

AI and You

Transcript

Guest: Handel Jones, part 1

Episode 130

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Hello, and welcome to episode 130! My guest today is Handel Jones, born and raised in Wales and now based in Silicon Valley, with over 50 years of experience in the electronics industry and consulting for International Business Strategies for over 30 years, supporting governments and corporations globally, analyzing technology and predicting corporate and government strategy and market trends. His new book is [When AI Rules the World: China, the US, and the Race to Control a Smart Planet](#), and that is what we are here to talk about. With the recent ratcheting up of technology sanctions against China by the United States, this is a very hot topic. How do the Chinese government and the Chinese people think about artificial intelligence, and what are their strategies for infrastructure and technology expansion? This interview was an education and an eye opener for me in many ways, and especially if you are in business, you will find some valuable and actionable intel here so let's get right to the interview with Handel Jones.

Handel, welcome to the show.

Thank you for having me.

So, what's a Welsh lad like you doing in Silicon Valley and in the thick of the most contentious discussion about the future of technology at the moment? Which is the relationship between the US and China? How did you get into that?

So, my early training was in mathematics. So, I've always been interested in things related to data. So, coming to the US, basically, I've been in a similar industry for a number of years. But the last few years, I've really been focusing on what's the future going to look like, and what are the characteristics that will change things? So, AI, at the beginning of my research, and so on, was basically very fundamental, didn't really look particularly promising. But then over the last few years, some significant things that have happened to make it look real. One, obviously, is the picture taking capabilities of smartphones. I mean, outstanding. Also, I was really not a firm believer that autonomous vehicles could be practical. But today, I'm convinced that this obviously is a key part of the future tied in with tied in with EVs and so on. But my interest in China really started when I was at Rockwell. Jiang Zemin came into Dallas, my boss was out of town and so I gave a presentation to him and he was very interested - this was on communications. I was actually involved with military but we didn't discuss those.

And when was this?

This was back in the early 80s and so a lunch, basically, Trammell Crow arranged it. I was sitting in the backseat, he saw me, he said, "Come sit next to me." So, I said, sat next to him at lunch and then we talked some more, and then you say, "come to China." But the US

government said no way. Rockwell was building the B-1 Bomber, they were doing the space shuttle and so I was involved with similar stuff that was fairly sensitive. But that really kind of created an interest in China. So, I started going to China in 2005 and I've written three books on China. First one was *Chinamerica*, published by McGraw Hill. The second one was, *How China Can Become Number One*. That was published in Mandarin, and was actually a best seller in China. And part of it is because the central government wanted the provincial governors to read it. And it basically looked at how evolution of technology where technology was going. But of course, my real interest, though, was what's going on in Silicon Valley, and also in the US in terms of AI. The other part of AI that interested me was, I went to some conferences, and the speakers there were mainly from academia, doing really interesting stuff, but trying to emulate the human brain, and there's no way AI can emulate the human brain. AI is a different way of doing things. AI manages data, operates on data; the brain operates - can operate - on emotion as well as data. So, how much would computing power increase and where would that take AI? So the purpose of writing the book was to basically try and think through those concepts. And one of the concepts in the book is what's called the virtual digital twin. And the virtual digital twin is where you have an extra brain. And that extra brain today may be the smartphone, but in future we will call super phone and will record basically many of your thoughts in terms of logic. You can record basically your history, you can record a whole bunch of things about you, but also [do] calculations and in terms of many aspects of life would be more powerful in terms of analytics than the human brain. So, those kinds of concepts, what do they mean? Also, things like virtual reality, today is very primitive and even the latest stuff from Meta, is an improvement. But in future though, virtual reality is going to change society. Because you can have, goods, physical goods as virtual objects, you can have Mona Lisa, you can have basically all these things in front of you and you can just sit there, and your life can just be part of a virtual world and that's the opium of the 2030s.

Let's go back to some of the origins of this, because back in the early 80s, when you had this encounter at Rockwell, I don't think anyone was taking China seriously as a world leader in computer technology. That's changed, and the conventional narrative is that when AlphaGo became the World Go champion, in 2016, the Chinese lost their mind and developed a strategy to become the world leader in AI and they've been pursuing that relentlessly ever since. How do you see that?

I think that's a good summary. China is going through a major digitization phase. Data basically will dominate China. And data can be controlled from central organizations, and so on. So, AI is really a tool, as I said, to manage data, and derive benefits from data, also, basically, power from data. So, when I did the book, *When China Can Become Number One*, that was heavily based on the data side of it and of course, a key part of all of that is semiconductors. So, what China has been doing is it China has this image of copying, yeah they copy. But they're also very innovative and I think that's a part of China, which is dramatically underestimated. So they've been systematically gaining access to capabilities to build AI. So, 3D facial recognition is one area, which in the US and in Canada, you know, basically, we really don't make much use of it in airports, we use it now some. But in China it's a very powerful tool, initially to reduce crime, but also now to streamline transactions. So, if you want to go to a bank, they basically have 3D

facial recognition, so they know who you are. But they can also track you. And they also have 3D facial recognition on the phone, so they know where you are. So, it's a very powerful tool in terms of transactions, making things much easier. But it also gives them control. So, the ideas in China that I think are powerful, in addition to working on the technology, they work on the applications for the use of the technology. So, when the technology merges, they basically have the ability to go into high volume, and it's high volume that gives you low cost. So, if you keep something within a small environment, like a military environment, enhancing it becomes very expensive. But if it's in the merchant market, where you have high volume like smartphones, the camera capabilities of smartphones have come because of the high volume and the big money that Sony can make in image sensors, and the big money that Qualcomm can make in terms of the chipsets. So, and of course, obviously the big money Apple can make in selling phones. So, the commercial side is something that the China government supports, as well as developing technology. But of course, there's a lot of waste. And you know, if you look at now at before China had maybe 20 or 25 or 30 smartphone companies, now big ones down to three or four.

The activities that you described as part of their competitive advantage, are all the sorts of things that cause fear and consternation in the West, in terms of invasion of privacy, the mention of tracking of any kind causes the ACLU to start sharpening their lawyers. What is the attitude towards those in China; does the average person go, "this is worth it"? Or what is the difference in their attitude towards that there that enables that to be successful?

Well, many of the Chinese people but especially the more educated ones, are very concerned about these trends, and the restrictions with COVID is an example of where you had local unrest but there is strong pressure in China to resist, people resisting, and the propaganda machine is very powerful there. So, that is really a very good question. Because with the changes in people in the 20th Congress, restrictions are going to become much tighter and you can Xi Jinping doesn't tolerate anybody resisting him, or having different views and the concept is that inefficient dictatorship will win and as long as he doesn't abuse power, there are benefits to it. No, giant China there is there is significant resistance. But when you look at COVID, you know, the people visit in China is a million people plus have died in the US and in China it's 5000, or whatever it is, or 10,000. Obviously, these numbers are not always correct. But they point out they're being different. So, in which do you want? Do you want to die? Or do you want to have some limitations. And of course, when you look at the people that die, they're mainly old people? But yeah, there are concerns in terms of these limitations, and they probably will get stronger. So, part of the new 20th Congress is they've got two people in high positions that are very experienced in security. So, it's planning ahead. So, it's running ahead for internal stress, and also external stress.

I want to look at what the differences might be in goals for national AI strategy between the US and China. China published that report in, I think, 2017, their next generation AI strategy. I confess I have not read much of it; and the US in 2016, published the National Science and Technology Council Report, one of the last outputs of the Obama administration, about artificial intelligence. Are they the same goals? Or is there a difference that you see between what China would like to do with AI, and what the United States nationally would like to?

Well, I read some of these reports, also the latest one, from Eric Schmidt, and so on. So, we see many common goals. The big difference, though, is China is implementing. An example for you is education. AI is going to dramatically change what you need to learn; AI will dramatically change the skill sets that you need. So, what China has implemented, is very intense selection process of students. At a fairly early age, there's been resistance from parents. But when you're 15, or 16 years old, you get selected in terms of whether you really go to a top university or not. And roughly 10% of students get selected and I have personal knowledge of this. But you go to school six and a half days a week, and you start almost seven o'clock in the morning, and you finish 10 o'clock at night. It's very intense learning. But the other part of it is also the exams. So, in the US, we have no problem selecting athletes, and giving them intense training and of course, they can become very famous and wealthy. Well China is taking the similar approach with educating students. So, they now have about 10 million graduates a year, by the way, 50% of them are women or girls, and high percentage of STEM. But they're training a fairly large group of people who are highly educated in technology, but also very competitive. Because to get through the system, not only do you have to be good in learning, but you also have to be basically very competitive in passing the exams. And of course, you get a lot of failures. The parents are the ones who fail, especially with one child policy, are very upset. But basically, they are they're implementing what Eric Schmidt and so on have been advocating in terms of improving the education process. Here? Nothing.

If I set that against the frame of US China relations lately, I could get scared. Does it scare you? What's happening right now and how China is ramping up all this capability?

Yeah, it really scares me here and again, the other part of this is military. Again, I'm not going to go into much of my past in the military. But when I look at when we started IBS, which was about 30, something years ago, LSI Logic was funded by Lockheed to do leading edge semiconductor products and those went into military stuff, I've actually worked on Stinger; chips for Stinger. Today, US is really doing military designs, maybe 28 nanometers and the reason is, it's very difficult for Boeing and Lockheed to hire top graduates. And also you need software development. And so, Google engineers have said they will not work for the US military. So, the US military is falling significantly behind, using the latest technologies. Now, us as Israel, Israel is actually doing really well. But China, though, probably maybe is at seven nanometers. And they basically provide incentives for graduates from top universities, maybe in five years, if you work for military, you can then leave and join the private sector. But by that time, we'll give you enough money, so you can have a deposit for an apartment. So, if you're a man, you can get a wife, if a woman, you know. And of course, they're also using relatively advanced semiconductors. So the level of expertise in new military systems in China, which can include drones, of course, swarms of drones is the goal. But also, hypersonic missiles, is actually moving ahead of the US. That scares me. That scares me.

The 28 and 7 nanometers that you described as is what, a wavelength or---

It's a feature dimensions of semiconductor. So, the generation you have twenty-eight, then you have sixteen, then you have seven, or maybe you have ten. So, basically, maybe two or three

generations ahead. Now Apple is starting to do for; so you've got seven, five, four. So, Apple, if you look at what Apple is at versus the military is 10 years difference.

Got it. So, that's the basically the resolution with which you can etch features on a silicon chip. And you describe that, actually, as though as a capability of China; I had thought that innovation in chip manufacturer was coming out of the Taiwan Semiconductor Manufacturing Corporation.

Yeah, so leadership in manufacturing, for the logic products, today is within TSMC. Samsung is also pretty advanced; Intel has a strategy to become advanced. And then how would you define Taiwan? So, the expertise in TSMC is outstanding. But part of the US strategy right now is to block China from getting future generations of chips. So, they define it, maybe the greatest BIS regulation includes potentially 16 nanometers, DRAM, NAND, and also many other products. So, the US is now taking the steps to basically initially talk about the equipment, but the real intent is to block chips agenda. But then the issue that you have is, if you block chips to China, and they come out of Taiwan, is China going to say; "Yeah, go ahead, just get all the chips you want in the US. We can't get any." Is that going to happen? Because of Xi Jinping and the way he operates?

Does this make it more likely that they will accelerate their plans to invade Taiwan?

Well, invading Taiwan obviously will have dramatic repercussions for both China and the US. So, that's probably - even though there's noise - not likely to happen. But there are other ways in addition to doing stuff with Taiwan, I mean, they could basically, if you have data, you can slow down the electricity supply, you can do minor damage or slowing things where you don't destroy the ecosystem, but you make it more difficult for the US to get the chips. Strategies that will take care of you basically give us time, and we'll build up the ecosystem in the US. That can happen. But how soon will it happen and how effective will it be? There are questions?

So, these recent sanctions by the US against China, I think the most severe yet; they even threatened to revoke US person status from any US person or citizen that does work for China, assists them in their technology. What is the likely impact of those sanctions going to be on China?

Well, we have written on this extensively, because our customer base is heavily impacted by those with a resolution. So, the first part is to block China from manufacturing semiconductors, advanced features, but they do include AI, and an issue that's related to human rights. Human rights can cover almost anything, AI can cover almost anything your smartphone is AI, basically, a thermometer can be AI. But the real intent is to block China from getting access to semiconductor products. Because if you can get semiconductors from Intel, or from Nvidia, from somebody else, then, you know, not having manufacturing doesn't destroy you. But the sanctions do include blocking Nvidia, the latest graphics chips, AMD, but now that's being expanded. And so it's going to be expanded to basically a much broader range of chips. That has not been formally announced yet. But that's going to be the next step. Also, the US people, the US citizens or green cards, again, not being allowed to support the simulator industry in China. But

that does that also include blocking them from working for that can benefit the China's semiconductor industry or electronics industry when they work in the US? So, it's got very broad implications, and we expect it to be implemented more rigorously step by step, unless China resists.

And the what would that resistance look like?

Yeah, that's a very key question. As, I said, blocking or slowing chips coming or wafers coming out of Taiwan. US has a record trade deficit with China, that can be the increase of some putting of taxes on those exports, which can raise prices, hence could be very difficult to find alternate sources. We get rare earths from China, we also have the packaging and testing facilities of companies like ASE and other companies are in China, they could basically be slowed down or blocked. Apple continues to have significant part of manufacturing in China. Yeah, if you go to Vietnam, if you go to India, a big part of supply chain still comes out of China, lenses and so on. So, again, they could put a significant slowdown on many products being manufactured. But if you are China, and if you say; "Well, I'm not going to get semiconductors, and I have some control over the semiconductor supply chain for you." The natural thing to do is say, "I'm going to negotiate with you when slowing you down unless you give me some relief." So, hopefully, there'll be some rational discussions, and we will have a rational resolution. But we are in a trade war, we are in a technology war and when you're in one of those, you have to run very fast. US is still in a good position. But things have to change, because China is getting stronger.

And with our economic dependence on advanced technology, this sounds like a recipe for a recession.

It does, and potentially even more, because if you know how much you depend on electronics trading for goods, but again, our whole ecosystem depends on data. So, again, we're going to have cyber warfare, but yeah, basically we have inflation already. I'm surprised by the GDP growth of China in Q3 of 3.9%. Based on the fact that the factories were slowed down, local consumption has slowed down, building has slowed down. So, they say that industrial output went up and I'm surprised because if you look at the ships leaving China down, and the consumption inside China is down, so I was surprised by that number.

To what extent do they depend on the west for innovation. At least in my view, my understanding, every innovation I can think of in computer technology and AI, has come out of the West. In fact, all of them will come out of Silicon Valley with the exception of Deep Learning from Deep Mind when they were in London, at least the ones I can think of. You listed how China was successful in commercializing applications at scale, but it still seems to me that those applications were invented in the West. Help correct me on that.

So, the some of that is correct. But if you look at 5G, China has many basic patents of 5G and they're significantly ahead of the US and Europe, in 5G, China's now doing 6G, and 6G, basically, they're putting in, we've been identified 2 billion or more a year, I think it's probably a lot more than that. But they'll have 6G in 2028, maybe 2030 commercialization: that's fully China developed. If you look at the some of the algorithms with 3D facial recognition, so the

basic technology did start in the US. But again, in terms of enhancements, the latest tech capabilities are in China. The Maglev train technology developed initially Germany and Japan and so on. But now the enhancements to it. You know they're talking about 1000 kilometer per hour Maglev now, and that is fairly radical technology. So again, it depends on where you start with technology. If you say, well, it all started with transistor in Bell Labs, what they're doing what they're doing with technology, in many cases, is much more innovative than what we're doing with technology and part of it is because of government spending. It ends up being - a lot of is wasted. But if you look at solar cells, they were developed in the US and Europe. But now new generations of pretty much exclusively coming out of China. Batteries, again, for EVs. Again, technology; Canada has some good sources of batteries - Ballard. But now the enhancements are coming out of China. So, depends on how you define technology.

And you're talking about the Maglev trains, then, China has built out cities and high-speed rail at a rate that is just incomprehensible to anyone else, and what has been the impact to them on connecting their country at that rate?

You know, that's a very interesting question, because they do have quite a few minorities and basically, part of Xi Jinping's future of China, is to kind of eliminate some of the differences in the minorities and so what you do is obviously now, all the education is based on Mandarin and the minority language is secondary, or maybe third after the English. But then having this efficient transportation system makes logistics very effective. So, factories initially were based in Shenzhen and so on, but now they've spread them throughout China, supply chain becomes very efficient and of course, the next part of it is intelligent robots where they don't need people. But it's really kind of improve the mobility of people from a physical sense inside China. But it also said improved logistics, for delivery of goods for factories, and so on. So, again, this is still the early stages. You know, when I first went to China, back in 2005, you know, you saw these hovels, you drove from the airport, and the airport was okay and you can see these hovels until you got to a nice hotel, and around it was basically pretty bad. Well, in 20 years, or 15 years, wherever it is, the changes are fairly dramatic and we think they will continue to be dramatic. So, we look at the last 10 years and where they're going with the next 10 years. So, this is building for the future. You know, we can't build a high-speed train in California. We have this big surplus from San Diego to San Francisco. But again, they're doing trains you know, they're doing now I said this 1000 kilometer train will reduce emphasis on air travel and again, I suppose it is relatively green, we don't know. But again, it depends on how you define innovation.

OK, this is another interview that went quite long, so it is split up into two parts for the usual reasons of not overtaxing bandwidth and attention span.

In today's news ripped from the headlines about AI, we've been following the deployment of autonomous ride-hailing services in China for a while now, and in August, Baidu announced that they had received permits to operate a fully driverless robotaxi service in Wuhan and Chongqing during daylight hours. Multiple outlets quoted them as saying that they are the first company in China to get that permission, but you may have heard me say or read in my book that AutoX has been doing so in Shenzhen for over a year, and has a video on YouTube showing a ride taking place with no one in the front seats. That aside, this is a notable development as the robotaxi space heats up in China. Although I

remain skeptical that level 5 service is going to be possible, or even revenue-positive level 4 services, this can only serve to advance the state of the art in vehicle autonomy with many benefits for other applications.

Next week, we will conclude the interview with Handel Jones, when we'll talk about China's development of its transportation infrastructure, developments in space, and different attitudes towards AI development between China and the West. That's next week on *AI and You*.

Until then, remember: no matter how much computers learn how to do, it's how we come together as *humans* that matters.

<http://aiandyou.net>