

## **How Technology and Globalisation will drive China in the 21st Century**

*(A Keynote Speech given at the AGM of the China-Britain Technology and Trade Association on 11 June, 2006)*

Whenever I talk about China, I can seldom resist repeating my favourite story about my American stock-broker friend at a dinner table. He said he did not have to deal with China because he is profitably and fully engaged with Wall Street, thank you very much. I referred to China's impact on energy and metal prices, shipping rates, the US bond market and through it, US and global interest rates and indeed property prices. Not to mention the 'China Price' driving jobs and businesses out of existence. All these and more are no doubt having a slight effect on Wall Street. He was speechless.

So, the China effect has become globalised. And it means more than buying and selling across the oceans. China has already overtaken the UK as the world's 4<sup>th</sup> largest economy. With China's economy poised to rival the US within the coming decades, its impact will become even further magnified.

But say, how much money is China making out of a proprietary DVD player? Well, if it sells for US\$32 in a Walmart store, it should cost about \$13 to produce. The lion's share, \$18, goes to the brand owner. This leaves the princely profit of \$1 for the Chinese manufacturer. I may be exaggerating a bit but I would not be far wrong. In any case, you get the picture.

Then, how does Walmart compete as the 'China Price' is not its monopoly? Walmart buys the equivalent of Switzerland's GDP from China every year. It thus can drive a very hard bargain as a buyer. But Walmart doesn't buy only from China. Nor is it just a supermarket. It is no less than a ruthlessly efficient synthesizer of a seamless global supply chain.

As soon as your DVD player is checked out with your credit card, a digital signal notifies Bentonville of the purchase and the customer profile. It simultaneously reaches both the final manufacturer as well as all its component suppliers so that the article gets replenished and shipped 'Just In Time'. Even hurricane advance warnings would automatically activate a quick supply chain response to stock up beer and kid's home games. And imagine all these going on non-stop spanning Walmart's numerous suppliers across the globe and its 108 distribution hubs and over 3,000 stores in the US.

As Thomas Friedman says, '*The World is Flat*'. And Walmart is a master of flatness.

I recently experienced a lot of this flatness myself. I ordered a bathroom radiator from an internet retailer. The radiator originates from Italy and it got delivered to me by a UK logistics firm. I ordered my books from Amazon.com and they were shipped by different suppliers in different parts of the world. I called AOL for technical support and the voice on the other side was from Bangalore. I did some consulting through a series of conference calls with New York without having met any of my contacts face-to-face. Immediately after a TV interview with CNBC Europe, I got a call from Bloomberg for another one a couple of hours later. I wondered how they managed to get my phone number. They just 'Googled' me. You may like to quote your own examples.

Not only has the world become 'flattened', interconnected and interdependent but the global market place has dramatically enlarged and grown much more business-dynamic. China, India, and the former Soviet Union have created '*Three Billion New Capitalists*' as these countries are transformed into full-blooded market economies, according to Clyde Prestowitz. Progressive world trade liberalisation and China's entry into the WTO are adding fuels to all this dynamism. Some call this phenomenon the 'Third Industrial Revolution'.

It's no wonder that in barely over a decade, eBay has quickly evolved into an international community with 105 million registered users in 190 countries and a turnover of \$35 billion. At any time around the clock, 2% of the world's GDP is in transit in UPS's worldwide fleet of 240 aircraft. Each driver has a mobile device to ensure no empty-handed journeys between destinations. And yes, UPS does computer repairs as well with trained technicians in their hubs worldwide to speed up the supply chain. All these global operations are driven by technology, connectivity, and creativity.

Not only are goods and services traded across the globe, there is a breathless 'value migration' across national boundaries. Companies are competing by locating any part of their value chain any place where the value is best created.

Rolls Royce itself doesn't manufacture cars anymore. Its business is technology. 75% of its component supply and 60% of R & D are outsourced. Half of its revenue comes from outside the UK. Boeing has an aerodynamics design office in Moscow with over 800 Russian scientists and engineers. Some of them used to work on MIGs.

Nowhere else is the phenomenon more pronounced than in the IT industry. Hewlett-Packard has 142,000 employees in 178 countries. Lenovo has bought IBM's computer arm and is busy building up its own brand worldwide under a Chinese Chairman, an American CEO, an American COO, and a Chinese CFO.

As recently as last month (30 May), Microsoft is investing 250 million yuan in partnership with Beijing's Ministry of Information Industry to help drive innovation, training and support. It will also provide rural IT services to bridge the digital divide. The target over the next five years is to train 1,000 instructors, 20,000 software engineers, and another 50,000 IT workers.

But this pales in comparison with Microsoft's robust presence in India with 4,000 local engineers. This is expected to increase to 7,000 with an additional investment of \$1.7 billion over the next four years.

The Economist ran a balanced Special Report on India this month (early June). The IT sector is expected to grow from 5% to 7% of GDP by 2010. This represents 17% of expected GDP growth. But at present, the total value is only \$36 billion, accounting for 1.2 million jobs. This is a miniscule proportion of its 400 million workforce. The country has to redouble its efforts to re-jig its creaking bureaucracy and infrastructure to realize the full potential of its new-found dynamism.

But there is no doubt that such dynamism is not only making the world sit up and marvel, but to embrace it as part and parcel of global competitiveness. Ashutosh Sheshabalaya has an up-to-date catalogue of India's IT achievements in his book '*Rising Elephant*'.

While China has become the World's Factory, India has turned into the World's Back-Office. Some 3.3 million white-collar jobs are expected to be outsourced from the US by 2015. The IT portion is expected to reach 23% by 2007. By 2010, India is likely to surpass the US in IT software and technical service jobs.

India has some 250,000 'accent-neutralised' call-centre staff. (A different Indian voice keeps on calling me from time to time trying to sell me the latest Visa card or mobile phone.) It is handling 400,000 US tax returns and \$35 billion global invoicing for GE. Its booming Business Process Outsourcing industry is providing back-office support for businesses as diverse as HSBC, Lloyds TSB, Aviva, BT and British Rail on this side of the Atlantic.

The out-sourcing spectrum is gravitating towards the higher end, from power-point presentations to Wall Street data analysis; econometric modelling; MRI scan analysis; clinical data-mining and early trials; and computer-aided designs for cars, aircraft, super-computers, fast-breeder nuclear reactors, remote-sensing satellites, fifth generation jet-fighters and stealth warships. It is spawning skills in bioinformatics and telemedicine, making healthcare more accessible to 600,000 villages.

Perhaps at this point it would be useful to ask (a) why India and (b) what has become the new Holy Grail of international competitiveness.

As for the first question, history and language have helped many Indian engineers establish their US roots. These were further reinforced by the spree of 'body-shopping' during the Y2K experience. Moreover, India's IT manpower profile is relatively strong, with some 800,000 IT professionals, 2 million university graduates a year, and a young population of 555 million under 25 years of age. The Indian Institute of Technology is said to trump Harvard, Princeton or MIT in IT excellence. India has registered more Capability Maturity Model (CMM) Level 5 (the highest level) certifications than the US. Indian engineers account for 20% of Microsoft and 25% of Cisco staff in the US. Indian IT companies are helping to train some 20,000 technicians in China.

So it is no surprise that leading Western pioneers of the Third Industrial Revolution are seeking out cost-effective Indian IT capabilities to leverage their global value and supply chains. The design of Nokia's brain-chips in India is one of many examples.

As for the Holy Grail of the New Economy, there is no magic wand. But with a commoditised world, a \$1 profit DVD player is fast becoming a norm. Making better widgets quicker is beginning to see margins cannibalised by fierce global

competition. It is also facing growing protectionism or frictions in both advanced and developing economies where jobs and traditional industries are being threatened. Moreover, energy and mineral intensive inputs are likely to come up against increasing supply, cost, environmental and geopolitical challenges in coming decades.

Looking at business champions in the New Economy, it is evident that continuous cutting-edge innovation as well as speed and efficiency in global leverage are winning the day.

Microsoft, Google, Walmart, Ikea, Goldman Sachs, Virgin, Samsung are just a few of the examples that come to mind. Their strategic advantage is not so much making things, but making innovative ideas and global leverage happen. It was a long time ago when best in the local neighbourhood was no longer good enough. Now, to win in the global market, you have to be the best in the world, and stay that way. Indeed, you are not just competing for the market. You are competing for the future. This is where the cheese seems to have moved.

Nimble and continuous innovation is very much the central theme of Matthew Kiernan's book '*The Eleven Commandments of 21<sup>st</sup> Century Management*'. In this context, some Asian examples may be interesting. Canon President Hajime Mitarai says, 'We should do something when people say is crazy. Crazy is praise for us. If people say something is good, it means someone else is doing it.' Many years ago, a young engineer went on strike in a Zen monastery to hold fast to his ideas in disagreement with Honda Co-founder Soichiro Honda. He is now Honda's CEO. As part of its global learning initiative, Samsung has a 5-year programme funding 400 managers each year on a 12-month sabbatical in an individually chosen foreign country. On return, they are expected to debrief their colleagues on their ideas to penetrate the relevant overseas market.

These examples show that it is not enough for a company just to have innovative ideas. It is more important to nurture an

internal innovative culture. This is because in the New Economy with fluid value migration across geographical and national boundaries, the individual has become more empowered, creating value and leverage through global inter-connectivity.

I have devoted a good part of my speech to the new global environment before I delve into China's own situation. Because I feel that in a dramatically globalised world, it is vitally important not to look from inside a well, even if the well is as huge as China.

So, is China in the very forefront of the New Economy, riding high in the Third Industrial Revolution?

China plans to nurture 20 of the world's 500 largest companies by 2010. A handful of these are already emerging. According to US Petroleum Intelligence Weekly, CNPC ranks tenth of the world's top 50 oil conglomerates. China Mobile has perhaps the world's largest captive customer base. Huawei Technologies beat all the world's top suppliers to build a third-generation wireless telephone network for the United Arab Emirates. Haier has surpassed GE to become the world's fourth largest white-goods maker. China's 'Big Four' banks are among the largest in the world. But the main competitive edge of most of these champions is either on account of their size thanks to their relatively monopolistic position in China, or they deliver superior cost-quality ratio for a known product or system. None are leading the world in innovative technologies, let alone brand recognition, corporate management, strategic insight and international savvy.

President Hu Jintao and Premier Wen Jiabao spoke on a 3-day national conference on science and technology opening on 9 January this year. Both outlined ambitious plans to promote innovation in realizing China's goals of coordinated, balanced and sustainable economic and social development by 2020.

Priority will be given to technologies in energy and water resources and environmental protection. Emphasis is placed on proprietary technologies in equipment manufacturing and information industries. Also targeted are technologies for life sciences, aeronautics, ocean sciences, as well as both 'foundation' and 'leading-edge' scientific research and training.

According to Premier Wen, spending on science and technology during the 11<sup>th</sup> Five Year Plan (2006 -10) will be higher than the expected increase in national revenue. Banks and financial institutions are required to support innovative activities and local authorities encouraged to develop high-tech zones.

Almost concurrently, on 8 January, Xie Xuren, Director of the State Administration of Taxation, outlined plans for tax reforms in 2006. They included support for technological upgrading and independent innovation.

It is no coincidence why innovation was given such serious treatment. China has earned the international reputation of being the Factory of the World. It is quickly going up the technological ladder. It has already overtaken the US as the world's largest producer of IT products. Nevertheless, it is still largely OEM (Original Equipment Manufacture) on behalf of foreign brands. It has yet to achieve major breakthrough in higher value-added and profit margins as I have illustrated with the example of \$1 profit for a DVD player. I have also mentioned the various challenges of international protectionism and natural resource-intensive inputs.

So it is wise to push for a more efficient and sustainable course for China's competitiveness through home-grown innovation and creativity. Indeed, with still over half of China's population in rural areas lagging behind in their development, no change is simply not an option.

But how good is China's creativity, especially in science and technology?

While I was in Sun Yat-sen University in Guangzhou for my Visiting Professorship, I was watching one evening China's successful launch (Shenzhou VI) of its second manned space flight. The televised five-day orbit was most impressive. Moreover, any visitor would not cease to be amazed with the glittering Zhongguancun Life Science Park in Beijing and the Zhangjiang High-Tech Industrial Park in Shanghai. There are many more science parks around the country, with different degrees of sophistication and specialisation. And more are being built.

There are plenty of examples of leading strengths in biotechnology, including genomics, stem cell research and gene therapy. Fudan University is partnering with Yale in bio-medical research. China has also one of the largest agricultural science programmes in the world, particularly in genetically-modified crops. These are becoming a highly attractive source for bio-fuels such as ethanol and for bio-chemicals.

As Premier Wen is reported to have said, China's magic big numbers never fails to amaze. China has over 4 million graduates a year. Over 600,000 past students have had an overseas education. In the US, Chinese students account for some 40% of post-doctorate degrees earned by overseas students. At a Chatham House presentation on 1 June which I attended, a University of Texas Professor said that 99% of the University's PHD students are Chinese. 90% of 160,000 returnees hold Master or Doctorate degrees. 13 million citizens have received higher education.

China has perhaps the world's largest pool of scientists and technologists, estimated at some 32 million at various levels. It has the world's fifth largest number of published scientific papers.

Yet, there have been no ‘home-grown’ Nobel Prize winners in science and technology. And the real money in China’s manufacture is still being made by foreign proprietary technologies and brands.

In an interview on 8 January with Xinhua Online reporters, Wang Yuan and Mu Rong Ping, two national science and technology experts on development and policy respectively, identified the following nine major challenges:

- (1) Investment in science and technology as % of GDP stood at 1.23% in 2004, below the target of 1.5%. This compares with 2.59% in the US. And is well below the historical height of 2.32 % in 1960;
- (2) China’s external technology reliance rate remains high at 50%, compared with 5% for US and Japan;
- (3) Home brands fail to command their fair share of the market. There is the saying ‘Foreign goods, however expensive, are worth it. National brands, however attractive, are given second thoughts’;
- (4) World-class talent remains extremely rare. Representation in the 158 world-class organisations amounts to 2.26% with only one chairmanship;
- (5) There is still too much emphasis on research quantity rather than quality. The international quotation rate of scientific papers remains very low amongst the top 100.
- (6) There is too much gravitation towards short-term functionality and profits, and knowledge absorption rather than creativity.

- (7) Only 3% of enterprises possess core proprietary technologies.
- (8) There is too much duplication and variegation of resources. The utilization rate of large-scale scientific installations remains low, at 25%.
- (9) The ability of science and technology in helping to break through energy and other development bottlenecks to create an all-rounded well-off society remains uncertain.

A 'National Medium to Long-Term Plan for the Development of Science and Technology 2006 – 2020' has already been announced by the State Council as a blueprint for building a 'Nation of Innovation'.

The State Council also issued a directive on 13 January, 'Enhancing Cultural System Reform', promoting China's cultural and creative industries. Science and technology alone are by no means sufficient for building a nation of innovation.

Recently, we are also seeing more robust enforcement of intellectual property violations. Cases involving Starbucks, Toto, and Ferrero Rocher come to mind. Credible intellectual property protection is a vital pre-condition for nurturing creative talent and proprietary brands.

The likes of Lenovo, Haier, TCL, and even Mengnui (fresh milk) are all trying hard to build up global recognition. Current product advertisements in China are much more branding conscious. References such as 'Top Ten' or 'Ten Strongest Brands' are commonplace.

China does not lack technological innovation potential. China's TV champions such as Chanhong, Konka, TCL, Haier, Hisense and Skyworth and IT champions such as Lenovo and Great Wall, are actively developing an industry-wide protocol for the

emerging '3C' industry (Computer, Communications, Consumer electronics, all linked together interactively).

China approved an Intelligent Grouping and Resources Sharing Standard in June 2005. This was the first of such standards for this promising new industry. Over the next five years, Chinese IPTV (Internet Protocol Television) users may double from 300,000 to become one of the largest markets for 3C products.

Another example at the 'fun' level is the Colouring Ring-back Tone Service (CRBT). It has become something of a rage among China's 200 million 15 – 24 year-olds. 'Cool is out and Cute is in.' 'Don't be surprised if a mock Bart Simpson voice cautions you to be nice to the handset holder as he or she has had a bad day!'

These fun-loving, web-surfing and more imaginative youngsters are largely the product of China's 'One Child Policy.' They represent a whole new generation of much more individualistic consumers and workers, its worrying longer-term demographic consequences notwithstanding. They are likely to supply the human resources and the market demand for more creativity.

Really strong Chinese international brands are still very few and far between. But all indications are that the Long March for Brands has begun.

But with globalisation, branding is influenced by the branding of a nation. Think about how much more difficult it would be for countries like Afganistan, Iraq, Iran, North Korea, Myanmar etc to market their own home-grown brands even if they have the best product and hire the best PR firm in the world.

China in recent years has enjoyed a much more favourable national branding compared with the past. According to the PEW Global Attitudes Report dated 23 June 2005, 11 out of 16 countries surveyed view China favourably Two-thirds of the

British have a favourable view of China, more so than Americans.

However, international concerns with such issues as intellectual property infringements, environmental degradation, corruption and non-transparency, need for more human rights and democracy, and indeed the view of a Rising China threat, are increasingly being used against China. These concerns are often politicised and have already foiled two commercial attempts by China's champions to lock into the US market: CNOOC's bid for UNOCAL and Haier's bid for Maytag.

But there is much more than national branding. A flat world of such inter-connectivity and inter-dependency has flagged up a number of major global contradictions which underline much of the world's imbalances and instability. The conflict between the Rich and the Poor; between the gaining of jobs in one country and the loss in another; between Growth or Energy and Environment or Climate Change; between Saving or Export and Consumption or Internal Demand; between Currency Stability and International Parity; between North and South; East and West; Religious Fundamentalism and Secularism. The list goes on. One man's meat is often another man's poison. China's recent national emphasis on 'Building a Harmonious Society' has obvious international applications.

The price of proactive participation is not only international status but increasingly, self-centred commercial interests or competitive advantage. Matthew Kiernan calls this the Eco-Industrial Revolution. Nortel in Canada was able to hone its ability to develop a cost-effective substitute to CFC in pursuance of the Montreal Protocol. It turned this into a multi-million dollar business and leveraged it with a Mexican Government eager to seek compliance to join the North American Free Trade Agreement. Molten Metal Technology in New England was able to turn a \$5 million equity into a billion

dollar venture capitalising on its proprietary technology for treating hazardous waste.

More recent examples include GE's Ecomagination initiative on climate-friendly products and services with revenues exceeding \$10 billion, a \$1 billion investment in reducing greenhouse gas emissions by a group of 30 US and European institutional investors, and American Electric Power's plan to build America's biggest power plant using "clean coal" technology.

Technology and globalisation will be playing a crucial role in addressing some of the global issues. IT is already helping to bridge the urban-rural digital divide, as I have mentioned. This is likely to have a significant impact on poverty relief and rural development, including the access of healthcare. Apart from waste treatment, technology will be the key to a host of energy and environmental issues ranging from clean coal and mining safety, energy efficiency and saving, solar, wind, biomass and other renewable or mixed energies, carbon emissions, and the harnessing and conservation of water resources. The world's first sizeable Eco-city now being built at Dongtan near Shanghai is a good example. Technology will also promote education and empowerment and the development of a more open and civil society. Above all, it will serve to reduce international conflict over energy concerns and enhance international understanding.

I have no doubt that in the process, not only will a great number of innovative products and businesses be created and prone to flourish, but the world will have a chance to be a much better place, a place with more Hope, Peace, and Harmony.

Andrew K.P. Leung, SBS, FRSA

[www.andrewleunginternationalconsultants.com](http://www.andrewleunginternationalconsultants.com)

1A Vincent House

Vincent Square  
London, SW1P 2NB  
United Kingdom

Tel (44) (20) 7821 6177  
Mobile (44) 7838 161 668