

# The Great Simplification

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Nate Hagens (00:00:02):

You are listening to the Great Simplification with Nate Hagens. That's me. On this show, we try to explore and simplify what's happening with energy, the economy, the environment, and our society. Together with scientists, experts, and leaders this show is about understanding the bird's eye view of how everything fits together, where we go from here, and what we can do about it as a society and as individuals.

(00:00:33):

What is the price of time? We don't think about it much. But since we are biologically finite life creatures, we do put a price on time and that is what we culturally refer to as an interest rate. Joining me today is financial historian, Edward Chancellor, to discuss his recent book called *The Price of Time*, which is a history of interest rates, the 5,000-year up and down ride of interest rates and human cultures, specifically the highest and lowest rates of interest ever in the last 40 years. And how low interest rates today have fueled what some could defend as the largest bubble in the history of our species. Mr. Chancellor is a former Wall Street professional. He writes for Reuters, and the New York Times, and other financial press publications, Financial Times. And we had a wide-ranging discussion on finance, interest rates, and the future. Please welcome Edward Chancellor.

(00:02:00):

Greetings, Edward. Welcome.

Edward Chancellor (00:02:02):

Nate, thanks for having me.

Nate Hagens (00:02:05):

It is a pleasure. So in addition to some mutual friends, I think we have at least one other thing in common; we were both on Wall Street in the early nineties. I don't know, you were at Lazard. I don't know if that was in New York City, but I was at Solomon Brothers and Lehman Brothers in the early nineties in New York.

Edward Chancellor (00:02:25):

I was in at Lazard... What was called Lazard Brothers in London.

Nate Hagens (00:02:30):

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Oh, in London. Okay, excellent. So you have written an incredibly impressive tome on the history of interest rates and monetary systems called the Price of Time. And my work on biophysical economics, how energy, money, growth, behavior, the environment fit together. Interest and exponential compound interest is a really central part of it. So you are now a world-renowned scholar on this topic, and I hope we can spend the next hour or so taking a deep dive into humanity's history, present, and future on the concept of interest. So Albert Einstein referred to compound interest as the eighth wonder of the world. Can you tell us what is the origin of interest?

Edward Chancellor (00:03:28):

Well, can I correct you to start with by saying that-

Nate Hagens (00:03:31):

All right, please.

Edward Chancellor (00:03:32):

Albert Einstein never actually referred to interest. That was a comment, that interest being a wonder of the world, that appeared in the mid-1920s, I think in a sort of American insurance advertisement. Perhaps in your neck of the woods, not Chicago or thereabouts. And like a lot of comments either ascribed to Einstein, to Keynes, or to... Who's the old baseball player who...

Nate Hagens (00:04:07):

Mickey Mantle?

Edward Chancellor (00:04:08):

Who has all the-

Nate Hagens (00:04:09):

Babe Ruth?

Edward Chancellor (00:04:11):

No.

Nate Hagens (00:04:11):

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Oh, Yogi Berra. Yogi Berra.

Edward Chancellor (00:04:13):

Yogi Berra. So, Yogi Berra, Einstein, and Keynes. If there are any sort of loose quotes hanging around, they normally get sort of distributed to between one of those three people. But in that case, anyhow, Einstein never said it. However, compound interest is a wonder of the world and a pretty terrifying concept to behold. And people have been worrying about the concept of compound interest for millennia. We first find the notion of compound interest in Mesopotamian credit activities. And there's even the word for... The Assyrian word for interest is mash, which means the offspring of a goat. A kid goat. And compound interest is mash mash. It's the only word I can say in ancient Assyrian. Anyhow... And we see there was a dispute between two territories in ancient Mesopotamia over some land, which one of the territories claimed. And the other territory then called, Lagash, demanded a back payment of rent compounded over a long period of time at, I think, 33% a year.

(00:05:52):

And the Lagash demanded of its neighbor the equivalent of 8 trillion liters of barley, which is several times more than the US annual barley output. And you can see there the sheer impossibility of compound interest. And then by the 18th century, an English sort of philosopher statistician called, Arthur Price, made a calculation that if... I can't remember what it was... a sort of a gold coin had accrued interest since the time of our Savior to 1770 or thereabouts. The size of the gold compounded would be the equivalent of twice the weight of the earth or the volume of the earth. And that sort of critique of compound interest finds its way into... Or the impossibility of compound interest, finds its way into some socialist critiques of interest. So for instance, Karl Marx picked up Price's piece on the impossibility of compounding.

(00:07:11):

And as you are interested in energy, and economic productivity, and finance, you are probably aware of Frederick Soddy, the Nobel Prize winner. The English Nobel Prize winner chemist, who... I think you know better than I, that he got a Nobel Prize for the discovery of radioactive isotopes or something. Anyhow, so Soddy got bored with chemistry and then became a sort of monetary crank in the 1920s. And he wrote a book. I can't quite remember what it's called, on the subject of what he called virtual wealth. And there he also describes the absolute impossibility of compounding.

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Compounding in a world of finite resources. And what you are thinking about is how economic productivity is linked to the energy that sustains life on earth. And now in a world of limited resources, you can't have an infinite compounding.

Nate Hagens (00:08:26):

So I have numerous reflections based on your initial comments. My first is I feel somewhat intimidated that I have to really up my game on this podcast because of your articulate British accent. It makes me want to be smarter for some reason. So it's wonderful listening to you. My second thought is, I wonder if positive interest is because we are biological creatures with finite lifespans. And so there is, like the title of your book, A Price of Time. And bearing on what you just said though, our cognitive brains can understand that exponential growth and compound interest, like you said, the trillion leaders of barley and the virtual wealth that Soddy wrote about, is an impossibility. But, that's like a long-term thing. At the same time, our actual human steep discount rates that we care about the present more than the future, wants stuff, experiences, consumption now. So the infeasibility of perpetual growth and exponential interest is someone else's problem, which is why we constantly recognize it, and constantly kick the can forward. What are your thoughts on that?

Edward Chancellor (00:09:58):

Well, first of all, I think as you say, the humans do prefer the present to the future and have a, what's called, a positive time preference. And this actually works to our advantage economically and financially. Namely, that, as I mentioned, as I take the title of my book, The Price of Time, if you put a price on time, you will use time more efficiently. And that price of time is also a price of risk. So you will take your risk more efficiently. And that's true whether you are investing in financial securities or whether you are actually engaging in actually sort of entrepreneurial activity. So I think that humans' mortality and the positive time preference actually contributes to our economic efficiency of using scarce resources well. As for the compounding of interest, I think we have to take it with a pinch of salt.

(00:11:11):

It's very easy for a mathematician to work out, to create, a simple formula and say, "Where if this compounds over X number of years, the amount of debt will be unpayable." And this is, in a way, the underlying thesis of Thomas Piketty's Capital in

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the Twenty-First Century, where he argues that if the rate of return is above the rate of growth, you are going to get rising inequality. This sort of compounding of wealth in the hands of a few. But it actually ignores the fact that, as we all know, most people have investments and if they're not Warren Buffet, they actually spend the money that they receive. So there is actually no compounding of wealth over an infinite period of time. But even over decades for, as I say, everyone apart from the extraordinary perverse Warren Buffett whose main pleasure in life is to enjoy the compounding of his wealth by not spending it. But he's a one-off.

Nate Hagens (00:12:29):

Why is interest important, or even a critical component, to a healthy economy or a capitalist economy? You mentioned the efficiency of risk-taking. Could capitalism exist without interest? And what are your thoughts on that?

Edward Chancellor (00:12:51):

So I'll take the question to sort of metalevel first and then get more specific. At a metalevel, all our economic transactions take place across time, and we need something to guide those transactions. Now, how are you going to balance your current savings with your future consumption? How are you going to... If you have future consumption needs and you're making the investment, what will the return on that investment be relative to the consumption you need to make in the future? If we have a certain amount of savings and a certain amount of demand for those savings, what balances those two? The demand and supply of savings. At that level, interest is necessary. And the Yale economic historian, Bill Kurtzman, I think he says that finance is like a time machine or a spaceship that travels across time. And he then says that, and I think this is right, he says that discovery of interest is the most important discovery in the history of finance because it allows for intertemporal transactions, for transactions across time.

(00:14:22):

And that is true for all societies, not just for a capitalist society. Somewhere in my book I cite an economic analysis of the Soviet Union by a Hungarian economist whose name slips my mind at the moment. Anyhow, he points out that the fact that the Soviet Union didn't have an interest rate and they had a central bank that printed money and high levels of inflation, but they didn't have an interest rate to help

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coordinate economic activities. They relied instead on the central planner. And the central planner, as we know, well, most of us know, the central planner will never have enough information to coordinate all the information in an economy. So it's common, everyone I think understands that, and is the critique of communism, is that they didn't have the price of goods to allow for the supply and demand and for all the information contained within prices.

(00:15:53):

But that, at a financial level, the most important price of all... What Jim Grant, my friend, the financial historian and journalist, calls the universal price. The most important price in the financial system is the interest rate.

(00:16:13):

And I think that's true for all economies, but I think it's specifically true of a capitalist economy. You can imagine, for instance, an agrarian economy, a feudal economy, sort of trundling along. Where someone who's just farming and perhaps paying their dues to the landlord in kind. Not requiring that much interest. Although bear in mind, as I mentioned before, in the agrarian economies of ancient Mesopotamia, they had interest. So that can't be a coincidence. But if we think of capitalism, what do we mean by capitalism? Well, it derives its name from the word capital. And then we think, well, what is capital? And capital is anything, any object, it doesn't even have to be an object. It can be sort a service or it can be something embedded in a piece of software. But anything that produces a stream of income over a period of time in the future.

Nate Hagens (00:17:32):

Didn't the origin of the word capital, in your book, you wrote it came from cows or something like that?

Edward Chancellor (00:17:39):

Yeah, that's the Latin, yeah. Kaput, the head of cattle. And actually all the language for money, pecuniary in Latin for capital comes from capital of... Pecuniary is a, I think, flock of geese? The ancient words for... I mentioned mash being a kid goat in Greek, the word for interest is τόκος, which is a calf. So there's a link if you're getting the picture, that the productivity of capital is linked to interest. And go back to what I was mentioning before, that if you have an asset, whatever it is, that delivers a stream

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of income in the future, you need to put a present value on that asset because otherwise you can't buy it or sell it. I mean, how would you price a share if you didn't have interest? Because if it had an infinite stream of income, the share price without a discount rate, would have an infinite value. And it's same true of house. You couldn't have a housing market without a discount rate applied to the future income.

Nate Hagens (00:19:07):

So with a meta big history arc, humans didn't need interest rates before the agricultural revolution because we didn't have possessions. We were hunter-gatherers. But with the dawn of surplus, and accumulating, and storing surplus, and trading, in order to keep track and make sense of our world, we had to have a price on time.

Edward Chancellor (00:19:31):

I think that you are right. I mean, we obviously don't know what happens in a prehistoric period by definition. But, once farming becomes settled, and once there is private property of some sort, or at least property that people are labor... Whether it's an official or a individual fund that someone's laying claim to that property, if someone then wants to borrow that property, and that property has the nature of being productive, then the lender is only going to lend that property in return for an interest payment. In other words, a share in the profit. And they were instantly, I think I mentioned the book, they were doing that in the Midwest in United States up until the beginning of the 20th century. That people were lending cattle and taking the cattle back plus a calf at some stage in the future, that was the loan contract.

(00:20:36):

So that type of agricultural loan contract with interest has been around for four millennial or so. So I've mentioned the role that interest plays in, as a discount rate, in the valuation of assets and that allows for financial markets, and real estate markets, and capital markets of all sorts to take place. I also mentioned, sort of in passing, that interest influences the nature of investment, real investment, in the economy. So when we talk about... When you're making investment, you talk about a hurdle rate for the investment, or sometimes investors will think about the payback period. What's my payback period? Well, the payback period embeds an interest in it. And one of the arguments in my book is that having a higher payback period actually helps with the allocation of capital from low-return businesses to high-return businesses. And that

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actually therefore, the interest rate or the existence of interest, plays an important, you might even say fundamental, role in Schumpeter's notion of creative destruction. (00:22:13):

And within that is a sort of notion of survival of the fittest. And bearing in mind that as the interest rate, when it becomes a hurdle rate, it will influence the type of investment activities people make. And if they make... It's all well and good to make investments with very long-dated returns, but at a certain point you are likely to be misallocating capital and to be wasting money. And I think that's... We are already seeing evidence of that in Silicon Valley, which was absolutely sort of inundated with capital in the last decade. At the time when interest rates were zero, and investors were crying out for potentially high-return investments, and the money went to Silicon Valley. And some of it was probably well spent, but a great deal of it was wasted in sort of pie in the sky scheme. So I think that's another absolutely vital function of interest for the capitalist system.

Nate Hagens (00:23:24):

Let me read you a quote from your book where you are quoting 19th century economist, Irving Fisher. "Nature is to a great extent, reproductive. Growing crops and animals often make it possible to endow the future more richly than the present. Man can obtain from the forest or the farm more by waiting, than by premature cutting of trees or exhausting the soil. In other words, nature's productivity has a strong tendency to keep up the rate of interest." That makes sense to me in a pre-industrial sense. But now we are basing a financial and economic system not only on the interest that we get from the hydrological flows of the sun, and the soil, and the rain, but also the mining of non-renewable resources that we're depleting 10 million times faster than they were trickle-charged by daily photosynthesis in the form of coal, oil, natural gas, copper, other things. So how do you see that disconnect of our monetary system is treating these non-renewable resources kind of as if they were interest when they really were drawing down capital?

Edward Chancellor (00:24:47):

That's a point that my old boss, Jeremy Grantham at GMO often makes. That-

Nate Hagens (00:24:56):



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I didn't know you knew him. I'm a big follower of his writings.

Edward Chancellor (00:25:01):

Right, and I worked with Jeremy in the asset allocation division and Jeremy... And you're probably also keen on Kenneth Boulding, the economist? Jeremy likes this idea, in a way he refers to this sort of spaceship Earth.

Nate Hagens (00:25:16):

Yeah-

Edward Chancellor (00:25:18):

How can you think of having infinite growth in the world of finite-

Nate Hagens (00:25:21):

A finite planet, you're either a madman or an economist.

Edward Chancellor (00:25:28):

Exactly. Now, I-

Nate Hagens (00:25:31):

Yes, yes. Edward, I'm one of those guys. But, go on.

Edward Chancellor (00:25:36):

In principle, a low interest rate should be associated with a longer-dated view of the future. If you think about sort of time preference, it's sort of lack of impatience. And in that case, then perhaps a low interest rate would be associated with sort of allocating resources in a more sustainable way. However, one also then has to look at the evidence of the world around you, and say that the low interest rate of recent years, actually doesn't appear to be associated with long-sightedness, but actually sort of extreme myopia. And I cite... And I think the best example of that is actually China. Which I cite in the book that, and you'll know this better than I do, but am I right in saying that sort of something like half of manmade carbon emissions have taken place since the mid-1990s. And the great-

Nate Hagens (00:26:47):

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That's correct.

Edward Chancellor (00:26:49):

Great bulk of the increase has come from China. And China has had, to my mind, the greatest real estate boom in history. I mean the valuation of Chinese real estate relative to GDP, you can't really tell because the Chinese, needless to say, won't give you any accurate data, but it looks to be roughly on par of valuation wise with the Japanese real estate public economy of the 1980s. But that has been accompanied by an extraordinary building of residential real estates and also of infrastructure and funded with debt at very low rates of interest.

(00:27:43):

So I mentioned in passing in the book that actually the environmental catastrophe that China itself has unleashed in the last 20 odd years has been encouraged by these extraordinary low rates of interest. Otherwise, at higher rates of interest, you wouldn't have had the credit growth and you wouldn't have had the investment boom.

(00:28:07):

And bear in mind, China's investment was running at roughly 50% of GDP. And Chinese cement production - as you know, conventional production of cement is very polluting, and yet Chinese cement consumption per capita was over a ton per capita, roughly on par with where the Spanish got to when they had their crazy real estate boom prior to the global financial crisis. But in Spain had a population of 30 odd million and China's population was 1.3 billion. So that was a lot more cement and a lot more emissions.

Nate Hagens (00:28:53):

This is our first conversation, Edward. So you don't know a lot about my views, but here's my meta view on finance, bringing back to what you just said. There's something in ecology. You mentioned before we hit record that you're studying some of the things of Howard Odum. Howard Odum had a theory on the fourth law of thermodynamics, which he called the maximum power principle, which states that organisms and ecosystems in nature self-organized so as to better degrade an energy gradient.

(00:29:33):

In other words, energy is the currency of life. And it is true that in nature, a tree will grow the right amount of leaves, not to be the most efficient or not to grow the most

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amount of leaves, but to have the right amount to access the amount of sunlight with all the shadings and everything else. I would argue that finance is a tool that humans use as a social contract to increase our cultural metabolism to access energy in the same way that a tree grows the same amount of oak leaves.

(00:30:13):

So just hypothetically, let's say that 50 years ago debt was not introduced in a massive way globally and for whatever reason we humans had no access to debt. Then as resources became more difficult to extract, we would've had to tighten our belts. We would've had to conserve and innovate with higher resource prices. But instead, we went a different route.

(00:30:41):

We used finance as a way to turbocharge the size of our economies, our cement production, the whole thing. And as you said, a long-dated view of humanity and sustainability would have a higher interest rate, which would've acted as a dampening feedback on our consumption and growth. But in order to keep the mouths fed and keep our consumption going, we did the opposite. We had very, very low interest rates. As you write about in your book, this might be arguably the biggest bubble in the history of our species because of what central banks have done. That was a mouthful. Do you have any reaction to that?

Edward Chancellor (00:31:25):

Yeah. Well, I mean, when you mentioned Howard Odum's idea ecosystem arranged to extract energy and how a tree grows to an optimal height with resource limitations and gathering energy work from its leaves and so forth, immediately it reminded me, as I mentioned in the book, I don't know when... You must go through New York from time to time. You see these little skinny towers? And these skinny towers that almost touching the sky, these tiny little needles for billionaires. And they strike me as being a tree that has grown too tall.

(00:32:18):

Well, I went talk about the misallocation of capital in recent years in VC. I mean, imagine that we... On the one hand people worry about CO2 emissions, next hand, we venture capital funding space travel. I mean, space tourism. So it doesn't really make much sense. And go back to China and then you see that China becomes a sort of wasteland as large parts as it given over to building and then discharges go into the

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sea, creating these dead zones there. As I say and bear in mind, actually, now it occurs to me that we talked earlier about Soviet Union. As you know, Soviet Union was the worst as far as I understand, the worst polluter of all time. And I'm not saying that the absence of interest in Soviet Union would directly related.

Nate Hagens (00:33:22):

Well, not worse than China.

Edward Chancellor (00:33:27):

Oh, yes, probably not worse in terms of emissions, but worse in terms of just degrading your environment. I mean, from what one read reads sort of pools of crude oil lying around. If interest encourages scarcity and prudent use of resources, then actually a higher interest will get you closer to a more efficient extraction of economic output for the unit of energy. I mean, that's an idea. Can I say, Nate? There's one idea that it'd be interesting to hear your thoughts.

(00:34:20):

I haven't really embedded it, I haven't put it in the book, which is namely this, if one buys a Howard Odum view that all economic growth, all economic activity results from transfers of energy and extraction and use of energy. And we can clearly see that over the last 300 years, a shift from what sort of coal-fired industrial revolution in Britain and then in oil and natural gas to the current day. And we're now moving... Regardless even if carbon emissions are not your primary concern, there is a scarcity to those natural resources in particular to oil. And oil becomes more and more expensive over time to extract. You can no longer just stick a rig in Texas or in Saudi and pull it out at almost no marginal cost.

(00:35:36):

So if you take that view, then actually you could argue that the trend rate of economic growth in the economy is naturally declining. And if that's the case, and if, this is big if, if the interest rate were connected to the rate of economic activity, which is I half-warmed that argument in my book, then you could say that this is an underlying... That the rising cost of energy extraction or declining energy return on investment actually would be linked to a decline in interest rates. I didn't actually put that in my book partly I think because I came to the whole Howard Odum thing just as I was coming to the end of the book, and I didn't know how I could integrate it. But

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I think it's an interesting thought. I mean, I'd be curious to hear your thoughts on that subject.

Nate Hagens (00:36:44):

I have a lot of thoughts on that. I think you're right that we are kicking the can of the... Okay. So productivity, in my opinion, is a function of innovation and technology combined with the massive energy surplus we get from fossil fuels, which the math of it works out to 500 billion human labor equivalence per year relative to 5 billion real humans and the mineral contributions. And we've taken those latter two things for granted because we've always had more, and it's generally been cheaper. But productivity growth peaked 50 years ago at exactly the early '70s when also oil production growth peaked. We still have positive productivity growth, it's growing every year, but it's growing at a declining amount.

(00:37:47):

And what we're doing is we're trying to keep all the demographics and the various aspects of society fed and happy and stabilized, by stimulus checks by artificially low interest rates, by too big to fail guarantees. And so paradoxically at a time when we should be getting biophysical signals of inflation and higher interest cost because resources are getting more scarce, we are not willing culturally or politically to admit that. So we're doing the opposite, like we're solving a credit crisis with more credit story, and we're reducing interest rates and guaranteeing other things and not allowing what you referred to early as the creative destruction, and in doing so, building a bigger bubble.

Edward Chancellor (00:38:47):

Yeah. Well, think back to how the Europeans responded to Russia's invasion of Ukraine last year. Natural gas prices went through the roof. All these governments that are putatively committed to Net Zero 2050 or they say so. And yet the moment gas prices, I'm talking about natural gas prices for home eating, started to rise in Europe, the governments then availed themselves of very cheap, borrowing... And this was when the central banks hadn't really given up their quantitative easing projects or at release were right at the end of the quantitative easings and the cost of government debt remained very low, and the government were just going out and borrowing to

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subsidize not new energy production but actually just to subsidize consumption as it stands.

Nate Hagens (00:39:46):

Exactly.

Edward Chancellor (00:39:47):

And that seemed to me... Well, I mean, I can sympathize if a person has trouble heating their home, but for a societal basis, I got the subsidy, I didn't need it. It didn't make any sense at all. And actually, of course, what does it do? It prevents you from actually economizing in your energy use. There's another... I mean, you probably picked this up and I probably mentioned it in passing in the book, but the very low interest rates as you know encouraged a lot of venture capital or high-yield debt investment into these US fracking and the shale. And perhaps you have a different view, but it seemed to me that those were businesses that didn't actually generate the amount of return required to keep them in business, which is why firms like Chesapeake went bust. But they did in the near term give you a little boost of extra oil production at an uneconomic cost that kept the lid on oil prices in the near term.

Nate Hagens (00:41:04):

Yeah. I totally agree. It's so interesting to unpack this in real time with you because we don't know each other, and I didn't know that you knew about the term energy return on investment. I wrote my PhD on that topic 15 years ago. So in the beginning of your report-

Edward Chancellor (00:41:24):

By the way, Nate, I did a podcast the other day with this guy called Paul Chapman. Does that mean anything to you?

Nate Hagens (00:41:30):

No.

Edward Chancellor (00:41:30):

See, he does podcasts about commodities. Anyhow, he's been pursuing that, interviewing people on this EROI.

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Nate Hagens (00:41:41):

Oh, don't get me started on EROI. I think it is a fantastic concept conceptually that we can create money, but we can't create energy. And the energy has a cost in biophysical terms, not in dollar terms, but to try and make decisions on it and use it as a fine laser digit that a 10 to one EROI is better than an eight to one, it's fraught with peril, in my experience.

Edward Chancellor (00:42:12):

Because a lot of judgment goes into the comparative destinations.

Nate Hagens (00:42:18):

Into the boundaries that you use on defining things. Yes.

Edward Chancellor (00:42:22):

Yes, because I hear there is a lot of debate, isn't there, going on between what's the EROI of onshore wind, offshore wind, solar panels versus EROI of your conventional... And I think depending on which way you lead, you can come up with... Give me the EROI you're looking for. Is that unfair?

Nate Hagens (00:42:46):

Exactly. That's exactly right. But here's why it's important is because our society, and our institutions, and our cultural stories, and our expectations were built on something like a 20:1 EROI or higher in aggregate. So friends of mine who are experts in this think that the inflation rate, setting aside central banks for the moment, the inflation rate of a society should be one over the EROI.

(00:43:20):

So if the EOI is 20, then inflation should be 5% a year. And as EOI declines from 20 to 15 or down to 10, inflation will go up because there is harder access to get copper and oil and things like that. Of course, that's not what happens in reality because by decree, central banks declare what the interest rates are. So that is the huge gauntlet that I think we're facing now. The biophysical gauntlet of energy and resources are telling us one thing, and interest rates and money are telling us another thing and we're headed for a giant reckoning between those.

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Edward Chancellor (00:44:11):

So, I mean, a couple of thoughts. One is something I took away from Odum where he talks of inflation, if you remember, being the decline in the value of money relative to a unit of energy. So that, I suppose, because if you think about it, money allows you to... Because it can be translated into things that produce energy, it actually allows you to transfer energy. So I can see if you have too much money relative to a declining EROI or a declining source of surplus, then you'll get to get inflation.

(00:44:54):

The other thought I think, and why I said earlier I only give a qualified approval to the notion that interest is linked to economic productivity, because you see in the ancient world, and this is pointed out in the great book by Sidney Homer and Dick Sylla, History Of Interest Rates, which goes back same time period as my book, back to Mesopotamian, what they describe as this U-shaped. And did you pick that up in the book? I think I included a chart in my book from Homer and Sylla. This U-shaped interest rates over time, so whether it's in Mesopotamia, in Greece, or in Rome, that each time civilization goes into decline as it reaches a late stage, interest rates are very low, and as the civilization starts to decline, then interest rates start going through the roof. And that you could see that would make sense because as a society is lacking-

Nate Hagens (00:46:07):

Could it be because of the lack of trust suddenly? That what is the role of trust in interest rates?

Edward Chancellor (00:46:14):

Yeah, I think it could be lack in trust. It could also be greater risk. And the risk might also include debasement of the currencies or inflation that tends to take place as society's collapse. And it could also be linked to the scarcity of resources. So in fact, on the one hand you might say that the interest rate is linked to our productivity, but also it's linked to the scarcity of resources. So if you have a society that's collapsing, then resources become more scarcity. If you want to borrow my sheep or if you want some grain from me to carry on farm, I'm going to charge you more because it's no longer as abundant as it was before. So any number-



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Nate Hagens (00:46:56):

I now have to pay you back triple mash. Mash, mash, mash,

Edward Chancellor (00:47:00):

Yes, something like that.

Nate Hagens (00:47:04):

So that's not a good foreboding, Edward, that you said that historically, there are U-shaped interest rates and right at the time of civilization upheaval, interest rates are very low. What does the concept of massive, a few years ago, massive up to 16 or \$17 trillion worth of negative interest rates in Europe? That's no longer the case now. But under what biophysical scenario does a negative interest rate make sense other than speculation and the momentum of central bank's past decisions?

Edward Chancellor (00:47:49):

Well, I mean, if interest is the price of time, a negative interest is putting a negative price on time. It's turning the clock backwards. And so in Europe, you had a sort of Alice in Wonderland world. And I mentioned so you know that you could actually buy 30 year, let's say, Swiss government bonds with negative yields in the expectation of capital gains because rates will still continue to get bad.

(00:48:25):

You were buying negative yielding bonds for capital gains and holding conventional stocks for income. I mean, how crazy does that sound? No one caring about yield. The fact that that in Europe, not only were normal companies able to borrow negative rates, junk bond rated companies borrowed at negative rates. So there was no pricing of risk. And there is another... I mean, this linked to the negative rates, but a point that Bill Gross, who an ex-PIMCO, so-called the old Bond King, he was saying roughly 10, 12 years ago that these very low rates don't make any sense at all because a healthy banking system needs positive carry. And by getting rid of the positive carry in the banking system and in the financial system at all, or at least putting the carry down to very low levels in which someone's taking on a huge amount of duration risk or interest rate risk by buying a long-dated bond, you are building up a huge amount of risk in the system.

(00:49:41):

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So I think that these negative rates and the ultra-low rates are, to my mind, the end product was the COVID market mania of 2020 to 2021, which Warren Buffett's sidekick, Charlie Munger, said was the craziest financial markets in all of history. Now I don't know how much in history Charlie Munger is. He's been around for a while. I've read quite a lot of financial history, and I can't think of any markets in aggregate that were quite as crazy as what we saw at the beginning of last year.

Nate Hagens (00:50:25):

Well, you stay tuned for 2024 and 2025. So in your book, you have a chart at the very beginning, I don't know that the screen can see this, but we'll share it, that shows 5,000 years of interest rates and with the exception of the very beginning, which is 3,000 BC, the highest and the lowest interest rates have been in the last 40 years. What is up with that?

Edward Chancellor (00:50:51):

Actually, I said, the two several countries compete for highest rates. I think Germany had very high rates right at the end of its hyperinflation. I think that Brazil and Argentina, in their hyperinflations, they had very high rates. And now you're not going to get a hyperinflation without a paper currency. And so clearly the very high rates linked to the arrival of fiat currencies and high inflations. And then the very low rates also linked to the fiat currencies in that once you move into a world of fiat currencies, then the central banks have a much greater say, determinant of what the interest can be.

(00:51:50):

I mean, they used to talk about the so-called Zero Lower Bound. And then they discovered actually, "Hey, we can take interest rates below zero." In a world in which the units of money were restricted by some hard rules say, such as under the gold standard, you are going to have much more restricted movements in interest. And in fact, under the gold standard, what you see interestingly is you had very stable long-term rates and very volatile short-term rates. And the volatility of the short-term rates was necessary in order for the central bank to make sure that it kept enough gold bullion in its reserves to cover its note issuance.

(00:52:40):

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Now once you move into the fiat money era, we get the opposite. We get more stable short-term rates because central bankers, they don't like economic downturns, whatever. But the net result is much more volatile long-term rates. And so again, that's not a particularly comforting thought because if in the 20th century we saw the lowest interest rates ever and the highest, and the 21st century, we've seen the lowest in history, so the question then would be, do you then make a step at some stage to even higher than we've seen in before? I don't know.

Nate Hagens (00:53:20):

So you also wrote the very popular financial book called Devil Take the Hindmost, which was about historical financial manias. Let me ask you this, Edward. At all of these historical financial manias, people in power were delusional about the risk. Either they were delusional, or they were helpless to the momentum of what was going on in the day. How is this time any different? I mean, you look at the Bank of Japan now has bought 50% of the government of Japan's government bonds. How big of a bubble are we in and how disconnected from reality are the central bankers and the people in charge? Or are they cognizant of the risks that we're discussing, but they're just powerless to avoid turning the heat on for people and getting food delivered, et cetera?

Edward Chancellor (00:54:27):

Well, to go back to the historical manias, as I point out in Devil Take The Hindmost, it's not just that the manias tended to take place with the active connivance of the political authorities who were often sharing in the games. The classic case we see the South Sea bubble in which took place in Britain in 1720, which the government, the company which was run by these crooked people, sort of Sam Bankman-Frieds of its day, they actually just bribed members of Parliament. They bribed the King of England in order to get their scheme off the ground. And you see that right through to the Japan's bubble economy in which politicians are involved.

(00:55:13):

I think in the recent years, I think the very low interest rates and the sort of illusionary wealth that they've created, the virtual wealth suits the politicians absolutely fine because the politicians have extremely short time horizons, whatever they say. And so, actually the very low interest rates help, as we used to say, kick the can of various

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problems down the road. If you have incipient pension problem, if you have a society with inadequate savings, then the easiest way to deal with the inadequate savings is to inflate the assets of what saving has taken place, which what's happened in America.

(00:56:10):

I mean I didn't mention it in the book, but I did crunch the numbers a few years back, and what you find is that in the US, a US household wealth as measured by the Fed used to move in line with US net savings. Sort of would make sense. You save and it becomes a piece of wealth. But then over the last 30, 40 years, it's diverged. We have the less we save, the more the interest rates went down, and the more actually the valuation of what assets we had rose. In fact, you had an inverse relationship between wealth and savings. To me, almost a definition of a bubble. That suits the politicians very well.

(00:57:01):

Do the central bankers understand it? I don't think. I think their problem is cognitive. I think that they have models that don't describe the world. They have, I think, I suppose my view, and my background is a historian before going into banking and investment, but my view is that the central bankers, many of whom are drawn from the ranks of physicists and mathematicians, have no real understanding of actually what an economy or a financial system is. It's sort of their understanding is limited to models that do not in any way describe the nature of the complex economic system that we have.

(00:57:50):

And that would explain why, I think that over the last 30 years, I mean look at the epic mistakes the central banks made. They didn't see or understand the dot com bubble. They didn't understand the credit boom at all. They just said, "Hey." With the dot com bubble they said, "We live in a world of efficient markets. Who are we to say that this is a bubble?" With the credit bubble, they said, "Oh well, one person's debt is another person's asset. Hey, who cares whether debts and assets are rising in tandem?" Then when you've got the low interest rates, they said, "Well, oh well these are to do with declining population or something in the real world. We've got nothing to do with that." I mean, even as they were actually going about deliberately manipulating short- and long-term rates to levels that had never been seen before.

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(00:58:46):

Then you get to the position, I mean as I'm ranting now, but then you get a position of the inflation which they unleash, where once again they failed to see it and cognitantly failed acknowledge their responsibility for. So I mean, I think that the central bankers as a community as a whole exhibits some group think and a failure to actually analyze in a modest way, recognizing one's own with humility, the complex nature of the system and the impact that their actions are having on this complex system.

Nate Hagens (00:59:31):

I fully agree with that, but it's almost too late in the game. Because if they really did understand the risks, I think, I mean, what is the way out? We're being squeezed by both directions here, by energy and resource depletion, by geopolitics, by declining real productivity. And look at what happened with the Fed raises in the last 12 months. All of the bonds on bank portfolios, they have paper losses on those things, especially in Europe, they own negative yielding debt.

(01:00:14):

In 2011, Edward, I met with one of the voting members at the time of the FOMC talking about these things. He said, "We have models that look at 2% growth in the future and then we have quarter percent variations up and down from that." I said, "Well, what if growth in the future is zero?" I didn't even say negative, I just said zero. He had this blank stare. He is like, "Well that would be bad." So I think they just implicitly assume that the animal spirits of productivity and human ingenuity will eventually continue to grow. And if we grow, we can pay back our debts and things like that.

(01:00:58):

So I personally have come to the conclusion, which is one of the reasons I liked your book so much, I do think we are living in the greatest bubble of our history, and we are making the bubble bigger by not acknowledging the bubble. Do you agree with me? What do you think?

Edward Chancellor (01:01:19):

I mean, so that's part of, going back to what I was saying earlier, about the interest as a discount rate. Well, if you take the discount rate down to its lowest level ever, you

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are going to inflate the valuations. And what we got was the so-called everything bubble, a bubble in everything. And you can see that going back to what I was mentioning before, the Fed's US household wealth and US household net wealth. It's far above. Its long term average. I think sort of, I'm saying off the top of my head, around 150% of GDP above its long-term average. And that bubble in wealth seems to, as I mentioned earlier, seems to be inversely related to the decline in interest rates. In fact, every time the central banks have met a crisis, whether dot com or Lehmans, each time they've taken interest rates down to a lower level and we've had a bigger bubble following it.

(01:02:29):

I think now, yes, we are at the highest level of net wealth. I looked at the recent data published for this year, and that that's come off really hardly at all despite the big selloff in the markets last year. So if you're going to get mean reversion, I'm not saying you will, but if you're going to get mean reversion, then you've got a lot more wealth to evaporate. And as I say in the book, a definition of a bubble economy is an economy that is dependent on the bubble. And so, because all these income streams are related to the bubble. You and I have worked in finance. Obviously our incomes at the time were dependent on how much financial market activity in investment banking or what the valuations of markets were.

(01:03:31):

So if you are in finance, which in the US and UK have grown to much higher levels of national income than in the past, your income is a derivative of the bubble valuation. Then when you end the bubble, you have to have a massive reallocation of resources. It's probably a good thing, but it doesn't take place overnight and it's not very easy. And there are obviously huge amounts of vested interests in keeping the bubble inflated as long as possible.

Nate Hagens (01:04:09):

So the last big bubble that burst was the 1929 to mid-30s credit collapse in the US and in Europe. But after that, we had 40 or 50 years of growing oil production still ahead of us. This bubble, that is not the case with resources. So how do you see this all unfolding either in the short term with the Silicon Valley, Credit Suisse current banking crisis or this decade with this larger bubble? Are we going to have hyperinflation or deflation? Will we switch from a 2009 situation of a too big to fail and find that we're

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going to be in a situation of too big to save like France or Japan or something like that? What are your speculations on all that?

Edward Chancellor (01:05:11):

Well, first of all, the thesis of the book was that these outflow rates had got into all the cracks of the financial system and of the economy, and that therefore the system would be extremely resilient, or so extremely fragile or non-resilient to any interest rate prices. And that's what we've seen over the last year. The market selling off, and then we had the UK pension funds almost going bust. Then we had the cryptos. I mean, I know it's a sort of a laughable sideshow, but you had the sort of crypto winter. Then more seriously you have the problems in the regional banks with Silicon Valley Bank going under. As I point out in the book, the ultra low rates created a huge amount of duration risk or asset sensitivity, that market sensitivity to changes in interest rates. In a way, all the problems we've seen to date are linked to this duration risk or interest rate risk. And I think slowly, the policymaking world, which appeared to have been oblivious. As you name, the investment world, people have been talking about this for years, but I noticed that this week the IMF chief said, "Oh, the world faces, Central Bank should be careful what they do. There are a lot of risks out there. There's a lot of interest rate risk." So that's one point is I would expect if the central banks continue raising, you will uncover more problems in more different areas and you won't necessarily know where they are. But my own view is it's not my job to analyze the entire world, but to give people a framework to start analyzing their own areas.

(01:07:11):

I think one of the problems that once you realize that the question is sensitivity of the system to interest rate hikes, which is an inherently deflationary impact, is that the central banks will then become reluctant to tighten or they've lost, they're not, I mean I think they already are, they won't admit it. But you can see that interest rates are massively negative in real terms and have been over the last couple of years. And if you can't use the interest rate lever to control inflation, and let's just assume that governments will continue to be fiscally profligate, then you're actually in danger of having much stronger inflation.

(01:08:07):

And then there's another problem to think about, which is that the central banks, they not just have an incentive to keep interest rates low, but they were already going

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back to use their balance sheets to support tottering financial institutions. So the Bank of England came out to help to step into the UK gilt's market to buy gilts when the pension funds were getting bust. Then now the Fed is offering, I mean offering this financing to US banking whereby they're taking the collateral at, I think they're taking it at par value rather than at market pricing. I can hand over to you \$80 million of market price of collateral and get \$100 million back from the Fed. So the Fed is then taking on more ... The central banks are taking on potentially more security risk on their portfolios at a time when they're already losing money on their portfolios.

Nate Hagens (01:09:08):

This is what I meant by too big to save is the central banks of the world are acting kind of like leverage bond funds in cahoots with the governments that they're associated with. But how does that end?

Edward Chancellor (01:09:23):

Well, I mean, so people are very blithe about central banks not having negative equity. The Reserve Bank of Australia has also already announced that its equity has formally been wiped out. The Bank of England, which has an indemnity from the UK treasury for its asset purchases, it's quantity of using asset purchase, it recently sent to Her Majesty's Treasury a note saying, "Well, if we were to run off our securities under such a scenario, we may have losses of 200 billion pounds, which we expect to be indemnified for." Well, that's actually quite a lot of money. I mean, it's roughly, it's not quite as much as the government spent on the COVID policies in that region. So either you get a situation where, as far as I see it, the central banks just invert commerce, print money or operate with negative equity. But there's a situation where if they're printing the money to make good their shortfall, then that would seem to me inflationary or the taxpayer has to make good, which actually would be hugely painful. (01:10:51):

The one other point I'd make, Nate, is that over the last ... I mentioned to you, these very ever lower rates to keep the bubble afloat over a 30-year period from the dot com bust, well really from the LTCM hedge fund bust in the early fall of '98, each time rates have been brought lower, got a bubble, then we brought it lower. So the bubble requires ever lower interest rates. It is not just enough to say, "Okay, we're not going to be as high as we would've been." We're going to have to have lower interest rates



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because you have to inflate the bubble to give people the wealth that their savings and the returns on those investments. The economy is entirely in the bubble economy, it's hooked on capital gains, and you can only produce those capital gains by ever looser the monetary policy.

(01:11:49):

Now I don't think that ... so I think that ... I don't know exactly what's going to happen next, but I don't think over the next five years, it's going to be smooth sailing for sure.

Nate Hagens (01:12:03):

Well, yeah. So one other point that we didn't talk about ... well, there's a lot of points we didn't talk about, but if you look at the increased duration risk because of the raising of interest rates, that's a problem for the viability of the financial system. But also the amount of government debt like the United States is now over 32 trillion in debt. And that's fine if we're paying 1% interest, but if we pay 5% or 7%, some historical average interest rate, we're going to be paying so much of our annual income on debt service that it will be untenable. So that's another reason that we want to have low interest rates.

(01:12:46):

But let me ask you this. I agree with you. I think the default path is we will "print money" to kick the can further. You are a financial historian. Are there any examples in history that come to mind of a similar tenor where people got austerity and realized this, and instead of printing money, they actually took the economic pain, had the creative destruction go on, and then they came through that and had some other options? Or does it always end with print until something implodes in the culture?

Edward Chancellor (01:13:32):

I was thinking. Actually, I'm reviewing a new book on inflation. I was thinking about when does inflation come about and when does it not? And actually, it's curious. So for instance, in the US during the Civil War period, the union was issuing these greenbacks. Greenbacks were depreciated in value. But then after the war, they actually retired the greenbacks at their old par values. So in other words, Washington actually decided to make good on the dollar.

(01:14:14):

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Now it's also true after in the Napoleonic Wars, Britain had ran up a huge amount of debt to fight Napoleon and the gold conversion of bank notes was suspended. After the war, they actually brought back the bank notes to par with gold and restored convertibility. After the first World War, Britain actually, again, having gone off the gold standard, did actually go back onto the gold standard at its old par, admittedly creating quite deep problems.

(01:14:53):

And I'm thinking, okay, so that's one set of problems, cases, where these countries actually didn't go down the sort of default or the inflation route. But then the other cases after the first World War, you had hyperinflations in Austria, in Hungary, in Germany. And so, what are the difference? It's that the victors actually can hold onto their currencies and will actually make great efforts. Whereas the demoralized countries that have been defeated, whose societies are fractured and whose economies are weak, are more likely to take the inflation route or even the hyperinflation. So you have to, I mean, we're not fighting a war, but you have to think, are we a winner or are we a loser? Because if we are a loser-

Nate Hagens (01:15:58):

I would argue that we are fighting a war. We are fighting a war right now. I mean, we're making the biophysical face shift both from a unipolar to a multipolar world with Russia and China and others having a say. Also, I think the Ukraine war was kind of a shot across the bow from the narrative of money and technology or powering society to resources, particularly energy, are really important. Russia and Saudi Arabia together account for 45% of world oil exports. That oil is, that's available for purchase. And so, I do think that that war and geopolitics are also part of this story that you're telling.

(01:16:48):

So from a monetary perspective, given all of your readings of history, what sort of broad guidelines, I'm not asking for an antidote to the current bubble because that would be too large of a question, but what sort of broad guidelines might you offer from a historian's perspective on a more durable, stable monetary system in the future?

Edward Chancellor (01:17:17):

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Well, I'm glad you didn't ask me how we would get out of this current impasse because I think that's-

Nate Hagens (01:17:23):

That's too big of a question, I know.

Edward Chancellor (01:17:26):

But I have been thinking. I think we need a new type of monetary unit. I'm not saying go back to the gold standard, but this fiat currency that we've been playing around with for the last 50 years since the collapse of Bretton Woods, it's associated with a period, initially a period of very high inflation, and then these series of asset price bubbles and financial crisis. And as I mentioned, as we've constantly talked about, it's also associated with us handing to a committee of people at the central banks, the power or control over the most important price in the economy: the price of time, the interest rate. We can laugh at the ridicule or pull our hair out at what the central bank has done, but no individual, they've been handed an impossible task.

(01:18:46):

And so I think we have to at some stage get back to a world in which a monetary unit that cannot just be increased at will, whether by a central bank or a commercial bank. And we probably need to deal with the leverage of a fractional reserve banking system, which put really from, I don't know, from time immemorial, fractional reserve banking, has its own weaknesses. That you have too much leverage and you have an asset liability mismatch, which is what happened to Silicon Valley Bank. The answer, we can design a financial system in which the banks actually don't take leverage. Your deposits are not levered into long-dated loans. And I think we'll have to go down that system once we've got rid of the current mess. There is a future in that for FinTech if you want. There is a future in that for banks going much closer to what's called the Chicago model, where they simply own short-dated government debt to cover their liabilities. And then the credit activities can take place out the banking system, and which the losses are contained.

(01:20:34):

In such a world, if you limit the growth of the core money, you should then get an interest rate which more closely matches the savings, the actual savings and actual demand for savings in an economy. And therefore, I don't know if there is such a thing

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as a natural rate, but you can see that there is a rate of interest, which isn't that manipulated if you went back to a world, so to speak, where the currency is hard in a way it isn't today.

Nate Hagens (01:21:10):

I agree with that and it's an incredibly complex question. I wrote a paper 10 years ago that referenced the annual interest of forests. That grow is 2.8% to the volume of the forest grow at 2.8% a year. That's what can be sustainably-

Edward Chancellor (01:21:30):

Yeah, I'd like to see that. I'd like to see that. I'd like to see that paper.

Nate Hagens (01:21:33):

Okay.

Edward Chancellor (01:21:33):

And I mentioned, didn't I, that Karl Marx sort of teases, he refers to the tree theory of interest, but there was a German, is he called Arnd? A-R-N-D or something like that, a German economist of the 19th century, he said the interest arrives from nature and is linked to the annual growth rate of trees.

Nate Hagens (01:21:56):

But we're subsidizing that with all kinds of things that are one time endowments. So, I refer to it as the carbon pulse, which is now starting to, very soon, to decline. Still very, very powerful. And the amount of wealth that we get from that dwarfs the 2.8% interest on forest growth. So, I agree with you that in the future there's got to be some... There's two questions, how do we navigate the current bubble without destroying society? That is its own problem. And then, what is a more sustainable monetary system for future humans? And I think that that second question there has to be some biophysical tether to land productivity, energy, something, because to run the world's kind of like a casino or a leverage bond fund and when you get in trouble you double down and leverage more, is a recipe for disaster.

Edward Chancellor (01:23:00):

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Yeah, I think, Hayek, the Austrian economist, and I think, Ben Graham, the security analyst, you probably know this, they both, as far as I can remember, suggested a currency reform in the 1930s of a commodity-based currency. And I mean, as for having land as a basis for a banking system, that was actually the original idea of John Law, who adapted it slightly to create the Mississippi bubble, said the trouble is if you create credit on land, then you've created a perfect bubble machine. So, you have to be careful of what sort of limitations you put in.

Nate Hagens (01:23:48):

Well, let me ask this then. Forget about all the details. Is the creation of bubbles itself part of our human genome?

Edward Chancellor (01:24:04):

Possibly. I think, we would probably have bubbles if it weren't for monetary excess because people can get excited about things, and because particularly, new technologies have first mover advantages and excess returns like Microsoft did in the '80s and '90s. They got the whole sort of tech bubble and dot-com boom gang. And that's not necessarily a bad thing in which you have a period in which people are flashing around for what are all the myriad opportunities available to us. I think, the trouble is that when it's underwritten by an easy money policy, it goes way too far. And then what we've done the last 25 years or so is we, I'm just repeating myself, but we pushed ourselves further and further off course. So, I think, that having Silicon Valley come up with some ideas, and it doesn't really matter if nine out of 10 ideas fail if one idea is good one. But if you have too much money going to Silicon Valley, you have a massive waste of resources.

Nate Hagens (01:25:28):

Do you think that between now and the eventual popping of this bubble that central bank digital currencies will be a reality so that governments can control, maybe they even would have your currency have an 18-month expiry date, "You have to go spend this before it expires," in order to boost aggregate demand, what do you think about that possibility?

Edward Chancellor (01:25:53):

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Well, we, lovers of freedom, are quite worried about the potential for CBDCs because the central bank can look into every one of your transactions and cut you off when you are doing something that is not socially approved and, as you say, actually even threatened to take your money away if you don't spend it, which is just returning to negative interest rates. It's a massive expansion of the state into people's personal lives and it's, to my mind... Yeah. I mean, people have referred to CBDC as a digital panopticon. Panopticon being the prison designed by Jeremy Bentham, in which an individual prison guard standing at the top could observe every action within the prison. And I think that's where China seems to be going pretty fast. And that would be very worrying if our central banks and politicians were to go down that route.

(01:27:04):

I was talking to a friend of mine the other day who sits in the British Parliament. He says that the bank in England is pushing through on its CBDC plans without any parliamentary scrutiny, which I think is extraordinary. That if money is a sort of power in a society and the CBDC gives you the greatest power that has ever been known to man, that you should hand all that power to bunch of people who've so conspicuously failed in recent years without any oversight, is extremely worrying. Having said that, a well-designed CBDC backed by government debt, say it wasn't just conjured out of the air, could be a hard money. And when I say well-designed, that would mean that it could only increase by 3% or 4% a year. And you can see, that would take the world of the Chicago plan fully backed money into the digital sphere.

(01:28:19):

It would be a nightmare for the commercial banks because they would lose all their deposits to it because who would want to keep their money at Silicon Valley Bank or whatever, when you can keep it on a central bank app that is more easy. But for me, all the convenience of those functions would be more than outweighed by the loss of privacy if a central bank had complete control over it. And obviously, we've gone through number of unprecedented restrictions in our liberties in recent years. So, I think, that's probably something one wants to lose a bit of sleep over.

Nate Hagens (01:29:09):

We've covered a lot, but at the same time, we've really only scratched the surface. I think followers of this podcast understand the centrality of energy and resources and the environment to our lives, but we take for granted the price of time, which is the

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price of money in our global economy. If you have a few minutes left, I'd like to ask you some personal questions that I ask all my guests, just a few of them. Given your lifetime of, well, scholarship on finance and financial issues, and your recognition that we're living through this incredible Wile E. Coyote financial bubble, do you have any personal advice to the viewers of this program at this time of pending global economic crisis?

Edward Chancellor (01:30:03):

Well, from an investment perspective, from what we've been discussing, it seems to me to make sense to consider the inflation proofing of your investment. One of the things like, you must have picked this up on reading Howard Odum, that gold actually has an extraordinary high innate energy content and, in a way, Bitcoin, as digital gold, has a sort of fabricated energy content, completely wasting resources. So, it makes me feel quite feeling that one wants to hold gold in the current environment, a sort of balance to the portfolio. And gold wasn't doing particularly well last year in dollar terms when the dollar was strong but seems to be coming back. You probably have stronger views on that than I do on this, but it seems to me that the energy transition is people having... I mean, one can't believe it, but the policy makers seem to make commitments that five minutes of analysis would tell you are impossible to meet.

(01:31:22):

In which case, I think, that conventional energy is remain, which has done well in the last couple of years, is required and will deliver as it's done over last year or so, decent returns beating the market. And I think that probably holds true for a broad sway of raw materials because of low investment in recent years. So, yeah, during the German hyperinflation, there was a saying that people, there was what they called [German], a flight into things of real value. So, we've been living in a world in which we've ascribed value to objects that are purely virtual such, as your cryptocurrencies or your non-fungible tokens or rubbishy works of contemporary art, and you want to positioned my mind portfolios in assets of real value, and if you can, also assets that are robust and robust to questions of inflation or rising interest rates and so forth.

(01:32:53):

I think that now that the treasury inflation protected securities have a positive yield, that makes them more attractive from an investment perspective, notwithstanding the fact that the governments will be very low to pay you if inflation runs out of control.

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But I'd steer clear of all nominal assets really and all purely financial assets. But that's my own preference.

Nate Hagens (01:33:29):

So, I'm sure we do have investors and speculators and asset allocators listening to this show, but most people are pro-social, thinking about themselves and their communities in this time ahead and what I refer to as The Great Simplification, investments aside, do you have any personal advice on how to cope or prepare in these times?

Edward Chancellor (01:33:56):

Well, I always think it helps live quite modestly. For years, I just tell my wife, whatever you think you are worth, cut it in half and live off that. So, in other words, don't overstretch yourself and lead a simpler life as possible, and in a way, one can lead reasonably good. And I'm living in the country, I think I've seen anyone for four days. So, you can lead quite a comfortable life. And I haven't spent any money. I think it's true extravagance and luxury. And I suppose, this is what I've done myself, I was brought up in the country, but I think that life will be easier in the country than in cities going forward in the difficult times ahead.

(01:34:56):

Again, I think back to the hyperinflation where the poor, wretched Germans are starving in these cities, in Berlin, or wherever they... They would go out in the middle of the night and steal the turnip. They would walk 50 miles to steal turnips from the farmer's field. Now, I'm not saying we're there, but the point is that there is actually a certain value in having a sort of sustainable and quiet life, and a rural life. I mean, after this conversation, I'm going to go off and plant my vegetable seeds. So, we better wrap up shortly-

Nate Hagens (01:35:35):

After this-

Edward Chancellor (01:35:35):

... otherwise, today won't be done.

Nate Hagens (01:35:38):



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Yeah, we better wrap up shortly. You could never guess what I'm going to do after this conversation. I am going to get in my car-

Edward Chancellor (01:35:46):

You're going to take your dogs for a walk.

Nate Hagens (01:35:47):

No, I did that before this conversation. I'm going to rush down to the post office box where my 25 1-day old chickens have been FedExed to me and I got a call this morning and I have to go get them, and it's 18 degrees here Fahrenheit, and I have to immediately put them under a heat lamp. So, it's my new chicken flock for this year. So, another reason I'm wanting to watch the clock. So, would you-

Edward Chancellor (01:36:20):

I have to say, I hope you know that chickens attract rats. So, as long as you're prepared for rats.

Nate Hagens (01:36:24):

Oh, we have a huge rat problem. Not to give too much information, but my last crop of chicken babies, the rats got a third of them, they ate through the plywood. So, now, I bought some spray foam to cover the holes that is unappealing to mice and rats. So yeah, too much information. But I agree with you on the rural existence. Do you have any recommendations to young humans that are learning about energy, and the economy, and Bitcoin, and interest rates, and the world that they're inheriting with climate change and everything else? Do you have any recommendations to young people?

Edward Chancellor (01:37:08):

Well, I think, if they're listening to you, they're on the right line. So, I spent the first decades of my work, thinking about finance and economics without taking on board energy and the role of energy, and the more I think about it, the more important it is. And I think, yeah, listening to your podcast is probably quite a good thing. I think, one of the things I find nowadays is, and possibly among the younger people. I mean, not actually in my own family or among my extended family, but one hears that younger

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people are less tolerant of argument and debate and perhaps prone to fixate on ideas that are quite scary and therefore get a bit hysterical.

(01:38:05):

And look, in a way, we've been obviously, have a lot of thrust of our conversation, has been worrying about the state's financial system. However, I think that one needs to keep an open mind and one needs to,... You cannot make any type of intellectual advance or you can't even really hold a decent view in your head unless you are prepared to be skeptical. Or you can be skeptical of everything we've said, and that's absolutely fine.

(01:38:35):

I mean, it's the loss of skepticism in the current environment that really... And obviously, one finds it a bit among the young. And in all these sort of hypercharged, ridiculous debates, which we already have mentioned because you get a head chopped off. You need to be open-minded and skeptical. And I think, also, I mean again, I'm plugging a case of being, one of the ways of being open-minded is to read history. If you read history then you see, as Jim Grant says, "The man keeps on stepping on the same fork."

(01:39:14):

So, we keep on making the same mistakes and our behavior in the past is obviously, not being quite exemplary, and we can see similar patterns. And in a way, that should also give you hope because however crazed we are today, both in our society and in our finance, sort of some or other, there is an end point, and at an end point there is a regeneration. And history is, in a way, easier to deal with because it's past and therefore you don't have to live the pain or worry about the future. As I say, skepticism and some sort of historical balance is probably, I think, most vital today. Otherwise, you'll lose your sanity.

Nate Hagens (01:40:00):

I like that answer. And in subsequent email I will ask you to recommend five or 10 of your best history recommendation books and I'll put those in the show notes for people to check out. So, we just met on this conversation, so hopefully this won't be too personal, but I'm just curious, knowing all this living in the countryside in England, what do you care most about in the world, Edward?

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Edward Chancellor (01:40:33):

Well, I tell my wife it's my dog, but I'm really just teasing her, aren't I? But my dog is-

Nate Hagens (01:40:46):

Not so much. I think the dogs would pretty high.

Edward Chancellor (01:40:46):

Dog and wife. I'm a wife and dog man at heart.

Nate Hagens (01:40:52):

Okay, excellent. I have four dogs and they are very close to my heart. Second to last question, sir, if you could wave a magic wand and there was no personal recourse to your actions, what is one thing that you would do to improve human and planetary futures?

Edward Chancellor (01:41:19):

Well, I suppose, given what we're talking about, I'm surely everyone gets the same answer given where we are today, that you'd like a source of energy that was plentiful and non-polluting. But in my field, going back to what we were saying earlier, I think I would like a form of money that couldn't be manipulated like the paper money is, and that therefore, would give us more stability, financial and social. I haven't said it so far, but the social hysteria that we see today I think, is actually linked in some weird way to the corruption of values created by these monetary distortions. We obviously see that in times of high inflation because obviously, the Germans, as they keep on saying, went nuts during the hyperinflation in its aftermath. But even with this monetary manipulation not associated with hyperinflation, I think, it sort of unloosens the buttons of society. So, I suppose that's wonderful, and I would like to see.

Nate Hagens (01:42:43):

We would need both, right? Because if we had abundant energy that was clean but it was tethered to leveraged financial system that would allow it to happen faster, it wouldn't work. So, we would need both. We need the sustainable, cleaner energy and we need a more cordoned off financial rules system, I think. Excellent. This was a great conversation. What are you doing now? Are you writing another book? What topic is burning for you?

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Edward Chancellor (01:43:21):

I mentioned Jeremy Grantham. My current project is to help Jeremy write his memoirs. So, in fact, at the moment, I'm speaking to him and we are sort of gathering information, and then here... Oops. I've got all his quarterly letters in three volumes of these. So, that's going to be my project this year. Hope Jeremy doesn't let me down. And then, I've got a couple of other ideas in the pipeline, but actually, the Jeremy project will keep me going for the year at least.

Nate Hagens (01:43:59):

Excellent. Thank you so much for your time and let us definitely stay in touch.

Edward Chancellor (01:44:06):

Okay. Nice to speak to you. Yeah. And send me your references. I'll read the stuff you sent me, but the other thing, I'd like to read the thing about the interest of trees, it's right up my street. Bye then, Nate.

Nate Hagens (01:44:19):

I will do that. If you enjoyed or learned from this episode of The Great Simplification, please subscribe to us on your favorite podcast platform and visit [thegreatsimplification.com](http://thegreatsimplification.com) for more information on future releases.