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The Challenge to Rekindle China's Innovative Spirit

Until AD 800 or 900, China was far ahead of any western country in technology, in science, and in culture and civilization altogether
(Drucker, 1989, pp. 245-246)

Abstract

Purpose – China has become an economic powerhouse in historic terms but there are a number of challenges to their continued meteoric economic rise. The aim of this paper is to address a key issue in China's next stage of development: their propensity to create new things and innovate.

Design/methodology/approach – The paper is conceptual but uses historical and secondary data to support its assumptions. The paper was written in conjunction with Peter Drucker's Centenary Conference and attempts to take on his challenge 'of the hard work of thinking'.

Findings – China has a long history of successful innovation. However, Confucian belief, a single despot and a closing off to the rest of the world have thwarted its innovative edge. The key to rekindling the entrepreneurial spirit "within" will be based on the State's ability to balance the institution of Government with the needs of a creative class. This article identifies that much of this change will rely on quality-related developments rather than simply investments of financial capital.

Originality/value – The ability to create new things is a challenge to developing economies that rely on low cost and imitation. China's success in innovation will have substantial implications for developed nations both economically and geo-politically. China wants to be a significant player on a global scale and this paper sheds light on their real potential to achieve such an objective. Through traversing China's innovative landscape, this paper also enlightens the field of management on key aspects of China's innovative past, present and future.

Keywords – China, Innovation, Entrepreneur, Spirit, Institutions

Paper type – Conceptual paper

Introduction and background

An unprecedented transition has occurred since Deng Xiaoping changed China's path and told the Chinese that "to get rich is glorious". China's GDP growth over the last two decades has been maintained at a staggering 9-10% with the World Bank acknowledging that 500 million Chinese have escaped poverty during this period. However, arguably China's greatest challenge this century is to rekindle its innovative 'spirit' (Schumpeter, 1939), and importantly this is a battle that will need conquering within (Hutton, 2006; Arrighi, 2007). For centuries the Chinese were leaders in technological advancement with cast iron, deep drilling, gunpowder, the magnetic compass, paper, porcelain, and early forms of printing (Needham, 1982; Diamond, 1997). China's rapid development under a planned state but a market economy is one of the greatest experiments in history. Given his views on market economies it is likely Peter Drucker (2002c) would recommend that the Chinese focus on *knowledge* and *people*. In China's case this means mobilising a *complex culture* and its *requisite institutions*. Presciently Drucker (1992, p. 95) identified that this is now a story about 'world history and world civilisation' and not about a Western-centric worldview. He would however also acknowledge that China's great barrier is to go beyond imitation and cost innovation to imagination, creation and invention. This paper accordingly looks at *why* the Chinese have languished in innovation, and more importantly, *whether* and *how* the Chinese innovative spirit can be rekindled.

The paper adopts North's (2005) approach that informal and formal institutions help shape people's behaviour and structure their interactions. Hodgson (2003 , p. 154) highlights that institutions have a potential to affect an 'individual's habits, conceptions and preferences'. Individuals and institution are inextricably linked and this has profound implications for China's transitory development. It is important to identify at the outset that culture changes (Faure & Fang, 2008), as do institutions. Ricky Yan (1994) offers a key insight into the "softer" attributes of Chinese society. He acknowledges that foreigners need to understand *guo qing* or Chinese special local characteristics. This is no ordinary society, but the domain of one of the last communist frontiers where the institution of Government has a direct intervening role. Peter Drucker was privy to some of the

great conversations in history. He was privileged to live in Vienna at a time when Joseph Schumpeter, von Hayek and von Mises of the Austrian School of Economics were sharing ideas with his father. Drucker witnessed the rise and fall of Hitler and would have some real questions on the ascent of a command economy like China. The real battle for China in seeking to rekindle its innovative spirit is Government-centric and will be a function of how the polity copes with, supports and encourages an increasingly liberalised people.

Joseph Schumpeter (1939) identified innovation as the pivotal driving force that devastates some firms but rewards others and leads to surges in economic growth. He called it 'creative destruction' (Schumpeter, 1939; Drucker, 1992). Schumpeter noted that the secret to sustained success was being channelled through entrepreneurial 'free spirits'. These free spirits would grow new technology and drive ongoing development. The concept of free spirits would bring a grin to Drucker's face as history has shown that this is China's ultimate paradox. This paper accordingly looks at whether China's free spirits can be unleashed within the dynamic of a command economy. It goes beyond simply looking at the pure economic "grunt" behind China's innovation and identifies some qualitative areas where Drucker's 'knowledge workers' need institutional support. China's rise to a world leader suggests there has never been a more appropriate time to evaluate China's progress.

It is also important to clarify what we mean here by innovation. Various views exist on what constitutes innovation. Peter Drucker (2002a , p. 95) suggested 'Innovation is the specific function of entrepreneurship…It is the means by which the entrepreneur creates new wealth-producing resources or endows existing resources with enhanced potential for creating wealth'. Theodore Levitt (cited in Shapiro, 2002, p. 7) suggested 'Creativity is thinking up new things. Innovation is doing new things.' Porter (1990) suggests innovation in its broader sense refers to both new technology and new ways of doing things. Three components of individual creativity that drive innovation include 'expertise, creative thinking skills and motivation' (Amabile, 1998, p. 78). Amabile believes the organisation influences such attributes. The focus of this paper therefore is on the creation of new things as well as the doing of new things. In essence, it's about creative

innovation. Accordingly, innovation around cost efficiencies is not the focus. More radical and disruptive innovation (Christensen, 2000) around creative intelligence (Rowe, 2004) using imagination, creativity and invention (Robinson, 2009) is the real entrepreneurial spirit under review. It makes sense for a transient economy with cost benefits to take advantage of abundant low-cost labour. However, this type of innovation has a limited shelf-life. Xie and White (2006) identify that a transition is taking place in China and it's seeing China progress from industrialisation (the 50s), to a 'creation paradigm'. The creation paradigm is central to this paper's question of whether China can reignite innovation.

Peter Drucker focused heavily on the significance of the 'organisation'. He identified that organisation is a relatively new term (post WW2) and suggested 'they are purposefully designed and always specialised' (Drucker, 1992, p. 100). In essence, the PRC is the most populous formal institution and purposeful organisation in the world. China has many organisations but it is also reasonable to see China as one giant system. This is a slightly novel concept (hopefully not too great a stretch for Drucker) but fits well with Institutional Economics. This paper adopts this perspective (referring occasionally to China Inc as a complex organisational system) but equally acknowledges that creativity functions best when it operates from both top-down and bottom-up. If Amabile is correct, the State has the unique ability to nurture each individual's creativity. China's big experiment is best summed up in Deng's notion of "one country; two systems" which opened the door to a market economy. Deng identified that this process needed to be conducted within the context of maintaining *guo qing*.

The structure of the paper is as follows. The paper begins with China's cultural traditions and then looks at the history of innovation in China. The paper moves on to investigate why China deviated from the West in terms of continuing to innovate. The next section then examines Chinese policies and institutions that facilitate innovation. This sets the scene for a comprehensive evaluation of China's innovative capacity against modern international benchmarks. Important qualitative aspects of China's innovative development are then discussed. The

chapter concludes with some important answers to initial questions.

China's cultural traditions

To truly understand innovation in China we must delve into history. Well known philosophers like Confucius and Laozi, strategists like Sunzi, and legalists like Han Fei all played a role and this has had a profound influence on the Chinese. Confucius' central thesis proffered the benefits of moral virtue. Its later adoption in China led to a non-litigious society reliant on the "rule of man". *Xinren* (trust) and *guanxi* (connectedness) became informal surrogates for a lack of formal systems trust. Transitional economies often take time to organise; and corrupt practices like *zouhoumen* or the back door were more common in this early phase. Robin Dunbar (1999) identified that historically in large populous communities it was easy to cheat and as Dunbar puts it, cheats can prosper. People in these societies will rely on social trust and informal institutions over formal institutions. This is the case if cultural codes and legal infrastructure are absent. As Dunbar noted, if freeloading behaviour is allowed to prosper it gives rise to what is a 'communal zero sum game'. It's a case of "cheat or be cheated".

Therefore, focusing on Confucian moral codes of conduct was an important addition to help build a civil society in China. It helped overcome the negative outcomes of debilitating conflicts, such as the Warring States period. Han Fei's execution in 233 BC probably usurped the legalists' hopes of a 'rule of law' over a Confucian rule of man. Confucian thought took hold and increasingly dominated Chinese thinking, becoming the dominant theme for the mandarin bureaucracy and elite. Those used to more formal institutional traditions are easily confused by the Chinese "Rule of Man". Take Laozi's *wuwei*, or action by inaction. Western negotiators can become frustrated by Chinese disinterest or lack of zest. Sometimes the cultural values are embedded rather than intentional. Take the Chinese propensity for high-context interactions based on subtle verbal and facial cues. Add a circular and diffuse cognitive style and it is easy to see why foreigners have found China, its people, and its culture baffling.

Confucian and other Chinese values have positive and negative values in relation to aspects like innovation. Ritual and observance provide discipline but equally impose costs. Such discipline may help what management theory describes as convergent thinking or focusing an idea once it's discovered. However it is likely to hamper eureka moments and generation of ideas, imagination and divergent thinking. Divergent thinking is critical to creativity and innovation (Robinson, 2009). The feudal system has not encouraged risk taking or non-conformance. Merchants have ranked poorly in Chinese history. Such threads did not vary until Deng's leadership and his suggestion that making money can be "glorious". Indeed, the lack of encouragement for merchants and mercantilism as opposed to mandarins and public service has been identified as a possible source for why China deviated off its technological inventive path (Winchester, 2008).

History of innovation in China

Many people understand the size of modern China in terms of population but 'what is less known however is China's history as a country of invention' (von-Zedtwitz, 2004, p. 439). Fernandez-Amesto (1995, p. 680) suggests, 'It is a common-place irony that three inventions which helped to establish western world hegemony – the magnetic compass, gunpowder and the printing press – had been known in China for centuries before they appeared in Europe.' Joseph Needham (1982) provided an extensive study on the subject. Add to the earlier cited list of inventions, the Great Wall and the Grand Canal and one realises why Chinese, up until the 15th Century, were inhabitants of a middle kingdom that they believed *was* the centre of the universe.

What therefore went wrong in terms of innovation? The early 1400s seems to be the catalyst of change. The Ming Dynasty reigned and China was led by a tactical, innovative and entrepreneurial leader ij Emperor Chu (Zhu Di). The Emperor appointed the eunuch Zheng He (Cheng Ho) as his Admiral to seek new lands. By all accounts, Zheng He's fleet was awe-inspiring. A visit to Yuejiang Tower in modern Nanjing gives tourists a sense of the magnitude of the great sea journeys from 1405-1433. China had traded for centuries through the Silk Road, but these voyages offered a new level of enlightenment. This was

a period of rich discovery based on observing other lands, people and animals. The seeds of creativity and innovation in this period are self-evident.

Menzies (2002) attributes the demise of China's enlightenment to a freak lightning strike and concomitant sequence of negative events. Fernandez-Armesto (1995) believes the efforts to build the Forbidden City, expand the Great Canal, and fight a war in Vietnam had taken a toll on the Emperor's support base. The Confucian Mandarins then conspired to usurp Chu and his Ming Empire. Diamond (1997) suggests that China's demise was institutional in nature and began around 221BC (Qin Dynasty). This summoned a unified China with a move toward standardised writing, weights and measures. Diamond claims this unification under a single despot was a catalyst for limiting technological development and innovation. Leaving all the power to a 'wild card' (Diamond, 1997, p.420) makes a nation vulnerable. The series of events that led to a withdrawal from exploration in the early 15th century was costly. Diamond suggested a lack of complex diversity within China left them even more vulnerable, and several Dynasties passed before the implications of this really surfaced.

Diverging worldviews

Brown (1991) identified a human universal that he believes is innate to all. This is the propensity to rationalise in a binary dyadic way, which means viewing life as an either/or. However, Chinese seem to have made a gestalt shift and deviated significantly from this norm. This Chinese variation appears to have its roots in the Tao, I-Ching and the Doctrine of the Mean. The essence of yin-yang means the Chinese do not treat objects as binary opposites. Rather, the yin-yang worldview is made up of two symbiotic male-female energies like sun-moon, day-night, and water-fire with such elements capturing both/and (Fang, 2006).

Nevertheless, it's too simplistic to identify the yin-yang dialectic as solely responsible for China's lack of recent progress. Ultimately, the choice was made in the West to go with scientific method, while the Chinese missed this movement and instead stuck with their more holistic, humanistic paradigm.

Eventually the pathways led to stark changes. Adam Smith was one of the first to question the 'stationary' nature of the Chinese, noting in the *Wealth of Nations* the rich fertile and industrious nature of its large populous (Smith, 2008). Ironically, it was Smith's simple recipe that accentuated the divide. He foresaw benefits in people's strong self interest, business's pursuit of profit, and benefits from specialisation and capital investment.

Max Weber (1951) was one of the first to assess variations in Chinese industrial development. Unlike Catholicism and its offshoot Protestantism, Confucianism is not a religion but acts as a moral way (Fang, 1999). Weber identified that Protestant-influenced cultures were well placed to take advantage of an economic system built around self interest, private ownership, laws of demand and supply, new technology, entrepreneurial spirits and institutional rules of law. Ultimately, particularistic ties, the institution of the family (Redding, 1990), a feudal system and a single ruling despot turned out to be less potent economically. The Chinese choice to stick with traditional Confucian cultural thought has therefore had a large influence on the East. It would take China at least half a millennium to try and catch up.

China's recent innovative record

Deng acknowledged that you should 'learn truth from facts' (Fischer & von-Zedtwitz, 2004). This section provides the reader with a brief overview of China's current innovation "state of play". Mao's regime left an indelible mark in modern China. However, the Chinese are flexible and have a long history of resilience. Modern China's evolution as an innovative nation can be divided into five key stages (Xie & White, 2006):

- Stage 1 (1949-1960) started with the emergence of Mao's People's Republic of China and an industrialised nation built around "bedrock" industries.
- Stage 2 (1960-1978) saw increasing tensions between the Soviet Union and Mao; and the Cultural Revolution devastated much of the local innovative capacity.

- Stage 3 (1978-1991) was the catalyst for the new Open Door Policy (1978) with Deng embarking on a new wave of technology transfer from leading countries.
- Stage 4 (1992-2000) saw a revitalisation of local industry with FDI channelled to broader activities and not simply a means of sourcing cheap wages and production.
- Stage 5 (2001 onwards) can be described as a *modern Chinese industrial revolution*. The WTO entry in 2001 was a "watershed" date that re-established China on the world stage, as did the 2008 Beijing Olympics.

Sigurdson (2004) notes that there is little doubt that China has a goal to become a top tier technological nation but it will need to overcome institutional weaknesses to do so. SOEs have been a traditional focal point of the Chinese Government apparatus and they have been a major inhibitor to China's future. The Chinese Government is instituting important reforms aimed at opening the SOEs to greater competition (Arrighi, 2007). The rise of Mainland China private enterprises, international joint ventures and Wholly Owned Foreign Enterprises (WOFE) is offsetting some of the impacts.

R&D investment and spending is also acknowledged as a pertinent area for immediate improvement. Management of R&D in China is 'still mostly uncharted territory' (Gassman & Han, 2004, p. 423). China Inc is pursuing innovation through a long-term strategic R&D plan and program controlled by the National Steering Committee of Science and Technology and Education. This body has been instrumental in developing the 2006 to 2020 Chinese National Science and Technology Development Plan. This is the pillar of China's movement toward becoming a powerful innovative nation.

Further, Xie and White (2006) identified several potential impediments to China's status as a potential source of R&D and creator of new things: inability to fully absorb technology transfer; poor IP and legal frameworks; Government policies that are too directive in relation to import of technology; lack of competitive forces particular in SOEs; lack of clustering and support industries and companies; lack

of real transfer (mainly personnel) from research institutes to the broader business community. Overcoming these inhibitors are important steps for shifting from being an imitator to a creator (Xie & White, 2006).

Xie and Li-Hua (2009) have offered important suggestions to take China R&D forward: developing human resources for innovation; building an innovative culture; strengthening intellectual property rights; and building new incentive systems for innovation. Further, Fischer and von Zedwitz (2004) highlight some key *how-to* solutions for China in the next 20 years: raising the depth of science and technology literature; reducing scientist and engineer turnover rates; retaining the best people; shifting from product process development to technology research and creativity; internationalising R&D; increasing the English levels of R&D staff; coping with new challenges in IPR management; and improving process and performance management.

The Chinese Government is obviously conscious of the importance of innovation and is showing positive signs for meeting a number of these policy suggestions. Two point five percent of GDP is now targeted at R&D. There are other key targets including improving the level of technological advances to 60% (of overall growth) and becoming one of the top five countries in the world for patents and science citations. Nevertheless, benchmarking against other nations is a better way of assessing how far China has come in terms of innovation.

China's international innovation ranking

Patent filings are a crude proxy often used to review a country's investment in R&D and innovation. The US continues to dominate with nearly a third of all filings (53,521), but China has a respectable ranking of sixth having increased its filings to 6,089. China defied the global trend and increased its filings considerably (up 11.9%) in 2008. What is most interesting is the movement of a Chinese telecommunications equipment provider, Huawei Technologies. Huawei implausibly reached the number one position for global filings: implausible in the fact that it is competing with historical heavyweights like IBM, Apple, 3M and so on. Chinese telecommunications manufacturer, ZTE Corporation, is another Chinese company appearing in the top 100 on the PCT (Patent Cooperation

Treaty) list. Both companies dedicate at least 10% of their revenue to R&D with ZTE dedicating 40% of its workforce to R&D.

The Global Innovation Index is a more comprehensive benchmarking tool for measuring global innovative progress (Dutta, 2009). China ranks quite low (37th) in comparison to more advanced economies. China's ranking is a result of poor ratings in a number of key areas such as institutions and policies (relates to aspects like political stability, rule of law, IP protection flexibility, and regulations enabling risk taking and entrepreneurship – ranks 59th). China ranks higher on other 'input' elements including human capacity (38th), infrastructure (48th), market sophistication (46th) and business sophistication (49th). On some other key output indicators China ranks more highly. For example, it ranks 28th on knowledge and 5th in competitiveness. The size of China and its transition to a rapidly developing nation means that it inevitably rates poorly in terms of wealth (74th). The Global Innovation Index Report (Dutta, 2009) also notes that China is now the second highest R&D investor (US$136 billion) behind the US and had a University population of 16 million in 2006 (including 352,000 engineers). This was four times what it was a decade ago.

Another recent benchmarking index relevant to China's progress in innovation is the World Economic Forum, Global Competitiveness Report for 2008-2009 (Schwab & Porter, 2008). This report rates a country according to thirty-two key innovation-related factors. China has made some inroads in Global Competitiveness, moving from a ranking of 34 to 30. China's innovative capacity has shown a marked improvement in the number of patents, R&D spending, and university-industry collaboration. However, it also identifies some key weaknesses in the following: institutions (56), infrastructure (47), higher education and training (64), technological readiness (77) and business sophistication (43). As the report also identifies, there are still 128 million people surviving on less than $1 a day in China which puts the overall growth into perspective.

The Institute of Large Scale Innovation is another one of the broader benchmarks. It uses measures such as R&D spending, post secondary awards and patents issued. In the period 2005 to 2006 its rankings on innovation listed

the US first, Finland second and China at 17 (as cited in Kao, 2009, p. 112). The OECD also produced a detail report on innovation in China in 2007 that provides some additional insights. The report (OECD, 2007) highlights a dramatic increase in high technology exports (increased to over 30% from 5% between the early 90s and 2005). However, this must be tempered by the level of R&D and exports growing out of foreign firms. An interesting aspect for innovative growth is the level of private sector value added production which has risen from below 30% to over 50% from 1998 to 2003. China's economic transition since 1978 has been substantial but as the rankings identify there is still a long journey ahead.

Some key aspects of China's future innovative development

This section looks at four key aspects where top-down and bottom-up *quality* imperatives seem tantamount. The first three elements include: *a revision in learning; nurturing a climate for creativity;* and, *encouraging risk taking*. A real challenge for China is the paradox of running a market economy while maintaining a planned socialist system. Hence, the fourth element in China's pursuit of creating new things is *managing China's formal and informal institutions*.

Learning and innovation

The Chinese Imperial Examination system is legendary and has provided a solid process of meritocracy and governance (Dreyer, 1996). A number of the principles have been passed on and adopted in China's modern school based system. The Chinese university education system has only recently been revitalised. Paul Krugman (1994) noted that the utilisation of social capital led to the rapid rise of the Asian tigers. Undoubtedly, pumping money into the system can improve productivity of social and human capital. The Chinese have an abundance of social equity that can be tapped. Based on pure numbers this should prove fruitful. However, it's the *quality* of social capital not the *quantity* that enables creative innovation. If China wants to achieve its ambitious targets for growth in R&D, quality of education is a key issue.

The West still has a lot to learn (Robinson, 2009) when it comes to improving education productivity and education-related creativity and innovation; but it can also pass on some tangible evidence to the Chinese. The best international systems of education have three common elements (Barber & Mourshed, 2007): they recruit quality people to teaching; they ensure these people have excellent instruction; and, they make sure this level of instruction is accessible to every student. Such inputs and a rich breadth of curriculum are returning outstanding results to the Finnish. Finland now tops the OECD list in the Program for International Student Assessment (PISA) benchmarks (1st in Scientific literacy, 2nd in Mathematics literacy, 2nd in Reading literacy – 2006). Focusing on teacher quality and the learning process has been critical in Finland achieving successful long-term educational outcomes and this provides valuable lessons for the Chinese.

Creativity and innovation also needs stimulus from fields like the arts and humanities (Rowe, 2004; Robinson, 2009). China has thus far focused on building a uniform education system with literacy and numeracy raised to a minimum standard and appropriate year level. These are basal necessities. Kao (2009, p.111) calls this model of innovation, the 'Brute Force' approach, based on stealth and pure numbers. At the higher level the focus is on scientists and engineers but the real challenge for advanced economies has been to increase the abilities of these engineers and scientists to find *new things*. These are the new *knowledge workers* and the US has been a dominant force here in the 20th Century. Kao (2009, p. 111) refers to this more inventive approach as the 'Hollyworld' model of innovation.

The sending of Chinese students overseas has provided a quasi solution. These students are bringing new skills back home and the top few are being offered sizeable incentives by the PRC Government. China has just recently announced a package aimed at attracting 1000 of its most talented overseas researchers. Such policies are heading in a positive direction and the brute force approach has seen a doubling of universities from around 2000 to 4000 (between 2002 and 2005). The top 10 institutions are gaining extra funds as they strive for global status (Kao, 2009, p. 111). Nevertheless, the overall culture of education

has to change if China wants to grow 'creative intelligence' (Rowe, 2004) and as Drucker (2006, p. 145) would suggest it's 'knowledge workers' who work with their 'minds' rather than hands. Fortuitously also for China, Drucker (1992) identified that education would see a dramatic change in the next 50 years (more rapid than in the past 300) due to technological advancement. There is acknowledgement already in the West that the Chinese have been quick to harness and adapt to such change.

Chinese climate of creativity

Florida (2002) in his book *The Rise of the Creative Class* identifies important criteria for those in search of creative innovation. Creative regions in Florida's view are built on 3Ts of technology, talent and tolerance. The measures include the number of high tech firms and innovations, the talent pool (bachelor degrees and above) and diversity. Florida's super creative people reside in occupations such as: IT and maths; architecture and engineering; life, physical and social sciences; education, training and libraries; arts; design; entertainment, sports and media. Florida later developed a Bohemian index based around writers, music and the arts. This he found has a direct relationship to high tech innovation and economic growth. According to Florida's work China is still focused on a *working class* and has not transcended to either a *services class* or a *creative class* (knowledge, technology and creative industries). This is reasonable as China's current comparative advantages are cost-centred. However, in a globally competitive environment where China's input and labour costs are rising, this may not be sustainable nor as we have seen desirable.

To grow a talented pool of creative people, Richard Florida suggests that location or the "quality of place" is important. Attracting creative talent requires proper amenities and a location that boasts a range of facilities and services. People need to be stimulated and that means aesthetic pleasure with appropriate transport mechanisms, walking tracks, and stimulating and friendly recreational areas. Thriving regions also need intellectual stimulus from libraries, universities, arts, theatre and alike. Social innovation as Drucker (1992, p. 97) acknowledged is 'equally important and often more important than

scientific innovation'. Finally people need access to better practices and this means promoting connections and networks for encouraging knowledge transfer. Harvard researcher Teresa Amabile (1998) introduced an assessment tool for reviewing this at an organisational level and called it the "climate for creativity."

How China can foster its own creative class and climate for creativity is complex for China Inc. However, serious attempts at incubator sub-regions of diversity and high tech development are underway and the results are positive (Chen & Karwan, 2008). Huawei is a leading example of China's progressive movements toward new things. Ultimately, real change is likely to receive its greatest boost from China's youth and its 'new culture of cool' (Yu, Chan, & Ireland, 2007). There are 200 million youthful Chinese living in urban areas (Yu et al., 2007). These new 'trendsetters' are expected to have a major influence on China's modern *guo qing*. Changing demographics and the opportunities it brings for innovation was a key focus of Peter Drucker (see Drucker, Dyson, Handy, Saffo, & Senge, 1997) and it is likely to be a catalyst for change in China as Drucker also suggested (Drucker, 2002b). Recent controversy over Wikipedia and Google and their provision of Chinese content offer insights into the growing complexity of these issues.

Nurturing innovation risk-takers

Survival in China has meant learning to adapt and being flexible. Tom Doctoroff (2005, p. 8) notes 'To survive, let alone advance, adaptive traits are required and the Chinese have them in spades'. Believing that 'creativity' is not one of their strengths, he goes on to suggest they revere knowledge and are extremely resourceful, intelligent, patriotic and above all 'analytically and tactically brilliant'. The Chinese have a history of minimising risk through *guanxi* and trust (*xinren*). The institution of systems trust in China is quite new in relative terms and is changing these behaviours. However, until there is more confidence in the system and litigious success, it is probable that individual risk-taking will be high for businesspeople who move beyond particularistic ties.

Risk taking is also related to business type and style in China. The area of Wenzhou offers a good example. It was an area that received minimal support in the days of liberalisation. Yet the local entrepreneurs were capable of starting their own enterprises and making them successful. Like the southern Chinese, these private entrepreneurs are known across China for their risk-taking capacity. This is not so evident in larger organisations such as SOEs. Staff of SOEs are reluctant to usurp or challenge authority. Private companies setting up in areas like Wenzhou and Southern China don't have to second guess such politically linked network constraints. Notably, Tan (2001) found no significant difference between the Chinese and their Western counterparts in terms of entrepreneurial propensity to innovate and take risks. However, this was not the case in the more bureaucratic SOEs where political embedded aspects were involved and incentives to innovate and take risks were much lower.

Pluralism is important to acknowledge and generalisations are extraordinarily inappropriate in China. Chinese with a higher propensity for risk taking are therefore not extraordinary. This is one of those paradoxes of the Chinese (Faure & Fang, 2008) with many levels of potential variation existing (Tung, 2008). A new "wave" of Chinese called ex-host country nationals (EHCNs) provides an example. This includes those who have been born and reared overseas and have returned to China, as well as those who have been educated overseas but also returned (Tung, 2008, p. 44). Interestingly, a cross-cultural study by Weber and Hsee (1998) found that attitudes to perceived risk were relatively the same among their data set of Americans, Germans, Chinese and Polish. Over time, the risk taking argument is likely to dissipate as the aforementioned aspects of diversity and complexity grow.

Managing China's formal and informal institution

Learning, creativity and risk taking are not simply functions of DNA, they are also acquired. Balazs (1965) suggested that it was the State's fault that technological progress was killed off in China by limiting the spirit of inquiry and innovation. Winchester (2008) noted two potential rationales for why innovation in China was

thwarted. One acknowledged that the lack of a mercantile class limited competition and ambition; the other theory was linked to the earlier Diamond argument suggesting unification and totalitarianism were at fault. The concept of 'cumulative causation' is an important aspect emanating out of the Institutional Economics literature worthy of note. It suggests that Governments can change pathways and alter trajectories but this is limited to 'incremental change'. China may be the first exception. It could be argued that China has shown that large capital inflows, modern logistics and new forms of communication can speed up the process of change. Yet, changing Chinese core values and habits may take more time.

Moving away from "Brute Force" to "Hollyworld" or to what Kao (2009, p. 112) suggests is a "Large-scale Ecosystem" model (intensive and extensive innovation with clustering around a National strategy) is extraordinarily difficult. As noted, China's brute force model built around imitation and cost innovation has served China well. For all the right reasons this transient economy is leading the way as the "factory of the world". This has led to trade imbalances and the US inheriting a large "bill from the China shop"(Dumas, 2008). Creative innovation is the higher-order goal for China but before this can be achieved a strong, stable foundation is required. What is different in China, to Finland, the US and Australia, is the role Government plays in terms of innovation. China's Government is not simply setting up the framework: they are also an active participant. China Inc. has a vested and controlling interest in many of the firms (SOEs).

Whereas, innovation and entrepreneurship, as outlined by Joseph Schumpeter, are functions of a liberalised economy built around more independent agents or 'free spirits'. It is built on a quite different market-based system. This recipe fuelled the West's sustained industrial revolution (although the US and others, in light of GFC, is now questioning the magnitude of its financial liberalism). Deng's *two systems* (planned state but a market economy) is far more complex. Some question China Inc.'s capacity to design a system and institution that allows for individuality, lateral learning, nurturing of a cosmopolitan creative class and risk

taking. The spirit of innovation in Chinaijto themijis likely never to be rekindled. This proposition is not so much based on the values and habits of the individuals but the values of the institution. Drucker (2002a, p. 102) observed that 'innovation requires knowledge, ingenuity, and, above all else focus'. No one seems to doubt China Inc's *focus* but many question their ability to allow people a *freer* spirit.

This brings us back to our earlier challenge: So why have the Chinese languished in innovation and more importantly can the Chinese people's innovative spirit be rekindled? The discussion has identified a number of reasons why they have languished. The more critical aspect is whether their innovative spirit can be rekindled within a *one country* and two systems approach.

Discussion

Rekindling China's innovative creative spirit is arguably China's greatest challenge. It's likely to also take "one country and a modified system". The key for China, as discussed, is not to sit on imitation, cost innovation (Williamson & Zeng, 2007; 2008) and manufacturing prowess forever. Modern developed economies show that longer term success will be built on developing knowledge and creative innovation. Following on from the work of Montesquieu, Phillip Parker (1995) identified that culture is a function of the environment. Culture is dynamic and changes over time (Fang, 2006). Likewise institutions emanate from culture and they need to adapt. Nobel Laureate Douglass North (2005) suggests we should view the world from a non-ergodic perspective, that is, a world in which there is a zero probability that any state of being that has occurred will reoccur (Kriz, Groen & Drew). China Inc. and the people are inextricably linked. Together they make up China's *guo qing*. There is a mutual benevolence as identified in the Confucian *wulun*. But to be truly innovative, the formal institutions of China will ultimately need to continue to follow a modified system that frees its spirits in line with more liberalised values.

Drucker (1992, p. 100) is well known for identifying that in an organisation, "People are our greatest asset". In terms of the people and future knowledge

workers of China, rapid economic progress and income equality appear to be two key drivers for China Inc's continued success. The Chinese are extremely intelligent and stand-out negotiators (Chen, 2001). Given the right institutional framework, they have proven extremely industrious. Japan was challenged in the 70s by those questioning its capacity to be creative and some still suggest that their incremental additions have yet to really impress. However, few could claim that companies like Toyota are not innovative (especially GM). Nevertheless, as yet there is no defining technology that has left the US languishing.

China is now facing the same challenge, which begs the question: If China as an institution set up the environment for creative people to innovate, what would happen? History shows that Chinese are more than capable. Joseph Needham's long list of inventions is testament and Drucker's quote at the outset of this paper was a prescient reminder. There is plenty of evidence acknowledging that the Chinese people's propensity is not the issue (Diamond, 1997). The issue stems from culture which then became institutionalised. Therefore, creating an environment where people *can* thrive is China Inc.'s "next big thing".

The introduction noted that China's greatest challenge lies within. Indeed, radical change is much easier where population size, for example, is equivalent to Finland, Singapore, Sweden or Australia. But mobilising the people has not been insurmountable to the Chinese. And in a yin-yang paradox, it's the nature of the Government structure that makes China such a strong economy. Hu Jintao (China Inc.'s CEO) and Wen Jiabao (China Inc.'s COO) have the power to orchestrate change; and through the agency of Government these changes can be enacted more quickly than in the West. Centralised power has stymied China since the mid 1400's but it could still be a source of major economic competitive advantage.

The Government has already orchestrated many of the structural features that need implementation to drive innovation. Spending on education and indigenous R&D as well as platforms for increasing patents and basic science have been set in motion. It is the *velocity* and *speed* of change that is probably now most at

question. Allowing “free spirits” to run free is difficult in a planned economy built around Marxist (and now Leninist) principles. The ability of Chinese to adapt and a new generation of ‘cool’ and well educated are likely to be catalysts. There are multi-layers in China and knowledge transfer between Chinese firms and Chinese people is likely to grow. The regional variations are starker than most realise. To the Chinese, these differences are as stark as those between France and Germany, so there is a creative class and climate for creativity already on the go.

Conclusion

China has already reinvented itself in the 21st Century. The magnitude of China’s phenomenal growth is likely never to be repeated. Its next step is to see if it can rekindle creative innovation. The PRC Government is already asking for a change in focus away from imitation to invention. The patent listings show that this is well underway. Brute force has helped but it’s now time for China to add to their small band of Nobel Laureates. Such achievements add more than innovative acumen to China but also add “face” and prestige (Sigurdson, 2004).

The last thing the CEO of China Inc can afford is a major upheaval. This is a delicate balancing act that China has to perform: broadening and enriching the social capital base while allowing creative spirits to flourish. The Chinese are well aware of the capabilities of Hu Jintao. The quantitative elements indicate China is likely to become one of the next great innovators. However, as this paper highlights much is reliant on the softer qualitative aspects. Ultimately, the institution (China Inc.) and the people of China will determine the right balance, velocity and speed.

Joseph Needham wrote the definitive history of technological discovery in China. However, he never satisfactorily concluded why China lost its early creative advantage. This has been called the “Needham Question”. Accordingly, we asked in the introduction: Why did China stop innovating and can it rekindle its innovative spirit? Hopefully, this paper’s review of culture and institutions has contributed to resolving this key issue. Winchester (2008) noted that the last 500

years is probably just a ‘hiccup’ in China’s story of creativity and innovation. Modern ascent is more difficult but only the naïve would bet against China. In the process, Schumpeter’s notion of a *free spirit* may need to be redefined. Managing the formal institution of Government and the informal institution of the people is the ultimate key to seeing China as a leader rather than a follower in new technology. Given the nature of this article it is worth leaving the last few words to the late Peter Drucker. Fortunately for China, ‘the greatest change of all is probably that in the last 40 years purposeful innovation – both technical and social – has itself become an organised discipline that is both teachable and learnable’ (Drucker, 1992, p. 97).

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