

Don't Be Afraid of the Robots

Artificial intelligence will disrupt industries & business models. How we handle the transition will determine who wins & who gets left behind.

■ By Janine Coughlin

Stories of villainous robots and artificial intelligence run amok have been terrifying us for ages. Remember the robots in Isaac Asimov's short stories, the evil HAL 9000 computer in 2001: A Space Odyssey, and the dystopian world of the Terminator film franchise, to name just a few. So as artificial intelligence (AI) moves beyond the boundaries of our imaginations and into the real world, who can blame us for greeting it with trepidation?

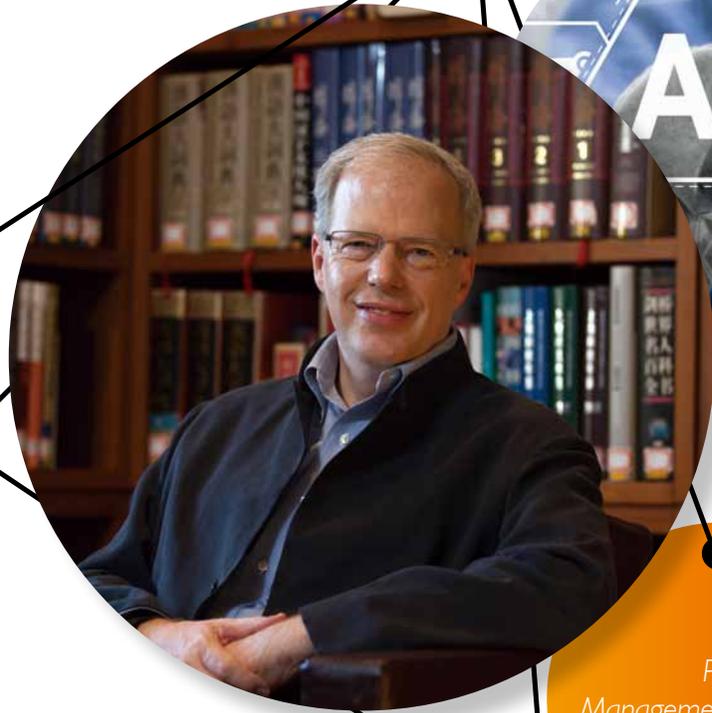
"As always there's a fear of Big Brother and technology," says Professor of Management Practice Jeff Sampler. "The Luddites in the Industrial Revolution destroyed factories because they thought these machines were going to take their jobs, they resisted technology. But historically technology has always created more jobs than it has destroyed. It's one of the fundamental growth engines of the world."

However some disruption is inevitable as various industries begin deploying AI technology. Factories have been at the forefront of employing robots as manufacturing transitions to Industry 4.0, but this is only one of the many ways that AI is being infused into the entire value chain. AI is also being used in product design, supply chain management

Chinese Go world champion Ke Jie lost to Google's AlphaGo computer.


 Ai

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*Professor of
Management Practice
Jeff Sampler*

and logistics. Though highways full of self-driving cars are still probably many years away, we already have AI applications in consumer devices such as lights, thermostats and smart phones. The finance and healthcare industries are also being rapidly transformed by AI thanks to the rich collection of big data that they handle. This fast shift towards a brave new world raises many questions. How should companies adjust their strategies to survive this transformation? What kind of industry consolidation will we see as AI creates market efficiencies? What skills should executives have to ensure they are still valued in the job market? Where will China be in this new AI age?

“China is well-positioned to be a leader in AI,” says Prof Sampler. “I think what’s interesting is that for historic reasons, China missed the industrial revolution. I don’t think they are going to miss this revolution. Clearly they get it, they see the potential growth.

China is very well poised in terms of the intellectual resources and government policy supporting things like innovation.”

Philips Chair in Strategy and International Business Professor Klaus Meyer agrees, noting that the government’s Made in China 2025 initiative is not just about upgrading the country’s manufacturing sector but also about dealing with a relative shortage of low-skilled labour. He points out that the huge demand for robots in China is one of the reasons that China’s Midea acquired the German company KUKA Robotics in July 2016. “Labour costs are increasing and at the same time, a good machine can work with fewer errors than humans, at least in many applications,” he says. “In certain standard applications a robot can be more reliable than a human being.”

Yes, to err is human – and perfection

can now be achieved by computers thanks to the machine learning process that collects and analyses data, allowing computers to learn independently and perform some tasks at a level of efficiency that exceeds human capabilities. This superior ability was cited by Chinese Go world champion Ke Jie in his losses against Google’s AlphaGo computer. “I was very nervous as I thought I had an actual chance at winning,” he said after losing his second match to the computer on May 25. “Because of this intensity I made a few wrong moves. I guess that is exactly what we can call human weakness.”

But Prof Meyer says that though AI may be more efficient at many things, humans will still be needed on the factory floor. “You have things such as human/robot interaction, which



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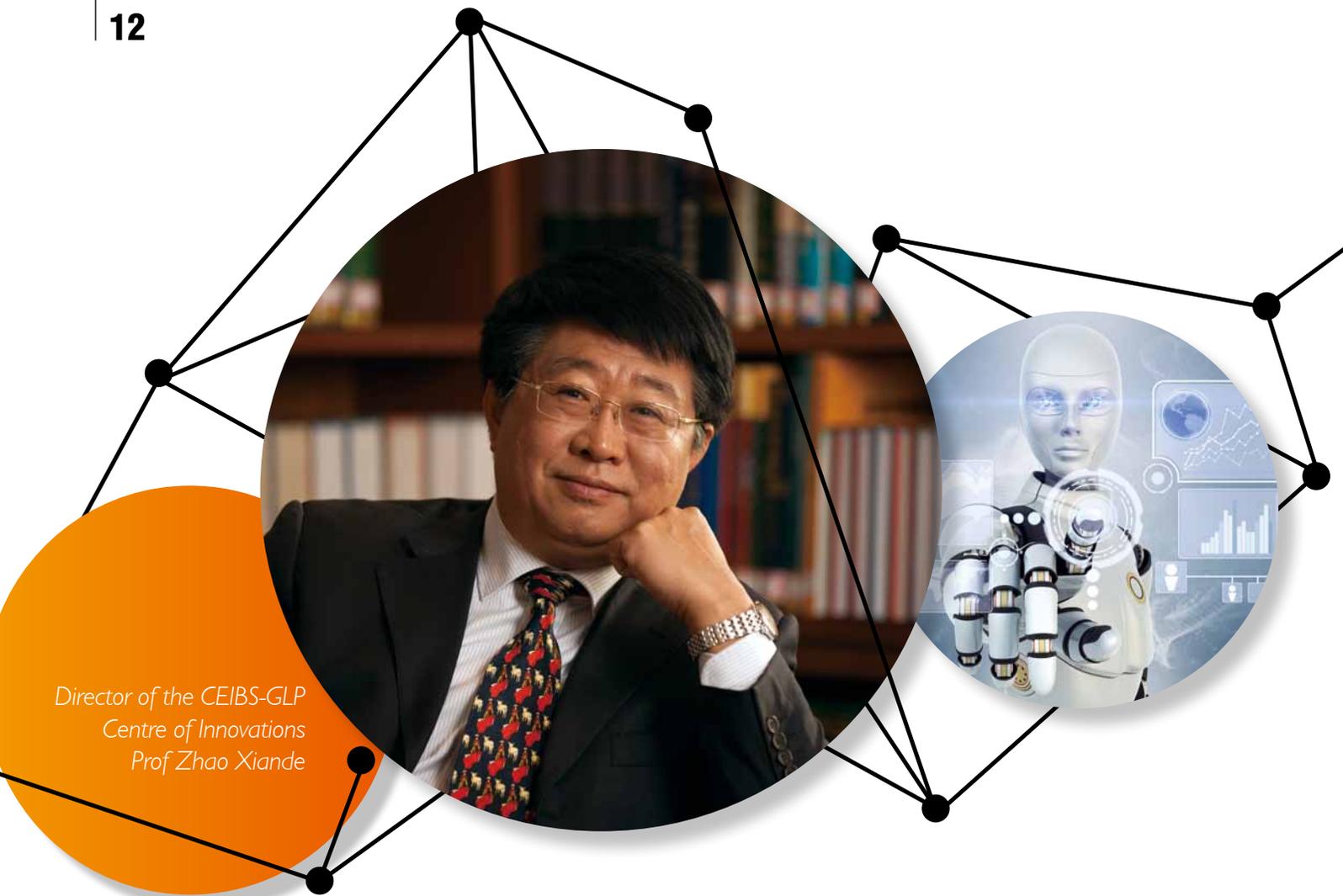
means you have lightweight robots that can work alongside human beings,” he says. “KUKA is one of the leading companies developing that, ABB is another.” For example, he says that in car manufacturing a robot might help lift a heavy window to be fitted into the car, while the human worker will make sure the fit is right. In other applications requiring human/robot interaction, robots can learn to memorise certain human movements in a manufacturing process, and then through data analysis, the robot’s performance of these movements can be optimised.

Thanks to big data, the AI applications driving Industry 4.0 are about more than just adding robots to the assembly line. “In supply chain management there is a recent trend towards using digital technology to link the different parts of the supply chain,”

explains Professor of Operations and Supply Chain Management Zhao Xiande. “Ideally Industry 4.0 should use Internet of Things to link the purchasing, production and then the delivery and service. Through the analysis of data you’ll be able to efficiently meet consumers’ needs by coordinating the work of the supplier, the manufacturer, the logistics and the service companies, and by continuously analysing the data you can improve the efficiency of the whole process.”

Prof Zhao, who is also Director of the CEIBS-GLP Centre of Innovations in Supply Chains and Services, says that some electronics manufacturers are already able to take smart design even further by monitoring how their products are being operated by their end users. By collecting and analysing that user data they can design improvements for future models.

Customer service is another area where AI is being used. Prof Zhao notes that Chinese e-commerce giant JD.com is among the companies making a significant investment in AI to help improve service quality. Analysing details about consumer preferences for brands, as well as product size and colour can also help create efficiencies in the e-commerce value chain. Not only does it allow for certain types of customisations, but being able to pinpoint the what, where, and when of consumer demand helps make the order and delivery process more efficient. Large online retailers can also use AI to help with pricing decisions by analysing data that factor in consumer behaviour, competitors’ offerings, and potential demand over time. “The demand vs price curve is a very important thing to study. The curve might be quite different at different stages of the product life cycle,” he says.



Director of the CEIBS-GLP
Centre of Innovations
Prof Zhao Xiande

The big data that drives these efficiencies is also going to have a profound effect on the competitive landscape in various industries. “You’re going to see a lot of consolidations, mergers and acquisitions based on this new digital economy logic,” says Prof Zhao. “We see companies buying other companies simply for the purpose of being able to gain more access to data in the supply chain.”

The increasing importance of big data is also driving more complex interactions between companies in the manufacturing value chain, as the

data exchange maximises efficiencies. Apart from issues of confidentiality and security, the complexities of data exchange may also begin shifting the balance of power in some cases, says Prof Meyer, who is also Co-Director of CEIBS Centre for Globalisation of Chinese Companies.

“If companies like GE are very successful at promoting their platform for data exchange within the value chain, then as a platform provider they end up in a very powerful position because they have everyone’s data,” he explains. “This gives them more

bargaining power over others in the value chain. So in some areas we might see vertical integration, but in other areas you will find specialist service providers developing who play an increasingly important role by providing big data analytics or cloud-based services.”

Prof Zhao says there are many small Chinese logistics and supply chain companies that have begun leveraging their positions in this way. One he cites is Shenzhen Chuanjie Supply Chain. The Shenzhen-based company began by handling export logistics for

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mobile phone manufacturers as well as the importing of components. As they gained a deeper understanding of the supply chain they found more ways to assist manufacturers in resolving issues such as purchasing and financing. This has allowed them to accumulate a significant amount of data from multiple phone designers, suppliers, and manufacturers.

However Prof Zhao says that most companies are not even using 5% of the data they are collecting. The main reason is a talent shortage. In order to effectively leverage big data, companies need staff that can both analyse the data and use it to solve managerial issues, and he says there are few who can handle both of these crucial aspects. “In order to automate the managerial decision-making process, somebody needs to understand what decisions need to be made and how to use data along with analytical and mathematical

tools to really make those decisions,” he explains. “Right now in China we have a huge shortage of these types of people. You cannot just rely on a machine to make a decision. Intelligent machines need to have people who can help them to develop their artificial intelligence.”

Prof Meyer says there are three new skill profiles where manufacturers will need to ramp up hiring. “You need people who run the robots, programme the robots, and people who can work in guided workplaces,” he says. “Putting in the robots without having the people who can really make good use of them can be a very expensive mistake.”

Guided workplaces are where the assembly line work of humans is guided by computer. Prof Meyer explains that this new type of low-skilled labour means the person on the production line would, for example, scan a barcode on a product going by and then get exact instructions for what they need to do with it. “The worker doesn’t need to think or interpret what is needed,” he says. The other jobs, programming the robots and analysing the data they generate, will require higher skill levels than the traditional factory jobs in years past.

These new types of manufacturing jobs will also require managers to learn new skills. Prof Meyer says that in the traditional manufacturing era managers simply needed to be able to lead a large number of low-skilled workers. Industry 4.0 will require

managers to learn how to manage the more highly-skilled workers who handle the complex tasks of programming and analytics, and will expect to have more creative input.

Reskilling and redeploying workers is an area where Prof Sampler thinks China will also excel, especially compared to Europe, which has comparatively strict labour laws. “Europe may have a very difficult time transitioning because of its labour situation,” he says. “Forget firing, even to fundamentally change someone’s job is not so simple there. So China, with its ability to move more quickly, may be well-positioned if they move in the right direction.”

As various industries ramp up their use of AI, Prof Sampler notes that different countries and regions will likely find different solutions for dealing with the transition. The real question, he says, is what the stabilising forces will be. “What’s that combination of public/private policy that’s going to allow these things to accelerate? I think that’s the interesting question,” he says. “Everybody is excited but nobody knows what the ride is going to be like. It’s like waiting for the roller coaster to start. There’s all the anticipation, everybody is nervous and excited; you think you are going to be okay on the other end. There will be a lot of ups and downs, and twists and turns, but we don’t know what that’s going to look like yet.”

Better fasten your seatbelts!