

The Future of Work podcast is a weekly show where Jacob has in-depth conversations with senior level executives, business leaders, and bestselling authors around the world on the future of work and the future in general. Topics cover everything from AI and automation to the gig economy to big data to the future of learning and everything in between. Each episode explores a new topic and features a special guest.

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Jacob: Hello everyone. Welcome to another episode of The Future Work Podcast. My guest today is Thomas Kochan, Professor of Management and Work and Organization Studies, and also, Co-Director at the MIT Sloan Institute for Work and Employment Research. And fun fact, and Thomas, you can correct me if I'm wrong here, I heard that you have been at MIT since 1980, is that right?

Thomas: Yes, I have. A long time, but it's a great place to work. So that's I guess why I stayed.

Jacob: Wow. You've been at MIT longer than I've been alive.

Thomas: Well, I've been at MIT longer than many people have been alive, especially my students.

Jacob: Yeah.

Thomas: I have fun with that once in a while and I assign something that was written before they were born or that I wrote before they were born.

Jacob: Oh, man.

Thomas: Just to make a point of it.

Jacob: Yeah, that's got to be fun. So you've been really looking at the future of work and work and employment for what, like 40 years now?

Thomas: My passion has always been that we need to update our policies, our practices and sometimes, our values to catch up with the changing nature of work and particularly the changing workforce and economy, and we have been very slow to do that in the United States. So I've been an advocate for change and innovation and sometimes, a thorn in the side of business leaders to get on with it. Sometimes, advocating for public policy changes and sometimes, advocating for unions to fundamentally change to catch up with what's going on in the world.

Thomas: So that's what I have been doing and then has kept me busy over these years.

Jacob: Yeah. It sounds like it. It's a fun, fun topic and we're going to talk about a lot of these different things. But I thought maybe we could start. Since you've been in this space for

a while, maybe you can share some of the big trends or changes that you've been seeing or paying attention to in the world of work?

Thomas: Sure. Well, I think there have been fundamental changes. And I have to go back to look at the changes that started to really take place in the 1980s because that was a profound turning point in work and employment relations because if you go back a little bit farther to the 1930s, the new deal in the United States under President Roosevelt, passed the basic foundational labor legislation, unemployment insurance, minimum wages and overtime rules, retirement income through social security and particularly coverage protection for workers to join a union and gain collective bargaining coverage.

Thomas: And that foundation then took off during World War II but particularly after World War II and built what we describe as a social contract in the United States where through the strength of unions but also, through progressive personnel policies and through laying a good foundation on ... among standards, wages and compensation moved up as the economy got stronger. As productivity went up, so too the compensation for average workers.

Thomas: And they moved up in tandem up until about 19 ... the mid-1970s, they start to fray and then by 1980, you see productivity continuing to advance at a relatively healthy rate. But compensation stagnating, flat lining up until even today. So you get this juncture, this departure now between how the economy is doing, how the average firm is doing in terms of profits and how the average worker is doing. And that's the big change.

Thomas: Now, what happened? Well, we deregulated some of our product and labor markets like transportation, utilities and finance. We had the rise of Wall Street as a much more powerful player commanding that company's focus on short-term shareholder value on hospital takeovers and all the things that went with it. You had a decline, a precipitous decline in unions and you had a period where international competition was becoming much more important, the American economy.

Thomas: And then finally, you had new technologies taking off. The knowledge economy really can be dated back to those ... that time period as new computer firms and software development and later, obviously internet and email today. So there is a real question of how we can form a new social contract tailored to the world we're in, not to go back to the 1960s and '50s, but to reflect the modern workforce, the modern technologies that are available, globalization of the economy and the same desire of the workforce to do well when the economy does well.

Thomas: And that hasn't changed but we don't have the policies and practices and institutions to make that happen. So we've got to invent those as we go forward and shape the work of the future.

Jacob: Wow. That seems like there is a lot that can be unpacked there especially when we think about policies because you have government, educational institutions, corporations, even us as individuals in the role that we play. So when you think about this kind of a new social contract, what do you envision that might look like? And I know that's a very

big and probably, very hard question to answer but where do you begin to think about that and what do you think that would look like?

Thomas: Well, the first key point is to recognize that no one of these key stakeholders that you mentioned can do this alone. You can't do it just by government policy. Business alone is not going to be able to do it. Education alone is not going to be able. Workforce and their representatives, labor are not going to be able to do it alone. It's the combination. Got to get these groups reengaged with each other, to talk to each other, to listen to what their particular needs and ideas for moving forward might be.

Thomas: And I believe if we can do that, we can then forge a new social contract. If we don't cross these divides and we'll have more anger and frustration as we're seeing it up there, [inaudible] as the economy moves forward. But to be more specific, we have to start with, well, what are workers expecting in a quality job, in a career today? Like before, the evidence says workers want a fair wage and compensation package. They don't put that at the top of their list but it's a necessary condition.

Thomas: They also want to have a voice in improving business operations and making sure that they are part of the process of delivering goods and services that they can be proud of and they can serve their customers or their patients to the clients or their students, whoever the ultimate user of the products and services are. And they can do that with pride that they're producing all of the goods and delivering quality service.

Thomas: So we have to understand that the workforce today wants to be engaged, wants to do a job and wants a fair return for their contributions to build in a more productive society and a society that serves. You start from there, then we can go on and ask, "Well, what does a business need?" Business needs to make a profit. Question, "But if we want them to make a profit and have good quality jobs, then we have to encourage them to compete on the basis of what we call high road strategies."

Thomas: We have to have businesses that see employees as an asset to be invested in and to provide training and lifelong learning opportunity to keep those skills current, hold on to those employees so you have lower turnover, give them a voice and continuous improvement on the job and then shaping of the conditions under which they work and that package of practices will drive productivity and will support good wages and good jobs as opposed to trying to just keep wages down as you're ... into your business strategy and your cost strategy.

Thomas: So we've got to invest in that. And then we need the labor organizations to modernize, to ... yes, workers still want collective bargaining now more than ever, our surveys tell us. But they also want a voice. They want an informal voice. They want to be able to work with each other in a cooperative fashion, their supervisors and managers in a cooperative fashion to improve operations and to really add value. And that's where labor organizations need to provide those new forms of workplace and representation.

Thomas: And then finally, government has to be ... has to listen to what business and labor and workforce need and they have to be responsive. They need to be the catalyst at the

local level and state level and the federal level to bring these parties together and say, "Let's move forward." I add in education as a key stakeholder in today's world because education and skill and the ability to continue to refresh one's skill base is so critical to the future given changes in technology and need to make sure that we have a productive workforce.

Thomas: So that means education has to really move from viewing its role as something that provides worker or citizens early in their life, then they go into the labor force and maybe they get a little bit of training here and there to a lifelong commitment to using education and working with employers to land learning on the job and using all of the online tools and other interactive opportunities and social media to provide the lifetime educational resources that people need.

Thomas: That's the key to a new social contract, getting these parties to engage with each other and to work together to each do their part.

Jacob: When you think about all the different parties involved, are any of them much farther ahead than others? Are there any groups that are very much lagging behind and then dragging everybody else down or are we all at the same rate with all of these parties?

Thomas: I see encouraging signs within each of these groups and then I see some things that are holding each back. So in business for example, we have many examples of firms that compete on the high road, that really see employees as an asset, they're investing and training, they're providing career opportunities, they're listening to their employees, they're engaging in continuous improvement processes, they're using technologies to augment work and to integrate the advances in artificial intelligence and robotics to support good work and to allow employees to continue to help make these technologies most productive.

Thomas: So you have lots of examples of that. The Southwest Airlines has historically been able to be a good company with high profits and really positive employee relations. In fact, highly unionized but continues to work with employees and with their labor organizations. But we have other companies like Kaiser Permanente in healthcare area that does a lot of training investment and really is on the frontline, so use of technology to improve patient care and now, to transform care to keep people more healthy rather than just pay for services as people come into a hospital.

Thomas: So within every industry, you can find organizations like that. You can find them in manufacturing. You can find them in healthcare. You can find them in airlines. You can find them in hotels and others. So there are a lot of good companies and you see the same thing with some labor organizations, not enough because unions are shrinking and they're getting really very, very defensive because their livelihood, their survival is at stake.

Thomas: But again, at Kaiser Permanente, they have a robust labor management partnership where the union works with the management to support employees in about 3,500 work teams on the front lines to improve ... to work together to improve patient care.

That's the kind of labor organization we need and maybe some new forms of labor representation that are still being met. But you see some unions still stuck with traditional models of representation and that are highly adversarial and that are not helping to move the economy and the workforce where it needs to go.

Thomas: And then in education, we don't see enough innovation yet but we are experimenting with online courses, with more blended learning, with technical schools, working with employers and companies, we have some very robust models of that in South Carolina and some parts of the Midwest and here, even in Massachusetts. So we see islands of innovation. Our task is to make ... to spread them as the norm rather than the exception.

Jacob: Since you've been in this space for a long time, I'm curious, has the phrase, the future of work, were you talking about this 40 years ago? Was this a concept and an idea or is this kind of a relatively new theme or phrase that has emerged?

Thomas: I think the phrase has emerged much more frequently in the last, let's say, five to seven years. I started teaching my online course called Shaping the Future of Work five years ago and wrote up a little textbook that goes with it, with that title. And basically, that was ... because we were beginning to see people aiding and thinking about the future largely driven by the notion that technology is actually more work at risk and so on. So I think that term has become much more part of the public discourse now.

Thomas: In earlier years, we were talking about how do we transform our place, institutions to catch up with changes in the workforce? We didn't talk so much about it in terms of just future of work, it was more to catch up with what was needed.

Jacob: I'm glad you said that because I absolutely see the same thing. So I wrote a book called The Future of Work that came out in 2014. So now, five ... almost six years ago, soon to be six years ago. And I saw the same thing. All of a sudden, it was starting to become more frequently used, business leaders were saying it more often. But I'm also wondering, how do you explain the term or the phrase or the concept to people?

Jacob: Because obviously, the future of work, there's always going to be a future of work.

Thomas: Sure.

Jacob: Somebody says, "Hey Thomas, the future of work, what is the future of work? What does that mean?" How would you explain that?

Thomas: I have a very particular perspective on that and it's shared with my colleagues here at MIT. MIT has set up a university-wide task force on work of the future. We prefer to talk work of the future for the reason you mentioned. There's always going to be work and those people who ... the futurist who have said, "Work is going away. We're all going to be replaced by some robot apocalypse", or something like that, that's ... there's no evidence that that's what's going to happen.

Thomas: But work is changing in the skill mix, in the task, the way we organize work. And the way our jobs are changing is really, really what it's all about and my particular perspective and the one shared by our colleagues on the task force here at MIT is that if we do nothing, then we're victims to whatever future happens and we're likely to get a more unequal distribution of benefits of it and more anger and frustration and more worries about it and people displaced who are not prepared for the future.

Thomas: But if we are proactive, we can shape the future of work in ways that really help to broaden the distribution of benefits, augment work more effectively and change the way in which tasks and work, our jobs are done rather than to just see it as a way of displacing labor. And then for those people who will be displaced, and there will be people whose jobs are negatively affected. We then have to figure out how we can help them just provide retraining or provide compensation so we don't have a big gap between the winners and losers in this race with technology.

Thomas: So our perspective is let's get on and let's talk about what we can proactively do to shape the future of work. And I think it's a healthy way to approach this issue.

Jacob: Yup. I couldn't agree more. I say the same thing all the time. It's not so much about what's going to happen to us as much as it is about what we want to build and create and design. So yeah, I love that that's what you focus ... are focusing on. Now, I have to ask you, since you brought it up, a lot of people are talking about this jobs apocalypse, AI is going to take over, you see different studies that keep coming out that say 47% of jobs are going to be eliminated by 2030 or 2040.

Jacob: There's a lot of doom and gloom stuff that's out there. Do you believe any of that? Do you think that we're going to have mass job automation and exodus and we're all going to be walking around with the pitchforks and shotguns in the streets?

Thomas: Well, I think we're moving beyond that debate. I think a lot of those wild predictions about jobs going away have been displaced now with much more credible research that's saying, "It's not 47% of jobs that are going to go away but it may be 47% or 50% of jobs that are changed by technology. Some aspect of our jobs." There's still a job for a college professor but the way in which I teach and use all these modern tools, media, this podcast for example, I consider this part of my teaching activity.

Thomas: So that the online course that I teach, it's a different set of tools and I put less time into standing in front of 50 students lecturing them for an hour than I do using all of these modern tools and then engaging in dialog and discussion and problems that apply the concepts that we are teaching. So my job as a professor or a teacher in an elementary and secondary school is changing but we're still going to have teachers. Same with nurses and doctors.

Thomas: They're not being replaced by artificial intelligence but they have a lot more data and evidence available to them at the tip of their fingers in a faster way of retrieving the data and more data about their patients that help them tailor the particular treatment and regime for recovery than they ever had before. So that allows them to say, "How

can we reorganize the delivery of patient care? What's the way in which the doctor's time can be better leveraged by the nurses having more flexibility to draw in that information and the medical assistants?"

Thomas: More opportunity to look at the interface and say, "Here are some ... Here, this patient hasn't filled her prescription or has ... coming in for her check-up or her tests to make sure that we're on course. So then, they can be in touch with the patient independently and say, "What's going on here? How can we help you? Let's deal with whatever the issues are in your life." And that's transforming medical care but you still have doctors, you still have nurses and you still have medical assistants but their jobs have changed by the technology.

Thomas: That's the dominant way in which things are going to go and yes, look historically. I grew up on a family dairy farm many years ago and we had a small farm and it was very labor-intensive. Now, you have many, many, many fewer farmers but you have more output from those farms with mechanization and financial tools and planning tools. So the job of the farmers, many have been displaced and had to go on to find something else, but the job of the farmer is still there but it's a very, very different job.

Jacob: I like the focus on change because I think that is definitely a better way to think about it. But as you mentioned, there are some areas that are going to experience some displacement.

Thomas: Sure.

Jacob: So a lot of people for example talk about customer service agents and telemarketers, drivers for Uber or truck drivers. So do you see that maybe most jobs will just change but then there are some industries where, I don't know, entire jobs or careers will be completely, I don't want to say destroyed but completely automated to the point where there's not going to be many humans doing those jobs anymore.

Thomas: Yes. Absolutely. There will be some. They will be dwarfed by the number that are changing the way ... the tasks that the computers or the AI or the robots or whatever do and how humans interact. But there will be fewer people doing many, many jobs. There will be new jobs that will be created. We'll come to that in a moment. But what the good news is, this is not going to happen. We're not going to fall off a cliff in 2020 or 2030.

Thomas: This is going to be a gradual process. So let's take this concern about autonomous vehicles and truck drivers in particular because we will see perhaps fewer truck drivers as the technology gets better and we can put more emphasis on linking various tractor trailers together and we don't need as many drivers. I do not believe, and by the way, our best experts on autonomous vehicles here at MIT who are world-class don't believe we're going to see the day where it's all autonomous vehicles and drivers are going to be eliminated.

Thomas: There's just too many complications, too many risks, too much variability in whether traffic conditions and unpredictable events. But the role of the driver will change and we probably will need fewer of them because we'll be able to link some of these trucks into essentially the caravans that ... on the road. So yes, some of the demand will go down and we'll have fewer, but it's going to be gradual.

Thomas: And that means we can prepare for the future by training people to take on the new jobs that will be created as we move from fewer people doing the physical work of loading and unloading a truck, because you'll have more automation in that area, but we'll need more people in logistics who route these trucks, who monitor how the trucks are going and that's a different set of skills. And if we engage the workforce now, we start training now before those technologies hit the workplace, we can help them adapt.

Jacob: I love also that you mentioned that change is gradual because one of my favorite things, and I hear this all the time, I don't know if you have any of these cafes near where you are but there's one in San Francisco and it's called Cafe X. And I've talked about it on the podcast before. And Cafe X is ... basically it's an autonomous cafe. You go up to this little robotic arm, you pick a coffee that you want and it makes a coffee for you.

Jacob: And one of the things that I always find interesting is that people see this cafe and then they take pictures, they do a little video, they put it on social media and it's always the headline of like, baristas around the world are going to be out of a job now. And people are so very quick to take what they see on the fringes and assume that the next day, it's going to become mainstream. As if Starbucks is all of a sudden going to take this Cafe X concept and put it in thousands of their stores around the world and just kick all of the humans out.

Jacob: And I don't know, for some reason, I feel like we have a tendency now to assume that what we see on the fringes is going to become mainstream and disruptive like the next day. And I don't know why that's the case or if you even agree with that but people forget that change is ... It is gradual, right? It's not going to be one day you wake up and there's not going to be any people left doing jobs.

Thomas: That's right. That's right. It is an incremental diffusion process. Some will go faster than others. But it doesn't ... It's not in the nature of things to change in such a big disruptive way overnight. What you see in the history of technological change are constant evolution. You see some breakthroughs but it takes a long time. Artificial intelligence has been around since the 1950s. Some of our most illustrious predecessors here at MIT were talking about this and writing about it.

Thomas: I found in some deep, old archive, in fact a colleague of mine found it, I didn't find it, a letter from Norbert Wiener, one of the inventors of cybernetics as they called it then, AI as we would know it today. In 1947, he wrote to the president of the United Automobile Workers saying, "I'm very worried about what our technologies are going to do to your workers, your members, that they're going to lose their jobs."

Thomas: Well, that was 1947. And yes, technology has become much more productive in the automobile industry but you still see a lot of people working to make cars. Now, that too is changing. The next generation of electric vehicles and so on are going to require much more skills in electronics and change the apprenticeship systems and maybe we certainly won't have as many people on the assembly line making engines and transmissions because they are not going to be needed in an electric vehicle.

Thomas: So again, the mix of skills will change but it will change in an evolutionary way and the smart automobile companies of today are investing and training to make sure that they have the workforce that they need to make those transitions.

Jacob: And actually, I was looking at some of this because I was giving a talk on artificial intelligence a little while ago, and I was looking at the history of AI. And I found that actually, if you go back even thousands of years to like Jason and the Argonauts, in the Jewish tradition, golem, that we as humans have constantly been obsessed with this idea of creating something seemingly out of nothing that's smarter than us, stronger than us that can do things that we couldn't do.

Jacob: We've talked about this for thousands and thousands and thousands of years. So we've been obsessed with this concept for a while. The first automaton I think was in Jason and the Argonauts where he had to basically fight Talos I believe it was, to try to retrieve the golden fleece. And that was the first time in history that as humans, we've come across an automaton. So people forget that this isn't necessarily a new concept. It's been around in myths and in fables and in stories and as you mentioned in the business world since 1946.

Jacob: So it's got some history which I think is pretty interesting.

Thomas: Yes. And it will continue to evolve and there will be disruptive technologies. So if you look at Uber and its associated cousins in the ride service industry. Well, that was a disruptive ... that was certainly ... it certainly disrupted the taxi business but what you had there was a combination of GPS technologies, Big Data technologies, mapping technologies beyond GPS and a different business concept.

Thomas: So the genius whether you like Uber or not, the genius of those entrepreneurs was to say, "I can provide better customer service in a new ... fundamentally new way by using these technologies and changing delivery mode." Now, I don't think it's all a positive and certainly not all a negative. People have strong views about Uber and so on. But that's a disrupt ... that really did disrupt the industry. But we still have people getting ... providing driver services, Uber or call it whatever you want. It's just the different mode.

Thomas: So now again, the people doing that work use ... have the technology sitting on their windshield, on their smartphones and know where the customers are and know how long it will take to get there and know what the rate will be and they can make informed decisions of, am I ready to go and pick that person up? And we as customers have a much more predictable and controllable, something we control, way of getting that

service provided to us and maybe even at a lower price and maybe even at a higher quality.

Thomas: So again, the role of there are more people delivering driver services today than there were 10 years ago, but the way in which they're delivering it is very different and they've lowered the price and therefore, they've increased the demand for that service. And we have to remember, as we lower the price of goods from textiles to clothing in the first industrial revolution, more people could afford to have the kind of clothing and wardrobes that they really wanted at a lower price.

Thomas: So it increases demand but it changes the mix of jobs involved in providing those goods and services.

Jacob: And people also forget that a lot of the ... you mentioned that the taxi business for example, that a lot of the taxi drivers migrated over to Uber.

Thomas: Absolutely.

Jacob: And I think Uber now has over 16,000 employees and although the number as far as how many drivers they have is I don't think there is an exact number out there but I've been reading somewhere in the range of two million drivers around the world. So there's still a lot of people who are doing this, it just pivoted a little bit which is interesting.

Thomas: That's right.

Jacob: But there are some people out there who say, "You know what, this time, it's different. I get in the past, change was gradual, change was slow, but this time, it's different, this time, it's going to be faster change, this time, it's going to be more disruptive change and this time, there's really going to be issues that we're going to need to figure out." So how do you deal with people like that? And there are some very big proponents, some business leaders out there who have talked about this as well who all keep saying that this time, it's different.

Jacob: What do you think? Is this time really different?

Thomas: Yes. It always is different. And the pace of change may be accelerating. So I don't dispute that but that means we have to be more agile and quicker to figure out how to address it, address the changes that are coming. Now, I don't, again, believe that it's going to be some apocalypse that's going to all of a sudden, appear one day unannounced and uninvited. It will be incremental. There will be some disruptions like the ... I would take the Uber taxi business. That's a clear disruptive use of technology and organizational design strategy to change the business.

Thomas: And we'll see more of that. We're seeing that we're seeing new forms of healthcare delivery with more use of data, more use of robotic surgeries, use of technology that reads X-rays and reduces the ... or changes the jobs of radiologists but may increase the

demand for X-rays and radiology because it lowers the price. So all of that is happening but it's not inevitable that we are just passive victims of this. That's where I fundamentally disagree with these futurists.

Thomas: I believe that if we understand and if we change the way we introduce technology to allow workers as the Japanese say, to give wisdom to these machines, we will get more innovation, we will get higher productivity and we will get more jobs that are augmented by technology, changed by technology in a positive way. And then as our very, very eminent economist here at MIT, Nobel Prize winner Bob Solow has said, "This time, it might be a little different but the real challenge is the distribution of the benefits of technology."

Thomas: Does what's really different right now because so many of the benefits are going to such a small segment of the population rather than broadly distributed. So when Bob Solow says the real problem and what's really different now compared to maybe some prior periods is we have a distribution issue rather than a distribution of income from the growth of technology rather than fear of the technology itself.

Jacob: You mentioned earlier that we would get to this conversation of job creation.

Thomas: Yes.

Jacob: And we've certainly talked a lot about how technology might impact jobs and replace or change jobs but we didn't actually touch on job creation yet. So what are you think there? Are we going to see a lot of new jobs? What type of jobs? And then maybe from there, we can jump into maybe skills that would be relevant in this new world of work?

Thomas: Sure. Sure. Well, just think of ... not simple occupations but simple ... We never had web designers until we had the web. So all of a sudden, we needed people who could develop those interfaces and make them readable, attractive and so on. So there is a job that comes out of the technological change. We're going to see more of that. With artificial intelligence, we see enormous demand for Big Data analysis, data scientists.

Thomas: We didn't even ever use that term, data scientist until maybe a few years ago and now, it's all over the place because everybody recognize that beneath people who can use data more effectively and present it, communicate with data to use it to solve problems and to communicate alternative solution options. So there will be more jobs. We didn't have people who were artificial intelligence designers and users.

Thomas: So IBM Watson is just one example and they have many competitors in the healthcare industry that employs thousands and thousands of people to develop these new systems. We have all new businesses that are doing automated medical records technology development and sale. And so there's a company called Epic which somewhat controversial, some people don't like their system, but this is a company that grew up with automated medical records technology and it has a big campus and a big number of employees located in its headquarters in Madison, Wisconsin and it's created an enormous amount of high quality jobs.

Thomas: So this is going to continue to develop, but that means we've got to have people who can be data scientists. It means we have to have people who can communicate with data. It means that we have to have people who have the combination of what we refer to as the STEM skills, the science and math and engineering skills with the soft skills that is the ability to conceptualize a problem, to communicate with customers about how they might use these new tools to solve problems in a group to interact so that we get the users of the technology, helping to inform the technologist on what is really needed to get the work done.

Thomas: So it's hybrid set of skills, both the data analytic and the technical skills and the soft skills that are in most demand, are growing and will command the best salaries and be the best jobs in the future.

Jacob: It sounds like new jobs will be created but we probably don't even know what all those new jobs are going to be.

Thomas: That's right. And they won't all be jobs that are just mediated or dominated by technology. Let's look at healthcare. Better or for worse, you got us baby boomers who are aging and there are a lot of us. And we hope that we will have longer life expectancy because healthcare is getting better and people are working as ... in as many physically debilitating occupations as in the past. So there's enormous, enormous growth.

Thomas: Home healthcare aides to essentially take care of elderly as large number of people move into that stage of life. But what we need to do is to upgrade the quality of those jobs. Home healthcare aides are paid a low wage, not really a living wage. They don't have many of the benefits that are needed for to support a family so we rely on a very low wage group of people to provide very important social services and healthcare services and family services and childcare services for that matter.

Thomas: We've got to upgrade those and that's where we need new labor organizations to really negotiate to improve conditions of low wage workers to open up opportunities for them to learn how to be more productive, to have the language skills, to have the problem solving skills, to take on some of the other responsibilities of healthcare, of communicating with the professionals in healthcare area that my family here has a particular person who has a set of needs and I know it.

Thomas: I know this person well and I want you to provide better healthcare services for ... And they're called patient navigators now. Nobody ever heard of that term 10 years ago but we have patient navigators. And home healthcare aides can be great patient navigators because they ... if they have the right training, they can see what some of the problems are, see the symptoms and know where to go to find the healthcare.

Thomas: So we got to improve the quality of many of the social human services jobs that are going to grow in large numbers and upgrade wages, benefits and the productivity of those people so we can afford to pay them better.

Jacob: Somebody from LinkedIn, Damien O'Conner wanted me to ask you a question. And his question was, "How will leaders need to adjust or change to be effective taking into account the future of work?" So all these different things that we've talked about, what does this mean for leaders?

Thomas: Let me tell you what my MBA students are telling me just today because I just asked them in a short online course I'm teaching with them. And their first assignment after reading some of the things, we're talking about a literature that we exposed them to is what does this mean for you as a future business leader? And the answers come back, just ... I'm thrilled to read these because I think they're getting it.

Thomas: I have to find ways to be responsive to my shareowners or investors but I also have to find ways to invest in my workforce to communicate with them that their skills need to stay current and make sure that they're willing to engage in more, what do you call it, lifelong learning or whatever term you want to use and then I've got to provide the opportunities for them.

Thomas: So I have to be ambassadors for investment in training education, I have to model that behavior, I have to make gone and away that reflects how adults learn by applying a new knowledge and learning on the job and give them the opportunities to put it to work in projects and so on and then listen to the workforce to say, "Now, how do I ... What else do I need to be productive and to stay with this organization over a period of time, a long period of time?"

Thomas: That's what leaders need to do. They need to listen to the workforce, they need to communicate with the workforce, the realities of today that their jobs are going to change and the skills that are required are going to change and they need to be agile is the kind of jargon, jargon laid word but they need to be willing to invest, they need to be willing to try some things, to work with others, to develop the communications and maybe more of the analytic skills that jobs of the future are going to demand.

Thomas: But it's our job as business leaders to create the environment and the opportunities and to encourage the workforce with realistic statement where jobs are going to change as they move into those leadership positions.

Jacob: For people listening to this, and maybe they're not leaders, maybe they might be individual contributors, entry level employees or maybe they're leaders, but for people listening to this, they're a little bit worried, fearful, scared of how their jobs or careers might change. Do you have any advice on what they can do? Anything that they should learn, skills that they should focus on or should they just not be worried about anything?

Thomas: They should be worried and they should be proactive. They need to make sure that they and their peers are getting good quality education in schools, the formal education that they invest in. They can no longer assume that people with just a high school education are going to do well. Those days are over, and they have to find additional education beyond high school whether that's a 4-year degree or a graduate program, beyond that,

or a technical school where they can learn a good trade and technical set of skills and get into an apprenticeship. Those are all choices but they're necessary choices.

Thomas: So just putting their head in the sand and saying, "I finished school. I didn't like it. I'm not going to get anymore" ... those days are over. They have to confront that. And then secondly, they need to recognize that the skills that are needed are this mix of behavioral skills. They have to have good work habits. They have to be reliable. They have to be willing to be flexible sometimes on when they work to demand reasonable schedules in retail and in restaurants and hotels and so on.

Thomas: And they need to be assertive in working with their employers and in reaching out for modern labor representation to say, "We need to work on this together. We don't have to work on it just as adversaries but we need to work on it together and we're going to demand that employers respect our rights to have a voice at work and then we're going to do our part to make sure that we take advantage of skill training opportunities as they come along."

Thomas: Skills that are needed are going to be communications, problem-solving, analysis, the ability to work together in teams because the job structures are changing and then the ability to help make these technologies really pay off for the business they will be in.

Jacob: I like that you mentioned being assertive and speaking up because I feel like over the past few years, we ... or employees haven't done a very good job of doing that but it seems like now, that that's a critical aspect of being able to speak up, talk to your manager, talk to your teams about what you think you need to be successful and just letting that voice be heard.

Thomas: Absolutely. We have done some national surveys in the last two years and we find that there's a voice gap at work that workers ... a majority of workers report they have less influence on workplace issues around compensation, around training, around new technology, around respect for themselves as individuals and freedom from discrimination than they believe they ought to have. And that's a big problem in society. Close that gap.

Thomas: Now at the same time, there's an increase in the number of workers who say I want some form of representation. Call that a union if you want but what they're saying is, "We want a voice at work on workplace issues. We want a voice to negotiate a fair compensation package for us and we want some voice in how this company, how this organization is going to be managed and run so that we can go home and talk to our children, our grandchildren, our neighbors and be proud of the services and goods that we are producing because we want them to be valued."

Thomas: That's what we heard from the Google employees on how they're a special ... they're highly professionalized but look what happened in November when they had that one-day work stoppage. They said, "We want protection against sexual harassment because we think it's not adequate in this organization. We want transparency in compensation between men and women. We want to elevate workers to sit on the corporate board of

directors so that we can bring our voices to the key decisions. We don't want to run the company but we want to have our voices heard in those ... the boardrooms and we want a fair way of resolving our conflicts. We want to get rid of this very biased and forced arbitration process and have a fair procedure for a conflict resolution."

Thomas: Now, that's what the workforce is telling us in our surveys and in their behavior and in the teacher protest or in Instagram and workers and contractors who said that the employer had changed the compensation system and was essentially stealing their tips. And we need not by design but just ... that's the way the new system worked out. And lo and behold, when they used petitions and modern forms of communication to raise their concerns, Instagram management said, "Okay. We're going to work with you to fix this compensation system in ways that makes sense."

Thomas: So I think raising workers' voices in modern ways is absolutely essential to progress in this world to shape the future of work in ways that meet the workers' expectations but allow the workers to really contribute to advancing the performance of their organization and by doing so, becoming more productive, making it more successful and then being able to claim their fair share of the productivity and the profits that they help generate.

Jacob: You've mentioned lifelong learning a few times and I've talked about it a bunch on the podcast as well. But can you help listeners understand what does lifelong learning mean and do you have any advice or suggestions or tips on how to actually practice and implement lifelong learning? Is it just about reading books or what does it really entail?

Thomas: Well, there's very little adult learning that can be accomplished just by reading books or even a manual or watching a video. They can be part of that process, so that's part of the intellectual learning process. Today, the key for workers is to say, "Am I getting opportunities on my job to experience new tasks, new technologies, new opportunities? Are we working together so I'm learning how my colleague's job is done so that I can fill in for her/him?", if they happen to have a family emergency or call in sick or out for a period of time, whatever might develop.

Thomas: Now to do that, sometimes you need to then go back and learn some new things, some new skills from an educational institution and that's where all these online and available media opportunities are ... have such high potential. And then sometimes, you need to go back to get a new degree, get a new certification from an educational institution. So the worker today has to look at all of those options.

Thomas: If they're not getting opportunities to learn on the job and to get more challenging responsibilities and broaden up their skills and to get information on where the ... who jobs are coming from, then it's time to either raise their voice to demand it as the hotel workers have done with the casinos in Los Angeles ... Las Vegas and with Marriott in cities around the country.

Thomas: They said, "Technology is coming in our industry. We know it, we can see it, we're not going to be able to stop it but we want advanced information on what that technology is

going to look like so that we can prepare. We want to have a voice in how the technology is going to be deployed to improve our jobs and to make them more productive and we want advanced training so that we're prepared for those technologies and we can really make them work for the business and for ourselves. And then for those who will be displaced, we want a fair compensation adjustment program for them."

Thomas: That's what workers today ... They need to raise their voices as individuals, they need to be open and looking for opportunities for further education and development, take advantage of them when they are available, call for more of them on their job individually and collectively perhaps. And if they don't get it, they should go somewhere else. Go to the good jobs. Use Glassdoor. Use LinkedIn. Use all of the job market services that are available to show them if their employer isn't a good employer, what are my options out there?

Thomas: And I think that is becoming a new source of power for people because there's so much more information available now. You can go on Glassdoor and see if your supermarket chain or your big-box store has got ratings by employees that are better or worse than their competitors. And if they're worse and you can't change them, then look for a job with better rated employer in one's neighborhood.

Jacob: I love that. Yeah. If it's not good, get out. Go find a company that deserves your time and attention and effort and resources. Don't struggle and suffer for a company that doesn't take care of these things for you. Absolutely.

Thomas: Absolutely.

Jacob: Well, maybe one last question for you before we wrap up and then I can ask, you can mention your course and some of the stuff you're involved in now. The very last question for you before we get to that is when you look at the future, are you optimistic or are you pessimistic about the future of work?

Thomas: I'm a perpetual optimist. I think I am so excited that people like you and many of our peers now around the world are beginning to turn the corner on getting away from these wild, often inaccurate and unsubstantiated predictions about what's going to happen to say, "Let's get on with the task and make it happen." That's what gives me the most optimism for the future. And if we can educate our students and our ... and the next generation of leaders to get on with these tasks, I think there's a path forward.

Thomas: That's our job, to make sure that we provide people with the ideas and the tools and the institutions to make a difference and I believe we will face the future. We will have some people who are injured ... not hopefully physically but set back by ... and displaced by technology but we can prepare for those days, give them the skills now needed to adapt and if they do lose their jobs, then we can be fair to them in terms of some kind of compensation or bridge to retirement if that's the case.

Thomas: So I'm an optimist but only if we get on with the task, if we're not passive.

Jacob: I couldn't agree more. Can't just be a leaf blowing in the wind, you got to be more active. Well, where can people go to learn more about you? I know you have a new course that just launched called Shaping the Future of Work. So anything that you want to mention for people to connect with you, with MIT, with any of the work that you're doing, please feel free to let listeners know.

Thomas: Well, we would love to have anyone who's interested join this online course. It's free, it's open to the public. Just started this morning, you can look at the videos and do the little exercises as you see fit in your own time and you can do that by just going to what's called edX, E-D-X, and just put in Shaping Work of the Future. You want to put in my last name, K-O-C-H-A-N, almost any combination of that on Google is going to get you to the course.

Thomas: There's an easy link, you can take ... watch a little video if you want to see if this is really for you, you can just register online and join the conversation and sample it as you see fit. We've got a very, very rich global audience that's part of this course now and we would welcome more. We also ... I would urge you to look at our websites here at MIT. Again, if you just Google MIT Work of the Future, you will get a website that is this taskforce.

Thomas: We also have something that's called the Good Companies, Good Jobs Initiative and I'm very much a part of that. Google Good Companies, Good Jobs Initiative at MIT, you will get a lot of resources along this line.

Jacob: Very good, and then people can also go on to Amazon. I know you have a couple of books there, lots of articles out there. So pretty much, if you just Google Thomas Kochan, K-O-C-H-A-N, you're going to find a ton of stuff spanning many, many years. So lots of fun stuff to check out. Well Thomas, thank you so much for joining me. I really appreciate it.

Thomas: Jacob, thank you very much. I really enjoyed it and let's go to work.

Jacob: Exactly. I love that message. Thanks everyone for tuning in. My guest again, has been Thomas Kochan, Professor of Management and Work and Organization Studies and Co-Director at the MIT Sloan Institute for Work and Employment Research. Make sure to check out his course and his books and I will see all of you next week.