

Jacob Morgan 00:00

Hello, everybody, welcome to another episode of the future work podcast. My name is Jacob Morgan. I'm an author, speaker and futurist that explores how the workplace is changing and what the future of work is going to look like. I do that by interviewing authors, business leaders and executives at companies around the world. Usually I speak at a ton of conferences and events every year. And these podcasts are really a great way to kind of go behind the scenes to hear directly from these leaders, to see what they're doing in their own respective organizations and to get their unique and candid perspectives and thoughts on these various topics. So you'll find that every episode of the podcast usually features a new guest and explores a new topic. The topics can be pretty broad, anything from millennials in the workplace, to technology, to economy, economics, to workplace and organizational design. I mean, you name it, and I cover pretty much everything I can here. And the guests are very interesting people. They are chief talent officers, chief technology officers, some CEOs, information officers, and I also like to bring in a couple of authors that have some interesting books and takes on various perspectives. Now before we get into this week's episode, I of course, have to mention and plug my new book coming out March 27, called the employee experience advantage. I think it's already available for pre order on Amazon or wherever books are sold. But basically, it looks at how to create a company where people genuinely want to show up to work based on an analysis of 252 global organizations. So I hope you check that out. And I'll be sharing more information on that as well. Now, today's guest, if you haven't noticed, by the way, the past few episodes, I've been just doing some recaps of 2016. And I've been planning to get some really interesting and cool guests for 2017. And today is the first of those guests that I was super happy I was able to get. And it is Yuval Noah Harari, he's the author of a couple books, his previous book was called Sapiens went on to be a global bestseller. It's got 1000s of reviews on Amazon. And you've all actually has a new book that's coming out called Homo Deus a brief history of tomorrow. And that is exactly what this podcast is about a brief history of tomorrow based on his book, it is a almost 500 page book that covers a ton of stuff. So you'll see that we bounce around quite a bit in this podcast. In fact, some of the times, I'm even stumbling over my own words, because there are so many things to ask you of all that I wasn't even sure what direction it takes some of these, these conversations and discussions and but I think at the end, it turned out quite well. So we look at everything from big challenges that are facing the human race, to this notion that humans are becoming gods, we look at virtual reality and how that is similar to religion. We touch on technology replacing or creating jobs, what the future of life is going to look like, what some of the concepts around the future of work are going to look like. We talked about knowledge and Biological Engineering, I mean, really, we go all over the place with this, we even touch on some of the writing process that he has for this book and where these ideas came from. Other things, we look at our data information, basically all sorts of fun stuff touching on science fiction, hopefully becoming fact, in the future. You've all shares some concepts and thoughts on what the world might look like in 150 200 years. So like I said, we really go all over the place with this podcast. But that is what is a lot of fun. Because I'm a huge fan of science fiction. And this kind of felt like having a science fiction conversation, but based on factual and historical data and information. So it was really, really cool and a little bit surreal. And I hope you guys really enjoyed this conversation as well. If you get a chance, please make sure to review the podcast on iTunes. You can open up the iTunes app and type in Jacob Morgan or the future of work podcast and you'll find that there. And last thing if you want to send me feedback or have suggestions for other interesting guests, like you've all email me Jacob at the future

organization.com Let's talk see what we can do. Okay, that's it for me. I really hope you guys enjoy this podcast with Yuval Noah Harare. As we talk about homo Deus a brief history of tomorrow, enjoy

Yuval Noah Harari 05:05

5432 This is a journey into your mind. You'll know when it comes, we hope it never come to get ready. Welcome to the future cast for your host, Jake.

Jacob Morgan 05:27

Hello, everyone. Welcome to another episode of The Future of Work podcast. Very excited for today's special guest. You've all know Harare, he is in mazing. Historians wrote several amazing books. And his most recent book is called Homo Deus a brief history of tomorrow. It's coming out on February 21. And he also had the he was also the author of the previous best selling book, sapiens. You've all thank you so much for joining me.

05:56

It's a pleasure to be here. All right,

Jacob Morgan 05:58

so this book was around 500 pages, and we have so much to talk about. So I have tons of notes and lots of questions for you. So hopefully, we'll be able to explore some really cool topics. But before we get started, why don't we start with a bit of background information about you? So how did you get involved in this? I mean, how did you create these two amazing books? Where does all this information come from?

06:23

Um, I really follow the questions. I mean, if there is some big question that interests me, like, why men have dominated human society and dominated women throughout history? What is going to be the future of the educational system? So I just go wherever the question leads me, and most big questions lead you across many different disciplines. I mean, you can't get an answer. If you focus just on economics. So just on biology, you have to integrate everything together.

Jacob Morgan 06:58

Yeah, makes sense. And you are a historian. Right? So can you give me a little bit of background info? I mean, how did you become a historian? Is this something that you've studied your whole life? Or how did you get involved with this field?

07:11

I was from early childhood, I was wondering why the world is the way it is, and not otherwise. Is it the result of some string of accidents? Or is there some more fundamental lows at work? So I was very interested in the history of society of religion, and, and so forth. I studied history in university. And my area of speciality was medieval military history, crusades, and knights and castles and things like that. And later on, when I got a job at the Hebrew University in Jerusalem, they gave me the task of teaching course of introduction to world history to first year students. So I had to basically abandon this very narrow focus on on medieval military history, and start reading and teaching about neandertals and

about the agricultural revolution and about China and about the future of humankind. And out of this course, came the my first book, sapiens, a brief history of humankind, which tried to cover the whole of human history, from the Stone Age to the silicon age. And now this new book, homo Deus takes the story forward, and tries to explore what are the opportunities and dangers that humankind is facing in the 21st century? And what is the likely what is the possible future of our species in the coming decades.

Jacob Morgan 08:51

So it's interesting that you basically got into this field because the the university that you were teaching at and kind of a little bit serendipitous, you could say, so it's fascinating how that kind of came about. So before we jump into some of the things from your book, I wanted to ask you about your, your writing process for the book, how long did this new book take you? People are always fascinated, you know, how to authors actually sit down and create these amazing books. So what was the writing process like for you?

09:22

Um, I mean, with the new book with hotels, it really was written in a kind of interaction with the public, because after writing Sapiens, I got invited to all these seminars and interviews and TV shows and so forth. And even though it was really a book about the past, about the history of humankind, many of the questions are about the future, because most people are more interested in the future than in the past. So I had to think more and more, what are the implications from what we know about the human past? As to the future of humankind. And I started giving talks about that and writing articles about it. Until at one point, I realized that actually, I have the material for another complete book. So I gathered all these different notes and articles and PowerPoint presentations and whatever. And the book emerged out of that.

Jacob Morgan 10:25

How long did this one take you to write?

10:28

About three years to two to three years, something like that?

Jacob Morgan 10:33

Wow. So this has definitely been an ongoing process. And it's a really a great book. So I'm excited for people to check it out. Now, earlier, you mentioned that you focus on the big questions of humanity, the big questions of the future of the human race, maybe you can touch on what are some of those big questions that you're asking?

10:56

about the future? Yes. Um, so one of the basic questions is what are we going to do with ourselves in the 21st century, we are now in a very peculiar situation in human history. Because for 1000s of years, the main tasks of humankind remained the same. The three biggest problems facing humanity were always the same problems. It was famine, and plague and war, every society in every age had to confront above all these three dangers. And remarkably, over the last few decades, we have managed

to bring under our control all these three dangers. Of course, there are still there is still famine and plague and war in the world. But they are no longer uncontrollable forces of nature. They are manageable threats that we know how to handle. And if we make the right decisions, we are able to really bring them are under our control. Today. For the first time in history, more people die from eating too much than from eating too little. More people dying from old age than from epidemics and infectious diseases, and more people commit suicide than are killed by war and crime and terrorism put together. For the average American, the chances of the average American being killed by al Qaeda, are about 1000 times less than the chances of the other average american dying from eating too much at McDonald's. So from this perspective, you can say that, for the first time in history, we can start thinking about other matters. We still need to, to keep the lead to keep warring plague and famine under our control. But for the first time, we can seriously think okay, what do we do next? What do we do next, with all our power, all the power that science and technology and human ingenuity have are putting at our disposal. And this is really opens up amazing new opportunities, but also very frightening scenarios from for the next century.

Jacob Morgan 13:33

How did we get to this point where we moved away from those kind of the major threats that we're faced to these new emerging threats that we have to think about? Because you made some very interesting points there? Did this happen all because of technology? Was it just kind of like, like, how did we get to this point where we're thinking about these new new threats?

13:56

Well, in the case of famine, plague, it's very clear that what enabled us to overcome them is science and technology. For 1000s of years, people thought that there is nothing humans can do. That can abolish famine, or plague from from the planet, maybe God will will perform some miracle but it's beyond human power. And then over the last century or two, breakthrough in in biology, in medicine in agronomy and economics and so forth, enabled us to produce enough food and to improve the transport network to such an extent that today, there are no longer any natural famines in the world. Even if there is drought or floods, it is always possible to bring enough cheap food from elsewhere to prevent mass starvation. There are still places where people die from starvation, but in almost all cases Is this is not natural Famine, Famine caused by natural disasters. This is political Famine, Famine caused by political considerations. If people still starve to death in places like Syria, or like North Korea, it is only because some government wants them to stop. There is no technological problem of providing these people with enough food. Similarly, with overcoming plagues and epidemics, the advances in medicine played the crucial part. When we turn to war, it's a different story. We don't have a device that stops war. But still, technology plays an important part, especially nuclear weapons. When nuclear weapons were invented, this transformed war between superpowers into collective suicide. So since 1945, the superpowers had to change the way in which international relations are being managed. And this enabled us not only to prevent nuclear war from from happening, at least so far, but also to change the entire international system. And which led to a sharp decline in violence. There is still some violence in the world, of course, I live in Israel. So I know perfectly well, that there is still there are still valid conflicts in different places around the world. But from the long term perspective of history, we are now living in the most peaceful era in history. As I said before, today, more people die from eating too much, then from human violence, more people commit suicide than are being killed in by war or crime.

So in the case of violence, it's not just technology, technology played an important part. But it's not just technology. It's also human kind, rising up to the challenge that technology presented us with.

Jacob Morgan 17:15

What do you think some of the new challenges or threats are in the future? I know in the book, you talked about things related to data, you talking about things related to artificial intelligence, to bioengineering? What are some of the big potential threats or challenges that you think we as humans need to be paying attention to in the coming decades or in the coming century?

17:39

One very big danger is climate change in global warming, which is the downside of all our technological development and all our industrial production. Other threats come directly from technology from the disruptive potential of new technologies, like artificial intelligence, for example, artificial intelligence, may very quickly outperform humans in more and more tasks, and therefore push hundreds of millions of people out of the job market and create a new massive class of useless people, in the same way that the industrial revolution in the 19th century created the new class, the urban working class. So in the 21st century, we are likely to witness the creation of the useless class. And what to do with this new useless class is going to be one of the most difficult social and political questions of the of the 21st century. One of the dangers is that states and elites will stop investing in the health and education and welfare of of the masses, because they will simply not need them anymore. In the 19th and 20th century, states built systems of mass education and mass health and mass welfare, not because they were very nice, but because they knew they needed everybody. Even dictatorships, if you think about, say, Nazi Germany, so even Nazi Germany invested very heavily in building hospitals and vaccinating people and building schools and having social welfare welfare systems, not because the Nazis were nice, but because the Nazis knew that if they wanted Germany to be a strong nation with a strong army in a strong economy, they needed millions of two Germans to serve as soldiers in the Vale knocked and to serve as workers in the factory. worries. Now in the 21st century, if many or even most humans will become economically and militarily useless, the elites will lose the incentive to invest in them. In some countries, I don't know, like Sweden, maybe the tradition of the welfare state will be so strong, that Sweden will continue to invest in the health and education of its citizens, even if there is no military or economic incentive to do so. But if you think about South Africa, Brazil, Mexico, India, and so forth, all these huge developing countries, once you take away the military and the economic incentive, the state may simply abandon the vast majority of the population to its faint. So this is one very big disruption that technology may may create. Another example of a major technological disruption is presented by biotechnology, bioengineering. Pre previously in history, humans learned how to manipulate the world outside them. We learned how to control rivers, and cut down forests, and domesticate animals and things like that. But we had very little control on the world inside us, on our own bodies and brains, today, we still have the same bodies, the same brains that we had in the stone age, nothing developed since then, in the 21st century, biotechnology will give us for the first time, the possibility to start manipulating

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the world inside us, I think, the main products of the 21st century economy will no longer be vehicles and weapons and textiles and food, the main products will be bodies and brains and minds. And here,

there is a very big danger, that we will misuse the new the new technologies, new abilities. Previously, when we gain the ability to manipulate the world outside us, we use this ability in unwise ways. And consequently, we completely destabilized the ecological system. And we are now facing an ecological catastrophe, we didn't fully understand the very complex system of the global ecology, and therefore, our power destabilized it. Now, when we gain the ability to start manipulating the world inside us, the result may be that we will destabilize our internal, our mental ecological system. Because we don't understand the human mind, the human mind is a very, very complex system, like the ecological system of the planet. And the danger is that we will start manipulating our bodies and our brains in a way, which will destabilize our internal mental system. And as a result, we will actually be in a much worse situation than before, instead of using technology to upgrade humans, we will end up downgrading them.

Jacob Morgan 23:40

So really quick, because you made a lot of great points there. And I like the the concept of sort of manipulating ourselves. And we're kind of seeing that today a little bit, right, augmented reality, virtual reality, we're seeing that with pills that we can take with ways that we can kind of alter the way that we feel and think So is that kind of what you're referencing, except to to another level to another extreme in the coming decades where we can just alter and just change everything about ourselves in our minds.

24:12

Yes, we are already beginning to see the first steps in these directions. I think there are three main ways for us to manipulate our internal reality. The first way is bioengineering, taking the body and the brain and tweaking them and changing this gene and changing the level of that hormone and seeing what happens. The second way is more, more novel more revolutionary, and it relies on combining our old organic bodies with new inorganic parts and creating cyborgs, cyborgs or entity that combined organic With inorganic parts, so for example, you can connect your brain directly to a computer, and maybe surf the internet just with your mind. Or you can replace your eyes, your ears, your lens, with bionic parts, you can augment the organic immune system, which we have received from millions of years of natural selection, you can augment it with a bionic immune system with millions of tiny robots, that will be wonder if we are your blood through your body and detect cancerous cells and kill them detect all kinds of other dangers and take care of that. So this is the second way in which you can start enhancing humanity by combining organic with inorganic parts. The third way is the most extreme. And this is the creation of completely inorganic bodies, or completely inorganic entities. And nobody really knows whether this can actually be done. Some people in Silicon Valley fantasize about uploading human consciousness into a computer, or creating artificial consciousness in a computer. We don't know whether this is feasible, or whether this is just science fiction. But if this will happen, it will probably be the greatest revolution, not just in history, but the greatest revolution in biology since the very beginning of life. Because from the beginning of life about 4 billion years ago, all life forms, whether it's an amoeba, or a dinosaur, or a tomato, or human being, all life forms, evolved by natural selection, and remained confined to the organic realm. Whether you are a tomato or a human being, you were made of organic stuff. Now, with this new revolution, we might replace natural selection with intelligent design, not the intelligent design of God, of course, the intelligent design of humans and computers, and we will break out of the organic realm into the inorganic realm, it will create the first inorganic entities lifeforms. After 4 billion years of organic evolution, it will be the greatest revolution in

life ever. And it will also maybe enable life for the first time ever to break out of planet Earth. For 4 billion years, life was confined to planet earth, because natural selection adapted us to the very unique conditions of this planet. And an organic animal, like human being or chimpanzee or a frog, cannot survive on the different environment, like on Mars, or on something some other planetary system. However, if you switch from organic to inorganic life, it suddenly becomes much easier. Inorganic, artificial intelligence can survive as easily on Mars, as on planet Earth, because it's not adapted to the unique condition of this planet. So this is the third way of not only enhancing humans, but really creating completely different life forms, from anything we've so far seen.

Jacob Morgan 28:56

Well, I think we all know Elon Musk is trying to get us to Mars. So he's probably helping us out there a little bit. I love that you referenced science fiction, because I always think that one of the best ways to understand or look at the future is to read science fiction and pay attention to science fiction, movies and stories, because so much of what we see in science fiction, we've actually been able to develop a lot of those concepts and themes, and we kind of strive to do a lot of what science fiction has talked about, you know, decades ago, and listen to you talk reminded me of, of a book that I recently read, I don't know if you've read it called Ready Player One. And you talked about these 333 ways that we're kind of changing and evolving and able to change ourselves and manipulate ourselves. But one of the things that I'm curious to hear about is if virtual reality is a part of that, and I'll tell you why I'm asking that. So in this book, Ready Player One, it's a it's a science fiction book where the author depicts a world in the future, where the majority of our time is actually spent in a virtual reality instead of the real one. And the real world is crumbling around us, as we all strive and put all of our time and money into living in this new virtual world that is amazing where we can upgrade ourselves where we can, you know, be who we want, and basically create any type of a world that we want. So do you see virtual reality is a potential threat, we're one day, that's kind of the only reality that we might want to be a part of, and kind of neglect the physical world around us?

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I think this is quite, this is a possible scenario, even even a very likely scenario. We talked earlier about this the rise of the useless class, and one of the biggest question is what will people do when computers can do everything better than us. And one of the best answers that people come up with is virtual reality, people will just spend more and more time playing three dimensional virtual reality games that will provide them with more interest, and more meaning than anything in the in the real world. And in a way, of course, this is not completely something completely new, you can say that this was always the human condition. For 1000s of years, most humans have been living inside virtual realities that exist only in their imagination. And we call these virtual realities, religions and ideologies. You all your life as a observant Jew, or Muslim or Hindu or whatever, you play a virtual reality game that has very little to do with the physical reality, you try to gain points. So after you die, you get to the next level of heaven. And this has nothing to do with reality. But millions of people have been preoccupied with that. Oh, Bill.

Jacob Morgan 32:07

Billions, probably more than mil billion the majority of the world. Yeah. I never thought about religion in that context. So that's, that's really, really interesting. It's it's a great analogy. I totally just never thought of religion in that context. But but now that you mentioned it, I mean, you're totally right. It's fascinating.

32:28

Yeah, I mean, I know, you know, all ultra orthodox Jews, that you know, almost everything they do is, is influenced by this set of rules of what is kosher? And what is not kosher. What is the sin? And what is what what is lawful to do. And, you know, this is just a set of future reality laws. And they are having most of them they have quite a good life. And I also had this experience some months ago, I went with my nephew, who is seven years old, to hunt for Pokemons. Is it big in the US also?

Jacob Morgan 33:08

Oh, my goodness. It is, everybody in the world knows what you're talking about.

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So okay, so we went to hunt for Pokemons in his town in Israel. And we found this very, very good Pokemon, some, I didn't see anything, because there was nothing to see, of course, you can see the pokemons only if you look at via the smartphone, but he spotted this very, this very rare Pokemon. And then there are two other kids on the street, and they were going with their smartphones. And you almost had a fight between my nephew and these kids who's going to get this rare Pokemon. And I thought, Oh, this is exactly like the Arab Israeli conflict, like with the Jews, and the Muslims fighting over Jerusalem, that if you go there, you don't see anything special. You just have stones and buildings, and what's the problem just divided between you. But when you look at it through the smartbook, through the Bible, and through the Koran, suddenly you see angels and fairies and Gods all over the place, and there is no way you're going to, you're going to divide this holy place with these other people. So you have this entire conflicts and people being killed and so forth, because of a virtual reality game.

Jacob Morgan 34:33

Yeah, I mean, that's a that's probably one of my favorite kind of comparisons I've seen or have heard to virtual reality. Another one is, you know, we read books, we listen to music, we watch movies. And that's a type of a virtual reality as well, where we kind of tried to transport ourselves into these new worlds into the minds of different characters. So I think humans have tried very, very hard to always create have alternate worlds and scenarios and experiences that we aren't in in the real world. And virtual reality can just take that to the completely next level where we're actually immersed in these areas. And I definitely think that in the coming decades, it's definitely going to be a both an interesting and a little bit of a scary area to pay attention to. Now, you mentioned the the useless class. And there's this big debate, as I'm sure you're well aware of in the tech and technology world. And you talked about in your book extensively around whether technology is going to create more jobs, or is it going to replace more jobs. And it seems like depending on who you talk to, some people believe that technology will create a lot of new jobs and everything will be fine. And then there's another group of people that says technology is going to eliminate millions, billions of jobs, and we're going to have this new kind of useless class. So looking at these two scenarios, the creation of more jobs or the removal of jobs, which which side do you think is actually going to prevail? What do you think's going to happen? We're going to see the removal or creation of jobs.

36:17

I think we're going to see both, of course, but the question is, how quickly and whether enough new jobs will be created in time to replace the old jobs. People often compare this with the industrial revolution in the 19th and 20th century, which also eliminated all jobs and created new jobs. But I think there is a fundamental difference. Humans really have just two types of abilities, physical abilities, and cognitive abilities. In the industrial revolution of the 19th and 20th century, machines outperformed humans in physical abilities, but they did not compete with us in cognitive abilities. So what happened is that more and more humans moved from jobs that require physical abilities, to jobs that require cognitive abilities. Now, machines are beginning to compete with us also in cognitive abilities. And we just don't know of any third kind of ability that humans have, and that we can move to this third, third kind of jobs. So I'm skeptical of the idea that enough new jobs will be created. Another problem, even if enough new jobs are created, the question is whether people will be able to adjust, because the pace of technological change is accelerating. And let's say that artificial intelligence replaces most taxi drivers and insurance agents and doctors in the next 30 years. But you have many new jobs in designing future realities. Now, would it be possible for a 50 year old insurance agent to reinvent yourself as a designer of virtual worlds? What is a future world designed by a 50 year old insurance agent look like? I know, I'm not sure that most people will be able to, to reinvent themselves in such a way. Even worse, if you think about young people, the people are today in school, most of what they learned today in school or college will probably be irrelevant. By the time they're 40, or 50. And we just don't know what to teach them. In the Middle Ages, if you ask yourself, What should I teach my son or my daughter? The answers were quite obvious. You taught your children how to harvest corn, and how to bake bread and how to build the house and how to build the table. And you knew that these skills will be very helpful when they are grown up. Today, we don't have any idea what the job market would look like, in 30 years. So we don't have any idea what to teach the children. We still go on teaching them the old stuff, not because it's going to be irrelevant, but because we don't have any better idea. So I think to conclude on to summarize this point, it's not just the technical question of how many jobs are lost and how many jobs are gained. There is also the question of how fast this is happening, and whether people have enough time to adjust and to adapt to the new conditions.

Jacob Morgan 39:58

Now, part of me wonders You know, today, if you turn on the TV, or if you read immediate publication, you hear a lot about this topic about technology and automation of jobs. I know it's a big theme at the World Economic Forum that's going on right now. It's basically everywhere, this concept of job automation and job loss.

40:18

It's not really everywhere. It's missing from the most important place, which is the political system. Yeah, I've watched, I've watched a followed the presidential election campaign in the US. And I've watched the debates between Hillary and Trump. And they never said a word about it. I mean, Trump went on and on about job loss, and he was scaring people, that the Mexicans will take your jobs, the Chinese will take your jobs, he never said, the algorithms will take your job, the robots will take your job. And that scared me. Because that meant that yes, in the academic world, and in Davos, people are aware of the danger, and they discuss it. But in the political system, and in the public. In the public arena. People are not aware or not enough aware of this danger.

Jacob Morgan 41:16

Yeah, I mean, you're right. That's they also didn't talk very much about the alternate work arrangements and gig economy. But the Yeah, the technology piece is huge. And I was actually surprised to that. It wasn't a part of the debates. But I think that the political system, you're absolutely right needs to definitely be paying more attention to that. But let's say let's say they did pay more attention to that. And, you know, some changes were made the, the evolution that we would see, it would be somewhat gradual, right? I mean, it's not as if tomorrow you would wake up, and all of a sudden, you're the insurance agent. And now there's a bot taking your job? Like, wouldn't this be a little bit of a gradual change that would happen over you know, 1020 30 years? So if we act now, or in the next few years, do you think that we can prepare ourselves and make some changes and adjustments that will keep that from happening?

42:14

We can just prevent it from happening. But we can take actions to make the transition easier, and to prevent the worst consequences. But for that, we willing, we don't have a lot of time. If you think about education, then we need to act now. And nobody knows what to do. When everybody almost everybody in the field would agree that what we are teaching children today would be largely irrelevant for the job market of 2040. But what should we teach them instead, nobody really knows. I mean, the best ideas is to focus on emotional intelligence, and not on teaching mathematics, and then then chemistry and history. But above all, to focus on on improving the emotional intelligence of the kids, because they will definitely need that to cope with the shocks of the of the 21st century. But even that, that is not being done. If you think about other issues besides education, then I don't really know how much time we have. Five years ago, a self driving car sounded really like science fiction. But today, it's really just around the corner. And it could be that in five or 10 years, millions of jobs of taxi drivers and truck drivers and so forth, will be lost to self driving cars. Nobody really part of the problem is that nobody knows how much time we have. And nobody has a model, a new paradigm for these new economic realities, we are still trying to make do with the models we have inherited from the 20th century, whether it's traditional market capitalism, whether it's the welfare state or some sort of socialism, but all that is adapted to the industrial world of the 20th century. It's, it's I don't think any of that will be of much help in dealing with the completely different realities of biotechnology and machine learning and artificial intelligence in 2014.

Jacob Morgan 44:40

It's even hard to imagine what the 2040s is going to look like. Because so much, you know, you talked about this in your book as well, I believe, you know, we're so good at thinking linearly that thinking exponentially is something that we we very much struggle to do. Now, I want to shift gears really quick and talk a little bit about data and knowledge. because you had a great quote from your book that I wanted to read, which was the paradox of historical knowledge. And you said that knowledge does not change behavior, or knowledge that does not change behavior is useless. But knowledge that changes behavior quickly loses its relevance. And the more data we have, and the better we understand history, the faster the faster history alters its course. And the faster our knowledge becomes outdated. And that to me was a very, very interesting quote, especially in the world that we're living in with data with people analytics with data science, big data, the Internet of Things. So I'm curious, how does that relate

to this data abundance that we're seeing? Does it mean that a lot of the data that we're going to have is quickly going to become irrelevant and useless over time?

45:53

Yes, it means that the more data and more computing power we have, the faster the world will change, because we'll have new technologies and developments and so forth. And then very quickly, the old paradigms, the old knowledge will become irrelevant. And we'll have to collect even more data, and to analyze it even faster. But this will only accelerate the process. So very soon, we reach a point when nobody really knows what's happening in the world. And I think that we are almost there, maybe we are already there. In the past, you could make reasonable predictions about how the job market would look like in 20 years, or how the political system would look like in 20 years. Of course, there are many unforeseen eventualities, but you could be quite sure about the basics. For example, in the Middle Ages, you knew you don't you didn't know maybe some, maybe the Vikings will invade next year, or maybe you have a civil war. But you could be quite certain that even in 50 years, most people will be peasants, and men will still dominate. And the human body will be exactly the same as it is today. In contrast, in the 21st century, they have absolutely no idea how what the job market gender relations of the human body would look like, in 20 3040 years. And this is because we are we have more and more data, and more and more computing power, which enables us to invent better technology faster and faster. And this changes everything.

Jacob Morgan 47:47

Yeah, I mean, a lot of the themes in the trends seem to go towards, towards technology. And I wanted to read one more little piece from your book, and you end your book by asking three questions. And I actually wanted to ask you these questions to see what you think. And so in the book, the way the way that you conclude is you say that, yet if we take the really grand view of life, all of our problems and developments are overshadowed by three interlinked processes. The first is science is converging on all encompassing dogma, which says that organisms are algorithms and life is data processing. The second is intelligence is decoupling from consciousness. And the third one is non conscious, but highly intelligent algorithms may assume that know us better than we know ourselves. And then you end the book by asking these three interesting questions. Are organisms really just algorithms? And is life really just data processing? What's more valuable intelligence or consciousness? And what will happen to society politics in daily life when non conscious but highly intelligent algorithms know us better than we know ourselves? So I wanted to actually ask you these three questions and see what what you think and I know you address some of this in your book. But let's start with the first one are organisms really just algorithms and his life really just data processing?

49:17

At present, this is the dogma of the life sciences. The biologists are saying that all animals, including human beings, are just machines for calculating probabilities, and what we call emotions and sensations and so forth. They're really just biochemical algorithms that calculate probabilities of survival and reproduction. Every decision we make is based not on freewill and not on some transcendent soul. Every decision is based on the calculations of biochemical algorithms. This is now The accepted wisdom in the life sciences. I'm skeptical about it. It could be true, I don't know. But we still don't have an answer to the one big question of consciousness. We don't have an algorithmic description, or

explanation for consciousness, we don't understand how consciousness emerges when billions of neurons are firing. How is it that when billions of neurons are firing in a particular pattern, I feel anger. And when they fire in a different pattern, I feel love? How are electrical currents being translated into subjective experiences of love, or anger or anything else? We don't know that. Now, I don't think that we should retreat to some religious view, and think, oh, there is a soul and all the answers are in the Bible and so forth. Definitely not. What I do think is that we shouldn't been, we should be aware of our ignorance, and continue research. And we should focus more and more of our scientific research, not on investigating just the body in the brain. But above all, on investigating and understanding the mind, which is very different from the brain. They're all connected, but they're not the same thing.

Jacob Morgan 51:37

This next question, actually, I think it was one of the most provocative ones from the ones that you asked in the book. And it was what's more valuable intelligence or consciousness? So maybe you can quickly separate the two, what are the difference between the two? And where do you stand on that? What do you believe is more valuable?

51:58

Well, people often confuse them. And for example, in science fiction, it's usually assumed that once you have artificial intelligence, you will also have artificial consciousness. And the confusion results from the fact that in mammals, and in humans, consciousness and intelligence go together, but there are different intelligence is the ability to solve problems. Consciousness is the ability to feel things. Now in mammals, including humans, they are connected, because the way we solve problems is usually by feeling things through our emotions. But they don't have to go together. In the case of computers, what we see enormous progress in the development of computer intelligence, without any progress in computer consciousness. Over the last few decades, computers have developed very high intelligence in particular fields. But exactly zero consciousness, they don't feel anything.

Jacob Morgan 53:07

I'm assuming something like, like Watson would be a good example.

53:11

Yeah, I mean, something like Watson or something like AlphaGo. That beat Lisa doll last year, in the in the game of Go. So AlphaGo, in plain goal is more intelligent than any human being. But it has no consciousness. When it played the game, it was intense, it wasn't nervous, it wasn't happy when it won the game, it doesn't feel anything. Now, from the perspective of the economic system, corporations and governments and armies, consciousness is irrelevant. They just want intelligence. They want entities that for example, if you want, if you want a taxi driver, what you want from a taxi driver is to bring you from point A to point B as cheaply and quickly as possible. And if you think about a doctor, what you want from a doctor is to diagnose your disease correctly and suggest the best available treatment. Now this is intelligence. Up till now, only conscious human beings can could do such things. But very soon, computers will be able to do it better than humans. And from the viewpoint of corporations and governments and armies. They just need the intelligence. The fact that Watson doesn't have feelings you don't care about you don't need what's in their feelings if it can diagnose your disease correctly. But from a bigger perspective, my impression is that in the end, consciousness is the only thing that

matters. If we create some, you know, some For intelligence devoid of consciousness, and we as a result, disappear, and the universe becomes inhabited or colonized by this non conscious super intelligence, this is a very frightening scenario, a universe filled with intelligence with absolutely no consciousness. It's a little bit of

Jacob Morgan 55:25

a, it's actually quite a scary situation to be a part of it, and almost makes me think like the Terminator movies just basically Skynet taking over the world. And that's basically what's going to be here. So let's hope that doesn't happen. And the third question for you is, when it comes to what will happen to society, politics in daily life, when nonconscious by highly intelligent algorithms know us better than we know ourselves. And you talked about Google, you talked about Facebook. So what do you think is going to happen when all these different sites and places with all the amount of data that they collect know us better than we know ourselves?

56:07

They I think we will see it very soon. And I think what will happen is authority will shift away from human beings to these algorithms, authority in the economic field, in the political field. And even in personal life. Most of the decisions that previously we took for ourselves, will be taken for us by these algorithms that know us better than we know ourselves. And I'm talking about not just what to buy, but who to vote for in the elections, what to study in university, and even whom to marry. If you haven't, if Google knows you better than you know yourself, and including it, it knows your feelings, your emotions, your body better than you know yourself, it could probably recommend to you potential mates, potential husbands and wives and girlfriends and boyfriends, which will be much better than the choices that you make for yourself. And I don't think we are very far away from that point.

Jacob Morgan 57:16

Do you think that will eliminate freewill? So basically, are we not going to be making our own decisions anymore? We're just going to rely so much on data and technology and analytics, that before making a decision, we're going to say, Well, what does the computer think? What does the data show and we're just going to abandon kind of human reasoning and emotion and just make decisions based on data?

57:42

Um, I think it's an empirical question. If, if the algorithms will indeed make better and better decisions, we will come to trust, and to rely on them, and will invest them with more and more authority over our lives. So it starts with simple things. Like I don't know, you want to read a book. And if previously, you went to a bookshop, and you go, and you take these different books, and you flip through them until you feel that you're connected to a particular book, and you buy that book, and you read it. So now you rely more and more on the recommendations of Amazon. And so far, Amazon relies on relatively little amount of data, it collects about you, it follows it asks you what books you enjoyed in the past. And based on that, and on statistics about other people, it tries to predict what kind of book you would like in the future. But in the not too distant future, actually, even today, if you read a book on Kindle, then Kindle is constantly collecting data about you. Kindle knows which pages you read fast, which pages you read slow, and when you stop reading a book. And this gives Kindle, which means Amazon some insight about what you like and what you don't like. And that improves the algorithm. The next stage is

to connect Kindle, with face recognition software, and even with biometric sensors inside your body. And then Kindle will know when you laugh when you cry when you're angry when you're bald. And based on that it cannot only recommend books much better than ever before, it will actually know who you are. And by the time that you finish reading, I don't know war and peace. You forgot most of it. But Amazon will never forget anything. It will know exactly what was the emotional impact of every sentence you read in warranty. Yes. And based on that, it will be able to tell what is your personality type, and how to manipulate your emotions. And you could use that kind of information, for example, in order to choose not just books, but also to choose your boyfriend or girlfriend or husband or wife.

Jacob Morgan 1:00:22

What does this mean for privacy and security? And also, there's this human component there, right? I mean, the human has to be willing to wear these devices, the human has to be willing to participate. So I find that even though technology can progress to a certain level, we still need human buy in, right? I mean, humans have to opt in, they have to be willing to do these things. So where does that play in all this?

1:00:46

Well, I think the big battle in the 21st century regarding privacy will be between privacy and health. If you're willing to give up your privacy, and to connect to these biometric sensors, and to allow some algorithm to collect all these biometric data about you, in exchange, you will get amazing health care, the algorithm will be able for example, to detect, when cancer is just beginning, you don't feel anything you don't know something is wrong with you. But the algorithm based on the biometric data, it already knows, oh, cancer is beginning to spread in your liver or something. And it will detect it at such an early stage, that it will be very easy and cheap to cure this cancer. And similarly, it will protect you against many other kinds of danger, and will provide you with much, much better health care than ever before in human history. In exchange, you will just have to give up your privacy. And I think that most people, when they have a choice between privacy and health, they will choose hell. And this will be the great. Not threat. But the one thing that will bring the end of privacy is our desire for better health.

Jacob Morgan 1:02:15

I think we also see our willingness to give up privacy today, you know, by going on the Facebook by using Netflix, by purchasing, purchasing things from Amazon and iTunes. We're already in a sense, I think giving up some privacy because when we do these things, we basically opt in to a lot of these websites, sharing our data with third parties. And we're okay with that. Or we're saying that, sure. I would love to use Facebook for free. And in exchange, you can give my data to various advertisers. So it seems like if we think about health, that would be kind of a no brainer, it'd be like, Yeah, well, yeah, of course. You know, if I'm willing to go on Facebook and exchange data, why wouldn't I do something like that? For my personal health?

1:03:02

Yeah, definitely. Then any noises the same goes, if you get something for free, you're probably the product. This is true for Facebook and Google and have so many other of these websites and cooperations. And as you say, if we are willing to do it, just to watch funny cat videos, then we'll definitely be willing to do it to get the cure to cancer.

Jacob Morgan 1:03:29

funny cat video. Yeah, that's exactly what what we see so much of online. Alright, so I know we're wrapping up near the end of the podcast, but I just had a couple last questions for you. One of the things that you talked about early on in the book was this concept of humans becoming gods. And I thought that was a very interesting idea. And I was hoping you might be able to just spend one or two minutes to talk about what that means and how you see that happening. And where you might see that concept going in the next few decades.

1:04:04

Well, I mean, the very title of the book homo Deus, it means God, man, that from Homo sapiens, wise man, we are evolving or trying to evolve to becoming gods. And I don't mean it as a metaphor. I mean, it literally, we are trying to acquire abilities that traditionally were thought to be divine abilities. If you think about the Bible, the first thing that God does, is to create animals and plants and humans according to his wishes. And now we with biotechnology, out learning how to engineer and create animals and plants and humans according to our wishes. So in this sense, we are really becoming like gone. And actually, as I said before, we are even going beyond God. Because at least according to the Bible, the only beings that God ever managed to create were organic beings, all these crocodiles and mushrooms and tomatoes and giraffes and humans. But we are now trying to do something beyond what God achieved, which is to create in organic life, trying to create cyborgs and artificial intelligence and and all that. So I think we can seriously talk not as a metaphor about humans becoming gods.

Jacob Morgan 1:05:34

It's a fascinating concept, actually, of these, I think, are many of the themes that you looked at between engineering ourselves, between technology between all these different types of things that we're doing, eliminating famine, eliminating potentially diseases, almost like becoming immortal in some way, especially when you think about uploading consciousness to different things, creating virtual reality scenarios. So it'll be interesting to see how many of these things actually come to fruition and what the type of a world would be like, when you talk about a lot of these concepts. What's your your time horizon? Are you looking, you know, 1020 30 years out? Are you thinking like, 150 years away?

1:06:23

It depends. I mean, if you talk about things like AI pushing humans out of the job market, here, the horizon is maybe 2030 years, if we were talking about creating, in organic life forms, oral transforming the human body, this is this will take longer, maybe a century, maybe 150 years, but but not beyond that. I mean, none of these ideas has a timespan of, say, 1000s of years, it's all a question of a century or two at most.

Jacob Morgan 1:07:03

So relatively in the in the grand scheme of things, we're not talking about that long of a time period. But for some of these things, the majority will, the majority, all of us listening and having these conversations right now will most likely not be alive when some of these things take place. Although I know some people out there are freezing themselves, right? The cryo freezing in the hopes that one day for this exact reason that you mentioned, we will be able to take their consciousness and take their

their bodies and sort of reanimate them and read and bring them back to life. So it's really fascinating that we're already starting to see this happen. And today, you can for I think, \$20,000 pay a company that when you die, they will freeze you and store you in this giant freezer locker with the hopes that one day in 100 years and 150 years that they can bring you back to life. So I have no idea if that's possible or not. But I think the people that are investing in that money, they got nothing to lose. Right. So we'll we'll we'll see what happens.

1:08:14

I think they have a better chance than the people who believe in paradise and heaven. Yeah. So as far as statistics go, I don't think they are completely crazy. I wouldn't do it myself, I think the chances are very slim. I don't know why anybody in 100 years would like to defrost them and to bring them back alive. I do think that given a time span of a century or two, immortality passes from the realm of science fiction to the realm of science, I don't think that today, we are there. Most people who dream about immortality today are going to be very disappointed. But given a century or two, I think we have a pretty good chance of overcoming old age and death. Which means that we are probably one of the last generations to die, which may be quite a bit depressing thought

Jacob Morgan 1:09:13

that that's a little depressing. Thank you for that. If only we were born a little bit later, we would have been able to live forever, but we're we got screwed. We're all gonna. We're all gonna die. So last question for you wrapping up is we talked a lot about a bunch of different things. And your book talks about a lot of different concepts and ideas. What does all this mean? So when you look towards the future, if you were to give maybe advice or some kind of parting words of wisdom for people that read your book, what do you encourage people to think about or to do based on a lot of the concepts that you talked about in your book?

1:10:04

I think it all goes back to the question of consciousness and the mind. It's the biggest open question that science still hasn't managed to, to answer to decipher. And it holds the key for most of our ethical and political dilemmas. So I would urge people, both as scientists and as individuals, to give more attention, not just to understanding intelligence, but to understanding consciousness, and to understand not just the body and the brain, but to understand the mind. Because as I mentioned earlier, I think one of the biggest dangers we are facing is that all the new technologies will give us the power to start manipulating the world inside ourselves. But because we don't understand the human mind, we will end up destabilizing our internal mental system, in the same way that previously, we have disturbed the external ecological system.

Jacob Morgan 1:11:24

I think that's a fantastic way to wrap up a lot of the conversations that we've been having one, one question popped into my mind, I don't know if you still have a couple minutes or if you have to jump off

1:11:37

with five minutes. I really have to go after that. Okay.

Jacob Morgan 1:11:42

So last last question is what advice would you give to kids? So you know, I have a baby that's just been born a few months ago. For people that have young kids, what advice would you give them to the kids.

1:11:59

The one thing you need to learn is how to change all the time. Previously, life was divided into roughly two parts. The first part you learn things, and then the second part you make use of, of what you've learned, and you have your profession, you'll have your identity, and you basically make use of that. And this is no longer relevant. In the 21st century, you won't have the luxury of, of just having a kind of stable identity, and stable profession, that will, will form the stable basis for your life, you will never be able to stop, you will have to learn things again and again, to reinvent things get to reinvent yourself, again, and again, to reinvent who you are, what is your identity, even when you are 40 or 50, or 60 years old. When you're 15 years old, everything you do is really to invent yourself, to build your identity. To understand who you are, by the time you're 15, you don't want to do it anymore. And but in the 21st century, you will have no choice, you will have to adapt to constant change. So the most important thing for a young person today to learn is how to cope with change, and how to keep changing all the time. And I don't think anybody knows how to do it.

Jacob Morgan 1:13:39

Well, I think when, when my little baby Naomi is old enough, in a couple years, I'll make sure to play her this ending of this conversation and let her hear your advice. I think that's a perfect way to wrap up. Usually, in these conversations, I get a lot of requests for people that you know, they always want to know the author's a little bit better. So I just wanted to ask you, maybe one or two fun questions about yourself, such as, what's your favorite food?

1:14:12

Oh, I'd porridge for breakfast every day for years and years. So I guess that would count as my favorite food. Okay,

Jacob Morgan 1:14:25

porridge. What's the most embarrassing moment you've had at work?

1:14:31

Oh, well, I work as a university lecturer. So not surprisingly, my most embarrassing moment when was when I caught a complete blackout, standing in front of class and I just, you know, I just loved it completely.

Jacob Morgan 1:14:49

Wow. So you just stood in front of them and just kind of blanked out,

1:14:53

just stood in front of them, where they run away or not in high in the bathroom or something. I'm but eventually I came through and somehow managed to to to finish the lecture. But I spoke nonsense. I

think I thought that after they told them just delete whatever you wrote during this class, I just, I just want whatever I said it was probably complete nonsense if you

Jacob Morgan 1:15:21

had a different career. In other words, if you weren't a historian, if you weren't writing these books, what do you think you would have ended up doing?

1:15:33

I don't know. I would have liked to study biology, but I'm not sure whether I would have been a very good doctor or biologist.

Jacob Morgan 1:15:44

Interesting. And last, and I promise this is the very last question for you. I know even keep dragging you on. What is your favorite non Apple product?

1:16:03

I'm actually quite technophobic. I don't like all these products. Really? Like? Yeah, very few of them. I try to, to stay with the old stuff.

Jacob Morgan 1:16:16

Well, that to me is that to me is very surprising. I would think that you would probably have like all the latest technologies and gadgets.

1:16:25

My mobile phone is like 15 years old. It's not a smartphone. It's still first generation or second generation. It is no internet. No camera. No, nothing. Mmm

Jacob Morgan 1:16:36

hmm. Well, that that alone, I think is a good enough answer. So we can leave it at that. Well, you've all I just want to say big thank you for your time. I know we've got a couple minutes over and I've been dragging you on but I really really appreciate you taking time out of your day to speak with me. This is a really, really a fascinating topic. So thank you. Thank you. It was my pleasure. And thank you everyone that was tuning into this episode of the future work podcast. My guest has been Yuval Noah Harare, and we've been talking about his latest book that's coming out. Homo Deus a brief history of tomorrow coming up February 21. I'm sure it will be another best seller. You can pick it up wherever you can find and purchase a book again. You've all thank you very much and have a great night. Thanks for tuning into the future of work podcast. If you want to learn more you can visit my website the future organization.com Or check out the fo W community that's fo w community.com I'll see you in the future.