The Chinese Social Credit System: A Model for Other Countries?

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Abstract: Many countries know financial consumer credit ratings, and recent years have also seen a proliferation of rating systems in relation to online platforms and in the 'sharing economy', such as eBay, Uber and Airbnb. In the view of many Western observers, however, the emerging Chinese Social Credit System indicates a paradigm shift compared to these former rating systems as it aims for a comprehensive and uniform social rating based on penalty and award mechanisms. By contrast, this article suggests that the evolving forms of the Chinese system should be seen as a specific instance of a wider phenomenon. Thus, it develops a framework that compares different rating systems by reference to their drafters, users, aims, scoring systems, application, use of algorithms, enforcement and accountability; it identifies shortcomings of both low and high interventionist rating systems; and it discusses a range of regulatory approaches and emerging issues that law makers should consider.

Keywords: Social Credit System, Chinese law, credit registries, reputation rankings, online platforms, law and technology

> '*It would be easy to assume none of this could happen here in the West.*
> *But the 21st century is not going to work like that*'.[1]

> '*China's dystopian tech could be contagious*'[2]

INTRODUCTION

Since the early 2000s the Chinese government has pursued plans for the construction of a so-called 'Social Credit System'. Implementation is progressing quickly, and it can be suggested that the Social Credit System will fundamentally change the life of all Chinese citizens. In a nutshell,[3] the main innovation, once fully implemented, could be that each Chinese citizen will be given a score measuring their sincerity, honesty, and integrity, and that this score will then be a major determinant for their lives, for instance,

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[1] J. Harris, 'The tyranny of algorithms is part of our lives: soon they could rate everything we do' *The Guardian* (5 March 2018) https://www.theguardian.com/commentisfree/2018/mar/05/algorithms-rate-credit-scores-finances-data.

[2] A. Greenfield, 'China's Dystopian Tech Could Be Contagious' *The Atlantic* (14 February 2018) https://www.theatlantic.com/technology/archive/2018/02/chinas-dangerous-dream-of-urban-control/553097/.

[3] For details see text to notes 95-155, below.

whether to be able to get a credit, rent a flat, or buy a plane ticket, or being given preferred access to hospitals, universities and government services.

In this Chinese government programme, the notion of 'social credit' serves as an extension of mere financial scoring systems from elsewhere in the world,[4] given that the Chinese 'social credit' score will consider a wide range of personal factors.[5] It also resembles, but goes further than, a range of systems that are intended to increase the prominence of reputation in relation to transactions, online platforms and in the 'sharing economy'. In addition, the Chinese initiative will cover both companies and individuals; the latter is more novel (and more controversial), given the prevalence of ratings for the former in the financial sector and in fields such as corporate social responsibility.[6] Thus, we focus here on rating systems concerning individual persons.

This article is motivated by the fact that it cannot be assumed that 'what happens in China, stays in China'. The Social Credit System already applies to foreign workers and companies in China, and possibly also to all 'overseas Chinese and ethnic Chinese' regardless of their place of residence.[7] In addition, it can be observed that China's economic, political and ideological influence leads to a general diffusion of Chinese law; writings about China's Belt and Road Initiative, the 'Beijing consensus' of development assistance, and the impact of Chinese investments in Africa show that China's influence abroad is not merely of an economic nature but that it increasingly shapes law and policy elsewhere.[8]

It may of course be argued that the Social Credit System is something that should be seen as not a model but as a counter-model for other countries.[9] We seek to provide a critical but also nuanced and measured assessment, against a backdrop of typical 'Western' responses which simply dismiss the Social Credit System as 'Orwellian', and a general lack of any critical debate on the topic in China.[10] In particular, this article will identify the many variations within the development of the Social Credit System in China,[11] while also addressing debates on the importance of reputation and grading/ranking and on the power of algorithms. We argue, therefore, that what is happening in China can be seen as a specific instance of a wider phenomenon. Even more so, as reputation-based quantitative tools have become established in the West, the Social Credit System

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[4] See text to notes 13-93, below.

[5] The term 'social credit' has also two further meanings that are outside the scope of this article, namely, as an economic reform programme developed in the 1920s (see C.H. Douglas, *Social Credit*(Vancouver: Institute of Economic Democracy, 1924)) and as a type of 'micro-credit aiming at fighting poverty' (see F.A.F. Ferreira et al, 'A Socio-Technical Approach to the Evaluation of Social Credit Applications' (forthcoming) *Journal of the Operational Research Society* DOI: 10.1080/01605682.2017.1415650).

[6] Despite many differences, see eg L.C. Backer, 'Next Generation Law: Data Driven Governance and Accountability Based Regulatory Systems in the West, and Social Credit Regimes in China', Working Paper (7 July 2018), available at https://ssrn.com/abstract=3209997.

[7] See S. Hoffman, 'Social credit: technology-enhanced authoritarian control with global consequences', Policy Brief Report No.6/2018.

[8] See eg S. Seppänen, 'Chinese Legal Development Assistance: Which Rule of Law? Whose Pragmatism?' (2018) 51 *Vanderbilt Journal of Transnational Law* 101; W. Zhang, I. Alon and C. Lattemann (eds), *China's Belt and Road Initiative: Changing the Rules of Globalization* (Cham: Palgrave, 2018).

[9] Or if it were to influence other countries, it may be argued that it should be seen as a 'malicious legal transplant', cf M. Siems, 'Malicious Legal Transplants' (2018) 38 *Legal Studies* 103.

[10] See further text to notes 127-155, below.

[11] See further text to notes 95-137, below.

may tell us something about their evolution in Western countries (or even the future of global normative orders[12]).

Accordingly, this article is interested in a number of overlapping research questions: to start with, how can we understand both the multiple Chinese and Western systems by reference to their drafters, users, aims, scoring systems, application, use of algorithms, enforcement and accountability? Is it then the case that the Social Credit System is based on a unique strongly interventionist logic, or could there be mixtures between the Chinese and Western models? And if reputation and rating systems consolidate in Western markets in a similar fashion, what opportunities, features, controversies, and pitfalls will arise? And how could law makers intervene if this happens?

The corresponding structure of this article is as follows. The next part maps the general debate about reputation, ranking and rating in the West (setting out salient features of its history in credit scoring and related systems, and identifying the significance of reputation data for online business and the 'sharing' or peer-to-peer economy); we conclude this part by considering certain controversies regarding such data, and setting out an initial framework for analysis. The following part explains the operation and variations of China's Social Credit System today as well as likely future developments. On this basis, the subsequent part compares and evaluates both of these systems, identifying shortcomings of low and high interventionist rating systems, and assessing a range of regulatory approaches, followed by a conclusion.

REPUTATION, RANKING, AND RATING

A short history

Although the identification and dissemination of reputational information has formed an important aspect of 21st-century e-commerce and sharing economy business models, the concept is certainly a more established one. The best known is probably found in the financial sector, where the 'rating' of the creditworthiness of companies, institutions, individuals, and financial instruments (e.g. bonds) has a longer history,[13] and has progressed beyond narrower, single-purpose origins to becoming a 'key component of global financial governance'.[14]

In Lauer's history of the development of consumer credit reporting and scoring in the United States since the 19th century, he emphasises the development of an information infrastructure in finance, including shifts towards a quantitative basis throughout the 20th century, and computerisation and the application of statistical methods to risk and creditworthiness from the 1960s onwards.[15] Other significant developments include the emphasis upon individual 'scores' in the late 20th century,[16] and continuous monitoring and surveillance rather than simple blacklisting[17] (or, as Pasquale puts it regarding the

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[12] cf L.C. Backer, 'And an Algorithm to Bind them All? Social Credit, Data Driven Governance, and the Emergence of an Operating System for Global Normative Orders', Working Paper (21 May 2018), available at https://ssrn.com/abstract=3182889.

[13] D. Marron, *Consumer Credit in the United States* (New York: Palgrave Macmillan, 2009) 100.

[14] B. Carruthers, 'From Uncertainty Toward Risk: The Case of Credit Ratings' (2013) 11 *Socio-Economic Review* 525, 530.

[15] J. Lauer, *Creditworthy: A History of Consumer Surveillance and Financial Identity in America* (New York: Columbia University Press, 2017) 40 and 183.

[16] ibid 249.

[17] Marron, n 13 above, 105-107; Lauer, n 15 above, 60.

21st century, the move to a 'scored society' in place of mere credit scores[18]). These developments sit within the a longer trajectory towards increased access to information which has, since the 18th century, driven 'fact- and theory-based approaches to issues of finance and credit' (in respect of individuals and companies) and attempted to neutralise 'irrationality' and misunderstanding[19] and replace uncertainty with an assessment of risk.[20] The increased involvement of mainstream banks in credit scoring, from the 1960s onwards, has also supported an algorithmic-led approach to risk and the likelihood of repayment.[21]

Credit scoring has also developed in the UK and across Europe[22] – although different legal and cultural approaches to data protection have meant that the pace of change has been different. Corporate transactions, such as the acquisition of Experian (formerly TRW, a major player from the computer age in the US[23]) by Great Universal Stores (a UK-based mail order retailer which had developed a successful credit scoring function of its own[24]), have promoted further convergence.

These financial matters form part of a broader trend. Classification systems and the urge to classify have deep roots in human societies, but were a major feature of scientific and capitalist development in the 20th century; they are ubiquitous and built into every aspect of social and commercial life, and combine 'social organization, moral order, and layers of technical integration'.[25] The late 20th century also saw the rise in popularity of key performance indicators, 'league tables', and the like, as part of the New Public Management revolution[26] and a shift towards the 'production of performance information with regulatory or quasi-regulatory purposes'[27]. Well-known examples include assigning core research funding to universities in the United Kingdom (and, increasing-

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[18] F. Pasquale, *The Black Box Society: The Secret Algorithms that Control Money and Information* (Cambridge, MA: Harvard University Press, 2015) 22-25. See also R. Botsman and R. Rogers, *What's Mine is Yours: How Collaborative Consumption is Changing the Way we Live* (New York: Collins, 2010) 217 (on how the 20th-century importance of credit ratings relates to 'consumers operating in a hyper-individualistic world' rather than the position of individuals within a community).

[19] J. Black, *The Power of Knowledge: How Information and Technology Made the Modern World* (New Haven: Yale University Press, 2014) 193.

[20] Carruthers, n 14 above, 529.

[21] Lauer, n 15 above, 191.

[22] T. Wainwright, 'Elite Knowledges: Framing Risk and the Geographies of Credit' (2011) 43 *Environment & Planning A* 650, 653 (highlighting the later adoption of methods in the UK, influenced by US practices); A. Rona-Tas and A. Guseva, 'Consumer Credit in Comparative Perspective' (2018) 44 *Annual Review of Sociology* 55, 62-64 (for a general survey).

[23] Marron, n 13 above, 104.

[24] N. Cope, 'GUS shares soar on £1bn acquisition' *The Independent* (15 November 1996). Ten years later, the (combined) credit scoring business was demerged: S. English, 'Experian to raise new equity in demerger from GUS' *The Independent* (29 March 2006).

[25] G. Bowker and S. Star, *Sorting Things Out: Classification and its Consequences* (Cambridge, MA: MIT Press, 1999) 33, 37 (ubiquity), 3-5 (historical understandings), 324-325 (integration into information systems).

[26] C. Pollitt and G. Bouckaert, *Public Management Reform: A Comparative Analysis* (Oxford: Oxford University Press, 2011) 106-111; C. Hood and R. Dixon, *A Government that Worked Better and Cost Less?: Evaluating Three Decades of Reform and Change in UK Central Government* (Oxford: Oxford University Press, 2015) ch 3; W. Nelson Espeland and M. Sauder, 'Rankings and Reactivity: How Public Measures Recreate Social Worlds' (2007) 113 *American Journal of Sociology* 1.

[27] A. Mehrpouya and R. Samiolo, 'Performance Measurement in Global Governance: Ranking and the Politics of Variability' (2016) 55 *Accounting, Organizations and Society* 12, 13.

ly, elsewhere),[28] and the evaluation of federal government programmes in the United States.[29] The economic impact of prizes for contemporary art[30] and the grading of restaurants[31] has been observed.

For individuals in labour markets, we see schemes such as quantitative approaches to determining the promotion of civil servants in the European Union.[32] In the last year alone, new developments in the UK include a requirement (imposed by competition and financial regulators) that financial institutions provide information on how likely customers would be to recommend their services to others,[33] and a proposed extension of a scheme attempting to measure the quality of university teaching beyond institutions to individual subjects, described by the responsible Minister as akin to the financial services comparison site MoneySupermarket.[34] These 'calculative practices [which] render previously incomparable elements visible and comparable'[35], while mostly focused upon institutions rather than individuals, normalise the collection and communication of data in this fashion, and allow for more effective methods of presentation and analysis.

As well as highlighting the benefits of an 'objective' approach,[36] contemporary versions of credit scoring and New Public Management also have in common a tendency to collect and analyse data at a relatively centralised level; that is, it is the credit scoring agency or the public audit authority that is gathering data (albeit from multiple sources) and providing advice (or at least aggregated and sometimes ranked data) on the performance, solvency, or quality of the data subjects. In other cases, however, the 'score' (whether concerning an individual or an institution) will simply reflect the data submitted by users of a given service – whether that be regarding the service provider or, as in the case of certain online businesses, other service users.

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[28] R. van Gestel, 'Ranking, Peer Review, Bibliometrics and Alternative Ways to Improve the Quality of Doctrinal Legal Scholarship' in R. van Gestel, H.-W. Micklitz and E. Rubin (eds), *Rethinking Legal Scholarship: A Transatlantic Dialogue* (Cambridge: Cambridge University Press, 2017); M. Henkel and M. Kogan, 'United Kingdom' in D. Dill and F. van Vught (eds), *National Innovation and the Academic Research Enterprise* (Baltimore: Johns Hopkins University Press, 2010).

[29] J. Gilmour, 'Implementing OMB's Program Assessment Rating Tool (PART): Meeting the Challenges of Integrating Budget and Performance' (2007) 7 *OECD Journal on Budgeting* 1.

[30] P. Pénet and K. Lee, 'Prize & Price: The Turner Prize as a Valuation Device in the Contemporary Art Market' (2014) 43 *Poetics* 149.

[31] L. Karpik, *Valuing the Unique: The Economics of Singularities* (Princeton: Princeton University Press, Eng tr, 2010) 77-80.

[32] eg Staff Regulations of Officials of the European Union, Regulation 259/68, [1968] OJ L 56/1 (as amended); see further C. Ban, 'Performance Appraisal and Promotion in the European Commission: the Challenge of Linking Organizational and Individual Accountability' (conference paper, Accountability and Governance in International Organizations, Konstanz, June 2008) http://www.pitt.edu/~cban/Research/Ban%20EC%20accountability%20paper.doc

[33] Competition and Markets Authority, 'Banks scored on quality of service' (15 August 2018) https://www.gov.uk/government/news/banks-scored-on-quality-of-service; Financial Conduct Authority, 'Making it easier to use and compare current accounts' (15 August 2018) https://www.fca.org.uk/news/news-stories/making-it-easier-use-and-compare-current-accounts.

[34] Department for Education, 'Universities to be rated by subject quality' (12 March 2018) https://www.gov.uk/government/news/universities-to-be-rated-by-subject-quality; see Eleanor Busby, 'University degree courses to be ranked in "MoneySuperMarket" style system, minister says' *The Independent* (12 March 2018) https://www.independent.co.uk/news/education/education-news/degree-courses-university-students-rankings-teaching-excellence-framework-sam-gyimah-a8251866.html.

[35] M. Kornberger and C. Carter, 'Manufacturing Competition: How Accounting Practices Shape Strategy Making in Cities' (2010) 23 *Accounting, Auditing & Accountability Journal* 325, 332.

[36] As emphasised by Marron, n 13 above, 104.

From eBay to Uber and beyond

The success of eBay and related sites has long been attributed, in part, to the way in which a platform has become 'trusted' by users and how well-understood information asymmetries are handled and countered. Trust in a sales platform is said to be a combination of payment security, reliable and affordable schemes for dispute resolution, and – of present interest – 'trust building measures like the mutual rating system which allows for online reputation'.[37] eBay's reputation system, where buyers and sellers rate each other (with comments published for all to see), was added very shortly after it began business, in order to address allegations of cheating; it became an established feature of the site and is still in operation.[38] Indeed, the different aspects of trust are interlinked as, for instance, a failure to engage with the dispute resolution process affects the reputation of a user.[39] Moreover, a user's ability to trade in the future will be affected by their score and feedback and therefore by their earlier actions:[40] eBay's system has seen high levels of participation, with traders with positive reputations found to be more likely to succeed in selling items on the platform,[41] and it also allows eBay to exclude from the marketplace users with very low ratings.[42]

Present-day observers note that online trust encompasses 'digital social capital' and various means of certifying and validating market participants.[43] Similarly, Facebook has recently confirmed that it maintains an internal system through which all users are rated for how 'trustworthy' they are,[44] though its current function appears to be limited, being only Facebook's own use in enforcing its own rules against its users. These present-day approaches however draw upon a longer history of identifying the reliability of individuals: Lauer highlights how credit systems which valorised character and hard work rather than social standing were an important facilitator of the emergence of US consumer capitalism,[45] while Packin and Lev-Aretz point to the more recent use of big data and the analysis of 'online social footprints' as a proxy for character, which in the history of credit scoring is seen as a reliable predictor of the ability and likelihood of repayment.[46] Unsurprisingly, the overlapping developments in reputation, big data, analytics, and Internet-driven business models, lead some to conclude that we now live in a 'reputation economy' where reputation is an asset.[47]

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[37] G.-P. Calliess, 'Online Dispute Resolution: Consumer Redress in a Global Market Place' (2006) 7 *German Law Journal* 647, 652.

[38] C. Shirky, *Cognitive Surplus: Creativity and Generosity in a Connected Age* (London: Allen Lane, 2010) 177-178.

[39] Calliess, n 37 above, 653.

[40] Botsman and Rogers, n 18 above, 140.

[41] P. Resnik and R. Zeckhauser, 'Trust Among Strangers in Internet Transactions: Empirical Analysis of eBay's Reputation System' in M. Baye (ed), *The Economics of the Internet and E-commerce* (London: Emerald, 2002).

[42] C. Lampe, 'The Role of Reputation Systems in Managing Online Communities' in H. Masum and M. Tovey (eds), *The Reputation Society: How Online Opinions Are Shaping The Offline World* (Cambridge, MA: MIT Press, 2012) 82.

[43] A. Sundararajan, *The Sharing Economy: The End of Employment and the Rise of Crowd-based Capitalism* (Cambridge, MA: MIT Press, 2016) 61.

[44] E. Dwoskin, 'Facebook is rating the trustworthiness of its users on a scale from zero to 1' *Washington Post* (22 August 2018).

[45] Lauer, n 15 above, 26, 33.

[46] N. Geslevich Packin and Y. Lev-Aretz, 'On Social Credit and the Right To Be Un-networked' [2016] *Columbia Business Law Review* 339, 343.

[47] M. Fertik and D. Thompson, *The Reputation Economy* (New York: Random House, 2015).

As the 'sharing economy' or 'collaborative economy' emerged as the latest Internet phenomenon (and business catchphrase) in recent years, the role of reputational systems has also been obvious. The sharing economy purports to be based around interpersonal relations and seeking to replace 'functional, cold and impersonal relations engendered by capitalism' with authenticity and trust.[48] Consequently, all major economy platforms, such as Uber, Airbnb, and TaskRabbit, and indeed precursors such as CouchSurfing, make use of a combination of scoring and feedback systems.[49] The availability of a community of users familiar with eBay-like feedback schemes and social media services, and the technological innovation that facilitated reputation-based services on earlier sites, is a factor in the rapid adoption of sharing economy services.[50] Indeed, the wider economic shift towards peer-to-peer provision, and indeed the reshaping of labour markets in the 'gig' economy, continues to see reputational information emphasised as a key component of the model.

How is reputational data used in these contexts? An obvious example is ridesharing services, where drivers and passengers rate each other. A driver with a comparatively low score (the aggregate of passenger scores) can ultimately be removed from the platform or restricted to providing a more limited range of services,[51] while a passenger is more likely to be picked up if they have a high rating from past drivers[52] (passenger ratings were formerly not visible to passengers or required effort to view, but a 2017 change means that a passenger now sees their own rating each time they use the app).[53] Airbnb feedback often includes detailed accounts of visitor experiences, with hosts having the opportunity to add their own comments in reply; a good reputation score for a host means that their accommodation may be returned at the top of search results.[54] A good reputation appears to be correlated with an ability to demand higher prices, though there is variation between how the strength of reputation is measured (e.g. mean score vs

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[48] N. John, *The Age of Sharing* (Malden: Polity Press, 2017) 148.

[49] Botsman and Rogers, n 18 above, 178-179 (reputation on couchsurfing.com), 217 ('with the Web we leave a reputation trail', ie 'a cumulative record of how well we collaborate and if we can be trusted').

[50] Sundararajan, n 43 above, 25; B. Stone, *The Upstarts: How Uber, Airbnb and the Killer Companies of the New Silicon Valley are Changing the World* (London: Transworld 2017) 10-11 ('Airbnb and Uber substituted [for older regulatory regimes] the self-policing tools pioneered by internet marketplaces like eBay – riders graded their drivers and guests evaluated their hosts, and vice versa'); J. Klein, 'Baby, you can drive my car' *Time* (9 February 2015) 34 ('the key to this shift was the discovery that while we totally distrust strangers, we totally trust people … many sharing-company founders have one thing in common: they worked at eBay and, in bits and pieces, recreated that company's trust and safety division … its innovation was getting both the provider and the user to rate each other').

[51] In the early (2012) service Sidecar, drivers were only eligible to use the platform if their score remained above a required minimum: Stone, n 50 above, 197-198. Uber allows drivers with higher ratings to provide higher-priced services (Uber Exec and Uber Lux): *Uber BV v Aslam* (UK Employment Appeals Tribunal, 10 November 2017) [9] and deactivates (after notices and opportunities to improve) the accounts of drivers with low ratings – below 4.4 out of 5 (ibid, [29], [56]) – or, allegedly, below 4.7 in some situations: T. Slee, *What's Yours is Mine: Against the Sharing Economy* (Toronto: Scribe, 2017) loc 1286.

[52] R. Rose, 'The shame of my very low Uber rating' *Financial Times* (4 July 2018). On identifying reliable customers for new business models through reputation systems, see L. Gansky, *The Mesh: Why the Future of Business is Sharing* (New York: Penguin, 2010) 105.

[53] M. Truong and R. Trivedi, 'Updates to the rating system' (Uber, 26 April 2017) http://www.uber.com/en_GB/newsroom/ratingsupdate-2/.

[54] G. Zervas, D. Prosperio and J. Byers, 'A First Look at Online Reputation on Airbnb, Where Every Stay is Above Average', Working Paper (25 January 2015), available at https://papers.ssrn.com/abstract=2554500.

number of positive reviews).[55] Another example of the use of reputational mechanisms is 'gamification', where platforms build in tools inspired by the mechanisms developed and perfected within the computer game sector for other purposes,[56] to incentivise good behaviour and drive active participation and engagement over a longer period.[57] Such tools (which are also being used in other sectors, such as education) include progress between levels, the collection of points, and the availability of rewards.[58]

Regulating rating and reputation systems

What is the role of the state, and of various means of legal control or oversight, in the systems discussed in the above paragraphs? In a limited number of cases, state authorities have initiated schemes that purport to 'rate' individuals (albeit on a simpler basis of passing a threshold rather than a comprehensive ranking). For instance, some countries use a point-based immigration system.[59] In other cases (and more characteristic of the development of these systems in the countries discussed in this part), the nexus between the state and rating and reputation systems is through acquiescence and encouragement, or through a self- or co-regulatory model, rather than the system being managed by a public authority.[60] This can be observed by reference to credit scoring and to the sharing economy.

While consumer credit scoring has predominantly been a private sector activity, it has certainly benefitted from seemingly unrelated aspects of public administration, such as the creation of a unique identifier for individuals in the US for social security purposes.[61] Public bodies engaged with the financial system can also play a role in standardising the use of private data through the exercise of their functions.[62] More generally, the

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[55] W. Qiu, P. Parigi and B. Abrahao, 'More Stars or More Reviews? Differential Effects of Reputation on Trust in the Sharing Economy' [2018] *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* 153.

[56] eg 'taking things that aren't games and trying to make them feel more like games': F. Escribano, 'Gamification As the Post-Modern Phalanstère' in P. Zackariasson and T. Wilson (eds), *The Video Game Industry: Formation, Present State, and Future* (New York: Routledge, 2014) 201; 'providing us with voluntary obstacles related to our real-world activity and by giving us better feedback really can help us make a better effort': J. McGonigal, *Reality is Broken: Why Games Make Us Better and How They Can Change the World* (London: Vintage, 2012) 148.

[57] J. Hamari, M. Sjöklint and A. Ukkonen, 'The Sharing Economy: Why People Participate in Collaborative Consumption' (2016) 67 *Journal of the Association for Information Science and Technology* 2047 (in general); Slee, n 51 above, loc 1274 (Uber drivers); S. Mason, 'High score, low pay: why the gig economy loves gamification' *The Guardian* (20 November 2018) https://www.theguardian.com/business/2018/nov/20/high-score-low-pay-gamification-lyft-uber-drivers-ride-hailing-gig-economy (Lyft drivers).

[58] eg A. DuVernet, A. Asquer and I. Krackkovskaya, 'The Gamification Of Education and Business: A Critical Analysis and Future Research Prospects' in F.X. Olleros and M. Zhegu (eds), *Research Handbook on Digital Transformations* (Cheltenham: Edward Elgar, 2016); on gamification, e-learning, and student performance, see D. Willetts, *A University Education* (Oxford: Oxford University Press, 2017) 333.

[59] For the discussion see eg, D.G. Papademetriou and M. Sumption, 'Rethinking Points Systems and Employer-Selected Immigration', Report of the Migration Policy Institute (2011), available at https://www.migrationpolicy.org/research/rethinking-points-systems-and-employer-selected-immigration. For the Chinese point system for internal migration see n 147, below.

[60] On the wide spectrum of self/co-regulatory models in relation to data and technology, see eg C. Marsden, *Internet Co-regulation: European Law, Regulatory Governance and Legitimacy in Cyberspace* (Cambridge: Cambridge University Press, 2011) ch 2.

[61] Lauer, n 15 above, 198-199.

[62] Lauer, n 15 above, 249 (on the use of private credit scores in the Government-based home lending system in the 1990s, and how it contributed to the success of and adoption of changes in scoring); Wain-

(private) rating of bonds has long played a role in public finances, including statutory requirements.[63]

The nature of sharing economy business models, where there is limited regulatory engagement in many cases, leads to heavy emphasis being placed by users on the quality of reputational information provided through the platform.[64] Moreover, whether any liability is potentially attached to the very act of ranking, reviewing, or rating is a factor; US law generally takes the approach that a view on creditworthiness or a review (or even scoring) of a service is an opinion protected by the First Amendment as an aspect of freedom of speech,[65] while minimising exposure to defamation claims has long been a concern for the credit rating industry and for (non-sharing) online review sites alike.[66]

Where there is concern about the implications of rating, there will be the possibility of the introduction of a regulatory regime or the application of more general provisions. This may be correlated with the degree to which ostensibly voluntary participation by users in a private sector market begins to become an everyday activity, which facilitates access to other markets or displaces more conventionally regulated services. Credit scoring, for instance, became the subject of specific regulation in the US.[67] Calls for greater regulation in other areas, on the basis of criticisms of the status quo in rating and reputation-based systems, are discussed in the comparative part, below.[68]

Recent trends: algorithms and aggregation

Even the more conventional forms of reputation-based decision making have undergone further change in light of Internet use and the availability of novel sources of data. A subject's use of social media or indeed of sharing economy sites can, for instance, be used as a proxy for creditworthiness. An Australian scheme for alternative (and significantly cheaper) deposits on rented properties, Trustbond, makes use of both types of

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wright, n 22 above, 655 (on the significance of financial regulator pressure on lenders to be assured of ability to repay, and of the relative cost of different approaches, on the working methods of lenders).

[63] Carruthers, n 14 above, 538.

[64] S. Ranchordás, 'Online Reputation and the Regulation of Information Asymmetries in the Platform Economy' (2018) 5 *Critical Analysis of Law* 127, 143.

[65] *Jefferson County School District v Moody's Investor's Services* 988 F Supp 1341 (District Court, CO 1997) ('The bond market depends in large measure upon the free, open exchange of information concerning bond issues and the First Amendment is ultimately the best guarantor of the integrity of the bond rating system'); *Browne v Avvo* 525 F Supp 2d 1249, 1252 (District Court, Southern District NY 2007) (lawyer rating website); *Castle Rock Remodeling v Better Business Bureau* 354 SW 3d 234, 242-243 (MO Court of Appeal 2011) (rating of service providers by bureau on six-point scale).

[66] For the former: Lauer, n 15 above, 42 (defamation in general) and 68 (historic, though now discontinued, practice of communicating sensitive information verbally and in restrictive circumstances). For the latter: *Seaton v TripAdvisor* (2013) 728 F 3d 592; *Clark v TripAdvisor* [2014] CSIH 110; *Burki v 70/30 Ltd* [2018] EWHC 2151 (QB); the broader question of host liability for content posted by users ('intermediary liability') is also relevant here (and differs as between the general immunity in the US and the conditional exclusions more commonly found elsewhere, including the UK).

[67] Pasquale, n 18 above, 140; J. Turow, *The Aisles Have Eyes: How Retailers Track Your Shopping, Strip your Privacy, and Define your Power* (New Haven: Yale University Press, 2017) 262; G. Krippner, 'Democracy Of Credit: Ownership and the Politics of Credit Access in Late Twentieth-Century' (2017) 123 *American Journal of Sociology* 1; Fair Credit Reporting Act 1970, 15 USC §1681; Equal Credit Opportunity Act 1974, 15 USC §1691. For data protection in the EU see text to notes 180-209, below.

[68] Text to notes 156-244, below.

data.[69] A Singapore-based lender, Lenddo, claims to use 'non-traditional data…to economically empower the emerging middle class', which includes various social media sources.[70] A US firm, Tala, operates in developing nations in Africa and Asia, claiming to utilise up to 10,000 'data points' such as social media and smartphone use, in order to create a new type of credit score to the advantage of lower-income customers.[71]

There has been a good deal of experimentation in the digital finance sector in terms of identifying creditworthiness, especially in conjunction with expansion into less developed economies.[72] However, as with more conventional forms of credit scoring, the emphasis is often upon correlation rather than causation and can therefore introduce unintended discrimination such as regarding race.[73] Observation of patent applications and corporate announcements discloses that service providers in the social media sector, such as Facebook, may be preparing for their own role in relation to future financial service products and the use of social media data in this context.[74]

In her work on algorithms and decision-making, O'Neal distinguishes between the 'relatively transparent' and 'regulated' systems of credit scoring developed from the 1960s in the United States[75] and the 'arbitrary, unaccountable, unregulated, and often unfair' assessments made by lenders and others who use browsing data and other insights alongside more conventional scores in making decisions.[76] It is also the case that many reputational systems are context-specific to some extent; that is, it is one's behaviour as a Uber driver that governs one's ability to drive for Uber, and one's financial history that affects further financial activity. On the other hand, Wei et al argue that using information from social media has the potential to 'reduce lenders' misgivings about engaging applicants with limited personal financial history' and so improve, for some, access to finance.[77]

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[69] http://www.trustbond.com; see C. Yeates, 'How your social media account could help you get a loan' *Sydney Morning Herald* (30 December 2017) https://www.smh.com.au/business/banking-and-finance/how-your-social-media-account-could-help-you-get-a-loan-20171219-p4yxw0.html.

[70] http://www.lenddo.com; see discussion in T. Tan and T. Phan, 'Social Media-Driven Credit Scoring: the Predictive Value of Social Structures' [2016] *37th International Conference on Information Systems* 552; C. Hynes, 'How Social Media Could Help The Unbanked Land A Loan' *Forbes.com* (25 April 2017) https://www.forbes.com/sites/chynes/2017/04/25/how-data-will-help-drive-universal-financial-access/.

[71] C. Cheney, 'How Alternative Credit Scoring Is Transforming Lending In The Developing World' *Devex* (8 September 2016) https://www.devex.com/news/how-alternative-credit-scoring-is-transforming-lending-in-the-developing-world-88487.

[72] A. Costa, A. Deb and M. Kubzansky, *Big Data, Small Credit: The Digital Revolution and its Impact on Emerging Market Consumers* (Omidyar Network, 2016) https://www.omidyar.com/spotlight/what-big-data-small-credit.

[73] S. Lohr, 'Creditworthy? Let's Consider Capitalization' *New York Times* (19 January 2015) A1; see further text to notes 187-194, below.

[74] Packin and Lev-Aretz, n 46 above, 344-345; as one analysis puts it, 'Facebook could be the next FICO' (referring to Fair Isaac & Co. scores used in the United States): V. Mayer-Schönberger and K. Cukier, *Big Data: A Revolution That Will Transform How We Live, Work and Think* (London: John Murray, 2013) 92; more sceptically, A. Mukherjee, *The Internet Trap: Five Costs of Living Online* (Toronto: University of Toronto Press, 2018) 67 ('imagine if Facebook were to combine their records with commercially available data from credit card companies, credit rating agencies, and census databases: they would have more information about us than our closest friends and family').

[75] See notes 13-36 above and accompanying text.

[76] C. O'Neal, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (New York: Random House, 2016) 142-145.

[77] Y. Wei, P. Yildirim, C. Van den Bulte and C. Dellarocas, 'Credit Scoring with Social Network Data' (2016) 35 *Marketing Science* 234, 249.

Aggregation is perhaps the most significant promised development, though again it can be seen as an obvious stage in the development of an information infrastructure, as occurred in relation to financial information in earlier decades. The exploration of the predictive value of credit scores (alone or in combination with consumer data) for non-credit questions, such as health, has also been noted,[78] as has the use of credit scores in dating services[79] and in a wide range of other contexts, including 'auto insurance assessments, cell phone contracts, residential rentals and even hiring decisions'.[80] In an optimistic account of the potential for the sharing economy published in 2010, Botsman and Rogers suggested that there would soon be 'some form of network that aggregates your reputation capital across multiple forms of collaborative consumption'.[81] Some services now emphasise the analysis of reputational information originally gathered for a single or more limited purpose. A leading player in this area, Traity (which was also a partner in the above-mentioned Trustbond scheme in Australia) explains its role as assisting users to 'gather … reputation from different data sources so that [they] can control it, own it, and leverage [it]'.[82] Other projects have sought to provide cross-platform indications of influence; examples include Sociota (a paid service which seeks to measure 'reach' and 'engagement' of a presence on social media)[83] and Klout (which attempted to measure 'social media influence' across multiple platforms, and closed, in the face of significant issues under data protection law, in 2018).[84]

As more work takes place in respect of aggregation, the argument that these single-purpose reputational systems are limited in significance becomes less compelling. Aggregated reputational information has, however, the potential to address some of the known issues with the reliance of platforms upon their own reputation systems. One such criticism is that single-site systems disadvantage new users without a reputational history on that platform[85]), and discourage 'switching' between services.[86] It takes effort for users (providers and customers) of sharing economy and similar services to build reputation through, for instance, positive ratings, or to understand how reputation is handled within a service.[87] This can be a disincentive to switching, owing to the need to rebuild reputation or one's understanding of trust and risk after such a switch.[88] Separately, innovations in e-commerce and social media have included the use of social media logins for third party sites (which, subject to the appropriate terms and conditions

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[78] Mayer-Schönberger and Cukier, n 74 above, 56-57.

[79] eg http://creditscoredating.com; see O'Neal, n 76 above, 321.

[80] A. Rona-Tas, 'The Off-Label Use of Consumer Credit Ratings' (2017) 42 *Historical Social Research* 52, 53.

[81] Botsman and Rogers, n 18 above, 219.

[82] http://www.traity.com; see Sundararajan, n 43 above, 98.

[83] https://sociota.net.

[84] A. Rao, N. Spasojevic, Z. Li and T. D'Souza, 'Klout Score: Measuring Influence Across Multiple Social Networks' [2015] *IEEE International Conference on Big Data* 2282; J. Kelly, 'Soon, Nobody Will Have Any Klout' *Financial Times* (11 May 2018) https://ftalphaville.ft.com/2018/05/11/1526033813000/Soon--nobody-will-have-any-Klout/.

[85] On the need for a critical mass of active users, see P. Hausemer, 'Exploratory study of consumer issues in online peer-to-peer platform markets' (2017), 86-87, available at http://ec.europa.eu/newsroom/document.cfm?doc_id=45245.

[86] V. Hatzopoulos, *The Collaborative Economy and EU Law* (Cheltenham: Edward Elgar, 2018) 197.

[87] OECD, 'Protecting Customers in Peer-Platform Markets' (2016) OECD Digital Economy Papers No. 253, 15.

[88] K. Sipp, 'Portable Reputation in the On-Demand Economy' in T. Scholz and N. Schneider (eds), *Ours To Hack and To Own: the Rise of Platform Cooperativism* (New York: OR Books, 2016) 59-61; on the relationship between platform models, users, and data, see eg N. Srnicek, *Platform Capitalism* (Cambridge: Polity, 2018) 95, 110.

and applicable laws, may provide direct access to further data or indirect access as a consequence of identification), the involvement of platforms in other fields (such as Snapchat's interest in wearable technology and image recognition[89]) and the cross-referencing of merchant or ecommerce data with records obtained from data brokers (including those who have historically assigned credit scores).[90]

Developing a conceptual framework

The previous sections have shown that there is a considerable range of approaches to rating systems, but that some common themes are emerging. Tables 1 and 2 of this section develop a framework that enables us to compare such systems at the descriptive level. Thus, the aim is to identify a short (and inevitably non-exhaustive) list of general topics which can then also be used to facilitate the understanding of the Chinese Social Credit System, as discussed below.[91]

Table 1: Degree of interventionism in rating systems

	Low	*Medium*	*High*
1) Drafter	Private	Co-drafting	State
2) User	Choice	Strong incentive	Mandatory
3) Aim	Specific	Socio-economic	General
4) Scoring	Multiple	Main and sub-indicators	Single
5) Application	Flexible	Comply or explain	Uniform
6) Algorithm	Transparency	Controlled transparency	Protected
7) Enforcement	Market	Stages of enforcement	State
8) Accountability	Oversight body	Review possible	Immunity

Table 1 displays eight topics. The first two criteria relate to the drafter and user of the system: first, is it initiated and drafted by a private entity or state authority, and, second, is it mandatory for individuals (users) to participate in the system, or do they have choice? Thirdly, we ask whether the scheme has a single, specific aim, or a broader set of objectives across a number of functions or context. The fourth and fifth questions relate to the specific operation of the scheme: does it use multiple scores or a single score, and is a result indicative or definitive (e.g. a precise number)? The sixth and seventh criteria ask how transparent the scheme is, and the responsibility for enforcing it. Finally, rating systems vary according to their degree of accountability, in particular how far a separate oversight body[92] monitors the design and operation of the system.

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[89] See eg B. Gallagher, *How To Turn Down A Billion Dollars: The Snapchat Story* (New York: St Martin's Press, 2018) 230, 247-251; S. Liao, 'Snapchat is working on a feature that can find products you snap on Amazon' *The Verge* (9 July 2018) https://www.theverge.com/2018/7/9/17549372/snapchat-feature-find-amazon-products-google-lens; A. Pardes, 'Why Snap needs its spectacles' *Wired* (May 2018) https://www.wired.com/story/why-snap-needs-its-spectacles/.

[90] Turow, n 67 above, 155-157.

[91] See Table 3, below. Given this descriptive function, these criteria should not be seen as a normative benchmark; for policy considerations see discussion in text to notes 179-244, below.

[92] eg the UK's Financial Conduct Authority monitors the credit scoring operated by private companies.

With these criteria, Table 1 also conceptualises how a rating system can have a low, medium or high degree of interventionism, which to some extent relates to the involvement of the state but also incorporates other substantive and procedural issues. For example, it can be seen that a system drafted by a private entity on a specific issue that is flexible in its application is at the lower end of interventionism, while a comprehensive system drafted and enforced by a public authority is more interventionist. The table also indicates that intermediate models are possible, for example, as far as rating systems are co-drafted or applied with a 'comply or explain' mechanism.

Table 2: Interventionism in selected rating systems

	Credit ratings in many countries	*UK research excellence framework*	*Sharing economy platforms*
1) Drafter	Low	High	Low
2) User	Medium	Medium	Low
3) Aim	Low/Medium	Low	Low
4) Scoring	Medium	Medium	Medium/High
5) Application	Medium/High	High	High
6) Algorithm	Medium	Medium	Low/Medium
7) Enforcement	Low	Medium	Low
8) Accountability	Low	Low	Medium

Table 2 shows that this model can be further explained by applying it to a number of the schemes discussed above. For instance, sharing economy and other peer-to-peer platforms often use their own reputation system, with a specific aim of supporting transactions on that platform, and enforced by the market that the platform has instigated. Applying the system is relatively inflexible, though; as discussed above, an Uber driver's entitlement to use the platform will be affected by her rating. It should also be noted that some observations are tentative, in the absence of full disclosure by private parties as to how their systems operate[93] – a point which we will return to below.

Overall, it can be seen that these rating systems combine different elements of low, medium and high interventionism. It is also noteworthy that none of these ratings have a high degree of interventionism in the fields 'user', 'aim', 'algorithm', 'enforcement' and 'accountability': this is potentially different in the emerging Chinese system as it is said to shift from 'reputation society' to the 'reputation state'[94] and thus to a more formalised model where reputation matters not only through societal forces (or as a self-contained aid to the use of a particular service) but as a tool of decision-making. Yet, the Chinese model also contains a number of nuances, to which we turn now.

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[93] For example, while it can be assumed that a displayed rating is the mean of submitted scores (with or without explanatory comments or sub-scores), a service provider can choose to apply a weighting system which, for instance, controls for timeliness or the reliability of the person providing the rating: see further L. Pettersen, 'Rating Mechanisms Among Participants in Sharing Economy Platforms' (2017) 22(12) *First Monday* DOI: 10.5210/fm.v22i12.7908.

[94] X. Dai, 'Toward a Reputation State: The Social Credit System Project of China' Working Paper (10 June 2018), available at https://ssrn.com/abstract=3193577.

CHINA: SOCIAL CREDIT SYSTEM AND REPUTATION RATINGS

Preliminary considerations

The websites mentioned in the previous part are rarely used in mainland China: Airbnb is available; yet, eBay and Uber have been unsuccessful in entering the Chinese market and many social media sites are blocked (e.g., Twitter and Facebook).[95] Thus, Chinese citizens rely on the specific Chinese providers, which also implies that the Chinese government may in principle be able to get access to the corresponding user data.

The previous part also discussed the use of financial credit rating systems in Europe and North America. The People's Bank of China (ie the Chinese central bank) has established the Credit Reference Centre[96] which provides both commercial and consumer credit reporting, based on credit information made available by banks and state institutions (e.g., regarding social welfare payments). The resulting reports are important for anyone who applies for a bank loan. Yet, these reports do not provide an actual rating of the creditworthiness of businesses and consumers, though this may change in the future due to the developments discussed in this part.

The Chinese Social Credit System has received extensive coverage in the Western press, where it is often described as a big-data-driven comprehensive rating of all Chinese citizens.[97] However, this is a misleading characterisation of the current situation. At present, three different models operate: China-wide blacklists, compliance scores by pilot cities, and social credit scores by financial institutions. The three main sections of this part will explain these forms of social control. Subsequently, this part will reflect on future developments and relate those to Western comments made about the Chinese model.

The Social Credit System and the use of China-wide blacklists

The introduction of the Social Credit System by the central government has a potentially far-reaching effect; yet, the China-wide measures that implement it are, so far, rather specific – namely, using blacklists – as this section explains.

The Social Credit System aims to address not only the financial creditworthiness of individuals and companies but also their sincerity, honesty, and integrity.[98] The initial discussions of the early 2000s put this in the context of the objective of supporting the transition to a market economy after China's accession to the WTO, for example, the need to combat commercial fraud and IP infringements.[99] A 2011 decision then also re-

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[95] L. Yuan, 'A Generation Grows Up in China Without Google, Facebook Or Twitter' *New York Times* (7 August 2018) https://www.nytimes.com/2018/08/06/technology/china-generation-blocked-internet.html. Some other countries seem to follow, see 'Beijing Wants to Rewrite the Rules of the Internet' *The Atlantic* (18 June 2018) https://www.theatlantic.com/international/archive/2018/06/zte-huawei-china-trump-trade-cyber/563033/.

[96] See http://www.pbccrc.org.cn/crc/ (available in English) and https://ipcrs.pbccrc.org.cn with access to the information (available in Chinese only).

[97] See text to notes 139-155, below.

[98] See R. Creemers, 'China's Social Credit System: An Evolving Practice of Control' Working Paper (9 May 2018), available at https://ssrn.com/abstract=3175792, noting in footnote 13 that the Mandarin term for 'credit' (*xinyong*) cognates with terms for 'sincerity, honesty, and integrity'; similar Dai, n 94 above, 16 (also on the use of the word 'social').

[99] See M. Chorzempa, P. Triolo and S. Sacks, 'China's Social Credit System: A Mark of Progress or a Threat to Privacy?', Peterson Institute for International Economics, Policy Brief 18-14 (June 2018) 3; Creemers, n 98 above, 3.

ferred to 'matters of social and political morality' as points of concern.[100] In 2014 this was followed by the State Council's 'Notice concerning Issuance of the Planning Outline for the Construction of a Social Credit System (2014-2020)',[101] which forms the basis of the development of the Social Credit System today. This document mentions the aim to promote 'integrity in government affairs', 'commercial sincerity', 'social integrity' and 'judicial public trust' which shows that these measures are targeted at individuals (the focus of this article), as well as companies, judicial organs, and other governmental authorities. It also explains that the ultimate goal is a uniform social credit system based on penalty and award mechanisms, presenting this idea in a general sense, with no references to quantitative measures and the collection of online data.[102]

The specific penalty mechanisms that are already operational aim to enforce the blacklists of persons who have violated the law. They are implemented and enforced by different government authorities. The process started with a decision of the Supreme People's Court on public blacklists of persons who defied legally binding judgments,[103] but there are now also many further blacklists compiled by other authorities, for example, the Ministry of Culture and Tourism lists those who have violated transport rules, such as smoking or carrying prohibited items.[104] Subsequently, a degree of centralisation has taken place. A central website makes the names of the blacklisted persons publicly available.[105] There is also now a system in place that requires cooperation of authorities in their sanctions (the Joint Punishment System).[106] This means that a violation of the law can lead to a variety of sanctions; it may start with a fine, but the perpetrator may subsequently be banned from flying or using high speed trains. It is also possible that these blacklists have implications for private-law relationships: while Chinese businesspersons may merely care about their own profits (and therefore be willing to do business with everyone), the recognition of blacklists by financial institutions can mean that blacklisted persons may not be able to use the funds on their current accounts in order to purchase a car or other luxury items.[107]

Given the severe consequences of these blacklists, it is provided that individuals need to be notified in advance. There are also some internal review proceedings: for example,

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[100] Central Committee, 18 October 2011 as translated at https://chinacopyrightandmedia.wordpress.com/2011/10/18/central-committee-of-the-chinesecommunist-party-decision-concerning-deepening-cultural-structural-reform/.

[101] English translation available at https://chinacopyrightandmedia.wordpress.com/2014/06/14/planning-outline-for-the-construction-of-a-social-credit-system-2014-2020/.

[102] As also noted by Creemers, n 98 above, 13.

[103] Interpretation No. 17 [2013] of the Supreme People's Court, English translation available at www.lawinfochina.com/Display.aspx?lib=law&Cgid=207020&EncodingName=gb2312. Search functions are available at http://zxgk.court.gov.cn/.

[104] See eg https://www.whatsonweibo.com/20-chinese-tourists-travel-blacklist/ and https://jingtravel.com/china-bans-169-people-from-travel-with-new-blacklist/.

[105] See Credit China, www.creditchina.gov.cn/ and, for companies, the National Enterprise Credit Information Publicity System, www.gsxt.gov.cn/. For empirical research on these blacklists (as well as the corresponding 'redlists' for good behaviour) see S. Engelmann et al, 'Clear Sanctions, Vague Rewards: How China's Social Credit System Currently Defines "Good" and "Bad" Behavior' (2019) *Proceedings of the Conference on Fairness, Accountability, and Transparency* 69.

[106] State Council Guiding Opinions concerning Establishing and Perfecting Incentives for Promise-keeping and Joint Punishment Systems for Trust-Breaking, and Accelerating the Construction of Social Sincerity, English translation available at https://chinacopyrightandmedia.wordpress.com/2016/05/30/-state-council-guiding-opinions-concerning-establishing-and-perfecting-incentives-for-promise-keeping-and-joint-punishment-systems-for-trust-breaking-and-accelerating-the-construction-of-social-sincer/.

[107] For the latter point see also text to notes 117-125, below.

the State Administration of Taxation, which has its own system of blacklists, has a 'credit repair mechanism' that provides correction of or relief from the blacklist under certain conditions.[108] Moreover, in principle, there is also a right to appeal to the courts, although observers have been sceptical as to how far these legal safeguards are effective.[109]

Pilot cities issuing compliance scores

In addition to the China-wide implementation of the Social Credit System, the Chinese government has authorised over forty pilot cities to experiment with forms of social credit. The following will provide some representative examples. These local schemes also have to be seen in the wider context of the ways that Chinese regions and cities have developed elaborated tools of state surveillance and supervision. For example, in the provinces of Xinjiang and Tibet, there are particularly extensive monitoring of internet use as well as elaborate registration and ID card requirements.[110] More generally, CCTV cameras see widespread use in China, including forms of public shaming (e.g., publicly listing jaywalkers caught by facial recognition cameras in Shenzhen).[111]

Two of the most extensive examples of regional pilots are from Suining in Jiangsu and Rongcheng in Shandong province. In both of these pilots, each citizen started with 1000 points. They could then lose points for a variety of infringements, such as traffic light violations, drunk driving, or having a child without the necessary administrative permission, but they could also re-gain points by 'good' actions, such as caring for elderly family members. The resulting points were then translated into a rating from A to D which could influence the individual in a positive or negative way in their dealing with the local government. For example, someone with a high rating would get preferential access to government subsidies, while someone with a low rating would be restricted in applications for housing, social welfare, business licenses, and public procurement.[112] There are also forms of public shaming and appraisal, for example, as billboards in some of the main squares display the names and pictures of citizens who have recently won or lost social credit points, and the city of Rongcheng makes some of this data available via a website.[113]

Other pilot cities have comparable schemes. All of these are underpinned by provincial and municipal pieces of legislation. Some of those rules have been translated into English,[114] and it is fairly straight-forward to understand their main aims and limitations. For example, the 56 articles of the Shanghai Social Credit Regulations 2017 are structured according to the headings (i) General provisions, (ii) Social credit information,

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[108] See eg www.chinatax.gov.cn/eng/n2367751/c3633676/content.html.

[109] Creemers, n 98 above, 19. For judicial review in China see also text to notes 206-209, below.

[110] See eg 'Twelve Days in Xinjiang: How China's Surveillance State Overwhelms Daily Life' *Wall Street Journal* (19 December 2017) https://www.wsj.com/articles/twelve-days-in-xinjiang-how-chinas-surveillance-state-overwhelms-daily-life-1513700355.

[111] See eg 'Inside China's surveillance state' *FT Magazine* (20 July 2018); Creemers, n 98 above, 18 (for the jaywalking example).

[112] See eg 'Discipline and Punish: The Birth of China's Social-Credit System' *The Nation* (23 January 2019) https://www.thenation.com/article/china-social-credit-system/; 'Life Inside China's Social Credit Laboratory' *Foreign Policy* (3 April 2018) http://foreignpolicy.com/2018/04/03/life-inside-chinas-social-credit-laboratory/; Creemers, n 98 above, 10.

[113] 'China's rewards and punishments' *Le Monde diplomatique* (5 January 2019) https://mondediplo.com/2019/01/05china-social-credit, and see www.rccredit.gov.cn.

[114] For an overview with links to translations into English see https://www.chinalawtranslate.com/giving-credit-2-carrots-and-sticks/.

(iii) Credit incentives and restrictions, (iv) Protection of information subjects' rights and interests, (v) Regulating and advancing the development of the credit services industry, (vi) The establishment of a social credit environment, (vii) Legal responsibility, and (viii) Supplemental provisions, with a noticeable desire to provide legal certainty to anyone affected by the Social Credit System. However, this is apparently also done in a way that does not limit the possible actions of the state authorities, as wide general sanctions such as 'restrict entry into relevant markets and industries' and 'restrict enjoyment of relevant public policies' show.[115]

Shanghai is also a good example of the use of incentives through the so-called Honest Shanghai scheme. Honest Shanghai is a voluntary smartphone app that asks users to enter their state ID number and then returns a rating as 'very good', 'good' or 'bad'. This rating is apparently based on data the Shanghai government has collected about each citizen; details of the algorithm are however not transparent.[116] This use of incentives and algorithms can also be seen in the next category, namely the social credit scores developed by financial institutions.

Financial institutions providing social credit scores

Financial institutions have also been allowed to create schemes implementing the Social Credit System. Many of these pilots consider a wide range of information, including social network data. Thus, here in particular, it may be justified to talk about schemes measuring 'social credit' (and not simply questions of 'financial credit').

The most influential of these schemes has been Sesame Credit (also spelled Zhima Credit in English), developed by Alibaba's subsidiary Ant Financial Group.[117] It evaluates the creditworthiness of firms and individuals with a model of 'smart business' which captures information automatically and then evaluates it with algorithmic tools in real time.[118] In detail, Sesame Credit scores each user on a scale of 350 to 950 points, based on five sets of information: (i) financial credit records, (ii) behavioural trends in commercial transactions, (iii) available assets and personal information, (iv) behaviour and preferences and (v) social relationships. As Sesame Credit is a smartphone app, linked to Alibaba's mobile payment system Alipay, it is clear that it accesses the phones of its users for information gathering.

However, beyond this general information, it is not transparent which tools and algorithms are used. In particular, this applies to the broad categories (iv) and (v) where rumours are that factors are considered such as: excessively playing video games, cheating in online video games, and a frequent change of address (negative) and donations to charity, having friends with high Sesame Credit ratings, and polite behaviour on social media (positive).[119] This potential use of a wide range of information can also be seen in other examples. For instance, the company Tencent (alongside the above-mentioned

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[115] Art 31 of the Shanghai Social Credit Regulations 2017.

[116] See M. Ohlberg, S. Ahmed and B. Lang, 'Central Planning, Local Experiments: The complex implementation of China's Social Credit System' *Merics China Monitor* (12 December 2017) at p 12.

[117] See https://www.xin.xin/ (in Chinese).

[118] Thus, this differs from conventional credit assessments: for details see M. Zeng, *Smart Business: What Alibaba's Success Reveals About the Future of Strategy* (Cambridge, MA: Harvard Business Review Press, 2018).

[119] See eg Creemers, n 98 above, 22-23; R. Botsman, 'Big data meets Big Brother as China moves to rate its citizens' *Wired* (21 October 2017) http://www.wired.co.uk/article/chinese-government-social-credit-score-privacyinvasion; 'The odd reality of life under China's all-seeing credit score system' *Wired* (5 June 2018) http://www.wired.co.uk/article/china-social-credit.

Alibaba and Baidu, seen as the trio of most powerful Chinese technology companies) is not only the developer of the social media app WeChat, installed by a billion users, but has also been one of the companies involved in the development of a social credit system. Thus, naturally, all information accumulated via the WeChat app may be used for ratings of its WeChat Pay Score; yet, details remain undisclosed.[120]

The consequences of a high Sesame Credit rating are far-reaching. To start with, as this rating is provided by a financial institution, users with higher scores have better access to easy forms of credit. In addition, many other companies also consider the Sesame Credit rating through an agreement with Alibaba: for example, a high rating may mean that such users do not need to pay a deposit for renting a flat, a car or a bicycle,[121] get faster check-in at hotels and airlines, and are displayed more prominently on dating websites (and users may also disclose a high score as a status symbol elsewhere, which apparently many do). The Chinese state is also not completely unconnected to the Sesame Credit rating and Alipay. On the one hand, for example, a high rating can make it easier to secure priority access in hospitals or a visa for overseas travel. On the other hand, Alibaba forwards non-compliance of payment obligations to the government, while also contributing to the implementation of China-wide blacklists through blocking certain transactions using Alipay.[122]

In early 2018, however, the People's Bank of China (PBOC) decided to withhold a renewal of the licences for these private social credit scores. There is some speculation about the reasons for this decision, for example, that Alibaba and others may have got too powerful, that they have stated collecting too much personal and social information about their users, and that they may face conflicts of interest as they also benefit commercially from their customers.[123] It also seems that the PBOC now believes that it is a good time to design a new consolidated credit rating – called Baihang Credit score – to be developed by a public-private partnership between the PBOC and eight private financial institutions.[124]

Some financial institutions have started sharing credit data with the Baihang Credit system.[125] However, further details are not yet clear. For example, it seems that Sesame and other ratings may continue for non-credit purposes, such as the bike rentals, visa approvals and dating websites mentioned above. It is also too early to say whether the new

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[120] See 'WeChat Pay pilots credit-scoring rival to Alibaba's Sesame' EJ Insights (14 January 2019), http://www.ejinsight.com/20190114-wechat-pay-pilots-credit-scoring-rival-to-alibabas-sesame-credit/ (also noting its previous scheme 'Tencent Credit').

[121] As also trialled in Australia; see text to note 69, above.

[122] See text to note 107, above.

[123] Dai, n 94 above, 17-18; Ohlberg et al, n 116 above, 12; 'Here's why China is concerned about Tencent and Alibaba's credit scoring efforts' *Business Insider* (6 February 2018) http://uk.businessinsider.com/china-tencent-and-alibabas-new-credit-scoring-solution-2018-2. But see also 'Alibaba and Tencent have become China's most formidable investors' *Economist* (2 August 2018) https://www.economist.com/business/2018/08/02/alibaba-and-tencent-have-become-chinas-most-formidable-investors ('being able to manage a handful of established private players with long-standing links to the Communist Party, with their tentacles in many young firms, makes the whole tech industry easier to control').

[124] See 'Baihang and the Eight Personal Credit Programmes: A Credit Leap Forward' *What's on Weibo* (10 June 2018) https://www.whatsonweibo.com/baihang-and-the-eight-personal-credit-programmes-a-credit-leap-forward/. On the significance of public-private collaboration for the design of the Social Credit System more generally, see F. Liang, V. Das, N. Kostyuk, and M.M. Hussain, 'Constructing a Data-Driven Society: China's Social Credit System as a State Surveillance Infrastructure' (2018) 10 *Policy & Internet* 415.

[125] See https://www.biia.com/category/company/baihang-credit-scoring.

Baihang Credit score will be more focussed on financial credit, as the PBOC's involvement in the Credit Reference Centre[126] may indicate, or whether it will incorporate the wide 'social credit' approach of Sesame Credit and other commercial ratings.

Future perspectives and reception in China

The previous sections have shown that it would be premature to talk about 'the' Social Credit System in China. Rather there are three different systems at the moment (with further sub-groupings possible) which follow somehow different logics. Table 3 maps those systems based on the distinction between high, medium, and low interventionist models, explained earlier in this article.[127]

Table 3: Degree of interventionism in the Social Credit System (so far)

	China-wide blacklists	*Pilot cities*	*Financial institutions*
1) Drafter	High	High	Low
2) User	High	High	Medium
3) Aim	Low	Low	High
4) Scoring	Low	High	High
5) Application	High	Medium	Medium
6) Algorithm	Low	High	High
7) Enforcement	High	Medium	Low
8) Accountability	High	Low	Low

It can be seen that all three existing systems have only some elements of a highly interventionist model: the China-wide blacklists due to the state influence in drafting, enforcement and lack of accountability (leading to a high degree of interventionism) as well as their mandatory and uniform application; the scores developed by pilot cities due to their belonging to the state, as well as their mandatory nature, single scoring mechanisms and protected algorithms; and the ratings by financial institutions due to their relatively general scope (often going well beyond financial credit information) as well as their single scoring mechanisms and protected algorithms.

This complex status quo raises the question whether the different elements will soon be consolidated into a 'state-run meta social-credit system'?[128] So, in the framework of the three models, will the future be a full interventionist system in all eight categories?

Such further evolution would assume that the current experience with the Social Credit System is a largely positive one. Two recent empirical studies find some evidence that this is indeed the case (though it may be doubtful how far respondents dare to provide

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[126] See text to note 96, above.
[127] See text to notes 91-94, above.
[128] L.C. Backer, 'Measurement, Assessment and Reward: The Challenges of Building Institutionalized Social Credit and Rating Systems in China and in the West' (Proceedings of the Chinese Social Credit System, Shanghai Jaiotong University, 23 September 2017) 7, available at https://ssrn.com/abstract=3040624.

fully open answers).[129] The Chinese media mentions the way the Social Credit System can create a 'culture of integrity', solve economic problems and improve governance.[130] More specifically, reports in Chinese newspapers most frequently emphasise its benefit for commerce and rural welfare. In particular, the argument is here that this system enables honest but poor persons (including small businesses) to obtain financial credit which otherwise would not be available.[131] With respect to the Sesame Credit score, it is also said that it may give citizens more control over the impact of their actions than previously,[132] and that the 'gamification' of the Sesame Credit score as a reward system may be one of its practical advantages.[133] And even the blacklisting system can be seen as beneficial for individuals as far as it induces their debtors (e.g., contractual counterparties) to comply with court judgments.[134]

There has also been some public criticism of the emerging ratings in China – reflecting the well-established interest in privacy (or the related concept of reputation) across societies,[135] despite differences in legal and human rights protection. As regards the pilot cities, the Suining experiment was criticised by the official state media comparing it with the system of Good Citizen Cards used by the Japanese during the occupation of China during the Second World War.[136] Similarly, an academic from the Shanghai Academy of Social Sciences argues that social credit should not cover any violation of moral behaviour, but that it needs to be defined in a narrow way as failure of compliance with legal and contractual obligations.[137] There have also been discussions in Chinese media about problems of information security, data privacy and flaws in the technical design, in particular with respect to the ratings by financial institutions.[138] Yet, of course, applying a comparative 'Western' perspective, the assessment may even be more critical, as will be seen in the next section.

The Social Credit System and 'Western values'

Most Western commentators resolutely reject the Chinese Social Credit System. The words frequently used are that it is a 'tool for totalitarian surveillance',[139] an invention

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[129] See eg G. Kostka, 'China's Social Credit Systems and Public Opinion: Explaining High Levels of Approval' (forthcoming) *New Media & Society* DOI: 10.1177/1461444819826402 (based on an online survey); M. Maurtvedt, *The Chinese Social Credit System. Surveillance and Social Manipulation: A Solution to "Moral Decay"?* (Masters thesis, University of Oslo, 2017) (based on interviews).

[130] Ohlberg et al, n 116 above, 5-7.

[131] S. Shahin and P. Zheng, 'Big Data and the Illusion of Choice: Comparing the Evolution of India's *Aadhaar* and China's *Social Credit System* as Technosocial Discourses' (forthcoming) *Social Science Computer Review* DOI: 10.1177/0894439318789343, 12-14.

[132] Botsman, n 119 above, citing a blogger based in Shanghai.

[133] Z. Ramadan, 'The Gamification of Trust: The Case of China's "Social Credit"' (2018) 36 *Marketing Intelligence & Planning* 93.

[134] cf Creemers, n 98 above, 1 (Social Credit System as a substitute for weak law enforcement).

[135] See eg J. Cannataci, 'Privacy, Technology Law and Religions across Cultures' [2009] *Journal of Information, Law, and Technology* http://go.warwick.ac.uk/jilt/2009_1/cannataci. For China, see Maurtvedt, n 129 above, 40.

[136] Creemers, n 98 above, 10.

[137] L. Yu, 'Use Social Credit Cautiously and in Accordance with the Law' Working Paper (2 October 2017), available at https://china-social-credit.com/changes-social-credit-19th-ccp-congress-1.

[138] 'Sesame Credit apologizes for alleged Alipay privacy violation' *Global Times* (1 April 2018) http://www.globaltimes.cn/content/1083285.shtml; Ohlberg et al, n 116 above, 7; Maurtvedt, n 129 above, 36-37. See also text to note 123, above (for the intervention of the PBOC).

[139] Ohlberg et al, n 116 above, 12.

of 'the digital totalitarian state',[140] that it is 'worse than an Orwellian nightmare',[141] a meeting of 'big data' with 'Big Brother',[142] or indeed a meeting of Orwell's *1984* with Pavlov's dogs: 'act like a good citizen, be rewarded and be made to think you're having fun'.[143] However, understanding the Social Credit System as 'merely' a tool of state surveillance[144] misunderstands the diversity of the current system, in terms of management but more importantly in terms of functions, as outlined in the previous sections. Still, as a more moderate form of criticism, we may also identify problems such as the confusion between conflicting objectives (and corresponding problems of construct validity), problems of data reliability (in particular as regards the measurement of soft factors) and the risks of a monopolist system lacking competition (with corresponding risks of corruption).[145]

Another frequent reaction is that the Chinese Social Credit System is incompatible with Western political and cultural values. For example, it has been suggested that it may be suitable for an authoritarian political system, but not a liberal democracy: only the former system can be openly paternalistic, as inherent in the Social Credit System,[146] and it may also be linked to other forms of control of personal behaviour used by the Chinese government, and associated with a Leninist idea of 'social management processes', such as the records about the performance and attitudes of citizens (*dang'an*) and the household registration system (*hukou*).[147] Another factor may be that there is widespread scepticism how far China has embraced the rule of law;[148] thus, as far as this is doubted, it can be said that the Social Credit System would be problematic in the rule-of-law societies of the West as it lacks transparency, as it disrespects the divide between law and politics,[149] and as it is not needed due to more effective law enforcement anyway.[150]

Cultural differences may also be relevant. As some of the mechanisms of the Social Credit System use forms of 'shaming', it may matter that in China shame is said to be an effective means of social control due to the desire to maintain harmony in relation-

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[140] 'China invents the digital totalitarian state' *The Economist* (17 December 2016) https://www.economist.com/news/briefing/21711902-worrying-implications-its-social-creditproject-china-invents-digital-totalitarian.

[141] D. Galeon, 'China's "Social Credit System" Will Rate How Valuable You Are as a Human' *Futurism* (2 December 2017) https://futurism.com/china-social-credit-system-rate-human-value. See also 'Orwell's Nightmare: China's Social Credit System' *Asian Institute for Policy Studies* (28 February 2017) http://en.asaninst.org/contents/orwells-nightmare-chinas-social-credit-system/; J. Horsley, 'China's Orwellian Social Credit Score Isn't Real' *Foreign Policy* (16 November 2018) https://foreignpolicy.com/2018/11/16/chinas-orwellian-social-credit-score-isnt-real/.

[142] Botsman, n 119 above.

[143] ibid.

[144] Liang et al, n 124 above.

[145] See eg D. Williamson, 'China's Online Consumerism: Managing Business, Moral Panic and Regulation' Working Paper (29 July 2017), 15-17, available at https://ssrn.com/abstract=3181287.

[146] Creemers, n 98 above, 26.

[147] S. Hoffman, 'Managing the state: social credit, surveillance and the CCP's plan for China', *China Brief*, Jamestown Foundation, 17 August 2017, 17(11), 21; Botsman, n 119 above. The latter also uses a point system, see L. Zhang, 'Economic Migration and Urban Citizenship in China: The Role of Points Systems' (2012) 38 *Population and Development Review* 503; for point-based systems of international migration see text to note 59, above.

[148] Or how far China has its unique version: see eg J. Garrick and Y. Chang Bennett (eds), *China's Socialist Rule of Law Reforms Under Xi Jinping* (London: Routledge, 2016); Y. Wang, *Tying the Autocrat's Hands: The Rise of the Rule of Law in China* (Cambridge: Cambridge University Press, 2014).

[149] Creemers, n 98 above, 5.

[150] See also text to notes 99 and 130, above.

ships, as opposed to the rights focus of Western countries.[151] As Western societies have lower thresholds as regards the feeling of 'intrusion',[152] and as in China there is lower trust towards strangers (with corresponding higher trust in close networks of *guanxi*), a trust-building instrument such as the Social Credit System also seems to fit better with Chinese culture.[153] This may also be seen in existing legal rules: the concern regarding data collection by states (or the use by states of data collected by others) highlighted in 20th century abuses, has long informed the development of robust data protection legislation in the West, especially in the European Union,[154] whereas data protection and privacy legislation in China is fragmentary at best.[155]

However, this critical perspective should not be our final word on the comparative assessment of the Social Credit System. The following will therefore discuss how far, despite this criticism and despite these differences, something can be gained from comparing the model of Social Credit System with its Western counterparts.

COMPARISON, EVALUATION AND REGULATION

Should we compare?

Some argue that, for scholars from Western countries, Chinese law remains a 'mystery' that they cannot apprehend – and that any sense of understanding may be a mere illusion that tells us more about the Western legal culture than about the Chinese one.[156] Thus, at least, authors from the West ought to be cautious in the way they can assess Chinese law. However, China has also transplanted a large number of legal concepts from Western countries in recent years.[157] Thus, it can also be noted that contemporary Chinese law may, in many respects, not be fundamentally different from its Western counterpart, and that in both China and the West we have to understand how legal rules coevolve with political, social, economic and cultural factors in order to understand how 'law works'.[158]

For rating systems, a similar dialectic line of reasoning can be applied. On the one hand, as we have seen, the rating systems developed in the West have limits in their 'interventionism'[159] and might be seen as (largely) optional activities from which users can withdraw, while it is possible that in China a fully 'interventionist' system will be implemented in the near future.[160] Thus, it seems that, in comparison, this 'unification of the

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[151] O. Bedford and K.-K. Hwang, 'Guilt and Shame in Chinese Culture: A Cross-cultural Framework from the Perspective of Morality and Identity' (2003) 33 *Journal for the Theory of Social Behaviour* 127, 133. See also S. Sheikh, 'Cultural Variations in Shame's Responses: A Dynamic Perspective' (2014) 18 *Personality and Social Psychology Review* 384.

[152] Backer, n 128 above, 14.

[153] For the relevance of 'trust' see also Y.-J. Chen, C.-F. Lin and H.-W. Liu, '"Rule of Trust": The Power and Perils of China's Social Credit Megaproject' (forthcoming) *Columbia Journal of Asian Law*.

[154] eg D. Cole and F. Fabbrini, 'Bridging the Transatlantic Divide? The United States, the European Union, and the Protection of Privacy Across Borders' (2016) 14 *International Journal of Constitutional Law* 220, 225-226; Mayer-Schönberger and Cukier, n 74 above, ch 8.

[155] See text to notes 206-209, below.

[156] See the discussion in T. Zhou and M. Siems, 'Contentious Modes of Understanding Chinese Commercial Law' (2015) 6 *George Mason Journal of International Commercial Law* 177.

[157] ibid (with examples from contract law and company law).

[158] D. Chen, S. Deakin, M. Siems and B. Wang, 'Law, Trust and Institutional Change in China: Evidence from Qualitative Fieldwork' (2017) 17 *Journal of Corporate Law Studies* 257.

[159] See text to notes 91-94, above.

[160] See text to notes 127-138, above.

various elements, and their seamless operation would be a great innovation',[161] or in any case 'unique' as compared to anything that is happening in the West.[162]

On the other hand, this should not lead to the conclusion that the Social Credit System and its Western counterparts are incommensurable. Some of the aspects of the Chinese system are not part of the Western rating systems; yet, they are not completely alien to the West. For example, it was explained that, as part of the Social Credit System, China uses blacklists of persons who have violated the law in order to exclude them with the help of data sharing from many aspects of social life.[163] Chorzempa et al relate this to the use of background checks and 'no-fly lists' in the US;[164] in Israel, codes (based on various data) are assigned to passengers as part of a distinctive 'risk-based' security system.[165] In many countries, criminal records and details of insolvent debtors are collected and may be shared more or less widely in a number of European states.[166] Other instances include the system of control of football spectators in the UK ('football banning orders'), which includes the temporary holding of passports during relevant periods (international fixtures) to prevent travel,[167] and the growing use of 'penalty points' systems in road traffic law,[168] which can in turn be used as an indication of the 'reputation' of the data subject,[169] even by car hire companies when deciding whether to rent to a driver.[170] Even in respect of private sector services (eg in the sharing economy), a poor reputation can exclude individuals from these emerging markets, with consequences for their financial position and their participation in certain aspects of urban life.

It can also be shown that the design and regulation of today's rating systems are already clear examples of policy diffusion.[171] The Chinese system partly derives from its Western counterparts: the financial credit scoring systems of Western countries have been an explicit source of influence,[172] and more recent tools such as the Sesame Credit scores may be seen as an example of the 'gamification' of rating systems in recent times.[173] As

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[161] Backer, n 128 above, 15.

[162] Dai, n 94 above, 1.

[163] See text to notes 98-109, above.

[164] Chorzempa et al, n 99 above, 4 and 7.

[165] S. Bennett, 'Risk-based Aviation Security – Designing-out Terror' in A. Masys (ed), *Security by Design* (Cham: Springer, 2018); T. Jonathan-Zamir, B. Hasisi and Y. Margalioth, 'Is It the What or the How? The Roles of High-Policing Tactics and Procedural Justice in Predicting Perceptions of Hostile Treatment: The Case of Security Checks at Ben-Gurion Airport, Israel' (2016) 50 *Law & Society Review* 608, 616-617.

[166] For criminal records see eg for the UK: Police Act 1997, Pt 5; for Germany: Bundeszentralregistergesetz 1971 (as amended). For debtors see eg for the UK: https://www.gov.uk/search-bankruptcy-insolvency-register; for Ireland: https://www.stubbsgazette.ie; for Germany: Zivilprozessordnung, s 882b (delegating this task to local courts).

[167] Football Spectators Act 1989; see further https://www.cps.gov.uk/legal-guidance/football-related-offences-and-football-banning-orders.

[168] See J.I. Castillo-Manzano and M. Castro-Nuño, 'Driving Licenses Based on Points Systems: Efficient Road Safety Strategy or Latest Fashion in Global Transport Policy? A Worldwide Meta-Analysis' (2012) 21 *Transport Policy* 191.

[169] M. Dodge and R. Kitchin, 'The Automatic Management of Drivers and Driving Spaces' (2007) 38 *Geoforum* 264, 268; J. Rule, *Private Lives and Public Surveillance* (London: Allen Lane, 1973).

[170] See eg https://www.rentalcars.com/en/guides/licence-paperwork/points-on-licence/.

[171] For the general literature on this topic see eg E.R. Graham, C.R. Shipan and C. Volden, 'Review Article: The Diffusion of Policy Diffusion Research in Political Science' (2012) 43 *British Journal of Political Science* 673.

[172] See references to statements by Chinese scholars and policy makers in A. Knight, 'Credit: The God of China's Big Data Era', *ECFR China Analysis* October 2018, 7.

[173] See text to note 133 as well as text to notes 56-58, above.

these systems develop, we see some attempts made to emphasise how users are granted agency and can utilise the data in varying ways. In return, the growing global influence of China[174] can mean that the Social Credit System may well be a regulatory tool which could inspire the West: the Social Credit System may show that China now 'appears to have ascended to the position of principal global driving force in political theory and action',[175] with 'the potential to change law and government as we know them in China and beyond'.[176] And while Pasquale highlights the shift towards a 'scored society' beyond the narrower functions of the 19th and 20th century, recent developments in China suggest, as noted above, a shift from 'reputation society' to 'reputation state'.[177]

Thus, the question arises how such a future development should be assessed: in other words, if reputation and rating systems consolidate in Western markets in a similar fashion, what opportunities and controversies will arise – and how should law makers intervene? How is what Rule calls the 'seductive appeal of mass surveillance' which becomes feasible following technological advances to be addressed alongside a greater understanding of dangers?[178] Will rating systems have different impacts on different groups of people, especially if there is a shift away from opt-in systems (where there may be incentives for participation) to systems that are (perhaps de facto if not yet de jure) universal?

A simplified normative framework

Evaluating rating systems is complex as much will depend on their precise substance and context. Thus, it could be suggested that mutual learning between such systems is likely to work best if they are based on a broadly similar design. It may also be helpful to move away from generalised criticisms or concerns towards a more precise identification of shortcomings of particular implementations. In addition, it is worth considering how far the reasons for and against systems with very different designs may stimulate mutual learning. Here, at the level of some generality, it is possible to identify possible shortcomings of systems that are either based on a low or a high level of intervention (or to put it in another way, the advantages of either of those systems), following the categories developed earlier in this article.[179]

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[174] See text to note 8, above.

[175] Backer, n 128 above, 2.

[176] Dai, n 94 above, 1.

[177] See text to note 94, above.

[178] Rule, n 169 above, 358.

[179] See text to notes 91-94 and 127-138, above.

Table 4: Typical shortcomings of low and high interventionist rating systems

	Low	High
1) Drafter	Private drafters may disregard public interest, with limited opportunities for oversight	State's monopoly may be abused, with limited checks and balances including through competition
2) User	Giving users choice enables them to enter and exit the system in a strategic way	Mandatory system may disregard interests of users and become unresponsive
3) Aim	Specific systems may be biased towards narrow interests	General systems may lead to disproportionate control of behaviour, or violate data protection concepts such as purpose limitation
4) Scoring	Multiple scores may lead to conflicting incentives	Single score may disregard complexities of social reality
5) Application	Flexible use may open door to corruption and biases	Uniform application may neglect fairness of individual case
6) Algorithm	Transparency may harm operation through game-playing	Protected algorithm may disregard need for accountability
7) Enforcement	Markets may lack effective means of enforcement	State may respond with overly harsh and rigid sanctions
8) Accountability	Constant interventions by oversight body may harm the operation of system	System which cannot be challenged may lead to the proliferation of biases

As the overview in Table 4 illustrates, a priori, it does not seem justified to regard either a low or a high interventionist system as superior. Indeed, it can be seen that in many circumstances the advantages of one of the systems are the disadvantages of the other one, and vice versa. For example, when a high interventionist system is inflexible, it may also be said that it is effective; and when a low interventionist system is biased towards narrow interests, a high interventionist system may be overly diffuse.

Thus, a possible response could be that a medium level of interventionism (as included in Tables 1 to 3, above) may be a good compromise. Notably, it may follow that a 'softening' of the highly interventionist approach of the Chinese Social Credit System with tools developed elsewhere may achieve the 'best of both worlds'. It is therefore worth examining how far legal and regulatory tools from the West (but possibly also elsewhere) can address some of the shortfalls of rating systems but also retain their benefits. In the next sections, we therefore review some of the current debates regarding regulation, before returning to the Chinese system, now considered as a part of global trends.

The complexities of regulating ratings

The Chinese Social Credit System has been accompanied by a large volume of legislation and other policy documents: for example, a recent article lists 15 pages of documents produced by the central government and other public authorities,[180] and there are also many provincial and municipal pieces of legislation.[181] The majority of those rules are about the technical operation of the Social Credit System, which is not the main focus of this article. Thus, before returning to aspects of the current Chinese law at the end of this section, we start with the way some of the more general policy considerations have been addressed in Europe and elsewhere in the West. We identify here the benefits of data (for consumer protection and law enforcement), and then outline certain concerns regarding the possibility of discrimination and the protection of privacy.

Law enforcement authorities have long recognised the valuable role played by records gathered in the private sector: consumer credit agencies in the US often provided co-operation,[182] and present day intelligence and policing functions make use of data collected for private sector Internet purposes (whether for an Internet connection or an online service)[183] or obtain it through interception,[184] all of which typically goes beyond what a state can gather through its own resources.[185] Less controversially, rating and review systems are pointed to (eg by the European Commission) as an important safeguard for sharing or collaborative economy platforms, especially in the absence of the relevant information or, in some circumstances, the inapplicability of consumer protection rules.[186]

The extent to which the reliance upon rating and reputation may have a disparate impact on some groups and constitute a form of (albeit possibly unintended) discrimination,[187] and how 'neutral' systems, even where there is no evidence of consumer discrimination, can still produce unequal outcomes on vectors such as gender pay,[188] has been highlighted. Although the specific area of credit benefits from explicit prohibitions on the use of certain data, even this area sees the use of alternative data sources that may aid in discrimination in practice.[189] Some argue, however, that reputation-led approaches

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[180] Liang et al, n 124 above, 25-39.

[181] See text to notes 110-116, above.

[182] Lauer, n 15 above, 179, 212-213, 220-221, 244.

[183] For the former see eg Directive 2006/24/EC on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks and amending Directive 2002/58/EC [2006] OJ L105/54. For the latter see eg Investigatory Powers Act 2016, Pt 7 ('bulk personal dataset' warrants); see also, regarding China, M. LaForgia and G.J.X. Dance, 'Facebook Gave Chinese Giants Access to Data' *New York Times* (6 June 2018) https://www.nytimes.com/2018/06/05/technology/facebook-device-partnerships-china.html.

[184] P. Bernal, *Internet Privacy Rights: Rights to Protect Autonomy* (Cambridge: Cambridge University Press, 2014) 108.

[185] L. Austin, 'Technological Tattletales and Constitutional Black Holes: Communications Intermediaries and Constitutional Constraints' (2016) 17 *Theoretical Inquiries in Law* 451. See further Dai's argument that various approaches, 'conceptually quite interventionist as they may appear', have already been used by public authorities in the US: Dai, n 94 above, 10-12.

[186] European Commission, 'A European agenda for the collaborative economy', COM(2016) 356, p 10.

[187] B. Edelman and M. Luca, 'Digital Discrimination: The Case of Airbnb.com', Harvard Business School Working Paper 14-054, 2014.

[188] C. Cook, R. Diamond, J. Hall, J.A. List and P. Oyer, 'The Gender Earnings Gap in the Gig Economy: Evidence from over a Million Rideshare Drivers', NBER Working Papers 24732, June 2018.

[189] Marron, n 13 above, 157.

could still *displace* existing discrimination,[190] or flag an open question as to whether algorithmic approaches could make hidden discrimination visible *and* create further problems of discrimination anew.[191] A recent decision of an equality tribunal in Finland highlighted how automated decisions made by credit entities through statistical profiling can violate anti-discrimination provisions of national law.[192] Both data collected from users (possibly including browsing history)[193] and credit records[194] can be used as an aid to price differentiation, which is also controversial (and has the potential for disparate impact).

Although the most extreme abuses of reputational information, such as the compiling and use of a 'blacklist' of workers on the grounds of their trade union activity, raise obvious human rights issues,[195] data protection law has a clear impact across a much broader range of systems. The 2018 coming into force in the European Union of an extensive General Data Protection Regulation (GDPR),[196] building upon what was first promulgated in individual states and then through a Council of Europe Convention[197] and EU Directive,[198] provides a partial framework for the regulation of rating and reputational data.

Data protection laws provide further detail on the conditions under which the processing of personal data is lawful. Such rules may begin to provide a framework where problems of validity and reliability, which have been the subject of warnings both in the West and in China,[199] can be addressed. Data protection concerns were also at the core of the criticism of services like Peeple, a proposed service that would have allowed individuals to 'rate' others whether they used the service or not. Thus, it was subsequently

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[190] See eg L.J. Strahilevitz, 'Less Regulations, More Reputation' in H. Masum and M. Tovey (eds), *The Reputation Society: How Online Opinions Are Shaping The Offline World* (Cambridge, MA: MIT Press, 2012) 68.

[191] M. Hildebrandt, 'Law as Computation in the Era of Artificial Legal Intelligence: Speaking Law to the Power of Statistics' (2018) 68 *University of Toronto Law Journal* (supp 1) 12, 30.

[192] *Svea Ekonomi AB* (National non-discrimination and equality tribunal, 21 March 2018) http://yvtltk.fi/material/attachments/ytaltk/tapausselosteet/45LI2c6dD/YVTltk-tapausseloste- 21.3.2018-luotto-moniperusteinen_syrjinta-S-en_2.pdf (translation). See also J. Cobbe, 'Administrative Law and the Machines of Government: Judicial Review of Automated Public-Sector Decision-Making' Working Paper (6 August 2018), 37-39, available at https://ssrn.com/abstract=3226913.

[193] Office of Fair Trading, *Personalised Pricing: Increasing Transparency To Improve Trust* (OFT 1489, 2013); Neil Howe, 'A Special Price Just for You' *Forbes* (17 November 2017) https://www.forbes.com/sites/neilhowe/2017/11/17/a-special-price-just-for-you/.

[194] Marron, n 13 above, 133-134.

[195] *Smith v United Kingdom* App no 54357/15 (ECtHR, 28 March 2017).

[196] Regulation 2016/679/EU on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, [2016] OJ L119/1 ('General Data Protection Regulation').

[197] Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (CETS 108).

[198] Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data, [1995] OJ L281/31.

[199] Criticisms ranging from fake reviews (Angela Giuffrida and Antonia Wilson, 'Man jailed in Italy for selling fake TripAdvisor reviews' *The Guardian* (12 September 2018) https://www.theguardian.com/world/2018/sep/12/man-jailed-italy-selling-fake-tripadvisor-reviews-promo-salento) to a skewing upwards of scores where there is a personal context or reciprocity (Slee, n 51 above, loc 1751ff); for China, see text to notes 139-155, above.

launched as a more limited service in light of such concerns,[200] though somewhat similar projects are also being developed by others, especially regarding online dating.[201]

One constraint upon rating systems is the need to ensure that data can be updated and challenged in light of its accuracy (article 5(1)(d) GDPR). Automatic deletion of negative information after a set period has been a feature of some credit recording systems,[202] and the famed challenge to Google's indexing of an old news report on the forced sale of property on foot of an unpaid debt succeeded on the basis of data protection law[203] even before it was strengthened in the GDPR in the more explicit right to erasure (article 17 GDPR).

Further attention is also likely to be paid to the rights set out in article 22 GDPR – not (in some circumstances) to be subject to a decision with legal or similar effects based solely on automated processing,[204] and the possibility, in other circumstances where automated decision-making is lawful, to receive an explanation and an opportunity to challenge.[205] Nonetheless, there will continue to be situations (expressly provided for in GDPR) where consent is not required (as other legal bases are available), which supports the development of powerful, potentially universal systems – although the right to object to processing carried out under certain (non-consent) legal bases, under article 21 GDPR, could constrain the development of such systems.

Although influenced by earlier Western laws,[206] Chinese law on privacy and data protection remains fragmented and drafted in reaction to specific problems rather than as an overarching framework;[207] this 'sectoral' approach is also a feature of US law, as compared with the general approach in the EU. In China, the relevance of access and correction rights under privacy and data protection law is said to be affected by the limitations on actions against public authorities in Chinese law.[208] Even as far as judicial review of public authorities is feasible, the issue remains how far Chinese courts can be said to be independent enough in deciding cases that involve the state on the one side and private parties on the other.[209] It is beyond the scope of this article to discuss this general issue about courts in China in detail – and, to the best of our knowledge, there have not yet been any judicial challenges in matters concerning the Social Credit System in China.

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[200] Botsman, n 119 above ('but Uber ratings are nothing compared to Peeple, an app launched in March 2016, which is like a Yelp for humans'; K. Rogers, '"Yelp for People" App Founder Says Peeple Won't Be "Shamed Into Submission"' *New York Times* (5 October 2015) https://www.nytimes.com/-2015/10/06/technology/yelp-for-people-app-founder-says-it-wont-be-shamed-into-submission.html.

[201] http://www.doidate.com and see S. Fishwick, 'The new dating app that's like a "TripAdvisor for people"' *Evening Standard* (18 January 2018) https://www.standard.co.uk/dating/do-i-date-dating-app-rate-date-a3743651.html.

[202] Lauer, n 15 above, 225.

[203] Case C-131/12 *Google Spain v AEPD*.

[204] General Data Protection Regulation, n 196 above, art 22(1).

[205] ibid, recital 71 and art 22(3). See further S. Wachter, B. Mittelstadt and L. Floridi, 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' (2017) 7 *International Data Privacy Law* 76.

[206] C. Jingchun, 'Protecting the Right to Privacy in China' (2005) 36 *Victoria University of Wellington Law Review* 645, 660-664.

[207] Y. Chen and A.S.Y. Cheung, 'The Transparent Self under Big Data Profiling: Privacy and Chinese Legislation on the Social Credit System' (2018) 12 *Journal of Comparative Law* 356, 357; see also Dai, n 94 above, 23.

[208] Chen and Cheung, n 207 above, 373.

[209] W. Cui, J. Cheng and D. Wiesner, 'Judicial Review of Government Actions in China' (Working Paper, 20 August 2018), available at https://ssrn.com/abstract=3228175. See also text to notes 139-155, above, for references to the discussion about the rule of law in China.

From a policy perspective, however, we suggest that judicial review should be provided as a way of protecting individual rights but also as a means of ensuring checks and balances in the design and operation of the Social Credit System.

The Social Credit System in a global context

Key to understanding the history of rating in the West and the controversy over the Social Credit System in China is the recognition that all systems are based on a certain combination of inputs and outputs, which may have strong normative or behavioural dimensions. As argued in an early account of the developing Social Credit System, drawing explicit links between developments in the West and in China, 'in both Silicon Valley and in Beijing, there is this notion that we can use technology to shape and re-shape incentives in such a way that people will behave better'.[210] In this section, therefore, we situate the Social Credit System in a broader context, first identifying character, information systems, and participation as core concerns, before turning to explore the degree to which reputation-based systems can be regulated. In so exploring the prospects for regulation, we draw again upon historical antecedents and developments in cognate areas (eg the power of online 'platforms' more generally), highlighting the implications of the complexity discussed in the previous section.

The history of credit registries and scores identifies a long-running 'character' dimension, including the desired impact upon consumer behaviour, the framing of a good credit score as a moral virtue, the use of data (via informants or otherwise) on personal character, and attempts to incorporate factors such as 'honesty' and 'clean living' into scoring.[211] Sesame Credit may be novel if it makes use of video game playing as a signal,[212] though American credit rating pioneers were well ahead of Alibaba in making careful note of alcohol consumption and gambling habits.[213] The ways in which systems in China – or indeed experiments like Lenddo, using carefully chosen proxies[214] – address these issues is therefore not a difficult leap from this American history of scoring. Moreover, the linguistic similarities of the Mandarin terms discussed above (eg sincerity, honesty)[215] emphasise a point also understood in the West (where credit – and indeed credibility – derive from the Latin 'credere', for trust or belief, with the Christian 'Creed' taking its English name from its Latin opening words, 'credo in unum Deum' (I believe in one God).

Furthermore, both the relatively uniform approach being worked up in China and the less obviously interconnected developments in the West can be understood as part of the continuing reverberations of how information systems now operate – that is, the mainstreaming of digital technologies and the vast amounts of data that are created (not just by institutions but by individuals). Such data can come through deliberate disclosure (eg on social media or by agreeing to take part in a loyalty scheme), but also through their data trails (eg browsing history, location data collected by an app) and through the actions of other individuals, and may be governed by data protection laws where in force.

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[210] R. Creemers, quoted in C. Clover, 'When big data meets big brother' *Financial Times* (19 January 2016) https://www.ft.com/content/b5b13a5e-b847-11e5-b151-8e15c9a029fb.

[211] Rona-Tas and Guseva, n 22 above, 61-62; see also Lauer, n 15 above, 4 (behaviour), 127 (virtue), 163 (informants), 172 (honesty etc).

[212] See text to notes 117-119, above.

[213] Lauer, n 15 above, 106, 161.

[214] Hynes, n 70 above.

[215] See text to note 98, above.

The initiatives in China are influenced by a systems theory approach to information, paying special attention to flows and loops as an emerging modality of governance.[216] Unsurprisingly, some analysts of the Social Credit System ask questions about how the availability and reuse of reputational data, especially at the level of big data, affects the regulatory state itself[217] – just as developments in information processing and management, and theoretical consideration of systems theory approaches, informed Western approaches to governance during the post-1945 period[218] and are at the heart of debate on the degree to which the Internet itself can be governed.[219] The arguments that performance management schemes have become normalised and so now require the analysis of mission, commensuration, and vision,[220] and that classifications embedded in information infrastructures require political and ethical study,[221] are surely capable of application to the various systems we discuss here, including those still in development.

Finally, it can be noted that the centrality of ratings and reputation poses questions about the relationship between technology and representative democracy. In Europe and North America, one such iteration is speculation regarding whether new deployments of information technologies could support new or revitalised forms of public participation.[222] As explained in the discussion of novel forms of credit scoring,[223] the hypothesis that better use of a broader range of data democratises access to resources and markets is clearly present in the arguments of developers. In the case of China, although there is speculation whether China will democratise,[224] this seems rather unlikely in the near future. So, while the Social Credit System may give Chinese citizens more control over the impact of their actions than previously,[225] in China technology may rather be seen as an alternative to representative democracy. In other words, it is suggested that the Social Credit System can be one of the means used by 'the center of figuring out what's going on at lower levels and across society' instead of relying on electoral feedback and related forms of civil activism.[226]

With these points in mind, we now turn to broader questions of how the technologies in use might be the subject of regulation. The innovation associated with recent developments in China provides a useful set of sub-questions that will inform the debate on how reputation-based systems ought to be regulated in the West. With key differences between conventional Western credit scoring and the Social Credit System including the use of a broader set of data, the enforcement of outcomes, and the use of devices and sensors to add real-time data,[227] and the clear echoes of each of these points in the historical evolution of credit and reputation schemes in the West (eg the impact of comput-

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[216] Creemers, n 98 above, 7.

[217] Dai, n 94 above, 31; Liang et al, n 124 above, 2-3.

[218] Black, n 19 above, 360-361.

[219] A. Guadamuz, *Networks, Complexity and Internet Regulation: Scale-free Law* (Cheltenham: Edward Elgar, 2011) 96.

[220] Mehrpouya and Samiola, n 27 above, 28.

[221] Bowker and Star, n 25 above, 321.

[222] See eg J. Morison, 'Gov 2.0: Towards a User Generated State?' (2010) 73 *Modern Law Review* 551; M. Hindman, *The Myth of Digital Democracy* (Princeton: Princeton University Press, 2009).

[223] See text to notes 69-90, above.

[224] See eg A.J. Nathan, L. Diamond and M.F. Plattner (eds), *Will China Democratize?* (Baltimore: John Hopkins University Press, 2013).

[225] See the discussion in text to 129-134, above.

[226] C. Larson, 'Who needs democracy when you have data?' *MIT Technology Review* (20 August 2018) https://www.technologyreview.com/s/611815/who-needs-democracy-when-you-have-data/.

[227] Ohlberg et al, n 116 above, 4.

erisation, or the link between reputation and continued use of a platform), these go beyond theoretical questions. Indeed, critiques of innovation both in the established credit sector and in social media[228] demonstrate the types of concerns that will inform debate on the regulatory approach to reputation in the very near future. If these systems 'spread' to other spheres of interaction and governance, lessons learned from earlier implementations of reputation-led approaches will form an important part of the design process.

A tension between centralised and distributed or fragmented reputation and rating systems is evident both in China and in the West. An overt form of centralisation appears more likely in the former (where private systems may be permitted limited autonomy within the context of an overarching system) than in the latter (where single systems of data are the subject of particular criticism, even where the same effect is achieved by less direct means).[229] On the other hand, both the approach to development in China (which allows for regional and municipal variation)[230] and the fashion for city- or sub-city based experimentation with data collection and analysis in Western 'smart city' initiatives[231] pose more difficult questions. Should the spread of reputation-based systems be seen as a type of policy diffusion?[232] If so, could spatially limited initiatives avoid the worst effects of mass surveillance and allow for the impact of variations in design and implementation to be tested? Or are Western cities, as Greenfield argues, setting out the 'material conditions … for Chinese-style social credit to spread'?[233] To what extent does data protection law, even as updated, constrain such spreading?

Although we have sought to explain the impact of intervention across a number of subcategories, it may be the case that a recommendation independent of context is not possible. Instead, the degree of intervention may be determined in light of overriding questions. What are the means by which accountability can be best secured? Is competition (and the pressure that it might create towards accuracy and relevance) appropriate? How can a system remain responsive (for instance, adaptable and flexible in light of technological developments or attempts to exploit a system inappropriately)?

The primary locus of intervention is likely to be the provider of the rating system. In some cases, this will be a service provider or the administrator of a platform through which others provide services; in other cases, the platform may manage a rating system but not be involved in the delivery of a specific service. In both situations, the provider is likely to be a 'data controller' for the purposes of data protection law.

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[228] Most famously disclosed by the controversy regarding political microtargeting, see eg J. Cobbe, 'Reining in Big Data's Robber Barons' *New York Review of Books* (12 April 2018) https://www.nybooks.com/daily/2018/04/12/reining-in-big-datas-robber-barons/, and by developments in advertising, see eg J. Ryan, 'Risks in IAB Europe's proposed consent mechanism' *PageFair* (20 March 2018) https://pagefair.com/blog/2018/iab-europe-consent-problems/.

[229] Backer, n 128 above, 8.

[230] See generally L. Liu and B.R. Weingast, 'Taobao, Federalism, and the Emergence of Law, Chinese Style' (2018) 102 *Minnesota Law Review* 1563; Y. Li and F. Wu, 'The Transformation of Regional Governance in China: The Rescaling of Statehood' (2012) 78 *Progress in Planning* 55. For the pilot cities of the Social Credit System see text to notes 110-116, above.

[231] R. Kitchin, 'The Promise and Perils of Smart Cities' (2015) 26(2) *Computers and Law*; S. Latre et al, 'City of Things: An Integrated and Multi-Technology Testbed for IoT Smart City Experiments' [2016] *IEEE International Smart Cities Conference* DOI: 10.1109/ISC2.2016.7580875; L. Bliss, 'How Smart Should a City Be? Toronto Is Finding Out' *CityLab* (7 September 2018) https://www.citylab.com/design/2018/09/how-smart-should-a-city-be-toronto-is-finding-out/569116/.

[232] See text to note 171, above.

[233] Greenfield, n 2 above.

In the specific area of reputation systems, it has been recognised that the initial position that the 'abundant information' available makes intervention unnecessary has come under challenge, especially on the grounds of transparency and accountability.[234] The continuing evolution of data-driven approaches to reputation also requires further study of the impact of measurement upon behaviour, including the creation of perverse incentives and non-productive attempts to 'game' systems.[235]

We have already seen a refocusing of regulatory efforts in the European Union towards platforms of various sorts, which provides some guidance on possible approaches for rating systems. A good example is online dispute resolution, where a Regulation and Directive of 2013 sets standards for approved dispute resolution providers (ie expertise, independence and impartiality; transparency; effectiveness; fairness; legality; liberty) and requires others to link to or cooperate with approved providers.[236] More recent scoping work by the European Commission identifies a broad category of 'platforms' which have increasing significance and influence, for which existing legal tools in fields such as competition and liability may alone be suboptimal.[237] Similarly, there is a lively debate on the regulation of emerging applications of artificial intelligence,[238] going beyond the specific issues of automation dealt with (to some extent) by existing law and overlapping with calls for accountability and transparency regarding the use of algorithms,[239] which without attention may make 'decisions … inscrutable and thereby incontestable'.[240] These developments recognise a preference for co-regulatory models, relying upon the setting of standards, the involvement of industry but also public authorities, and the pursuit of broad objectives rather than a prescriptive approach. Note too that much of the legal complexity of the developing system in China is found in the interaction between different emanations of the state and between state and non-state entities.[241]

In concluding this contextual analysis of reputation systems, it is helpful to recall a recent debate in the field of law and development – the rapid *economic* development of China and the possible role of Western-style law in promoting it.[242] Here then the Social

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[234] Ranchordás, n 64 above, 129; Dai, n 94 above, 7-8.

[235] Exploring this point in the context of institutional rankings: Espeland and Sauder, n 26 above, 29-31; updated in W.N. Espeland and M. Sauder, *Engines of Anxiety: Academic Rankings, Reputation, and Accountability* (New York: Russell Sage, 2016).

[236] P. Cortes, 'A New Regulatory Framework for Extra-Judicial Consumer Redress: Where We Are and How to Move Forward' (2015) 35 *Legal Studies* 114, 119-120; Regulation 524/2013/EU of 21 May 2013 on online dispute resolution for consumer disputes, [2013] OJ L165/1, art 14; Directive 2013/11/EU of 21 May 2013 on alternative dispute resolution for consumer disputes, [2013] OJ L165/63, arts 5-11.

[237] European Commission, 'Online Platforms and the Digital Single Market: Opportunities and Challenges for Europe', COM(2016) 288; see also COM(2016) 356, n 186 above. For an alternative approach, favouring a public utilities model instead of regulation, yet beyond the surveillance state, see Srnicek, n 88 above, 128.

[238] See eg House of Lords Select Committee on Artificial Intelligence, *AI in the UK: ready, willing and able?* (HL 100, 2017-19).

[239] House of Commons Science and Technology Committee, *Algorithms in decision-making* (HC 351, 2017-19).

[240] Hildebrandt, n 191 above, 28.

[241] Chen and Cheung, n 207 above, 367-369.

[242] See eg D. Kennedy and J. Stiglitz (eds), *Law and Economics with Chinese Characteristics: Institutions for Promoting Development in the Twenty-First Century* (Oxford: Oxford University Press, 2014); G. Xu, *Does Law Matter for Economic Growth? A Re-examination of the 'Legal Origin' Hypothesis* (Antwerp: Intersentia, 2014); G. Yu, *The Roles of Law and Politics in China's Development* (Heidelberg: Springer, 2014); G. Yu (ed), *Rethinking Law and Development: The Chinese Experience* (London: Routledge, 2014).

Credit System may indicate a paradigm shift in both aspects of this causal relationship: it challenges us to move beyond Western-style law and it poses the question how a system that also promotes *social* development can be designed. Shaming, to give one example, is a powerful feature of Internet communications, whether in a formal sense as under development in China[243] or for all users, especially of social media.[244] The presentation of the Social Credit System as farfetched or as an exemplar of State control of information is not just complacent; it ignores the longer history of reputational information in various Western contexts, and the degree to which similar phenomena have taken on significance, albeit with different levels of intervention, in transnational e-commerce and sharing platforms (and in the most recent attempts to reuse or merge data). For example, the unfinished business of whether new approaches to reputation promote access to finance for the 21st century 'honest but poor' of China or the 19th century hardworking immigrant to the United States, or constitute a new threat of further discrimination – or both – requires a less complacent approach. Consideration of what is underway in China can therefore, for instance, prompt productive discussion of the adequacy and focus of existing regulatory mechanisms in the West – especially at a time of unprecedented scrutiny of the ethics of Silicon Valley and the implications of the digital revolution.

CONCLUSION

In English-language newspapers a common frame of discussing the Chinese Social Credit System is an episode of the science fiction series 'Black Mirror'.[245] This episode, *Nosedive*, imagines a future society in which every citizen has a rating from '0' to '5' which derives from the subjective assessments made by everyone else using a mobile phone app. This rating then has a social function (in the episode: who gets invited to a wedding party), but it also determines commercial decisions (in the episode, for example, the type of car you can hire or neighbourhood in which you can live) and access to public services (in the episode: in prioritising medical treatment). At its extreme, the rights of the individual are at stake; the episode closes with the main character's score dropping to zero, and so removed from the 'platform' – through the removal of the lenses that provide, in the style of augmented reality, real-time access to data – and, apparently, imprisoned.

The intuitive parallel to the Chinese system is that, here too, individuals are rated with a single score and that this score can have a variety of consequences. However, there are some profound differences. The most obvious one is that the Social Credit System is not based on the subjective ratings of other citizens. Indeed, it may be said that this subjectivity is closer to the contemporary Western ratings such as Uber and Airbnb than the more objective (and more algorithmic) emerging Chinese one. Moreover, from a normative perspective, a recent newspaper article notes: 'No, China isn't Black Mirror – social credit scores are more complex and sinister than that' given that in 'China and elsewhere, the implied threat isn't the tyranny of the crowd, but state and corporate power'.[246] In support of this mere acceptance of contemporary Western ratings, it could also

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[243] See text to notes 98-116, above, as well as text to note 151 (for cross-cultural differences in shame response).

[244] eg J. Ronson, *So You've Been Publicly Shamed* (London: Picador, 2016).

[245] A combined Google News search for 'social credit system' and 'black mirror' leads to 872 hits as of 16 March 2019.

[246] 'No, China isn't Black Mirror – social credit scores are more complex and sinister than that' *New Statesman* (27 April 2018) https://www.newstatesman.com/world/asia/2018/04/no-china-isn-t-black-

be said that it is just a normal feature of human societies that we depend on the subjective judgments of others, regardless whether this is quantified or not.

Yet, this negative comparative assessment of the Social Credit System may not be a matter of course. Ratings initiated by the state or companies may be designed in such a way that they provide targeted incentives (not simply 'being nice' as in the Black Mirror episode – which is silent on how the system came about or who controls it). It may also be an advantage that 'interventionist' or centrally planned rating systems can more easily be shaped and controlled by law and regulation. This is relevant for the Chinese context as the Social Credit System is in a transitional stage with its current mix of China-wide blacklists and ratings by pilot cities and financial institutions. It is also relevant for Western countries where, at present, public authorities are more likely to engage with rating and reputation systems through acquiescence or encouragement, and only sometimes through regulation, which may be indirect.

Thus, in this article, we argue that the Chinese *models* (not *model*) of new approaches to credit should be studied in the West, not as a template or even a counter-model, but as illustrations of the implications of today's emphasis upon quantification and reputation across a range of domains, personal and official. Such illustrations can also inform law-making efforts in the West. Specifically, this article addressed some of the core general issues that law makers should consider. We discussed eight aspects where regulatory differences can be observed: drafters, users, aims, scoring systems, application, use of algorithms, enforcement and accountability. We also indicated that law making in this field can be either through the introduction of a new regulatory regime or the application of general requirements to a particular context. It may also be unlikely that there will be a single 'law on ratings' given the relevance of many overlapping policy considerations and corresponding fields of law, such as e-commerce law, privacy and data protection law, anti-discrimination law, tort law, competition law, sector specific regulations on financial services, and so forth.

Finally, we suggest that where there is a need for regulation, the first focus should be on the provider of the rating system. This should also incorporate means by which accountability can be best secured, such as forms of online dispute resolution but also the availability of conventional judicial scrutiny. Importantly, any law making in this field also needs to be done with full understanding of the technological and behavioural aspects of the rating systems under consideration: for example, we have noted problems of validity, reliability and responsiveness, including attempts to 'game' systems. Thus, this calls for not only a comparative but also an interdisciplinary perspective, as we also aspired to in this article. Rating systems have been commercially and socially important in different ways in China and elsewhere, and so questions of regulation require not just attention to the systems currently used in one context (or on an apparently voluntary basis), but to the ways in which they are likely to develop, through taking on additional functions or more ambitious types of aggregation.

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mirror-social-credit-scores-are-more-complex-and-sinister. On how the Social Credit System ought to prompt a wider reassessment of surveillance and power, see eg K. Kühnreich, 'Soziale Kontrolle 4.0? China's Social Credit Systems' [2018] 7 *Blätter für deutsche und internationale Politik* 63.