In Conversation with
Professor David Lee

Professor David Lee is exceptionally extraordinary. He is not only effectively bilingual and tech savvy, but also has a strong bent for applied research that has been perceptibly shaped by his extensive management experience from managing large enterprises and finance companies, as well as his intense desire in serving the underserved. He has a knack of "finding the next big thing" as shown by his illustrious career.

Graduating with a PhD in Mathematical Economics and Econometrics from the London School of Economics in 1990, Professor Lee began his career as a lecturer in econometrics and public policy in the National University of Singapore. Subsequently, with the development of Singapore as a financial centre, he left academia to become a stock broker, and later became the managing director of Fraser Asset Management. Riding on an increase in interest in hedge fund strategies in this country, he founded his own hedge fund company Ferrell Asset Management in 1999 and was involved in property REITs (real estate investment trusts), mergers and acquisitions, and then property development.

As he widened his interest horizons, he concurrently took on the appointment of the Group Managing Director of Auric Pacific Group, and later the Group Managing Director and Chief Executive Officer of Overseas Union Enterprise Limited. In 2010, he was appointed non-executive Chairman of a listed company that specialised in manufacturing disk drive component, enterprise management services (EMS) for the Passport external disk drive and plastic medical supplies. Driven by his love for applied research and a desire to share his knowledge and experience in an ever-changing environment in the financial sector, he returned to the academia as a Professor of Quantitative Finance and an Advisor to the Provost in Singapore Management University. In 2014, he also assumed the position of the Director of the Sim Kee Boon Institute for Financial Economics in addition to taking charge of the Global Master of Finance Programme with Washington University.

After finishing his appointment as a Visiting Fulbright Fellowship in Stanford University in 2015/2016, he now spends his time teaching in the Singapore University of Social Sciences. Recently, one of his books entitled "Handbook of Digital Currency: Bitcoin, Innovation, Financial Instruments and Big Data" was nominated to be one of the year's most outstanding business reference sources by the Reference and User Services Association (RUSA). Economics & Society interviewed Professor David Lee to find out his interests and views on the value of technology in our society.

Hi Professor Lee, in your opinion, what is the biggest issue we are currently facing in the study of Economics?

I am most concerned about the failure of Economics in addressing wealth and income inequality, as there has been no theory propounded so far to solve the problem. I rejoined academia in 2012 in the hope of finding answers to the many questions that have been troubling me, such as those relating to the widening wealth and income divide and the continuing existence of a huge segment at the bottom of the pyramid that remains underserved. I want to find out the next big thing and see where I can contribute most to a better and more equitable world.

Currently, I am working on FinTech (Financial services or products built upon technology) and scalable technology for inclusion. I believe digital finance can change the economic landscape via digital asset sharing using blockchain. With a fall in business cost through scalable technology and decentralisation, we can increasingly reach out to the underserved. With blockchain technology, the large number of underserved in remote areas of agricultural economies can now have a digital identity. They can register their interest of ownership using digital means without having to form a company, which is expensive. A handphone with a blockchain is sufficient to register and own whatever assets, including digitised livestock located miles away. A chip worn on a livestock will be able to locate, identify and verify the cows, goats, or horses to be owned via smartphone. The poor remain poor because it is costly to own assets and borrowing is difficult without a digital identity. Decentralised digital revolution will be one of the most powerful means to reduce inequality working through the asset sharing economy.

In this case, what is the most important asset in the new economy?

With the advent of the fourth industrial revolution, we have now moved from steam engine to data and computing power. With smart data, the entire supply chain can be transparent to those with computing power. For instance, companies can detect their clients' problems before the clients are aware that they have problems. We are used to owning wealth through cash, bond, equities, and other complex instruments using a legal entity and a custodian. But all these arrangements and structures are inherently expensive to operate and owned. If we think in terms of data and computing as an investable asset class that need no intermediaries, the cost of owning such digital assets will be reduced tremendously without the middlemen. There will be more transparency. It will lead to

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decentralisation and disintermediation allowing for Peer-to-Peer transactions that are affordable to the poorest among us. The lowest denomination of a digital value will be smaller than one cent and can be divisible up to 16 decimal places if needed. This low-cost asset ownership blockchain technology will be able to serve a large population across all borders. With data and computing power, this would also provide autonomy for individuals to own very cheap assets which were not viable previously.

Going forward, our traditional factors of production will now include data and computing power: land, labour and capital would become relatively less important. Labour will be replaced by robots/machines, land is not in short supply as we could operate in remote areas 24/7 with scalable technology and renewable energy. When almost everything can be digitised and decentralised, digital assets will play an important role in transforming the way the entire society is organised. Data and computer power will be one of the most important asset classes and valuable resources.

Are there any threats that we should be cognisant of?

Yes, we must be mindful not to end up with a few centralised digital empires that control the entire world. If a few companies own all the data and computing power, it will lead to a concentration of ownership of digital assets, which will lead to a concentration of power and wealth. Inequality will be worsened with greater uneven distribution of wealth.

Moreover, there is a danger of artificial consciousness beyond just intelligence whereby machines have the capability to decide for themselves what is right or wrong. I highly

recommend the movie West World to the readers. In this show, we can see the danger of androids malfunctioning. Hence, we cannot have only a few centralised empires. The digital world should be decentralised with on demand encryption. If it is decentralised and encrypted, humans can still have dignity when machines take over. Hence, blockchain technology with encryption is so significant. When we talk about ZCash as an experiment, many will view it negatively as it permits anonymous transactions. But the technology in ZCash, just like the first blockchain technology Bitcoin, has tremendous implications as artificial intelligence becomes an important part of the digital world.

How would these new technologies transform the lives of people?

Scalable technology includes drones that can connect Wi-Fi with people within a radius of over thousands of miles. Drones can deliver data and physical goods over sparsely populated areas. Augmented and Virtual Reality (AR/VR) can transport 3D images making our virtual "physical" presence felt all over the world at the same time. As cities become crowded, people now have the incentive to move away from crowded areas to enjoy clean air and water without affecting their career aspirations. They can have meetings and move around in Augmented Reality

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(AR) and Virtual Reality (VR) settings. They have more autonomy now and have access to cheaper accommodation and regenerative energy in a healthier environment. Cities may hollow out with fewer jobs and lower standard of living. But not all countries, however, can transform themselves because of legacy issues.

Of course, we should also expect incumbents to put on a fight and resist changes. Hence, this new industrial revolution is biased for countries which are sparsely populated with no incumbents. Myanmar is a case in point. We should expect Myanmar to benefit the most from these technological advancements. Within five to 10 years, Myanmar would be able to leapfrog many other economies as the underserved would become the engine of growth for the future in the "Hinternet" as opposed to Hinterland. If Myanmar successfully builds a "Hinternet" full of sticky customers, initially underserved, its economic growth will accelerate as more services are created at a fraction of the cost to the same customers on the net. A leapfrog economy like Myanmar can overtake financial cities such as Hong Kong and Singapore with economies of scale over a large and sparsely populated area. New digital economy services may be introduced, some of which we have not even thought of at this moment.

How should Singapore get ready for the new industrial revolution that you have just mentioned?

Mindset is more important than skillset. Singapore has been focusing too much on skillset. In today's fast-changing world, skills become obsolete much faster than before. We need to focus more on mindset: mindset to embrace failures, mindset to do good, mindset to create ecosystems and communities to collaborate, mindset that engenders compassion and mercy.

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onslaught of the fourth industrial revolution, which brings with it a new society and economic order with the characteristics of sharing of services and assets, thriving with the on-demand economy, rewarding suppliers with bounty reward and not salary. More importantly, there will hardly be any lifelong jobs. Even if the young people are aware of the challenges, they may not be able to participate in or join a start-up with its attendant high risks due to parents' disapproval. We need to have a supportive environment before we start talking about acquiring relevant skillsets.

Educators are only beginning to realise that knowledge and content are not as valuable as experience. So, learning is about experiencing actual life situations rather than merely acquiring skills per se. Policymakers need to understand that it is the speed of innovation that is important. Knowing how to be creative is just one dimension. We need to learn how to scale our innovation exponentially in the shortest possible time in the global economy. With the internet and digitisation, we can reach out to billions of people in a very short time span. Ultimately, man will need to decide what they want to do with technology. Technology can do good but technology can also do harm. An economy without a sense of mission to serve others will eventually lead to a digital world where machines will dominate humans and take away the dignity of mankind. Singapore with its huge reserves and talents must decide if the regional sharing of asset strategy with the underserved enabled by technology is what it wishes to pursue! If it is, then being conversant in scalable technology and infrastructure such as AI, smart data, blockchain, drones, AR/VR and holoportation will be the best defence against disruption!