

Cosmopolitan China?¹

By David Tyfield and John Urry

Abstract: Cosmopolitanism is the focus of much current debate. This literature is marked by a relative paucity of detailed research examining cosmopolitanism as a social force within particular societies. Two topics that have received little attention despite their utter importance for current global challenges are the scale and impact of cosmopolitanism in China and the significance of 'low carbon innovation'. This paper explores both on the basis of over 70 interviews with parties involved in low-carbon innovation, a field particularly propitious for cosmopolitan motivation. We argue that there is distinct evidence of cosmopolitanism in China but this is relatively fragile and an elite development, despite China's increasingly deep integration into global networks and flows. Furthermore, the cosmopolitanism in evidence is a distinctly Chinese version, thereby offering important lessons regarding the nature of cosmopolitanism per se and the reciprocal challenge of China to the existing cosmopolitanism of the global North.

1. Introduction

Although cosmopolitanism is the focus of much current debate, this literature is marked by a relative paucity of detailed research that examines its impact as a social force within different societies. In particular, two topics have received little attention despite their importance for current global challenges, the scale and impact of cosmopolitanism in China and the significance of 'cosmopolitan' low carbon innovation.

With regard to the latter, various global risks have precipitated calls for a 'cosmopolitan innovation' regime, a global regulatory architecture to stimulate the international collaboration in innovation necessary for development of various global 'public goods' especially following the Great Crash of 2008. The imperative for such an innovation regime is to facilitate global transition from high- to low-carbon economic-social systems. There is significant potential for feedback loops between cosmopolitanism, a global public sphere and global efforts to tackle climate change. And as the largest absolute emitter of greenhouse gases, the most rapidly developing major economy and a potential future geopolitical superpower or world hegemon, China is central to such possible developments (Wilsdon / Keeley 2007).

In this paper we explore the growth of cosmopolitanism as a social force within China, using the case study of international collaborations in various 'low-carbon' innovations within the fields of agriculture, energy and transport. We show evidence for an emergent cosmopolitanism but one that so far is an important social force only within a small internationalized elite. It is a fragile force, constrained both by stalled political transition from within and by neoliberalism from without. We examine whether global mechanisms to encourage international collaborations in low-carbon innovation may strengthen embryonic cosmopolitanism and develop feedback loops of 'progressive' social change. A crucial aspect of this process, however, is the reciprocal challenge of a specifically Chinese cosmopolitanism that the global North, and its existing conception of cosmopolitanism, must accommodate. As such, the case of China offers

1 This paper is an updated version of Tyfield and Urry 2009. It is based upon an ESRC / AIM project on low carbon cosmopolitan innovation in China involving extensive interviews with UK and Chinese scientists and researchers within the domains of agriculture, energy and mobility. Many interviews and observations have been conducted in laboratories and research sites across China. Other members of this team are James Keeley, James Wilsdon and Brian Wynne.

important lessons. Cosmopolitanism has to be understood as a specific socio-historical configuration.

This paper proceeds as follows. Section 2 explores the relations between cosmopolitanism and innovation through outlining five components of cosmopolitanism. Section 3 considers the general evidence for emergent cosmopolitanism in China. Section 4 focuses the discussion within innovation with an analysis of around 70 semi-structured interviews conducted with scientists, businesspeople and policymakers involved in international collaborations in and with China around the 'global' issue of low-carbon innovation. We close with reflections on the possible, probable and preferable futures for a cosmopolitanism that in some sense implicates China in the context of the global challenges of this new century.

2. Cosmopolitanism, Globalization and Innovation

Cosmopolitanism has recently received much attention in the social sciences, due to the challenges, both practical and analytical, of multiple global processes, such as critiques of 'methodological nationalism' (Beck 2006; BJS 2006; Beck / Sznajder 2006). Cosmopolitanism is highly contested with six main conceptions (Vertovec / Cohen 2002): as a socio-cultural condition (Appadurai 1996); as a philosophical or world-view as in Beck's 'cosmopolitan manifesto' (1998); as a political project to build transnational institutions (Kaldor 1996); as a political project for recognising multiple identities (Held 1995); as a mode of orientation to the world (Hannerz 1990); and as a set of competences which allow one to make one's way within other cultures (Friedman 1994).

We draw on these in seeking to develop a 'critical cosmopolitanism'. We hold that 'cosmopolitanism' is an emerging social force in the contemporary world; that it is a force that competes with and is at odds with many other such forces; that there are a variety of cosmopolitan projects; that it is to be formulated as simultaneously normative *and* descriptive; that its extent, scale and significance is empirically researchable; and that a necessary if not sufficient condition of low-carbon innovation is the increased power and purchase of such a cosmopolitan condition (Delanty / He 2008). We develop some of the connections between carbon and cosmopolitanism, a task central to developing what we term a 'post-carbon' social theory seeking to examine the conditions and possibilities of shifting from neo-liberal to resource-capitalism.

Our approach is opposed both to the premature universalism of 'global reductionism' and the particularism of chauvinistic nationalism. It challenges the universality of a global ethic of concern although noting its normative appeal (Fine 2003; Delanty 2005). Our formulation is normative and descriptive of an emerging, if contested, social force. For instance, attempts to identify cosmopolitanism with social phenomena such as plurality, diversity, transnationalism and so on omit the striving to alternative models of modernity and self-questioning that makes cosmopolitanism a social force in the first place (Delanty 2006 b). Conversely, normative discussion of cosmopolitanism that fails to situate itself within analysis of concrete political, economic and cultural circumstances can drift into universalising abstract discourse (Fine / Cohen 2002).

Cosmopolitanism and 'globalization' should not be conflated although they are closely connected. The cosmopolitan is a crucial aspect of the 'global' while a social force can hardly be called 'cosmopolitan' unless it employs some concept of the 'global'. But it is the interaction of cosmopolitanism with diverse 'global' processes that is crucial. Examining this interaction presupposes their analytical distinction. Such dualism is also necessary if we are to accommodate how cosmopolitanism can resist globalization as a political project. Similarly, not all

global processes are necessarily cosmopolitan, let alone normatively desirable, such as global crime and global terror (Sassen 2006).

A further major issue concerns the relationship of cosmopolitanism with nationalism (see Billig 1995, on ‘banal nationalism’; Szerszynski and Urry 2002, on ‘banal globalism’). Cosmopolitanism is not necessarily incompatible with the social imaginary of national solidarity, cultural identity and democratic politics (Calhoun 2007; Appiah 2002). Indeed cosmopolitanism and a ‘nationalism’ of solidarity can be dialectical twins, as we examine in the case of contemporary China. The former presupposes the latter in its respect for both local difference and the need for a politics of solidarity; the latter presupposes the former in the reflexivity needed for a democratic politics. Both are projects of modernity, of ‘imagined communities’ (Anderson 1983) and ‘invented’ traditions (Hobsbawm / Ranger 1983). Beck and Grande characterise this as a ‘cosmopolitan realism’, that national interests can be bound in, transformed, and made more powerful through international openness and collaborations across borders (Beck / Grande 2007: 220). We especially examine this interweaving of nationalism and cosmopolitanism in the Chinese case.

We now turn to cosmopolitanism *per se*; we propose there are five components of ‘cosmopolitanism’ as a socio-cultural force in the contemporary world and examine below whether, to what degree, and where these characteristics are powerful within China.

1. *Extensive mobility* in which people have the right and means to ‘travel’ corporeally, imaginatively and virtually; to experience many places and environments *en route*; and a curiosity about other practices, places and peoples.
2. *Global openness* to other peoples and cultures and a willingness / ability of members of a society to appreciate and incorporate elements of the practices / language / culture of various ‘others’.
3. *Social reflexivity and imaginaries of alternative modernities*, a willingness to take risks by virtue of encountering the ‘other’, involving self-transformation, incompleteness, lack of certainty and uncertainty.
4. *Social plurality and a developed ‘civil society’*, both as indicating cultural interaction and as spaces in which reflexivity may be manifest.
5. *The presence of a global ‘public’ sphere or space*, that is ‘the always ever present sphere of discourse that contextualizes political communication and public discourse’ and which is constituted and reproduced through multiple interactions often over large distances (Delanty 2006 b: 36).

There is one further relationship here, that innovation, or knowledge work or ‘STI’ (science, technology and innovation), is a key globalizing process. What is the relationship between cosmopolitanism and innovation? Furthermore, as innovation is apparently more significant, so how it is understood has broadened from the narrow introduction of new products by individual firms in pursuit of profit to one recognizing innovation’s fundamental social situatedness. Indeed as a process involving numerous actors and social forces, scholars have pointed out the different sociotechnical trajectories of what comes to be identified as ‘innovation’ (see Urry 2008 a). Choice is a social process and not a teleological one subject to technological rationality (as Tuomi 2003, shows with the internet). Developments in innovation increasingly emphasize the importance of dispersed, networked forms, often incorporating users and ‘disrupters’ and employing open-access rather than proprietary models. Some claim a ‘democratizing’ of innovation (von Hippel 2006; Willis / Webb / Wilsdon 2007). These changes redefine it as a socio-political process, the direction of which is set by dominant imaginaries of the future and ‘civic epistemologies’ within each social formation (Jasanoff 2005). Cosmopolitan imaginaries would seem to offer much for envisioning appropriate global regulatory regimes (Leadbeater / Wilsdon 2007).

Further, such cosmopolitanism has been complicatedly intertwined with ‘neoliberalism’ over the past two to three decades. Harvey describes how neoliberal processes involve ‘accumulation by dispossession’ (Harvey 2005: 159–61). This neoliberalism has become the dominant global orthodoxy articulated and acted upon within most corporations, many universities, most state bodies and especially international organisations such as the World Trade Organization (WTO), the World Bank and the International Monetary Fund. In particular its global regulatory architecture of an international ‘level playing field’ is stacked in favour of the developed economies of the global North, most obviously in the WTO’s intellectual property agreement, TRIPs, which was drafted by (largely US) transnational companies for transnational companies and instituted as global economic law (Sell 2003; Drahos / Braithwaite 2002). This neoliberal settlement dispossesses local involvement and innovation capacity (Rodrik 2007). It is a premature global universalism and one privileging global financial innovation and not innovation for the global public good (Krugman 2008).

What would a ‘cosmopolitan’ innovation regime be like? To the extent to which the components outlined above were found then that regime would be ‘cosmopolitan’ if there is:

1. Extensive movement of ideas, scientists, entrepreneurs; widespread use of technologies to travel virtually; and a curiosity about innovations and developments occurring in many other places.
2. Openness to innovations taking place elsewhere; and a motivation that privileges neither short-term financial profit nor national geopolitical power, critiquing both neoliberal global reductionism and techno-nationalism.
3. A willingness to take risks through encountering the ‘other’; innovation would involve self-transformation, incompleteness, uncertainty and contingency.
4. Innovation drawing upon and feeding back into ‘civil society’, especially the idea of innovation as involving various ‘disruptive groups’ within civil society.
5. Innovation involving emergent global publics formed through civic engagement around the world, especially responding to and seeking to resolve major global risks.

The impediments to cosmopolitan innovation come from all sides, including the global North, with its neoliberal universalism and its techno-nationalism centred upon US interests stretching over decades (see Klein 2007). But China is also a crucial player as the most rapidly growing global power and a rapidly industrializing economy that includes nearly one fifth of the world’s population. In the following we explore first, the evidence of an emergent cosmopolitanism in China; and, second, whether a putative cosmopolitanism is emerging through international collaboration in low-carbon innovation (see Delanty 2006 a, on cosmopolitanism in east and west).

3. Cosmopolitanism in China

We first explore the relationship between cosmopolitanism and nationalism in China. As a multi-ethnic empire with significant trading connections and subject to various invasions (Mongol, Manchu), China’s long pre-modern history shows many ‘cosmopolitan’ aspects (Lovell 2006).²

The fundamental dilemma is how to be modern *and* Chinese. Modernity was historically thrust upon China through its encounter with European capitalist imperialism. This confronted China, as a pre-modern imperial state, with the stark discrepancy between its own long-standing self-image at the centre of the world (*Zhongguo*) and its actual geopolitical weakness. The conclusion drawn was the connection between the strength of Western states and their econo-

2 The Chinese language has developed no equivalent for ‘cosmopolitanism’ that connotes the tension between *cosmos* and *polis*.

mic ‘development’. A fundamental faultline of this ongoing contested social process of China’s modernity is thus between a strong, static and enclosed nation-state, seeking to strengthen itself and be restored to its ‘rightful’ place, and the ‘means’ to achieve this, namely the disruptive process of economic industrialization and development – a tension, insoluble in the abstract, captured in the phrase ‘Western means, Chinese essence’ (*xiyong zhongti*).³ To this day the national project of economic ‘catch-up’ and hence geopolitical strength, remains of overriding concern within Chinese thought. Indeed, the tension is heightened in the present ‘reform and opening up’, as economic development increases disruptive and fluid flows of capital and global markets that unsettle an authoritarian state.

Further, assessments that define cosmopolitanism and nationalism as incompatible opposites will fail to find cosmopolitanism in China.⁴ Yet in an age of growing Chinese power, conceptualizing the dialectical relation between cosmopolitanism and nationalism is crucial, for it is in this context that a specifically *Chinese* cosmopolitanism can be traced.⁵ For instance, there has been a particularly vigorous debate in the last twenty years regarding cosmopolitan themes. Thus the 1980s television series *River Elegy* caused such a stir by contrasting the sluggish Yellow River (the cradle of Chinese culture), with the open, dynamic blue ocean into which it flows. As a result the series was banned shortly after it was first aired. China has, of course, changed dramatically since then, most importantly through its increasing sociological ‘cosmopolitanization’ (Beck / Sznajder 2006), but the debate about openness to the world (and the dominant ‘West’) and preserving Chinese specificity continues (Leonard 2007; Gries 2004). A specifically Chinese cosmopolitanism may thus be expected, just as a specifically Chinese geopolitical model or ‘Beijing Consensus’ is developing (Ramo 2004).

Indeed, the distinction between cosmopolitanism and the dominant American-led neoliberal ‘Washington Consensus’ is also crucial (Klein 2007). For instance, a proto-cosmopolitan observer may be tempted to align cosmopolitanism *against* the introduction of capital flows, which are seen as western impositions destructive of indigenous Chinese social formations. But as Ong (1999) stresses, this conflation of capital and the West marks a Eurocentric prejudice since overseas investments in China often originate with ‘overseas Chinese’. These capital flows may be the source of imaginaries of modernities that are alternative to that of Western neoliberalism.

We now examine the five components of cosmopolitanism. First, contemporary China is open to global flows, this being one of the most evident changes of the ‘reform and opening-up’ since Deng Xiaoping. China is the fourth largest country for inbound tourism and according to the United Nations World Tourism Organization, by 2020 it will be the largest tourism destination-country and the fourth largest for generating overseas travel.⁶ China is also the top recipient of foreign direct investment amongst developing countries (behind only US, UK and France in 2005), the second largest exporter in the world by 2007 behind Germany, and the third largest in total international trade (aggregated exports and imports) behind the US and Germany (UNCTAD 2008).

3 Or, as dissident Professor Fang Lizhi provocatively put it in the 1980s, ‘Western essence, Chinese means’ (*zhongyong, xiti*) (Harrison 2001).

4 Though see Ong (1999) for a discussion of diasporic Chinese sentiment that retains little nationalistic sentiment.

5 Even in the case of the Chinese diaspora, this is tied up with the confrontation with Western modernity. It was the imperial free-trade economy that first propelled this emigration and the continued or renewed affiliation with the ‘motherland’ in diaspora Chinese, as in the construction of narratives of Confucian capitalism, is itself a reaction and self-definition in contradistinction to the West. See Ong (1997) and Pan (1994). More generally, see Beck and Grande (2007).

6 See http://news.xinhuanet.com/english/2008-08/06/content_8994009.htm.

There is also a markedly positive attitude to economic openness amongst both the government and large, influential sections of the population. The Chinese economy has developed in close connections with the Chinese diaspora, that is spread across Southeast Asia (*Nanyang* or 'Southern ocean') and its internationally dispersed business model (Ong 1999; Arrighi 2008). Thus the disciplinary regimes of global capitalism, the PRC state and the Chinese family (with its extended connections of *guanxi*) (Ong / Nonini 1997) together stimulate a *prima facie* enthusiasm towards openness (see Delanty / He 2008: 334).

The media's role in creating imagined communities is related. Yang (1997) details the widespread preference within Shanghai for overseas television and radio shows. Hewitt (2007) discusses the profound changes in Chinese society, particularly amongst the 'me generation' of the young, who self-consciously adopt attitudes from their overseas idols, including garish dress and relative sexual liberation unthinkable in the 1980s. Much of this cultural openness seeks access to other Asian, not 'Western', youth cultures ('Cantopop' from Hong Kong or bands from Taiwan, Korea and Japan) (Ong 1997; Hewitt 2007).

The most striking example of the contradictory attitude to global openness was arguably the 2008 Beijing Olympics. The discourse of 'international togetherness' (in its slogan 'One World, One Dream') was at odds with how the Olympics is also a global competition *between* nation-states (Economist 2008 a; Urry 2008 b). The cosmopolitan openness of the Olympic 'celebrations' was also undermined by protests against the torch relay and strident nationalism. When confronted by contested opinions about Tibet that destroyed the appearance of a happy (or triumphant) home-coming parade, for many Chinese the openness quickly evaporated. Similarly criticism of the Games as the 'no fun games' (Crabbe 2008; Economist 2008 b) and the clampdown on visas making it difficult to enter the country, the huge police presence in Beijing from May, and the introduction of laws to constrain spontaneous parties and outdoor alcohol consumption, all showed how an open celebration of global fraternity was not *the* priority.

The continuing one-party system adds a layer of structural conditioning: not only must China reclaim its national pride and place in the world, but only the CCP can lead China to this goal (Gries 2005). Furthermore, nationalism is deployed by the CCP as a trump card against political challenge, especially given the downgrading of Communism as its central ideological focus to the empty signifier of 'socialism with Chinese characteristics' (Hughes 2007). Thus the CCP Government institutionalizes the tension of opening up both economically to overseas capital and culturally.

Regarding the third issue, the entire modern history of China is one of exploring alternative modernities (Mitter 2004). But it is an open question to what extent this shows cosmopolitanism. For instance, even amongst educated workers employed by Western businesses, recent interviews displayed little acknowledgment of the *political* importance to China of staging the Games and widespread assent to the simple Olympic ideal of keeping 'sport and politics separate'. The internet campaign following the torch relay protests, in which Chinese browsers were encouraged (and in some cases bullied) to display a '♥ China' symbol, also displays the dual-edged nature of the meteoric emergence of the internet. On the one hand, it is a site of much venting of anger and one relatively tolerated by the authorities as a useful safety valve, preferable to actual assembly and protest. On the other, the internet has introduced some space for critical reflexivity and debate, yet its potential anonymity and fluid mass visibility means it can be used for propagating intolerance and bullying (Economist 2008 c).⁷

7 These developments have moved Tim Berners-Lee, the inventor of HTML mark-up language, to express concerns (Ghosh 2008).

The widespread lack of accommodation to the uncertainty and contingency of modernity is also visible in Chinese civil society. A *gesellschaft* civil society is based upon an epistemological pessimism regarding the capacity of an enlightened and virtuous government to gauge the needs of its population (Metzger 2002). Chinese civil society, however, has followed the Confucian lead and remains, via Maoist thought regarding the dictatorship of the proletariat, within the *gemeinschaft* tradition (Bell 2007). It is culturally opposed to the social embedding of a scepticism regarding knowledge claims and their authority. The continuous thread of the national development project adds to this dynamic. In the context of an apparently straightforward goal of national ‘catching-up’, fallibility and its political implications are made to seem irrelevant (Metzger 2001).

This is also shown in the continuing weakness of a civil society or public sphere. The growth of NGOs is certainly significant particularly in environmental issues (Tang / Zhan 2008), but NGOs have to be officially registered with the central state. The rights to protest also remain greatly limited, as shown at the time of the Olympics (Dickie 2008). But Chinese society is not simply subdued. Even according to official figures, rural protests have hugely mushroomed in recent years from 10,000 in 1994 to 74,000 in 2004, involving some 3.76 million people, while a further doubling of protests to nearly 150,000 in 2005 has been reported (Pan 2005). And the deepening environmental crisis and the unprecedented scale of China’s urbanization suggest increasing social unrest. In the emergence of a relatively educated, consumer-literate and sexually liberated generation (Hewitt 2007), Chinese society is also undergoing significant transformation at the apex of its stratification system.

Finally, identification with a ‘global’ public or awareness of issues such as climate change as quintessentially ‘global’ issues, in which the Chinese population is crucially implicated, remains relatively low. The absence of the ‘global’ is more prominent inland, where the 700+ million rural peasants have little interaction with ‘foreigners’ except occasionally via the media and the internet. Nor do government pronouncements evidence much strategic calculation in terms of a ‘global’ public. Despite speculation as to whether China is set to replace the US as global hegemon, the Chinese state, under its banner of ‘peaceful development’ (‘peaceful rise’ having been discarded as the connotations of ‘rise’ were deemed too aggressive), does not seek responsibility for developing or maintaining ‘global order’, not least when it is already facing extraordinary domestic social challenges.

Thus cosmopolitanism does not have strong impact but it is, nevertheless, in evidence. In the next section we discuss this emergent cosmopolitanism from a site propitious for its development: international collaboration in the quintessentially global issue of ‘low-carbon’ innovation. A distinct cosmopolitanism is developing here with significant implications for China, the world and existing understandings of ‘cosmopolitanism’ in the global North.

4. International Collaboration in Low-Carbon Innovation

We examine below interviews with Chinese researchers involved in international collaborations on low-carbon innovation, regarding the five components of cosmopolitanism.

The first two issues concern the overall global openness of Chinese STI. Given the centrality of STI in China’s project of national development and the wider emergence of (the discourse of) a knowledge-based economy, global openness in STI has the structural support of both state and capital within China. This is revealed in the biographies of many of the interviewees.

As regards international mobility, almost all interviews were conducted in English or with minimal interpreter involvement (these interviews were conducted by Tyfield who speaks basic Mandarin). Some 80% had studied abroad for a prolonged period and / or travelled internationally at least once or twice a year, to international conferences or to meet with international

partners. This is not unrepresentative of Chinese research. For instance, at Nanjing Agricultural University, a good but not top-ten institution, 80 % of staff have overseas experience and 20 % have foreign degrees. There is significant support for such travel.

Secondly, in science, discourses of the intrinsic globalism of science, a borderless language of reason, are accompanied by effectively unanimous commitment amongst interviewees as to the benefits of international collaboration for the status, quality and impact of Chinese science and innovation. Indeed, citation analysis reveals that international collaboration dramatically increases the global impact of papers by Chinese scientists (Tyfield / Zhu / Cao 2009). International collaboration is positively encouraged and sought after, both in major cities such as Beijing, Shanghai and Nanjing and in more remote regions, where it boosts a scientist's *domestic* standing.

Scientists and policymakers also acknowledge the importance of returnees and research exchange programs in which overseas scientists have visiting fellowships within China. Stimulated by policy changes to encourage such movement, Chinese-born scientists are thus returning in increasing numbers (Wang / Zheng 2005), giving rise to (albeit controversial) statements from some commentators that the former 'brain-drain' is becoming a 'brain circulation' (Saxenian 2006; Jasenoff 2007). Such 'sea-turtles' (a pun on the Chinese for 'returnee'), however, are often disaffected by the cool reception of their new Chinese colleagues who may be on less generous salary bands, or by unfamiliar levels of bureaucracy (Wilsdon / Keeley 2007).

In business-led innovation, most Chinese enterprises currently lack the innovation capacity to be competitive on global markets or to tackle the environmental problems with which China is faced (OECD 2008). As business is competitive and is devoid of the Mertonian discourse of the 'republic of letters' present in science, however, the tensions associated with such global openness are more apparent, namely as a means towards greater *domestic* economic power. The most crucial issue here is that of intellectual property rights.

This interweaving with the nationalist development project is also present in science, though the discourse of intrinsic openness allows it to be more easily concealed. Indeed, the primary motivation for international collaboration amongst respondents is to improve the quality of *Chinese* science. This underlying nationalism is most striking given that interviewees were involved in low-carbon-related research, in which the global rationale of combating climate change may be expected to have some impact regarding their motivations for work generally and for international collaboration in particular. Yet even amongst senior researchers committed to the importance of mitigating 'global climate change', the national project remains fundamental. Various interviewees said that 'serving national development is our number one priority' and that 'China will do what it wants [regarding climate change] anyway' (Interviews with leading Chinese scientists, dated 23 / 4 / 08 and 9 / 5 / 08 respectively). This is best intelligible as a specifically Chinese-inflected cosmopolitanism.

The best example of this interplay of nationalism and cosmopolitanism, and the Janus-faced nature of current cosmopolitanism in China, is the government's policy of indigenous innovation (*zizhu chuangxin*). Mistakenly translated by the Chinese state news agency as 'independent innovation', this policy in 2006 elicited much China-criticism especially in the US (NAS 2005). This focused particularly on the third of the 'three pillars' of the policy, namely 'absorption of foreign technology', which was (mis-)understood as a frank admission of government policy as involving the 'theft' of intellectual property from overseas companies, hence making it a techno-nationalist and protectionist policy akin to Japanese and Korean (and every other developed country: Chang 2005; Segal 2003; Corning 2004; Wilsdon / Keeley

2007). Yet, some accounts of the negotiations of the policy suggest that this pillar was specifically introduced to flag the continuing *openness* to overseas innovation.

In any case, to the extent that a cosmopolitan innovation regime is one concerned with global equity and the capacity to deal with global problems such as climate change, it seems to demand that China has strong science and innovation capabilities or at least is not precluded from developing them (Tyfield / Wilsdon 2010). For only in these circumstances can China contribute to a global shift to low-carbon societies that marks a cosmopolitan innovation regime. In this context, however, the importance attached to national development (Gao 2008; Nolan / Wang 1999; Rodrik 2007) is not unreasonable, given that the systems necessary for strong science and innovation capacities can only be incubated with a national industrial policy. So long as Chinese nationalism is interpreted as prioritising global openness there is no reason to consider it averse to emergent cosmopolitanism, as the case of (low-carbon) innovation illustrates, but one that is characteristically *Chinese*.

The third component concerns social reflexivity and alternative modernities. On the one hand, science has always assumed great importance during the process of China's modernity and especially during reform and opening-up. Most recently, this has resulted in the slogan of 'scientific development' as the guiding principle of the Medium to Long Term Plan of 2006 (Schwaag / Serger / Breidne 2007). But on the other hand, this has generally manifested itself in a technocratic faith in science that misses the contingency and openness of scientific practice. This scientistic interpretation is also apparent in an almost ubiquitous techno-fetishism in Chinese policy and popular discourse, conflating 'innovation' with 'technology' and both with 'progress'; a trope very common in the global North but increasingly repudiated in the scholarly literature. Chinese innovation policy is dominated by a 'linear model', so that the broader role of innovation within social change and its social embeddedness are rarely examined.

Similarly regarding an emergent civil society and its participation in science and innovation, there is a striking discrepancy between the moves towards public engagement in science (Wynne 2006; Wynne / Wilsdon / Stilgoe 2005) and the 'democratization' of innovation (von Hippel 2005) in the EU and their almost total absence in China. Engagement with science remains locked into a 'deficit' model of communication, in which those with knowledge and authority (now based on their expertise, formerly on their 'redness') are seen as enlightening those located 'beneath' them. The fixation on economic and geopolitical 'catch-up' is a primary factor behind this interpretation. With the apparently 'clear' goal of meeting and beating the developed countries, the different imaginaries and possible trajectories of socio-technical change are excluded as mere nuance. The potential for science and innovation to contribute to the emergence of a cosmopolitan China through a participatory knowledge politics is not strong. *Prima facie*, then, STI in China does not demonstrate significant cosmopolitanism here.

However, we have already noted the almost unanimously high regard in which international collaboration is held. Furthermore, while most interviewees had little to say concerning the benefits of international collaboration for issues of reflexivity and / or civil society, around one-fifth offered strikingly cosmopolitan sentiments. These interviewees argued that the *primary* benefit of international collaboration is the challenge it effects to Chinese culture more broadly. This is so in at least three ways: challenging traditional Confucian respect for the opinions of elders with a culture of critical thought; challenging cultures of hierarchical promotion depending upon bureaucratic obedience rather than merit based on the quality of hypothesis-driven science; and challenging traditional mores of familial (or party), and hence exclusive, loyalty with instead an egalitarian concern for non-identified others.

One interviewee stated bluntly that 'humanity is not a common Chinese concept' and that he had only learnt it, and grown from so doing, through international collaboration (Interview dated 27 / 5 / 08). Another senior scientist claimed that she had gained a 'sense of humanity' from her time abroad, emotionally adding that: 'The most important reward from my time in the UK is making me think about others and care about them no matter where they are from', including not only overseas but also poor parts of China itself (Interview dated 29 / 5 / 08). Indeed, what is equally significant is that in each case such sentiments were accompanied by explicit recognition of the importance of national development and a revitalized sense of respect for Chinese culture. We thus see some beginnings of a specifically Chinese cosmopolitanism interweaving it with a certain nationalism (Beck / Grande 2007).

Finally, there is some evidence of 'global' publics. The aspiration for international collaboration, compounded by the growing influx of returnees who are already well integrated into global networks, brings with it broad awareness of a putatively 'global' stage for both science and innovation, and the desire to be part of these 'global' scientific and / or business 'communities'. The evidence of an emergent pan-humanism from international collaboration also evinces a growing 'global' subjectivity and roughly one half of our interviewees expressed the importance of 'global' awareness in some fashion.

Yet this cosmopolitanism is complicated by other trends. Interviewing immediately after torch relay protests in 2008, several respondents described these differences of opinion regarding Tibetan independence as 'cultural differences', identifying them as the single most important barrier to international collaboration. While justified in the allegation that there is striking ignorance in the global North in general about contemporary Chinese society (but see Bell 2007), the reification of opinions on Tibet as deep 'cultural' differences suggests that these interviewees viewed China as pitted against the 'world' rather than as encompassed within it.

Similar geopolitical tensions are also in evidence regarding attitudes to climate change and the presence or absence of the 'global'. Even amongst those involved in 'low-carbon' collaborations, climate change is often not seen as an imminent 'global' problem for *China*, by contrast with its air and water pollution problems. Nor is climate change seen as an issue for which China must assume significant responsibility if it is to be a good global citizen, though this is arguably changing rapidly at least within the top levels of the state (e.g. State Council 2008; NDRC 2008).

No doubt this response is conditioned by the international politics of a climate change deal. The approach of the global North remains one of limited efforts to effect emissions reductions together with criticising the emerging industrial economies, the 'BRICS', to which much of their industrial emissions have been off-shored (Tao / Watson 2007). And simultaneously developing countries remain the most vulnerable to the future effects of climate change (Roberts / Parks 2007). The Chinese are generally indignant at demands that they should forego economic development to 'save the planet' while the global North continues along its own high-carbon path, although there are some variations between the North American and European models here (Rifkin 2004). The political will to accept responsibility in China is lacking until the global North itself acts effectively. Even so, the position regarding climate change amongst most interviewees was phrased in terms of relative indifference or a defensive *tu quoque* rejoinder. This does not, therefore, evidence much of a 'global' subjectivity, as would a frustration with the global North for *its* failure of its 'global' responsibility and the impossible position in which this puts China regarding any measures it may pursue.

Finally, despite the growing awareness of a 'global' stage for science and innovation and a desire to be involved in it, the predominant calculations and concerns even of those involved in international collaborations focus on domestic problems, opportunities and markets. This is

not to condemn this dismisses this as simply parochial since ‘domestic’ for mainland Chinese does involve nearly one-fifth of the world’s population (and mirrors the historic parochialism of the US)! Yet the everyday integration of ‘global’ issues into operations and strategic calculation generally remains less prevalent than in the global North. As such, it seems that Chinese science and innovation does not much participate so far in the ongoing reconstruction of ‘global’ relations except through the holding of global mega-events such as the 2010 Shanghai Expo.

5. Conclusion

We explored emergent cosmopolitanism within China. We examined some prospects of a cosmopolitan innovation regime to help effect the global shift from high to low-carbon economies / societies. We found significant evidence of emergent cosmopolitanism amongst STI institutions involved in international collaborations. By contrast with the broader ‘globalization’ of Chinese society, this cosmopolitanism impacts upon a relatively limited elite and is embryonic. It is generating a distinctly Chinese cosmopolitanism in parallel with the integration and astonishing rise of China upon the global stage, economically, politically and culturally.

The endpoint of this cosmopolitan trajectory is unclear. But in so far as China’s national development project is successful, China will increasingly develop an ‘imaginary’ to mobilize its cultural global power commensurate with its economic (and military) might, even if it explicitly repudiates global dominance. Any such project, as the 2008 Olympics and the 2010 Expo, must offer a unifying ideal to the world of greater appeal than simply submitting to China as a great and prosperous China. The challenge of developing a specifically Chinese cosmopolitanism will be integral to this but is a singularly difficult one to achieve.

It is important to remember that China is the planet’s oldest ‘continuous’ culture, hence one with a profound richness in its particularity. It is also a culture for ‘insiders’ that is built upon *gemeinschaft* principles and in which personal contact, rather than arms-length rational-legal institutions, remains crucial for navigating socio-economic and political life (Metzger 2001). Finally, as a modern nation-state, China is also based on a particular allegiance to the integrity of the *Chinese* nation which possesses a high level of ethnic unity (especially given its astonishingly large population). The cosmopolitan challenge is a crucial faultline in China’s ongoing development project, just as the latter is the most important factor conditioning the former.

This process has very significant implications for the global North, its conception of cosmopolitanism and theorization of the concept. For an increasing Chinese presence in global networks adds a new dimension that demands accommodation from, and hence challenges, existing conceptions of ‘cosmopolitan’ (and ‘global’), not least as a non-European, developing and increasingly ‘successful’ exemplar. The full inadequacy of attempts to understand (and engender) cosmopolitanism through abstract theorizing, employing the existing conceptual resources of Euro-American heritage, is laid bare.

Instead, we see the mutual challenge of the hitherto hegemonic ‘global’ of the global North and Chinese modernity in an ongoing restructuring of the ‘cosmopolitan’. But given the importance of reflexivity as the feature that distinguishes cosmopolitanism from premature universalism (which is, at present, neoliberalism), detailed empirical study of this process, repudiating ‘flat world’ discourse (Friedman 2005), is crucial in its incubation as a social force.

These observations raise two issues. What are the prospects for a broader global cosmopolitan regime? And what types of innovation may arise given Chinese participation? We can outline various scenarios, distinguishing possible, probable and preferable futures, bearing in

mind unintended consequences and the potential importance of random ‘outlying’ events that may render incorrect such forecasts.

Regarding possible futures we expect to see the growth of cosmopolitanism in China and its uneven participation within innovation networks. First, there is considerable global openness and commitment to it. This will continue and encourage deeper international interaction so long as it does not threaten the CCP-led project of nation-state development. The challenging interaction with different cultures – and ones, moreover, that privilege competitive and critical thought – may encourage the central transformation in understanding of science and innovation towards a broader introduction of self-critical and reflexive consciousness that has remained relatively superficial, despite China’s genuine attestations in favour of science throughout the modern era. If, as is predicted, global warming also manifests in dramatic, or even catastrophic, climate change in China (with the North facing drought and the South floods: Zhang et al. 2006), this may galvanize Chinese thought and practice and develop its commitment to ‘global’ action but probably only in the longer term.

There are many unknown variables involved in this: rapid Chinese economic and social change; a political situation that encourages nationalism; a continuing neoliberal global capitalist political economy undergoing extreme turbulence post-2008; the limited ability of the Obama administration to deliver even modest low carbon policies; the processes and contested politics of climate change; and a growing set of other global risks such as financial crashes, pandemics, peak oil, crime and terror, what has been termed ‘global complexity’ (Urry 2003).

With these many uncertainties intersecting with each other, there is thus no single future. To the extent that China’s political democratic transition remains ‘trapped’ (Pei 2005), any growth in a self-reflexive, civil society may increasingly oppose the Chinese political establishment. But such a transition may not be towards ‘Western-style’ shallow parliamentary democracy, with a vigorous internal debate exploring alternative models (Leonard 2007). The ideological dependence of the CCP regime upon a chauvinistic nationalism (given the demise of communism as its central principle) could lead to cosmopolitanism becoming a crime against the state. As such, arguably the biggest domestic constraint to cosmopolitanism in China and its participation in cosmopolitan innovation is the slow pace of political reform. Indeed we should not presume any necessary movement to even shallow democracy with the widespread spreading of ‘capitalist’ market relations within China and it becoming the world’s largest capitalist economy in a decade or so.

Finally as regards a preferable future, this would involve deepening the global connectedness of Chinese science and innovation and cosmopolitanism within Chinese society. This should be on the back of international mechanisms to encourage international collaboration in low-carbon innovation, a proto-cosmopolitan innovation regime that also demonstrates that the global North accepts primary responsibility for climate change, something that was manifestly not shown at the 2009 Copenhagen summit. This points out how the single biggest constraint from without is neoliberalism that has ruled the world over the past three decades.

By engendering commitment on the part of the Chinese, such a shift in context may enable tackling climate change before, rather than in reaction to, catastrophic weather events. And to the extent that this quantum leap in internationally co-operative innovation leads to radical mechanisms to effect a low-carbon systems transition, this may moderate the whirlwind of global climate change (Stern 2007; Giddens 2009).

Indeed the possible demise of neoliberalism after this crash may give an unexpected upward shift in the conditions propitious for cosmopolitanism to spread as a social force, though it could also lead in the opposite direction with nationalist resurgence. Stern argues that a coming period of growth after the 2008 crash ‘can be firmly based in the low-carbon infrastructure and

investments that will not only be profitable, with the right policies, but also allow for a safer, cleaner and quieter economy and society' (Stern 2008). And if a global reordering rebalances in China's favour, this may enable the cosmopolitan forces within contemporary China to become more effective in the post-crash context. A specifically Chinese cosmopolitanism could gain momentum and just possibly might provide some of the conditions necessary for a low-carbon future to emerge. And according to Stern such low-carbon innovation and growth is utterly essential both environmentally and economically. Without China on board, what Stern refers to as the greatest of market failures may otherwise wreak much devastation and some very bleak futures (Stern 2007; Dennis / Urry 2009). The stakes would seem high indeed for ensuring that cosmopolitan innovation takes root very soon.

On some accounts in this fast changing context, China may actually just be in the lead in that new struggle (Lacey 2010; Lee 2009). Conversely, although cosmopolitanism may be powerful at certain discursive levels, the actions of the Chinese leadership at the Copenhagen climate change summit made it clear that economic modernisation remains the utter priority so that any cosmopolitanism in evidence is operationalized in terms of becoming a full (and leading) participant within the neo-liberal economy. This would, of course, be no mean achievement to say the least. But if economies were to shift even a little to what we refer to as 're-source-oriented capitalism' then a revived cosmopolitanism would be significant in helping the development of a low carbon 'economy-and-society' (albeit this is still very far from a low carbon utopia).

So far we have seen some of the green shoots of that development but there is an awful long way to go. Indeed the fights between the two largest GHG emitters at the Copenhagen summit, the US and China, and other rising tensions (including over trade, arms sales to Taiwan and the valuation of the Chinese Renminbi), suggest that cosmopolitanism is confronted by some enormously powerful economic and geo-political enemies. Although the Great Crash of 2008 appears to have led us only back to more 'business as usual', the hope must be that there are actually below the radar of the great powers and metropolitan centres, numerous vernacular cosmopolitanisms of the sort we have illustrated here that will (at the very least) nudge capitalism towards transition to a resource-oriented future. The evidence for the emergence of China as home to multiple disruptive low carbon innovations that may aggregate to unsettle fundamentally the existing high-carbon socio-technical regimes (Tyfield / Jin / Rooker 2010) is another important element of any such heterogeneous assemblage that stands a viable chance of replacing the current dysfunctional set of high-carbon systems.

Bibliography

Anderson, B. (1983): *Imagined Communities*, London.

Appadurai, A. (1996): *Modernity at Large: Cultural Dimensions of Globalization*, Minneapolis.

Appiah, K.A. (2006): *Cosmopolitanism: Ethics in a World of Strangers*, New York.

Arrighi, G. (2008): *Adam Smith in Beijing*, London.

Beck, U. (1998): The Cosmopolitan Manifesto, *New Statesman* 1998, 20th March 1998.

Beck, U. (2006): *The Cosmopolitan Vision*, Cambridge.

Beck, U. (2009): *World at Risk*, Cambridge.

Beck, U. / E. Grande (2007): *Cosmopolitan Europe*, Cambridge.

Beck, U. / U. Sznajder (2006): Unpacking cosmopolitanism for the social sciences: a research agenda, in: *British Journal of Sociology* 57 / 1, pp.1-25.

Bell, D. (2007): *China's New Confucianism*, Princeton.

Billig, M. (1995): *Banal Nationalism*, London.

BJS (British Journal of Sociology) (2006): Special Issue on Cosmopolitan Sociology 57.

Calhoun, C. (2007): *Nations Matter*, London – New York.

Chang, H.J. (2005): *Kicking Away the Ladder*, London.

Corning, G. (2004): *Japan and the Politics of Techno-Globalism*, Armonk – London.

Crabbe, M. (2008): A Tale of Two Beijings and the Junket Special, in: AccessAsia Weekly Update, available at <http://www.accessasia.co.uk/weekly%20update.asp>.

Delanty, G. (2005): The idea of a cosmopolitan Europe: on the cultural significance of Europeanization, in: *International Review of Sociology* 15 / 3, pp.405-21.

Delanty, G. (ed.) (2006 a): *Europe and Asia Beyond East and West*, London.

Delanty, G. (2006 b): The cosmopolitan imagination: critical cosmopolitanism and social theory, in: *British Journal of Sociology* 57 / 1, pp.25-47.

Delanty, G. / B. He (2008): Cosmopolitan Perspectives on European and Asian Transnationalism, in: *International Sociology* 23 / 3, pp.323-44.

Dennis, K. / J. Urry (2009): *After the Car*. Cambridge.

Dickie, M. (2008): Protests fail to get out of the blocks, in: *Financial Times*, 18th August 2008, available at http://www.ft.com/cms/s/0/f642c726-6d55-11dd-857b-0000779fd18 c_i_email=y.html.

Drahos, P. / J. Braithwaite (2002): *Information Feudalism*, London.

Economist (2008 a): Our revels now are ended, in: *The Economist*, 28th August 2008.

Economist (2008 b): Welcome to a (rather dour) party, in: *The Economist*, 31st July 2008.

Economist (2008 c): The brave new world of e-hatred, in: *The Economist*, 24th July 2008.

Fine, R. (2003): Taking the 'Ism' out of cosmopolitanism: an essay in reconstruction, in: *European Journal of Social Theory* 6 / 4, pp.451-70.

Fine, R. / R. Cohen (2002): Four cosmopolitan moments, in: S. Vertovec / R. Cohen (eds), *Conceiving Cosmopolitanism*, New York – Oxford.

Friedman, J. (1994): *Cultural Identity and Global Process*, London.

Friedman, T. (2005): *The World is Flat*, London.

Gao, X. (2008): Building Domestic Innovation Capability, Presentation to the Inaugural Pujiang Innovation Forum, 19th May 2008, Shanghai.

Ghosh, P. (2008): Warning sounded on web's future, in: *BBC News*, 15th September 2008, available at <http://news.bbc.co.uk/1/hi/technology/7613201.stm>.

Giddens, A. (2009): *The Politics of Climate Change*, Cambridge.

Gries, P. (2004): *China's New Nationalism*, Berkeley.

Hannerz, U. (1990): Cosmopolitans and Locals in World Culture, in: M. Featherstone (ed.), *Global Culture*, London.

Harrison, H. (2001): *China: Inventing the Nation*, London.

Harvey, D. (2005): *A Brief History of Neo-Liberalism*, Oxford.

Held, D. (1995): *Democracy and the Global Order*, Cambridge.

Hewitt, D. (2007): *Getting Rich First: Life in a Changing China*, London.

Hobsbawm, E. / T. Ranger (eds) (1983): *The Invention of Tradition*, Cambridge – New York.

Hughes, C. (2006): *Chinese Nationalism in the Global Era*, London.

Jasanoff, S. (2005): *Designs on Nature*, Princeton.

Jasanoff, S. (2007): The Cosmopolitan Scientist, Atlas of Ideas Conference, 17th January 2007, available at <http://tv.theiet.org/channels/research/1342.cfm>.

Kaldor, M. (1996): Cosmopolitanism versus Nationalism: The New Divide?, in: R. Caplan / J. Feffer (eds), *Europe's New Nationalism*, Oxford.

Klein, N. (2007): *The Shock Doctrine*, London.

Krugman, P. (2008): *The Return of Depression Economics*, London.

Lacey, S. (2010): Is the US losing the clean energy race?, in: *Renewable Energy World*, 5th April 2010, available at <http://www.renewableenergyworld.com/rea/news/article/2010/04/u-s-losing-clean-energy-race?cmpid=SolarNL-Monday-April5-2010>.

Leadbeater, C. / J. Wilsdon (2007): *The Atlas of Ideas*, London.

Lee, B. / I. Iliev / F. Preston (2009): *Who Owns Our Low Carbon Future? Intellectual Property and Energy Technologies*, London: Royal Institute of International Affairs (Chatham House).

Leonard, M. (2007): *What Does China Think*, London.

Lovell, J. (2006): *The Great Wall*, London.

Marx, K. / F. Engels (1952 [1848]): *The Manifesto of the Communist Party*, tr. Samuel Moore, Moscow.

Metzger, T. (2001): The Western concept of civil society in the context of Chinese history, in: S. Kaviraj / S. Khilnani (eds), *Civil Society*, Cambridge.

Mitter, R. (2004): *A Bitter Revolution: China's Struggle with the Modern World*, Oxford.

NAS (National Academies of Science) (2005): *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future*, Washington DC.

NDRC (National Development and Reform Commission) (2008): *China's National Climate Change Programme*, Beijing.

Nolan, P. / X. Wang (1999): Beyond privatization: Institutional innovation and growth in China's large state-owned enterprises, in: *World Development* 27 / 1, pp.169-200.

Ong, A. (1997): Chinese modernities: narratives of national and of capitalism', in: A. Ong / D. Nonini (eds), *Ungrounded Empires*, London.

Ong, A. (1999): *Flexible Citizenship*, Durham / NC.

Ong, A. / D. Nonini (1997): Chinese transnationalism as an alternative modernity', in: A. Ong / D. Nonini (eds), *Ungrounded Empires*, London.

OECD (Organisation for Economic Co-operation and Development) (2008): *OECD Reviews of Innovation Policy, China*, Synthesis Report, Paris.

Pan, E. (2005): *China's Angry Peasants*, Council for Foreign Relations Backgrounder Paper, New York: Council for Foreign Relations.

Pan, L. (1994): *Sons of the Yellow Emperor: A History of the Chinese Diaspora*, New York.

Pei, M. (2005): *China's Trapped Transition*, Cambridge / MA – London.

Ramo, J.C. (2004): *The Beijing Consensus*, London: Foreign Policy Centre.

Rifkin, J. (2004): *The European Dream*, New York.

Roberts, J. / B. Parks (2007): *A Climate of Injustice*, Cambridge / MA – London.

Rodrik, D. (2007): *One Economics, Many Recipes*, Princeton / NJ.

Sassen, S. (2006): *Territory, Authority, Rights*, Princeton.

Saxenian, A. (2006): *The New Argonauts: Regional Advantage in a Global Economy*, Cambridge / MA.

Schwaag-Serger, S. / M. Breidne (2007): China's Fifteen-Year Plan for Science and Technology: An Assessment, in: *Asia Policy* 4, pp.135-164.

Segal, A. (2003): *Digital Dragon*, Ithaca.

Sell, S. (2003): *Private Power, Public Law*, Cambridge – New York.

State Council of China (2008: China's Policies and Actions for Addressing Climate Change, White Paper, Beijing: Information Office of the State Council.

Stern, N. (2007): The Economics of Climate Change. The Stern Review, Cambridge.

Stern, N. (2008): Green routes to growth, The Guardian, 23rd October 2008.

Szerszynski, B. / J. Urry (2002): Cultures of Cosmopolitanism, in: Sociological Review 50 / 4, pp.461-81.

Tang, S.-Y. / X. Zhan (2008): Civic environmental NGOs, civil society and democratisation in China, Journal of Development Studies 44 / 3, pp.425-448.

Tuomi, I. (2003): Networks of Innovation, Oxford.

Tyfield, D. / J. Urry (2009): Cosmopolitan China? Lessons from International Collaboration in Low-Carbon Innovation, in: British Journal of Sociology 60 / 4, pp.793-812.

Tyfield, D. / J. Wilsdon (2010): Low-Carbon China: the Role of International Collaboration, in: S. Yao / B. Wu / D. Sutherland / S. Morgan, Sustainable Reform and Development in Post-Olympic China, London.

Tyfield, D. / J. Jin / T. Rooker (2010): Game-Changing China: Lessons from China about Disruptive Low Carbon Innovation, London: NESTA.

Tyfield, D. / Y. Zhu / J. Cao (2009): The importance of the “international collaboration dividend”: the case of China, in: Science and Public Policy 36, pp.723-35.

UNCTAD (2008): Handbook of Statistics, Geneva.

Urry, J. (2003): Global Complexity, Cambridge.

Urry, J. (2008 a): Innovation, systems and synchronisation, AIM meeting, Imperial College, London, November.

Urry, J. (2008 b): The London Olympics and global competition: on the move, in: 21st Century Society 3, pp.289-93.

Vertovec, S. / R. Cohen (eds) (2002): Conceiving Cosmopolitanism, Oxford.

Von Hippel, E. (2006): Democratizing Innovation, Cambridge / Mass.

Wang, T. / J. Watson (2007): Who Owns China's Carbon Emissions?, Tyndall Centre Briefing Note No. 23, Norwich.

Wang, Y. / T. Zheng (2005): Overseas Chinese have become a strong force in the development of Chinese economy, available at www.cer.net/article/20050104/3125764.shtml.

Willis, R. / M. Webb / J. Wilsdon (2007): The Disrupters, Lessons for low-carbon innovation from the new wave of environmental pioneers, London: NESTA.

Wilsdon, J. / J. Keeley (2007): China: The Next Science Superpower, London.

Wynne, B. (2006): Public Engagement as a Means of Restoring Public Trust in Science – Hitting the Notes, but Missing the Music?, in: Community Genetics 9 / 3, pp.211-220.

Wynne, B. / J. Wilsdon / J. Stilgoe (2005): The Public Value of Science, London.

Yang, M.M. (1997): Mass Media and Transnational Subjectivity in Shanghai: Notes on (Re)Cosmopolitanism in a Chinese Metropolis, in: A. Ong / D. Nonini (eds), *Ungrounded Empires*, London.

Zhang, Y. / Y. Xu / W. Dong / L. Cao / M. Sparrow (2006): A future climate scenario of regional changes in extreme climate events over China using the PRECIS climate model, in: *Geophysical Research Letter* 33, L24702.

David Tyfield
John Urry
Lancaster University
Department of Sociology
LA14YT Lancaster
d.tyfield@lancaster.ac.uk
j.urry@lancaster.ac.uk