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Dealing with the complexity of causes of societal innovativeness: Social enabling and disabling mechanisms and the case of China

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Abstract

Societies progress by the influence of two forces: innovativeness and cooperativeness. Enabling these forces constitutes a society's transformative capacity. The paper proposes a vocabulary for certain universal requirements for use in comparing the various societal trajectories aiming towards shared prosperity. Progress to date has in consequence normally seen the growth of empowerment and of more benevolent forms of domination over time. Economic action fosters the sharing of prosperity when systems encourage competition to cooperate. Studies are considered that stress the heritage of ecological context in shaping relevant responses in the present-day social psychology. The specific field of innovativeness is considered by an analysis of Silicon Valley. From this, and from other studies, seven features are identified for an ideal type societal system high on innovativeness. These are: capacity to scale up; worker creativity; individual autonomy; property rights and incentive; open society; stable institutional order; rationality. China is assessed against these criteria, and found to have certain inadequacies that are currently the subject of policy attention.

JEL: Z1; N00; O01; P5

Keywords: Economic Systems; Economic History; Developmental State;

Introduction

In his detailed study of the first industrial revolution in the UK, Mokyr (2009, p. 12) suggested that below the surface of the mass of activities involved between 1700 and 1850 there were essentially two things going on. They were to do with knowledge and institutions. He saw ‘the economic game’ as being played at two levels: a game against Nature played via technology; and a game of interacting with other people played via institutions. The two processes were in constant interplay and ‘it is in this complex of interactions that the answers to the big historical questions must be sought’. This paper takes such complex interactions as its field of interest and proposes an approach to defining their nature.

The paper also takes note of the role of *ideas* in the historically evolving processes of development, and sees much to be gained from tracking how ideas affect the societal and political balancing act when and if vested interests are to give way to market rationality (or something else) in the pursuit of progress. The account by Mokyr and Nye (2007) is instructive here, as they depict the way the first industrial revolution matured in conditions where (a) a very strong and legitimate parliament, and (b) a two party system, made possible the shift from self-seeking legislation to public-good legislation. In this century-long shift, the ideas of the Enlightenment fostered the rise of a new *bourgeoisie*, which in turn facilitated the distribution of political power away from land, and towards capital, commerce, and eventually labour. This change was driven in large measure by the *high minds* or *virtues* of key holders of power (McCloskey, 2006). The earlier power elite of land-holders in this long-drawn out and never-before-witnessed scenario ‘could not guess the inversion that would later come’ (Mokyr and Nye 2007, p. 60). They kept their wealth until well into the nineteenth century (Cannadine, 1990) and with it their acceptance of the radical political changes that went with the ideals of empowerment slowly but steadily driving them. In the context of the study of government policy and innovation, and especially for this paper in the contexts of developing societies still experimenting with *modernization*, the following observation is relevant: ‘Perhaps the most important and least noticed change in policy was the growing support for the bearers of technological progress and innovation. The British political establishment simply refused to cave in to the local special interest that tried to resist innovation in an attempt to preserve the technological status quo’ (Mokyr and Nye 2007, p. 67).

We note also, as part of the blending of ideas with institutions, the key role of its being financially worthwhile to make the effort of innovation. At the most basic level this refers to the innovators (a) getting rich and (b) keeping their wealth under safe conditions of regulation. This point was illustrated in the recent posted responses to a new ratings system measuring societal success in building high levels of the kind of human capital that sponsors innovation (The Global Talent Competitiveness Index)¹. The best results were attributed to government policies on openness in trading, vocational education, research investment, and (for the top three - Singapore, Switzerland and Luxembourg) small populations. There was an immediate outcry from bloggers, saying in effect you have missed the point; these winners are English-speaking tax havens; what do you expect? The combination of property rights and acquisitiveness remains quite central here, but is often represented by surrogates in policy debate. The extensive work of McCloskey (2006, 2010) on economic history shows that unless the acquisitiveness matures to include the 'bourgeois virtues' it will lose its societal legitimacy and influence. The world of banking provides the most recent object lesson.

If we take the meaning of *the game against Nature* to refer to the use of science to enhance technology then we are close to accepting *innovation* as a surrogate label for this first game. One further step in the defining process is to consider this feature as a capability of society. This is harder to grasp but it goes well beyond a collection of specific inventions and exploitations. The ideas of human and social capital similarly express the concept of societal capability, such capital being a resource for use. The accumulating by societies of higher and higher levels of 'transformative capacities' of this nature is seen by scholars such as Eisenstadt (1968) and Fukuyama (2014) as the essence of politico-economic achievement and it normally rests on stable empowerment. As Fukuyama summarizes it (2014, p. 513), 'A high degree of autonomy is what permits innovation, experimentation, and risk-taking in a bureaucracy. In a well-functioning organization, the boss gives general orders to get something done, and the subordinates figure out how best to do it'.

A wider historical view comes from Mokyr as interpreted by McCloskey (2006, p. 14): 'Above all *modern* capitalism encourages innovation. Joel Mokyr has emphasized the institutions of modern Europe that prevented the sins of envy or of

¹ This is sponsored by INSEAD, the Human Capital Leadership Institute of Singapore, and ADECCO.

anger or injustice from killing innovation'. Parallel work on this *liberating* phenomenon is visible in the empirical tracking of it via the World Values Survey and *Freedom Rising* (Welzel, 2013); so too the organizational implications of it for releasing the creative energy of *distributed leadership* (Ancona and Bresman, 2012).

We therefore propose to identify the object of interest here as *Innovativeness*, rather than Innovation, in other words as a society's collective capacity for combining scientific invention with its practical and progress-inducing application. This includes the amount and quality of the scientific invention that starts the process, but also brings into play the fostering and the organizing of its being applied.

Mokyr also brings our attention to the complex reciprocity between these forces. Technical change, and the social organizing of the individual human energies to take the advantages available, worked together as (in the western response) markets began to exert their logic. Such organizing, when seen historically, invented step by step a set of new social relationships due to which, as Heilbroner (1985, p. 40) has observed, 'the domination represented by capital emancipates society from harsher previous modes of domination'. Key in this, for all successful societal transformations was the stabilizing of property rights, a special case of the more general conceding of rights deep into a society's structure (de Soto, 2000; Holt, 1985; Welzel, 2013). Put at its simplest, it was this empowerment that released the autonomy that then underpinned the innovativeness, while at the same time fostering the spontaneous emergence of new forms of cooperativeness. It is this cooperativeness that can be argued to be the main catalyst for both growth and well-being (Halpern, 2010). These forces were largely expressed inside and between organizations as the willingness to cooperate grew exponentially. The mistrust of strangers was gradually counteracted by new institutions and by information flows that gave people reason to re-calibrate the grounds for trust, and dismantle the old suspicions. You could for instance reliably judge another company by its published accounts. As markets added competitive stimulus, the essential business dynamic became, and has remained, *competition to cooperate* (Beinhocker, 2007). Without this, the drive to meet the ultimate criterion of per capita productivity would not have led to the large organizations that make up the Fortune 500 and their emulators. Nor would we be seeing the information revolution leading to new structures for continuing the same search for efficiency at scale. Nor could we explain the parallel expansion of system trust, via law and regulations that proved crucial in enhancing both the innovativeness and the cooperativeness. The

interplay between these twin forces is the field of interest in this paper. In consequence, following socio-economics and complexity theory, it is appropriate to take brief note of frameworks of explanation for such dynamics.

We need here to enter a caveat. It is not assumed that there is one trajectory providing ‘the’ answer to the societal mastering of such capacities, and pioneered in the western historical experience of development. Other answers are currently visible in Japan and (differently) South Korea, Taiwan and Singapore. Further trajectories are in early stage process, most notably that of China. It is instead our purpose to search for unifying core principles of a universal nature that might then allow for comparisons to be made between the trajectories.

Approaches to Explaining Societal Economic Progress

The macro explanations necessary for economic and societal progress have tended to cluster in and around the discipline of economics, but (with the exception of certain adventurous thinkers) to reveal its paradigm as incomplete. From Adam Smith, who knew the power of *moral sentiments* in the larger equation, through Max Weber, who also knew the power of *the ideal* to shape *the material* and vice-versa, and Alfred Marshall who saw economics as closer to biology than to physics, we see an acknowledgement of the complexity. But in more recent post-Keynes scholarship, affected perhaps by sensitivity to discipline boundaries, there has been a tendency for economics to stop short of expanding into other fields such as genetics or culture.

Instead the study of institutions has grown as middle ground where those of a positivist persuasion can research. Three Nobel Prize winners are representative of both the priority of the challenge and the limitations of meeting it: Douglass North (2005) now acknowledges the way in which culture constrains the scaffolding of societal institutions, and the role of *intentionality* in explaining behavior. Elinor Ostrom (2009) had to break new ground with her *social-ecological systems* framework in order to understand how spontaneous institutionalizing permitted the sharing of common-pool resources. Michael Spence, on economic success, acknowledged ‘there is a bit of a mystery as to how these reinforcing growth dynamics get started and why they don’t when they don’t’ (Spence 2011, p. 41). Other distinguished economists have said similar things, perhaps most notably David Landes (1998, p. 516) with his comment that ‘If we learn anything from the history of economic development, it is that culture makes all the difference’. But he shied away

from that question as a field of enquiry *per se* due to implicit possible racism. We address this point later as a more recent and empirically powerful dismissal of racial influence by Welzel, Inglehart and Alexander (2015) gives hope for moving forward into taking account of culture. The emergence of socio-economics as a field now provides a home for such cross-fertilization.

Other fields are now contributing rich additions to relevant theory-building. Complexity theory is demonstrating how the industrial economics that lies behind much business strategy theorizing can be enhanced with evolutionary logics (Beinhocker, 2007). A number of writers have brought new insights from evolutionary theory to issues such as human cooperativeness and inventiveness (Nowak, 2011; Pagel, 2012; Ridley, 2010). New thinking is also emerging at the intersection of biology and the behavioural sciences (Stoelhorst and Richerson 2013), and institutional theory continues to expand to include for instance an institutional logics perspective that reaches back into cultural determinants (Thornton, Ocasio and Lounsbury, 2012).

Clusters of Determinants

Several ideas that have evolved with socio-economics have led to improved ways of analysing determinacy. One has been the concern with systematically accounting for the *context* of economic action (Whitley, 1999). Related has been the holism advocated by Ragin (1987) in his advice on comparing societies. Influential also has been interest in the coupling of determinants and their locking together into strings of connected forces. These appear in the varied literature in several guises: *complementarities* where change in one feature is connected with change in another, *configurations* in which an account gathers them into strands to explain a phenomenon, *co-evolutionary coupling* in which explanation rests on the study of the interactions, or *autocatalytic networks* transferred as an idea from biology to social systems analysis.

We propose to develop an explanation of the state of innovativeness in China using such a configuration of determinants. We look at two such explanations for the workings of this nexus. By doing so we may then throw light on the contribution of government policy to the total set of effects. We will follow this with an exploration of the situation in China, and here expand the analysis to include the other side of reality – the configuring of social *disabling* mechanisms. When innovation

performance is weak these may justify a shift in policy focus away from the pursuit of positive features alone. An assumption is that the negatives may not be just the opposite of the positives. We will also propose the inclusion of certain catalysts; normally these are societal features of a *deep* nature that serve to underpin or legitimize forms of response at the surface. An example would be a tolerance of failure within an essentially competitive collective mind-set.

Explaining Silicon Valley

Redding (2005) in following Geertz (1973) and advocating the use of *thick description* as a means of societal comparison, added certain lessons from complexity theory (Kauffman, 1995) and holistic analysis (Ragin, 1987) to develop a model in which societies are seen as complex adaptive systems. One aspect might be the business system (Whitley, 1990), and within that a feature might be the social architecture of innovation. In using such a framework to achieve understanding of a phenomenon that is itself complex, the process of analysis becomes one of connecting threads, usually across institutional spheres like labour markets and capital markets, but also often across disciplines, as when a civilizational ideal such as a belief in freedom (values) is paired with an organizational response to decentralize authority (structures). This thick description avoids simple causes, themselves often uprooted from their context and so only partially understood. Guiding the construction of such configurations is the search for *complementarities* that exist when the presence or efficiency of one complements the returns from or efficiency of the other. For example a norm that it is ok to fail.

Another pattern of determinacy runs from the socio-cultural legacy, via the experience of specific historical events such as the US Declaration of Independence or the Meiji Restoration, into the co-evolution of institutions for order, on to current forms for the coordination and control of economic exchange.

Figure 1 is of the innovative ecosystem of Silicon Valley as seen by Hwang and Horowitz (2012). It lists thirteen features that make up the workings of this hyper-innovative region, seeing it via the metaphor of a rain forest. In other words it is dense, fertile, full of different species, of rich interactions and interdependencies, an environment for competition, and hard to penetrate. The components proposed include ideas, institutions, processes, plus various assets: human, social, physical and knowledge-based. Their position is that the *rainforest* as context supplies the

conditions in which new forms of coordination can evolve, compete, and grow. The context is not in itself a determinant of the outcomes, as they emerge spontaneously and are unlikely to be imagined prior to that. Instead the context is catalytic. For government policy therefore a concern with fostering such a context will be a concern with stimulus and encouragement, not with direct control. This may well run counter to the proclivities of some governments if their instinct to control is high, a point with some relevance in China.

Figure 1 The Silicon Valley Ecosystem. Source: Hwang and Horowitz (2012).

In a similar manner, but with a different and wider framework, Redding (2005) has proposed a form of *thick description* to help understand the complexity of a societal business system. The model sees the system in terms of three interconnected layers. At the base is the realm of *meaning* (Culture). This interacts with the realm of *order* (Institutions). These both then interact with the realm of *coordinated action* (Organizations) (see Figure 2). Following Whitley (1999) the coordinated action is seen in terms of three connected design logics: what kind of firms; the relationships between such firms and; the nature of the internal ‘glue’ that holds each unit together. The short terms for these three coordinating features are *ownership*, *networks*, and *management*.

Figure 2 The elements of a societal business system. Source: Redding (2005).

These features of the business system are in constant co-evolution with the realm of order i.e. the society's framework of institutions. This consists of the rules of the game, and the consequent systems for delivering predictable order in three fields: the sourcing and allocation of capital; the creation and use of human skill and talent and; the architecture of trust. So *capital, human capital, and social capital*.

Underlying all of the above is the realm of meaning or culture, seen as (i) the most commonly held views about the core purposes of economic action, (ii) the most commonly shared perceptions of where the individual belongs in society and (iii) the normally adopted view of who has authority and why. So *rationale, identity, and authority*.

The model acknowledges that certain historical events are likely to have left their mark, as for instance did Maoism in China. It also acknowledges that the object of

study is an open system, not normally protected from external influences, and these are seen as both material and ideational.

It is not intended to explore this explanatory framework in detail here. Such accounts are available for several societies in Redding (2005), Redding and Witt (2007), and Witt and Redding (2014). Reference to it is simply to allow a laying out of one attempt at manageable completeness. Its findings are now built into a combined model that builds further on the insights of Hwang and Horowitt (2012) (see Figure 3).

Figure 3 The Silicon Valley configuration of determinants: An amalgamated model.
Source: Hwang and Horowitt (2012).

This combined configuration is intended to show what works in the Anglo-Saxon case. It is currently not known how much of this set is in some sense *universal* and

capable of being carried forward as a check-list to China, a society with a different legacy. What we do know however is that the possibility of borrowing and collaborating is changing the nature of the global competitive game. The decline of manufacturing and the rise of knowledge industries is also changing the global game. But we would contend that the core capacities to innovate and cooperate are unlikely to lose their central roles in the arena of competition.

We later ask whether China can meet this challenge. We will argue that China will find it impossible to keep up its rapid ascent beyond the USD15,000 GDP per capita that it will reach in about ten years from now; that this challenge has much to do with its limited capacities for innovativeness and cooperativeness and; that adjustment to escape the trap will require a re-defining of its societal ideals concerning authority and control. We believe this may be possible, given that the Chinese government is aware of the threat (World Bank/China State Council, 2013), but the complete form of response is neither obvious, nor likely to be straightforward. There are also many other countries with their own versions of the same dilemma. But before considering China's position, it will be necessary to look in more detail at certain arguably non-negotiable implications of the historical and pre-historical legacy.

The Lessons from Evolutionary Theory

Taking it as read that ethnocentrism is unhelpful even if often subconscious, we begin this section with a brief review of literature from fields connected with evolutionary theory in order to identify the foundations of human innovativeness and cooperation (i.e. the shared determinants amongst all modern humans). We then propose how contextual factors, time and path-dependence result in different modes of cooperation and innovativeness in different societies. New knowledge is building fast in these fields, with technical advances in DNA reading.

North, (2005, p. 170) suggests, 'economists have the correct insights that economics is a theory of choice. But to improve the human prospect we must understand the sources of human decision making. That is a necessary condition for human survival'. North (2005, p. 30) also suggests that the immense variation between 'the performance characteristics of political/economic units over time makes clear' that both culture and genetics must be central to the understanding of the decision frameworks of individuals, groups and organized societies and further suggests that 'the exact mixture between the genetic predispositions and cultural

imperatives is far from resolved, however, and represents an important frontier for further research’.

Much research in evolutionary biology (Hamilton, 1964; Trivers, 1971, 2006) suggests that reciprocal altruism is a genetic/biological function that underpins and drives interaction and exchange behaviours in all social creatures. Research in fields including evolutionary psychology and institutional theory argue that neurological and psychological processes in the brain (Cosmides and Tooby, 1994; Hodgson, 2010) habituate the expression of reciprocal altruism and its application to social circumstances. All social creatures engage in habitual behaviours in order to maximise the fitness and survival capacity of the species (Trivers, 2006). The foundations of such behaviours are largely driven by the ecological context in which the species evolves (Georgas and Berry, 1995; Parker, 1995; Ridley, 2010; Trivers, 2006). Human mental processes have evolved over millions of years as adaptive mechanisms to contend with a complex external environment and ecological context (Cosmides and Tooby, 1994; Parker, 1995). The ecology in which a community of a species evolves, and the concomitant resource abundance/scarcity, determine how reciprocal altruism will be expressed in social interaction and exchange (Georgas and Berry, 1995; Parker, 1995). In humans, reciprocal altruism is moderated through psychological systems and Trivers (1971) argues that any complete definition of human reciprocal altruism would contain the following behaviours: helping in times of danger (e.g. accidents, predation, aggression); sharing food; helping the sick, the wounded or the very young and old; sharing implements; and sharing knowledge.

Higher level mammals such as humans, chimpanzees and gorillas evolved hard wired modules in the limbic system (emotional brain) millions of years ago to govern habitual exchange behaviours; dependent upon the ecological context and resource contestability (Chance and Jolly, 1970; Cummins, 2005). That such behaviours are shared by apes, chimpanzees and humans suggests that such behaviour has been part of our hard-wired repertoire since at least the time the three species branched out from the same evolutionary tree (Drew and Kriz, 2012).

Such behaviours have been defined in the ethology literature as *agonic* and *hedonic* (Chance, 1988; Chance and Jolly, 1970). Agonic behaviours occur in ecological contexts where resources are clustered together and abundant; in predictable locations; with individual acquisition of the resources highly visible to other group members and; where consumption is delayed. Agonic groups tend to be

strongly hierarchical in terms of resource allocation amongst group members and this appears to limit destructive conflict within the group (Pierce and White, 2006). Agonic groups are also low in trust (Kortmulder and Robbers, 2005). Conversely, hedonic behaviours occur in ecological contexts in which resources are scarce and there is the requirement for members of the group to go out in search of their basic needs. Hedonic groups tend to be more egalitarian and nurturing. Agonic or hedonic behaviours are shared by members of a community as a means of shaping norms for exchange behaviour, enhancing community adhesion and maximising the collective fitness of the community (Chance, 1988).

Anatomically Modern Humans (AMH) have experienced the concomitant development and functioning of both the neocortex (rational brain) and complex language over approximately 100,000 years (Ridley, 2010; Searle, 2005). Such evolution has permitted humans to engage in higher level mental functioning such as assigning and communicating collective intentionality, function, and status (Dunbar, 2003; Searle, 2005). Further, it is the relatively recent evolution of these three functions, along with language, that give all humans the ability to develop, share and rely on complex institutions (Searle, 2005). However, despite our recent psychological development, human behaviour is not fully rational and is governed to an extent by innate drives (Knoll, 2003). In their four drives theory, Lawrence and Nohria (2002) provide compelling evidence that rational decisions are influenced by four independent hard-wired drives in the limbic system that motivate behaviour through conscious emotions. Of these, the drive to defend (reactive) and the drive to acquire (proactive) were the primary drives in archaic *Homo sapiens* some 500,000 years ago, whereas the drive to bond and the drive to learn (both proactive) were only secondary drives. They suggest that these latter two drives only became primary as recently as 100,000 to 75,000 years ago. This was the time of a 'great leap forward' in human cognitive capacity (Lawrence and Nohria, 2002, p. 29) during which religion, art, and complex technology evolved rapidly (Ridley, 2010). Here much larger brain size, enhanced by the invention of cooking and the subsequent efficiency of *fuelling* the body permitted much richer social interaction and cohesion through language, and through the related retention and transmission of learning.

When faced with novel situations or a change in resource availability, humans do have the ability to switch from agonic to hedonic modes (Chance, 1988; Pierce and White, 2006). However, 'a switch at the societal level is much more difficult as it

requires compatible cognitive reasoning, collective intentionality and collective agreement at the population level' (Drew and Kriz, 2012, p. 86). The configurations by their nature include constraints. As evolutionary psychologist Cummins (2005, p. 693) suggests, 'Darwinian processes have produced a complex network of cognitive, emotional and physiological systems that bias us toward producing this kind of social structure' and 'we are wired from high cognition right on down to our neuroendocrinology to detect minute changes in our status vis-a-vis others'.

The Shaping of Societies by Ecological Context

According to population geneticists (for example, Appenzeller, 2012; Wells, 2002), although our species has been evolving over millions of years, the ancestors of every person on the planet today can be traced back to a population bottleneck of as few as 10,000 people in north-east Africa around 70,000 years ago. From around 115,000 years ago until that time, the world was going through waves of ice-ages. However around 71,000 years ago, the world was rocked by the cataclysmic explosion of Mt Toba in Sumatra which released 800km³ of volcanic ash and resulted in a deadly six year volcanic winter, then a further 10,000 years of severe cold and drought, leading to a reduction in vegetation (Ambrose, 1998). This critical era in the evolution of AMH coincided with the major cognitive changes and more complex social structures discussed above. Bands of migrating humans moved out of northeast Africa towards the south-east from at least 50,000 years ago and in a northerly direction from at least 45,000 years ago. We note now for later explanation, the probably crucial nature of this division and its aftermath. We note also the strong possibility of a real threat of extinction serving to stimulate human ingenuity as a survival response. Innovativeness as an instinct may have been greatly strengthened in this context.

Recent research (Drew, Kriz and Redding, 2015, Welzel, 2013) suggests that groups following the southern route along tropical and sub-tropical lines of latitude, and eventually populating Asia, experienced relative climatic stability and resource abundance and therefore evolved agonistic orientations over many thousands of years. Conversely, the ancestors of modern Europeans migrated along lines of longitude following and hunting large game animals out of Africa and across the steppes (Wells, 2002). They experienced greater climatic instability and resource scarcity due to fluctuating ice-age conditions and in response evolved hedonic orientations. We also suggest that such orientations were later reinforced and embedded by the

different resource endowments and climatic conditions in the east and the west, when the last ice age receded around 12,000 years ago and small groups started to form larger communities based around agriculture and animal husbandry. The unusually concentrated distribution of genetically transmitted lactose tolerance (Welzel, 2013) in the plains of northwest Europe is perhaps tribute to the millennia of dependence on such food supply.

Such shared orientations arguably became the basis for path-dependent evolution of the cultures that assisted growing communities to make sense of their social world, and to accept power holders. Such sense-making permits the structuring of social order and the meta-traditions and values on which it rests (Drew, et. al, 2015). These in turn, are congruent with their underlying agonic or hedonic value orientations. Such values-based meta-traditions inform and institutionalise social behaviours such as cooperativeness and innovativeness and such behaviours are transmitted from generation to generation through social axioms and semantic spaces (see Drew et. al, 2015; Leung and Bond, 2004; and Redding, 2008 for discussion of these constructs).

Theory development along such lines can be traced back across a number of academic fields including institutional economics (Veblen, 1919), anthropology (Fleck, 1935), sociology (Weber, 1930) and ethology (Chance, 1988). In cross-cultural psychology, the existence of two massive blocs of societal responses has been apparent for decades (Hofstede, 1980) and reinforced consistently since. Put at its simplest, the world tends to be clearly divided into (1) societies with hierarchy and collectivism, and (2) societies with equality and individualism. There is further clustering within the detail but a recent review of decades of cross-cultural research (Ronen and Shenkar 2013, p. 890) concluded that the clusters remain and ‘the role of the ecocultural variables is supportive of the stability/slow change hypothesis, since religion, and in particular language, are unlikely to change in the near term’. This does not mean no change; it means very slow and partial change.

What is the Eco-cultural Legacy?

What can we make of the research findings from a range of disciplines? To date, the findings suggest that physical differences between people such as eye, skin and hair colour, epicanthic eye folds and physical height are simply physiological adaptations to living in different ecological settings since leaving Africa. Further given the relatively short time, in evolutionary terms, since some of our ancestors left Africa, and given

our DNA, anatomical, physiological and neurological similarities, differences between groups of AMH are unlikely to be due to *genetic* evolution. Rather, and as with external appearance, differences appear to be rooted in the ecological contexts in which different groups settled, formed communities and developed their respective systems of shared meaning (culture) – underpinned by their pre-existing agonistic or hedonic orientations.

This answers, at least in part, North's (2005, p. 30) important question regarding 'the exact mixture between the genetic predispositions and cultural imperatives' and their influence on the decision frameworks of individuals, groups and societies. Our shared biological and neurological make-up may also go a long way in explaining why humans share universals (Brown, 1991) such as 'universal understandings of number, time, space, movement and physical bodies, some conceptual universals in interpersonal language and some universals in fundamental motivational mechanisms' (Runciman, 2009, p. 72). The species has not had evolutionary time to take other than a fundamentally single form. So race is not a determinant of human capacity. It is simply an indicator of specific adaptation on the surface by sub-groups to certain ecological surroundings. Given sixty million years of uninterrupted evolution, new species might result. Given only 60,000 years however, we remain the same in all essentials as individuals, but we have learned to live together in subtly different ways, and have varyingly acquired a limited number of physical adaptations to cope with our environments. Figure 4 presents a conceptual framework derived from the interdisciplinary literature illustrating the psychosocial evolution of AMH.

Figure 4 Psychosocial evolution of anatomically modern humans. Source, developed for this research

What About China and Innovativeness?

We now argue from the above that China carries the heritage of a society that is essentially agonic, in line with an ancient ecological context over many millennia that provided food and safety on condition that resource allocation remained under central control. It retains that legacy: powerful hierarchy, strong dependence on its centre, and high collectivism that restrains and conditions individual initiative and at the same time, protects the welfare of the core survival unit of family in conditions of competition for resources. It is in consequence untrusting of strangers but trusting within the interpersonal networks that hold the societal workings together. The perpetuation of these responses has been supported by ancient traditions and a proud cultural legacy based on their codification. Such a context is a long way from that in which Silicon Valley is immersed, and we proceed now to consider for China how far and why.

Our case may be summarised as follows: there are certain universals that have applied just as much to Japan, and Korea as they have to western societies. These are:

1. For world standards of competitive efficiency the economic unit, regardless of its ownership, must be capable of being efficiently scaled up (with the exception of certain service or craft industries resting on individual skills).
2. In such scaling up it is necessary to retain the psychological engagement of those with skills strategic to the organisation, so that they are motivated to be creative for, and cooperative with, the enterprise.
3. Such individuals need to be able to express adventurousness with a high degree of autonomy and without fear of punishment.
4. Such individuals need to be able to safely keep a fair proportion of any rewards that come from their inventiveness.
5. It should be possible for information to flow through the society in a way that fosters both learning and collaboration.
6. It should be possible to trust that the surrounding system of order and regulation will act protectively and predictably and express shared ideals.
7. There should be a fundamentally neutral position in decision-making about risk that rests on objective and rational calculation of evidence-based judgement. Effort devoted to innovation should be applied in conditions of competitive fairness

1. The Scaling up of Economic Units

Marie-Claire Bergere (2007, p. 20) in her history of China's economic structures, noted that in recent times its potential bourgeoisie was being subsumed into the state's system of control, '*Acceptant les entrepreneurs mais refusant la bourgeoisie, il a entrepris de creer un systeme capitaliste sans capitalistes*'. To attempt capitalism without capitalists means that entrepreneurs are encouraged up to the point where they might have societal influence, at which stage they need to be constrained to conform with the state's policies. The mechanics of this process are well understood. They rest on the use of Party membership as a means for entrepreneurs of securing (a) low-cost capital, (b) licences (c) state contracts, (d) support for business initiatives and contacts, and (e) freedom from interference. These advantages, seen pragmatically, have value and approximately a third of China's richest private business leaders are Party members (Lardy, 2014). Such exchanges of obligation are informal and are also attached normally to the person of the CEO/owner. A variation is the use of a crucial intermediary 'middleman' on whom the firm becomes

dependent for such essential liaison, and this is common in alliances with foreign investors (Feldman, 2013).

This process is seen by many as a sign of state-driven capitalism taking over the initiative, but a corrective is offered by Lardy (2014) who argues that the great 30-year surge of growth based on the *workshop of the world* formula, and private business, will be continued. In summary he makes three claims: market forces not government interventions explain the huge growth since 1978; state influence did not increase significantly in the decade just past and; planned reforms will continue to strengthen the role of the market and diminish the role of state-based vested interests. Some caution needs to be exercised in trying to find where reality lies between the accounts of Bergere and Lardy. A key factor here is that the full reactions of entrepreneurs to government co-optation will remain unspoken.

In matters of scaling up of organization, however, one point becomes clear. China's private sector does not have many firms employing large workforces and there are many reasons in recent history why this might be so, most stemming from the risks of exposure to government intervention. There are in addition a number of cultural predispositions that limit the capacity to scale up (Redding, 1990) and these have much to do with the mistrust, nepotism, and personalism that evolved as protection against high levels of uncertainty in the business environment. Until that environment changes the instincts are likely to remain. The effect on innovation is predictable. Unlike many of the *Mittelstand* firms of Germany, Chinese private sector firms do not become major technical innovators. Only 6% of China's small enterprises have R&D activities, and only 30% of large and medium firms (World Bank/China State Council, 2013).

2. Motivating the Use of Individual Creative Skills in the Organization

A number of accounts have reported the difficulty of releasing worker creativity in large organizations in China. In a recent McKinsey *CEO's guide to innovation in China*, Orr and Roth (2012, p. 74) note the difficulty of instilling a culture of risk-taking, and explain: 'Failure is a required element of innovation, but it isn't the norm in China, where a culture of obedience and adherence to rules prevails in most companies. Breaking or even bending them is not expected and rarely tolerated. To combat these attitudes, companies must find ways to make initiative-taking more acceptable and better rewarded'.

Business initiative in the Chinese economy rested traditionally on the boss in each firm. There was always plenty of that, given the competitive striving implicit under the *materialistic familism* of a *minimally integrated* society (Lau, 1982). But such dependence only works well in certain forms of industry where the concentration of strategic initiative is appropriate. Such forms of industry include small-scale manufacturing and assembly, property, trading, and retailing. These may be enhanced by co-opted skills, as in Original Equipment Manufacturing, where design, supply chain logistics and market access, are handled by alliance partners. Serious organizational growth requires either strong co-optation of political support (as in China and SE Asia), a high level of reliable surrounding institutional context (as in Hong Kong, Taiwan, and Singapore), or - in rare cases - the absorption of heavy amounts of professionalism and bureaucracy permitting rational resource allocation and use under distributed leadership. The rarity of this latter response is worthy of note, as is – paradoxically – its success (in for example the Cheung Kong/Hutchinson Whampoa Limited group).

3. Individual Adventurousness and the Fear of Punishment

In most Chinese organisations, growth is determined by personal decisions taken by a limited senior group, and often an individual. This is in contrast with organisations in many other cultures where organisational growth is driven by momentums coming from external logics such as shifts in market demand that have to be responded to, or allocation decisions by investors or advisers who choose which sectors and industries to support. In these latter cases, more people in the organization are involved in the strategic choice, and more objectivity is applied in the decision process; in other words initiative and responsibility for growth are more widely dispersed. Size is instead normally reached under quite heavy government subsidy. The state sector where large scale is normal has a return on assets of 4.9% compared to the 13.2% of the private sector (Lardy 2014, p. 98). In Lardy's view the low growth of total factor productivity in the state sector indicates low innovative capacity. He points to the e-tail sector led by Alibaba and Tencent as showing the power of the private sector. Here innovation has benefitted in myriad ways from imported technology as its starting stimulus, then built much further. In some industries such as solar power heavy state investment in R&D has brought great success but this has been largely (and rationally) motivated by the society's need to clean up its environment.

In most large Chinese organizations, the social psychology is one of strictly hierarchical control and heavily socialized compliance. This has two effects (Lieberthal and Lieberthal, 2003): the creation of organizational silos across and between which there is little natural coordination; and downwards control, based on discipline and conformity, leading to inhibited initiative. Behind all this is anxiety about the capacity of the government to punish either individuals or organizations for non-compliance. As noted by Chu (2013, p. 101) who was brought up in China and is now a western journalist, in assessing the current psychology within the politico-economy of China:

What always strikes me when I try to engage Chinese friends for the first time in discussions about the prospect of political reform in the country is the fear that exists... Most people know what savagery the regime is prepared to sanction in order to survive. And many Chinese have learned to keep their heads down.

4. Keeping the Rewards for Innovation

There is a long Chinese tradition of entrepreneurship and private ownership that fosters the privatizing of added value inside the circle of owners, usually family and/or close friends. In a modern economy such responses are usually boosted by new forms of access to capital that allow the protection of such assets inside various financial envelopes. Spare capital has always also been the basis for much hedging, especially in property investment, in recent years often abroad. China has also in recent years, added new formulae such as Initial Public Offerings and new centres for their registration, and has benefitted from related institutions especially in Hong Kong. As a result there are now many rich Chinese innovators, their leading members being visible in the annual Hurun Report (2014). But access to risk capital does not entirely follow an international model. Informal lending remains strong. Secrecy remains high. State banks still disfavour the private sector. And the co-opting of political support remains a necessity for many. Capital and its use remains a politicized issue.

5. The Openness of Society

The role of information in any society is crucial in determining how its institutions and organizations function. A theory of how this issue is evolving for China is proposed in Boisot, Child and Redding (2011). It argues that information needs to be

understood as working over two main dimensions: codification and diffusion. When societies are rich in available information then that information has been both accessibly codified and conveniently diffused. It tends then to become a means of redistributing influence down a hierarchy as long as its universal use is encouraged. Censorship will normally prevent empowerment: in that case the de-stabilizing role of accessible information will be stifled, but so too will its positive role in facilitating exchange, cooperation, and innovation.

In the circumstances of China the theory argues that the private sector, designed as it is to respond to a context of opaque uncoded information, and elastic enough in its patterns of organizational response to cope with other challenging circumstances, will be uniquely suited to survive in such a limited-information setting. But in doing so it will stretch itself across a wide response mode with *fief-like* structures for information-starved spaces, and larger market-responsive structures where data are becoming more codified and diffused. The state sector would remain essentially bureaucratic, and so inefficiently conservative. The local corporates would adopt *clan* structures in the intermediate space.

The implications of this scenario are all variations on the theme of where societal control is to be located. Should China find the formula it has acknowledged it is seeking, so that market logics feed the economic dynamism, then the resulting empowerment will release the necessary innovation. If power remains centralized the economy will lose its competitiveness in a fast changing world, where the widespread trends towards expanded participation are clear (Welzel, 2013).

6. Reliable Surrounding Order

The sources of crucial surrounding order for business, when they are functioning well, rest on two features: a neutral rationality based on the wider social good; and a practical and reliable deliverability of predictability to the actors concerned. The neutral rationality exists in systems of law, regulation, credentials, professions, and in accessible mechanisms of protection. These are all normally supported by a free press, an impartial judiciary, and political enfranchising. The important sense of protection rests on systems of stable, fair, and efficient interaction between the public and the wider system.

Essential to all these features as they function to underpin order is the absence of corruption. China's record here has been very poor, especially where bribery is

concerned. Transparency International's Bribe Payers Index for 2011 placed China 27th out of 28 countries analysed. For the broader Corruption Perceptions Index its position is 100th out of 175. The campaign begun in 2014, led by the Central Commission for Discipline Inspection is sending shock-waves through the Party and elsewhere.

7. Neutrality in the Decision Process

We refer here to the transition from a system based on the cultivation of personal connections of exchanged obligation to a system of rational pursuit of legitimate larger purposes agreed by all as superordinate. This lies at the heart of the transition to the modern condition, and even more so to the postmodern, and is seen by many as the acid test. It is what political scientists refer to as the problem of clientelism. In discussing the difference between a prosperous northern Europe and a struggling southern Europe, Fukuyama (2014, p. 96) observes that 'The real division is not a cultural one, at least if we define culture by religious heritage; it is between a clientelistic and nonclientilistic Europe'. He suggests as an indicator the South's chronic inability to control public sector employment. For Acemoglu and Robinson (2012) in answering the question Why Nations Fail?, their commentary on China adds the feature that regularly accompanies *clientilism*, namely *extraction*. In the worst cases this becomes *predation*. Their warning is relevant to our theme, and is as follows:

growth under authoritarian, extractive political institutions in China, although likely to continue for a while yet, will not translate into sustained growth, supported by truly inclusive economic institutions and creative destruction....we should not count on authoritarian growth leading to democracy or inclusive political institutions..... China, and several other authoritarian regimes currently experiencing some growth are likely to reach the limits of extractive growth before they transform their political institutions.....and probably before there is any desire among the elite for such changes or any strong opposition forcing them to do so.

Acemoglu and Robinson 2012, p. 445

We have already noted the awareness of such contentions shared among some of the elite in China and visible in State Council planning documents. Whether and how such a state can change in this way remains of more than local concern.

Discussion

We return now to the question of societal capacities, and specifically that of innovativeness. We have seen how this is achieved in a western free-market capitalist context. How might it be achieved in a totalitarian state oscillating between socialist and market ideologies, and concerned with its responsibilities for a fifth of the world's population?

We propose the seven features discussed above be seen as the parts of a configuration of social enabling mechanisms appropriate to China. They are the components of a societal 'fitness function' similar to one (at a different level of analysis) that determines a firm's capacity to survive and grow in a competitive environment (Beinhocker, 2007).

Lewin, Caspin-Wagner, Massini and Peeters, (2013) propose further that to understand how one socio-economic system succeeds and another fails requires an additional characteristic to be examined. This is the way in which the positive influences stemming from the configuration are coordinated and integrated into the workings of the organizational system. This integration is as important as the configuration, and its workings cannot be assumed to stem simply from the configuration being available to start with. Here the *socially enabling mechanisms*, are seen as *unobservable socially embedded meta capabilities* that have been internalized and assimilated by actors. Such societal features are familiar from work on societal development by Eisenstadt (1968) with his concept of *transformative capacities* and by Fukuyama (2014) with his notion of levels of social mobilization and societal capacity. We also acknowledge the option of identifying configurations of disabling mechanisms. A real-world example might be the attempt by Singapore to sponsor indigenous creative industry, by establishing a very advanced infrastructure of seemingly encouraging features, but still finding it difficult to release local inventiveness, and to break the reliance on imported skills. The socially disabling mechanisms in that case are such things as educational rote learning, respect for hierarchy, and the stifling of individual independence. Strenuous efforts by the government to change these features are indications of their continued embeddedness.

The argument of this paper is that context in socio-economics is so crucial that to leave it out of any account will leave that account always subject to correction. A second contention is that new forms of analysis are emerging to meet this challenge and that they are accessible and useable. A third argument is that the trajectory of

history has great influence on current events in ways not often enough accounted for. Patterns of human behaviour are now more readily understood and classified, as new knowledge in specialized disciplines grows fast to explain the historical and pre-historical processes. We also have a means of making new progress in disciplines that previously have displayed understandable reservations over engaging with the issue of race. In all this fast changing work, we continue to see certain stable facts. The typical human society has evolved to survive and expand on the basis of two acquired capabilities. One of those is innovativeness, and it works well in some conditions but not others. We contend that many of the logics that connect its workings with those conditions are not negotiable, even though there may be variation in their being interpreted. Much learning and adjustment may be needed in societies where the behaviours and the contexts are misaligned, even if those misalignments may remain currently invisible to the naked eye.

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