic Petroleum Reserve came into existence in direct response to the first oil shock in late 1973-1974. This is what's commonly known as the Arab oil embargo in response to the so-called Yom Kippur War. So, Israel was attacked by Syria and Egypt. And the Arab countries that had become most of them OPEC about 10 or 12 years earlier, said, "Well, guys, anybody who's supporting our enemy, Israel, we're cutting you off from exports." Which they did. And the US was one of them. And it was a horrendous psychological experience, not unlike what we're talking about, Nate. I mean, life didn't end. It's just that people had to wait in line to get gasoline. Horror. I mean, I don't want to do it either, but it's not like life ends when that happens. But the experience you can imagine. I mean, this post-war ebullience that we were going through, anything is possible, American can do, et cetera. And suddenly we're screwed by some people that we don't even know.

(01:07:17):

I mean, who are these guys? Why are they doing this to us? And so, in 1975, the Congress passed the law that said, "Okay. We're going to do two things. We're going to create a national petroleum reserve. And we're going to pour a whole bunch of oil into mostly underground salt caverns so that if this ever happens again, we've got a

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pretty good supply of our own oil that we can draw on so that we don't get in gasoline lines and et cetera like we did this time. And the other thing is we are going to ban export of just about every kind of crude oil imaginable." Now, we didn't actually export huge amounts of crude oil back in those days, but we said, "Look, we just can't afford to do this. We need to keep all our oil in our country." So, that was 1975.

(01:08:15):

And so, the Strategic Petroleum Reserve mostly just sat there. And most of it, by the way... I mean it's all over the country. But most of it's in a couple of salt domes here in Texas and Louisiana. And I think I gave you a slide that actually shows a map of that. And so, we're looking at something like 700 million barrels. So, it's a fair amount of oil. There's no question about it. It's not enough. I mean, the United States uses 5 billion barrels in a year, just to give you some context. So, it's a chunk, but it's a helper, let's put it that way. It mostly sat there, and then we got to a point not very long

Art Berman (01:09:03):

ago, towards the end of 2021 when things started heating up with OPEC, and it looked like probably Russia was going to do something nasty or maybe not, but in Ukraine, and we're preparing for all of that. And our president, Biden at the time, said, "Okay, we're going to start releasing oil from the Strategic Petroleum Reserve so that we don't feel the pain so much."

(01:09:31):

Now, just between you and me and everybody who's listening, I think that was an absolutely terrible idea. But we'd already given up on banning crude oil export in 2016, and that was an even worse idea in my opinion, but which is the worst of two bad ideas? If you're trying to save yourself for a rainy day, you don't do either of them. You can argue about, "Well, is this the right thing or not?" But at least we're doing something. So two terrible ideas, exporting crude oil again, and everybody who works for an oil company say, "Wait a minute, that was a great idea. Look at all the money we're making." Okay. Yeah. It was a great idea for capitalism. A terrible idea for conserving our-

Nate Hagens (01:10:18):

For our future.

Art Berman (01:10:19):

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Yeah, for our future. Exactly. So the SPR, the Strategic Petroleum Reserve got drawn down from something like 700,000,000 barrels to where it is today, which is about 360,000,000 and that's 40%. That's a lot. And so a lot of the critics and the analysts and pundits and anti-Biden people say, "Oh, this is a horrible thing. Look what he's done." And I just said, "Yeah, bad, bad idea." But those are the same people that say, "Well, but it's a great idea to export crude oil." Well, you compare the two numbers, and we've drawn down round numbers, 250,000,000 barrels of strategic petroleum reserve. We've exported 6,500,000,000 barrels of crude oil since that ban came off in 2017. And I gave you a graph showing the two, and it's like this SPR thing is insignificant.

(01:11:16):

Again, we shouldn't have done either, but we did. So if you want to complain about something that's really affecting our future, stop the crude oil export or stop complaining would probably be a better idea. Just accept that this is a done deal or whatever you like.

Nate Hagens (01:11:32):

Okay. So the SPR is important, it's an insurance policy. The media is blowing it out of proportion a little bit, and if they were not energy blind, they would be focusing on the reality of the United States draining America first, and selling that oil to other countries is a much bigger deal than draining the SPR.

Art Berman (01:11:58):

Exactly.

Nate Hagens (01:12:00):

So here's just a naive question. Have you ever been to one of those salt caverns? Is it allowed?

Art Berman (01:12:08):

Yeah. You have to make arrangements, but yeah, you can go visit. It's not very exciting. On the surface it just looks like a bunch of oil tanks and you can drive around and the tanks go down thousands of feet. They had to drill a well and put pipe in it, and it connects to a cavern that's been dissolved out of a giant hunk of salt. They just forced fresh water in there and dissolve it out. And it makes a great place to store oil

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because it's impermeable, it's large, and it can't get out of the salt and pollute the beds around it or anything else. And they just pump millions of barrels in, and every once in a while they pump millions of barrels out and hopefully we'll someday get around to putting back in what we pumped out. But yeah, there's a couple of them that are pretty close to where I live in Houston.

Nate Hagens (01:13:11):

So a savvy practice would be to keep those tapped off all the time, topped off in case there is an international emergency or whatever. Do other countries, does Europe have Strategic Petroleum Reserves like similar?

Art Berman (01:13:29):

It does. The United States is by far the largest in the world, at least as far as we know. We don't really know what China has. They're not very transparent and their storage or anything like that, but my guess is that China probably has a pretty respectable one. They are the second economy in the world. They're the largest oil importer. And just parenthetically, we didn't really get to talking too much about the BRICS and all that stuff, but the assumption that China would do really well from high oil prices, I think is misinformed. China is a big consumer and China, their strategy for years has been to just dump product out on the market when prices get high to lower the prices. So there's a lot of ideological misconceptions about who's on what side and what their interests are. But as far as Strategic Petroleum Reserves, when Biden decided to do this, it was done in concert with a number of our European allies, and it was a way of putting a stick in OPEC's eye and saying, "Okay, you guys want to cut? Guess what? We can pump."

Nate Hagens (01:15:04):

Yeah, but it's the deferring the second marshmallow sort of thing. It's just one of those many choices that we can consume now and pay later because at some point in the future, not only the oil in the SPR, but the oil in the ground will be incredibly important to our children and beyond.

Art Berman (01:15:27):

And it is important to us. We just don't value it the way we should.

Nate Hagens (01:15:31):

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Exactly. Okay, my friend. Thank you for that education on the SPR. If you have a few more minutes, I know you're in grandfather babysit mode, so I want to be respectful of your time, but I never did ask you the closing questions that I've come to ask all of my guests. And I know you listened to this podcast because you often tweet out the day after you listened to the latest episode.

Art Berman (01:16:04):

True.

Nate Hagens (01:16:05):

So you have been a macro observer thinking about these issues for a very long time, long before you and I met. What is your personal advice to listeners at this time of converging human predicaments ahead of the great simplification or whatever you might call it? What advice would you have to people listening to this program?

Art Berman (01:16:32):

My advice would be to take a breath and don't let yourself get caught up in the kind of anxiety that our media and a lot of our political leaders, and certainly even our friends and colleagues want to draw us into, that I'm not here to tell you that everything's going to be great or that everything's going to work out or that life is going to carry on just as it has. In fact, I'm confident that none of those statements will be exactly true. But what I think I've learned and learned from others, not just from my own experience and study, is that things are rarely as bad as they seem, or at the very least, when they seem really bad, that means that everything bad that could happen has to happen simultaneously and in an aggregate way.

(01:17:38):

Now, that doesn't mean the bad things and terrible things don't happen because occasionally they do, but it's very rare that all of the horrible things that we can imagine might happen will all happen at the same time and will all happen tomorrow morning. It's like some of these movies. All of a sudden, climate has catastrophically changed tomorrow, and New York City is flooding or freezing or whatever. Those are just not probable outcomes.

(01:18:09):

And so take a breath and go talk to a friend or meditate or read a novel or something, and think about all of the trials that people in the past have faced, and

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somehow they either lived through them or they adjusted to them. This too will pass in some way, not without pain, but it's probably not as immediate as we all think. Now, lots of bad scenarios could happen, but more likely than not, whatever happens, it's going to be how well you take it and adjust to it. I think Darwin, whether he actually said it or not, it doesn't matter. It's not about who's the fittest of the species that survives, it's which one is the most adaptable. So be one of those more adaptable and you may need to learn some things. I certainly need to learn some things. I don't have this all figured out, but whenever I get a little freaked out, I try to remind myself, "Settle down for a minute, remember who I am and where I am," and talk to a friend, read a book. That's what I recommend.

Nate Hagens (01:19:39):

How would you change that advice for young humans listening to this program, 17 to 25 years old?

Art Berman (01:19:48):

Well, first of all, I would try not to despair, try not to see myself and my generation as a target. The world is a tough place, but it's impersonal in the end. And it is true, it's absolutely true that your generation is going to have to bear an awful lot more of the pain of what we're doing right now than my generation or yours, Nate, who are only a little bit younger than I am. That's a fact. I can't make that go away, but I don't think anybody planned this to cause you or your generation pain. And I'd say read your paper on the superorganism or listen to some of the many podcasts. This is just the way that human society has evolved. It wants more, it takes more, and there are consequences to all that. It's not a good thing, and I'm not making excuses for it, but don't take it personally.

(01:21:03):

Figure out, "Okay, this is happening. I can waste a lot of energy wishing it weren't happening or trying to blame whoever I think it is." And that's the most important thing. Blaming accomplishes absolutely nothing. It may make you feel a little bit better for a moment, but let's just say that the CEOs of five oil companies are in fact solely responsible for everything that's happening to our planet. Put them in jail, boil them in oil, do whatever you want. Did that make you feel better? Maybe, maybe not. Did it help the planet? Not a bit.

(01:21:46):

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So it's natural, okay? I'm flawed, I'm human. I want a first reaction. Who's to blame? But it's not helpful, it's just not helpful. What can I do in my little circle of friends and family to somehow make things better with what we have?

Nate Hagens (01:22:10):

Thank you. Do you have any career advice for young humans given what you know about our biophysical landscape?

Art Berman (01:22:19):

I would look beyond the emphasis, the mainstream emphasis of science, technology, engineering and mathematics. I That's the direction I went. So I'm maybe not a great person to seek advice from, but there's a whole nother side of life, which is more attuned to, as you said a little bit earlier about the metaphysical, things like philosophy, things like religion, and I'm not pushing religion, but things like religion, just going after all the things of this world, the tangible pieces of this world that we can measure and count and put in a bank account or whatever. That certainly, we need that to survive. But if that's all that there is in life, then I think life is... At least for me, it's not really worth living very much. There is the side of creativity and satisfaction and empathy and compassion that most of us, and I'm speaking from personal experience, I was frozen in some state of emotional underdevelopment. Here I was, 50 or 60 years old and I had the emotional equipment of a kid in the junior high locker room. And in many ways I still do, and you criticize me occasionally for some of those behaviors, Nate, but okay, I see that. I'm aware of that. And so be aware of what's happening and pick a career that gives you bliss and ignore all the people that tell you, "Well, how are you going to make any money doing that?" Don't worry about it. It should be somewhere in your awareness, but if that's really what you want to do, then you should follow that. I didn't. My first degree was in history for crying out loud. It took me until I was 10 years out and a father and had done a bunch of odd jobs, and I'm better for it, by the way, to say I really like the earth and I don't know why it took me so long to figure it out. And I was told by some very important people, including my parents, "You're no good at that. You'll never be any good at that." Well, I'm not saying they were wrong, and I'm right. I'm saying I'm sure glad I did it because I still love what I do every day.

Nate Hagens (01:25:20):

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Well, history was at least in the right direction. You just really wanted to study the history of rocks, not people.

Art Berman (01:25:27):

The history of everything, that's what I wanted. I didn't know it. You're right. Yeah.

Nate Hagens (01:25:32):

So what do you care most about in the world, Art?

Art Berman (01:25:39):

I care about life, not just my own, although I am selfish. I'm here being with my grandchildren, my wife's here with me. I care about my family. My dog's here with me. I love her. My daughter's dog is here. Their hamster, all the birds that are outside. We're all together, and that's not just the COVID cliché, "We're all in this together." We all are in life together. That doesn't mean that we all need to be working towards a goal. Well, that's another conversation altogether, but we all are here together in this life, and it's a mess in a lot of ways, but it is a beautiful thing. It is a beautiful, beautiful thing. And some days I have to remind myself just how much I really enjoy. We were talking on the phone the other day and I said, "Nate, are those ducks in the background?"

Nate Hagens (01:26:52):

Yes, they were.

Art Berman (01:26:54):

And you put me on FaceTime and there were those ducks and they were funny. They made me laugh. They were great.

Nate Hagens (01:27:00):

They make me laugh every day. They make me laugh.

Art Berman (01:27:03):

Again, I don't have this figured out, not even close, but pick something that just really makes you want to learn more about it and do more with it, whatever that is. I wish I'd have done it sooner, but I'm not sorry that I did it the way I did it.

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Nate Hagens (01:27:23):

If you had a magic wand and there was no personal recourse to your decision, what is one thing you would do to improve planetary or human society futures?

Art Berman (01:27:37):

I warned you, ask a geologist and you're going to get an, "It depends," answer, but I'll give you an optionality answer. How about that? I'll give you a choice. If I'm the king of the world, if I'm the emperor of the universe, I'm going to give you two choices. You have to do one or the other. The first is you need to listen to every single one of The Great Simplification podcasts, and if you don't like that option, then you have to put in an equal number of hours with a psychological therapist, and you're probably not going to want to do either one of those. But those are the two things that I would require if I could with no recourse of every citizen, and you're going to fight and you're going to scream like most people do, but because you don't have a choice, you're going to come out of it somehow changed in some way, I hope.

Nate Hagens (01:28:36):

Well, what you're really saying is we need to have broader systems education, and we need to have people healed from trauma and do inner work so that we can live more in the post tragic instead of the tragic, and both enjoy life and contribute to the collective predicament we face. So I agree with that. I agree with those two categories. My friend, this is your fourth time, I think, with the Roundtable.

Art Berman (01:29:12):

I think so.

Nate Hagens (01:29:13):

I would like to continue to have you come back. We've covered a lot of different topics. I wanted to have you on today because of the BRICS and the oil and the SPR. Is there a topic that you are curious about that's relevant to our future that you would like to take a deeper dive on the next time you're on?

Art Berman (01:29:36):

Well, since you asked, yeah, there is. I'd like to pursue the topic that I told you got me in a little bit of contentious water just recently, which is the title of the talk I gave was Getting Honest about the Human Predicament, which almost sounds like it could be a

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frankly or something. So you've influenced me a lot. But yeah, let's talk about what actually is realistic and feasible versus what is just basically fooling ourselves about where we're going with the ideas, the potential solutions that people talk about for this predicament we're in, which goes beyond climate change.

(01:30:31):

Obviously that's front and center for a number of people, but I know you and your listeners, we're interested in ecology. We're interested in the Earth, where some of us are really concerned about financial situations, geopolitics. There's a whole wad of stuff that all comes together and we can't cover all that. But I would like to just sit together the next time and talk about... Let's explore, okay? If you think this is a good idea, whatever it is, renewables or net-zero or nuclear or fusion or whatever, let's just play that forward and see what kinds of things we learn when we investigate that path further than just the headline.

Nate Hagens (01:31:26):

Let's do it, sounds like a plan. Three months, más o menos to be continued. I'm sure we will talk soon. Enjoy your time with your grandchildren.

Art Berman (01:31:35):

I will.

Nate Hagens (01:31:35):

And thank you again for your time and expertise sharing today.

Art Berman (01:31:40):

Always a pleasure, Nate. You too.