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CHILD 1: When I grow up, I want to be a illustrator or a tailor.

CHILD 2: When I grow up, I'd like to be an actress, artist or an animator.

CHILD 3: When I grow up, I want to be a stunt double.

CHILD 4: I want to be a cleaning lady when I have my own business.

RAY HARRIPAUL: Hey, Shawne. What career did you dream of as a kid?

SHAWNE MCKEOWN: Cartoonist, writer, writer-novelist, writer-journalist and just a general bon vivant. What about you?

RAY HARRIPAUL: Not as cool and exciting as yours but bus driver and a professional golfer.

SHAWNE MCKEOWN: Oh, that's cool. Well, remember how straightforward and simple it was to figure out what you wanted to do when you grow up?

RAY HARRIPAUL: Yeah. Those were the days. Carving out a career path can be a challenge but now I think it's becoming more and more complex.

SHAWNE MCKEOWN: Yeah.

RAY HARRIPAUL: And we're gonna talk about that today. Welcome to Work Shift.

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RICK HUIJBREGTS: And I think we as humans are needing to learn how to interact with this new reality. So, I think that in here lies the opportunity where we need not to be scared of it. And we do need to all learn how to, how to-- you know, it sounds weird-- collaborate with automation.

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RAY HARRIPAUL: Collaborating with automation. What do you think of that?

SHAWNE MCKEOWN: M'hmm. Not sure. But let's find out.

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RAY HARRIPAUL: Digital disruption.

SHAWNE MCKEOWN: The gig economy.

RAY HARRIPAUL: Artificial intelligence.

SHAWNE MCKEOWN: Robots.

RAY HARRIPAUL: There's a lot of talk about these things in the media and online but what do they mean for you?

SHAWNE MCKEOWN: I'm Shawne McKeown.

RAY HARRIPAUL: And I'm Ray Harripaul.

SHAWNE MCKEOWN: We're exploring the future of work and changes you can expect to see at your job.

RAY HARRIPAUL: We'll tell you how this massive digital shift could change your career and what you can do to adapt, evolve and thrive.

SHAWNE MCKEOWN: In our first episode, we're going to look at the big picture with Dr. Rick Huijbregts. We're gonna explore new technologies and trends that are revolutionizing the way we work.

RAY HARRIPAUL: Rick spent 12 years with the IT and networking giant Cisco, helping businesses evolve and transform with new technologies. He's passionate about city building, smart cities, real estate and the world of tech. Now he's Vice President, Strategy and Innovation at George Brown College.

SHAWNE MCKEOWN: Rick earned a doctorate from the Harvard University Graduate School of Design. Oooh. A Master's of Science from Delft University and he also studied construction management at Tilburg Polytechnics College in the Netherlands.

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SHAWNE MCKEOWN: Can you explain what the fourth industrial revolution is and what it means to everyday people in a wide range of industries?

RICK HUIJBREGTS: Sure. I'll give that a try because you're right, it's a lot talked about. It's often I guess labeled by the industrial sector in manufacturing and they use industry 4IR or fourth industrial revolution to indicate their transformation but I do believe the implication is one that, that impacts all of us. The change itself though is not new. We've gone through a first industrial revolution and electrification and steam and then, right, factories, so we've seen transformation of industries and sectors and jobs frankly for hundreds of years. One hundred

fifty years ago I believe in Ontario something like 90 per cent of employment was related to agriculture. Now 150 years later it's only three or four per cent. It doesn't mean that suddenly everyone was without a job. New markets and new industries and new opportunities came about and new jobs came because of a lot of this evolution and innovation that has taken place.

SHAWNE MCKEOWN: But this evolution is happening much faster.

RICK HUIJBREGTS: It is happening faster. It may be more pronounced in a way but even there I'd say if you look at a picture of New York City, 1900s new year's night, there were only horse and buggies, no cars. You look only 12 or 13 years later, no more horses, all cars.

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: That's quite disruptive for a city-- in a city infrastructure and city building. And that was our grandparents or for some maybe the grandparents of our grandparents' time. So again, I think the change is not something we should fear. The speed may be daunting.

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: And I think the implications seem more profound. But we're maybe equally scared of it as we're already benefiting from it. I'm sure many of us take an Uber or do an Airbnb, part of some sharing economy. We all have smart devices now that we rely on when we drive to work for instance if we think about Waze or Google maps. So, it has given us as many conveniences and new experiences that we benefit from every day that I think will also give us the opportunities to continue to evolve our expectations and the jobs and the industries. So, the fourth industrial revolution, it's kind of the coming together of kind of the industrial, physical, mechanical world with the digital world which is going to give us kind of a new dynamic almost of the environments in which we live, work, learn and play that I think we as an educational institution and industries today have a great opportunity of shaping.

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: So, you're right, it's scary on one hand because we don't know what the future looks like but it's such an exciting opportunity that I think we're in the midst of and I think looked at to help formulate and shape and grow.

SHAWNE MCKEOWN: Well, that example you gave of the change, the disruption in a city from horse and buggy to automobiles is a great example. Some people, you know-- I wonder too about-- I think maybe some of the unease comes from people who may currently work in industries that are being disrupted: cab drivers, jobs that are factory jobs that are starting to be automated and some people may be wondering, "Is my job going to be automated and how can I kind of get ahead of the curve before I'm made redundant or before my job gets phased out?" How do you think work will change and even finding work will change in this new environment?

RICK HUIJBREGTS: That's a great question and may be a million-dollar question if we knew that answer. Again, I do believe we've seen the movements before from factory workers in the old days to agriculture in the old days that have all transformed. The industries haven't necessarily disappeared, they have-- they look different and are transformed. I think what we're going to see more and more is the need for us to work with automation and technology. I am not really convinced that all our jobs are going to be taken over by artificial intelligence or some magic, you know, pixie dust new technology but I think the reality is we're gonna be more immersed in technological innovation that is going to augment the things that we do. And yes, sure there are gonna be jobs less in demand. I think in the mid-west in the United States, the number one popular job is truck driver.

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: And if we just look at autonomous vehicles and the evolution there, there is I think a potential of a future where trucks do drive themselves and the truck driver as we have them today won't be there. Now these new automated and autonomous trucks need to be built, need to be maintained, need to be programmed. Infrastructure; the roads we have and the street lights we have and the roads need to be built and maintained so I think with the arrival of this new innovation that may have a destructive impact on jobs and technologies, immediately opens up new industries, new need for technologies, new need for innovation and new need for jobs. And I believe again there's the role for an academic institution on what can we do to help transform or evolve or retrain people's skill set. And I think the world of continuous learning or lifelong learning; we're never done learning. We always want to evolve and grow and grow with the opportunities in front of us. We're gonna be more important in that ecosystem than we've maybe ever been before.

SHAWNE MCKEOWN: Okay. So here's an interesting question 'cause that makes me think okay, say you're, you're in a job that-- say you're a truck driver right now and you foresee your job being phased out possibly in the future where you live. And you think okay, I've gotta retrain, I wanna get-- stay on top of this. And the idea of going back to school-- say you're in your early 50s, the idea of going back to school for a three-year diploma or a four-year degree seems a bit too much. What do you see-- do you see the future of education and helping people retrain become more of like a micro-credentialing aspect to it?

RICK HUIJBREGTS: Yeah, I think-- I think-- I think that's right. I think the speed by which we will consume and need to consume curriculum in education is going to be similar to the speed by which we see industries evolve. So, I don't believe all three-year and four-year credentials will go away. I think we're still gonna see certain jobs and expertise needed that require that but I do think it's gonna be a broader mix of alternative delivery, alternative consumption; during the day, in the evening, both mixed physical as well as digital. It becomes much more personalized.

SHAWNE MCKEOWN: Yeah.

RICK HUIJBREGTS: So that I can learn at my speed and my way which will be very different from 40 or 50-year-old retiring truck driver to an 18-year-old eighteen high school student who is currently probably playing Fortnite and wants to think about how's technology gonna change his or her experience in the classroom. And we as an educational institution, I think will certainly over the next 10 years as we think about our strategy and our future be a supplier of a plethora of experiences and modes by which our future work force can come and consume and can learn and can collaborate and can constantly prepare themselves for the new jobs of the future.

SHAWNE MCKEOWN: Okay. That segues very well into my next question. So, what are the-- what is the skill set, what kind of things are you gonna have to be able to put in your, your skill basket per se of-- because it sounds like maybe the, the days of the linear career path over? Which is maybe for some people might be daunting but for other people might be very exciting. You can kind of have a whole bunch of cool skills and mush them together and make your own really cool, unique career path. But it sounds like transferable skills will be really important. So, what do you think? Like, you know, you've got the technical skills related to your specific industry of interest but what are the other skills you see people really needing to succeed?

RICK HUIJBREGTS: Yeah, I think you're right. I think technical skills will remain. The way I learn them may be slightly different through simulation or different means of education. I think as we're already doing work integrated learning and being actually on the ground with employers, working on real projects it's gonna be and already is among the best probably learning experiences. But it is going to be augmented or infused more than ever before with, call it the human skills or the soft skills; whatever term or label we give it. It's the ability to collaborate, to communicate, to be entrepreneurial, to be creative, to be innovative, to be agile in, in doing work. This is not for everybody. Some people wants a job or needs a job that, you know, keeps them busy and they wanna just have their-- work with their hands and, and may not be public speakers or entrepreneurs.

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: So, I think for us to figure out how to offer these experiences and these capabilities augmenting-- getting still the right hard skills is what will continue to differentiate us as an institution but I think where we're going to see the need for our next generations of work force gravitate to. And already we're seeing data come from organizations. Again, we may not like it, we may not agree, we may not know because sometimes these predictions are five, ten, fifteen years out but if we just look at the last fifteen years and all the change we have witnessed we can only assume that change will continue to, to happen. We're seeing more and more people having precarious jobs—

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: Change jobs. The idea of being in a career for 30 years with the same company is pretty much not there anymore. We're actually already seeing research showing

that people have-- even when they have permanent employment somewhere but that they already have two to five different jobs.

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: So, we're seeing, I think more and more where people package and from manual almost create their life, grow their lives, do employment.

SHAWNE MCKEOWN: Yup.

RICK HUIJBREGTS: And change it up as they go. And again, it's difficult and daunting for some but it's an opportunity and a challenge for others.

SHAWNE MCKEOWN: So we're not all gonna have to learn how to code.

RICK HUIJBREGTS: Great question 'cause I think in the-- if you ask me three years ago I would have been of the like, well yeah, we should teach everyone to code. There's something to it because you can argue--

SHAWNE MCKEOWN: I guess 'cause it's good to be not just a passive user of the online world.

RICK HUIJBREGTS: I think digital literacy is going to be key.

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: I think no matter what job you are in, if you're a nurse, a carpenter or a chef, being digitally literate, knowing how to take advantage of the digital world and participate in it-- not one that's just digital but also increasingly global--

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: And, and fast pacing, I think that is going to be key and you know the work we do with for instance, the Toronto Public Library. We were part of the digital literacy day to make Torontonians or expose Torontonians to digital capabilities. I think that's going to be key to everybody.

SHAWNE MCKEOWN: Yeah.

RICK HUIJBREGTS: For some that might include understanding coding and I think there's a value to that. I made my kids take robot class during lunch recess in school so they hated me for it for signing them up but they loved every second of it. And they're not coders now but I think they got their hands on something that they had no experience in and I don't think actually any of them may pursue that as a career but I think it will help them better understand what's happening around us.

SHAWNE MCKEOWN: And they won't be intimidated or afraid even of that technology in the future.

RICK HUIJBREGTS: Truth is because kids of my age already are and I think the way they embrace and absorb new capabilities it's-- and I like to think I'm innovative and typically at the front end of it but then look at them and I realize how behind I am. I was told a week ago that me being on Twitter makes me old and I thought I'm hip on Twitter but so, you know, for every generation, all of us it will be a different phase and a different stage. And again, we can see that as a scary obstacle, heels in the sand or we can see that as an opportunity. Let's embrace it, let's work together, let's collaborate on how can we take advantage of---

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: What is to come.

SHAWNE MCKEOWN: Yup. And when you were talking earlier about a whole host of new jobs that could be created with new technologies emerging in different industries, is that part of this-- what's being called like, human machine relationships in the future? And how do those work?

RICK HUIJBREGTS: Yeah. I think you asked about what are the skills we need to have and yes, soft skills, collaboration, all that stuff but the skill to work with automation is going to be an important one. This is not either/or; you have a robot or a human. This is humans working with technology in different ways. We're already seeing terms introduced like 'digital twins' where physical assets and it could be a building, a city, a space, it could be your car. You have digital twins where the digital and the physical world start to blend and I think we as humans are needing to learn how to interact with this new reality. So, I think that in here lies the opportunity where we need not to be scared of it. And we do need to all learn how to, how to-- you know, it sounds weird-- collaborate with automation. And I think it's gonna augment everything that we do and not for the sake of technology by the way and I hope this conversation doesn't make it sound like oh, I'm so keen on everything should be automated. This is about creating new opportunities which is gonna enhance our quality of life, hopefully increase prosperity and opportunity for everyone. Some of it is because simply the world is moving and the train has left the station so we better be on board so that we can debate that not all of what we see is beautiful and ideal. And we see that the discussions around cyber security, safety, privacy and those need to be had. And again, coming back to us as an education institution, I think we have a role to play to shape that dialogue. But then between all that kind of fuzzy, kind of maybe doom, I think there's a lot of bright light here that is gonna create new opportunities, new jobs that we need to help our employers as well as our future students to prepare for.

RAY HARRIPAUL: For example, in hospitality we've, we've done some research about this fourth industrial revolution. Certain countries have an automated concierge whereby you, you step in

and you ask a question and it's got multiple languages from all over the world. Where are some opportunities where you feel like we can take digital and complement it with the people skills?

RICK HUIJBREGTS: Yeah. How much time do we have? In every division, for every program, for every job. If you are gonna be a nurse, I think technology already is augmenting what we do through iPad or technology that allows us to see real time information or diagnostics and respond to it much quicker. Which I think then allows people in the health sector to focus on what's important and that is care and being with patients. You talk about culinary arts or hospitality, I think the implication there from digital concierge to frankly, robots that are going to be waiters and we've seen that too; to much closer to home. I think the whole notion of online ordering and Uber Eats and I'm convinced is kind of shaking up that sector already, right? That traditionally you have two options: eat at home or go to a restaurant. There's no more. There's this other business models that have popped up that are reimagining supply and demand. Same with construction. You look at digital design technologies like building information, 3D printing, 3D scanning. Again, I think still we're gonna require people knowing how to use all those capabilities but to provide more accurate, more or less of doing construction and design projects with less problems. So, the list goes on and on and I think any job we prepare students for is going to be one that is going to be infused with technology advancement and therefore working with an understanding how to work with the digital capabilities is going to eventually be key for all of us.

RAY HARRIPAUL: What is some advice that you have to folks that are scared of experiencing life through a phone or a tablet? Like, I'm sure in your in your work experience you've experienced this resistance.

RICK HUIJBREGTS: It's a good question because now we get into the psyche of people. Change is scary.

RAY HARRIPAUL: Which is important though, right?

RICK HUIJBREGTS: It is important.

RAY HARRIPAUL: 'Cause it's a mind shift.

RICK HUIJBREGTS: Yeah.

RAY HARRIPAUL: And how do we slowly get people on board?

RICK HUIJBREGTS: This is about change management and seeing people that it's not all bad and we try to do that in a world where we are inundated with negative messaging around Facebook and data security and-- right? So those are realities that industries have to face with while we try to help our students and our employers to focus on the bright lights. Also-- and the truth is, sad or not, not embracing it or ignoring it is unfortunately not an option anymore but we also don't have to be all in. We can, you know, get going. Try to download an app, try something. It

may be small little improvement or an experience you have and I'm sure everyone who downloaded Uber for the first time ago was like, "Oh, what is this thing gonna do? And we still hear bad messages but millions and millions of people taking Uber. Yes, that transforms an industry; hasn't quite completely eliminated taxi services. It's actually forced the taxi industry to reimagine their business model. So, I'd say try it. I would say don't be scared but that's obviously a silly answer.

RAY HARRIPAUL: I don't think so.

RICK HUIJBREGTS: And I think this is through collaboration. I don't think anybody is going through this transformation alone. Learn from your peers; learn from other industries; maybe even in other sectors; have a dialogue; learn from each other's mistakes. But don't walk away from it. Try to embrace it and even if it's with baby steps. I think the next generation will come in and help us to accelerate that and embrace it in different ways.

SHAWNE MCKEOWN: And I don't think anybody has to worry about malevolent AI lords. Do they?

RICK HUIJBREGTS: Well, you know, I don't think so but Elon Musk will say we may. (laughing) So.

SHAWNE MCKEOWN: It'll be fine.

RICK HUIJBREGTS: Yeah. I remember watching TV when I lived in the U.S. and my wife-- then not wife yet-- but we saw commercial from one of the carriers there where you could be on the beach and check your email while you're on the beach. And I remember saying, "That's never gonna happen."

SHAWNE MCKEOWN: Why would you want to do that?

RICK HUIJBREGTS: Why would you want to do that, right? In 2007, I think, is when the first iPod came out and now tablets and smart devices have well over taken what we would know as PCs and laptops. So, this is happening and again, it's figuring out through I guess the soft skills and enabling people to embrace it and learn from it and try to benefit from it. I think this can be good too.

SHAWNE MCKEOWN: M'hmm.

RICK HUIJBREGTS: You know, with everything, if there's people want to do bad with it, that may be possible but I think again as an educational institution, our job is to show the good and try to figure out how we work with industries for students with the government to turn this into something that's gonna benefit us all more than I think we've seen anything before.

SHAWNE MCKEOWN: Right on.

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SHAWNE MCKEOWN: It's time to take a look at the future want ads.

RAY HARRIPAUL: We're going to ask our guest to give us an outline of a job that doesn't exist yet. According to the Institute for the Future, a non-profit think tank based in Palo Alto, California, 85% of jobs that will exist in 2030 have not been invented yet.

SHAWNE MCKEOWN: Okay. Rick Huijbregts. What have you got for us? What job do you think will be in demand in the future?

So, let's check out the future want ads. In this segment of the show we ask industry experts-- that's Rick here-- to put on their future forecasting hat and tell us what jobs they see a demand for in the coming years.

RAY HARRIPAUL: So, Rick you may have-- you may have seen this. We've asked you to create a sample of a job description for 2030 and we'd like to know what that job is.

RICK HUIJBREGTS: I think a real job will be a robot companion or robot trainer. Someone whose job it is---

RAY HARRIPAUL: What will a robot trainer or companion do?

RICK HUIJBREGTS: These robots are going to need to be trained in hospitals. Now-- so I say this is the job of the future. I don't think it's going to take us long to see that some of this already happening in Japan and China because they're looking at for instance their aging population and just know that they don't have enough people to support the next generation elderly with personal care. And that automation and robots are going to have to augment this but they cannot be ugly machines that feel like they just manufactured a car. They have to not only look kind of human almost and friendly and warm but they're gonna have to behave as such. So I think one of the jobs we're going to see and we may end up training our future students on this-- how become actually trainer of automation.

SHAWNE MCKEOWN: What skills do you need for this job?

RICK HUIJBREGTS: Patience because I think a new robot is probably like a young child. You know, I think very healthy doses of the human skills itself. Like how can you train a robot if you don't have the skills to teach? So empathy, creativity, collaboration, entrepreneurship, agility, flexibility I think are going to be traits we would need in this new hire that I can put in front of my robots that go around the world and hopefully do good and bring a human touch to the equation.

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SHAWNE MCKEOWN: That's a wrap on our first episode of Work Shift. What did you think?

RAY HARRIPAUL: Want to share your thoughts on automation and digitization? Have new technologies changed your career? In fact, are you thinking of making a work shift? We wanna hear from you.

SHAWNE MCKEOWN: Send us an email to workshift@georgebrown.ca

RAY HARRIPAUL: And be sure to download episode two when we talk about new opportunities, robots and big data could create in the healthcare field of the future.

SHAWNE MCKEOWN: This podcast is brought to you by the fine folks at George Brown College. We want to thank Rick Huijbregts for sharing his vision with us today.

RAY HARRIPAUL: It's the end of your Work Shift. See you next time.

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