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[Digital Democracy](#)

# Invented in China

High Technology in the Service of Illiberalism

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30 years following the collapse of the Soviet Union, international politics is facing some fundamental questions once again. Whereas during the Cold War it was the socialist doctrine of the USSR, now it is China's digitally empowered authoritarianism that poses a challenge to the West. In this conflict between two different systems, the focus is no longer solely on military capabilities, but also on key digital technologies and emerging industries. If the West is to prevail, it has to make an objective assessment of China's capacity to innovate and find answers that take the factuality of globalisation in research, innovation and business into account.

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### **China in the Fast Lane? From Imitator to Innovator**

It is quite astonishing to see how today's systemic competition has developed over a few short years. Even well into the 2010s, many observers were convinced that modern information technology would accelerate the spread of liberal values and ideas. It seemed unlikely that illiberal regimes would be able to contain the democratising power of the internet, and censor the flood of global data and communication.<sup>1</sup> Even though the West recognised China's efforts to control internet freedom at an early stage, as Bill Clinton said in a 2000 speech, these efforts seemed unlikely to bear fruit: "In the new century, liberty will spread by cell phone and cable modem. [...] We know how much the internet has changed America, and we are already an open society. Imagine how much it could change China. Now there's no question China has been trying to crack down on the internet. Good luck! That's sort of like trying to nail Jell-O to the wall."<sup>2</sup> The competition between the two systems is all the more astonishing because – despite China's impressive and sustained rate of economic growth – it has always lagged behind when it comes to innovation. It has often been stated that China may be able to copy and adapt Western innovations but is unable to develop any major innovations of its own.<sup>3</sup> That is why, even until 2014, experts concluded that the rise of China did not pose a serious threat to the

West and the US. After all, technological leadership represents the foundation of power distribution between states. It was thought that, even in the long term, the West could feel secure in the knowledge that complex skills and an open, diverse innovation ecosystem are prerequisites for innovation in the high-tech sector. Precisely such skills and characteristics are difficult to import and copy, and hence China's rise from imitator to innovator would be a protracted one.<sup>4</sup> Despite all these forecasts, the fact that we are now discussing a new systemic competition and China's innovative capacity is largely due to its "Made in China 2025" strategy and related measures.

#### *"Made in China 2025": A Catalyst for Market-Driven, Open Innovation*

"Made in China 2025" is a national strategy drawn up by China in 2015 that sets out a framework for developing the country's industrial and high-tech sector.<sup>5</sup> With this strategy, China aims to digitalise large sections of its economy and increase its ability to innovate in order to independently scale new heights in the value chain (innovation autonomy). Priority is given to becoming an industrial and technological superpower. In parallel, the economic transformation should contribute towards stabilising economic growth and prosperity, so that China can become a high-income country in the medium term. However, the country is to avoid falling

into the trap of stagnating economic growth (known as the middle-income trap<sup>6</sup>). These are crucial objectives because economic growth and increased prosperity are cornerstones of the country's political stability.

To achieve these goals, the national strategy relies on harnessing market forces, open and independent innovation, leapfrogging, targeted state funding and the de-compartmentalisation of China's civil and military innovation bases. There is also a clear focus on the sectors and areas of technology that the Chinese government perceives to be of strategic importance.<sup>7</sup> The plan also lists a broad portfolio of areas where specific action is required. These include:

- funding for research and development,
- protecting the domestic market against foreign high-tech companies,
- assisting companies to become national and international market leaders,
- providing support for the transfer of knowledge and technology,
- establishing sector-specific innovation centres at local level,
- continuously and pragmatically adapting the strategy, including clear objectives and transforming the overall strategy into regional and sectoral sub-strategies.

While innovation has long played a central role in the strategic thinking of Chinese governments, this strategy now takes a different approach to innovation policy. This entails shifting the state away from its role as the planner of innovation and towards being a hybrid catalyst for innovation, which establishes conditions favouring market-driven, open innovation whilst providing massive backing for scaling innovations.<sup>8</sup> Whereas the public debate usually focuses on the enormous increase in the Chinese government's funding for R&D,<sup>9</sup> this fundamental change at the structural level – based on the ascendant model of the Asian Tiger states – is largely overlooked. This is problematic because it is precisely the fusion of more liberal market forces with autocratic structures that is creating a new, hybrid state-capitalist model for innovation.

## Innovation and Systemic Competition

*High-Tech in the Service of the Communist Party (CP)*

The sought-after transformation of China will do more than create a powerful economic challenger for the West. We are witnessing the emergence of a systemic competitor empowered by digital innovation.<sup>10</sup> China is using innovation to secure its rise to power and consolidate its illiberal domestic order: “Advanced technology is the sharp weapon of the modern state.” (Xi Jinping).<sup>11</sup> Its use of a social scoring system (SSS) illustrates how digital innovation and high-tech developments are being applied.<sup>12</sup> What began as a way of addressing lack of trust when granting loans has now developed into a comprehensive state surveillance and disciplining. The SSS primarily monitors the social and political activities of every Chinese citizen, company and NGO. Behaviours rated by the CP as desirable or undesirable are automatically recorded and fed into a points system. People with a negative ranking are subjected to higher taxes, denied access to careers in government or government-related organisations, or face travel restrictions. The extreme measures that such a surveillance system offers the state apparatus are reflected in the situation of the Uyghur minority in China. The arsenal of cutting-edge information technology used for the social scoring system includes the latest telephone and video surveillance as well as AI-supported face and voice recognition, plus systems for analysing digital communication flows and online behaviour. In some regions, the system is even supplemented by a DNA database.

**For China, the idea of national cyber sovereignty and a politically charged understanding of cyber security are of primary importance.**

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Every move one makes: Today, in contrast to analogue times, illiberal regimes are able to achieve a new level of social surveillance and control of public opinion at relatively low cost. Source: © Damir Sagolj, Reuters.

In addition to the social scoring system, China has been using state-of-the-art information technology since 2012 to build and monitor the “Chinese Internet”. While the West advocates an open and free internet, China believes in a censored, state-controlled order for the digital space.<sup>13</sup> In this context, the idea of national cyber sovereignty and a politically charged understanding of

cyber security are of primary importance. These are also regulatory means to build what China regards as a “clean and righteous internet” at national level.<sup>14</sup> Thanks to the “great firewall”, certain Western platforms and search engines are blocked, data streams filtered, content censored, and access to the internet is restricted or even completely shut down.<sup>15</sup> The latest information

technology – such as AI or deep packet inspections – is of vital importance here. This reveals the central components of the tools that enable China to nail the Jell-O to the wall.

*The Model of High-Tech Autocracy –  
A Threat to the Future of Democracy*

There are three reasons why digital authoritarianism poses a threat to the future of democracy.

1. Thanks to the use of advanced information technology, illiberal regimes are able to achieve a new level of social surveillance and control of public opinion at relatively low cost, so that illiberal structures can be consolidated internally.<sup>16</sup> AI in particular opens up new potential for politically controlling every area of society, making past attempts at control under socialist regimes seem crude at best.<sup>17</sup>
2. One difference between digital authoritarianism and its predecessor is the fusion of authoritarian political control with free market forces. This not only means that China has built a more impressive economic record than previous systemic competitors, but also that it has developed its own state-capitalist innovation model, which can point to some successes.<sup>18</sup> An objective view should be taken of these, but China's development in the area of innovation still poses the question: can China's hybrid innovation model surpass the innovative power of liberal societies over the long-term?
3. Digital authoritarianism poses a threat because China, together with Russia, serves as a role model for other illiberal states.<sup>19</sup> China and Russia have not only managed to harness advanced technology for their structures but have also developed an appropriate regulatory framework to that end: whether it be the concept of cyber sovereignty, which is important for sealing off the internet, or corresponding cyber security legislation enabling them to carry out mass surveillance. Digital authoritarianism is a threat because

states like China and Russia are exporting their technology together with their model of order. China and Russia play an active role in propagating this model.<sup>20</sup> Its recipients include countries such as Ethiopia, Ecuador, South Africa, Bolivia, Egypt, Rwanda, Venezuela and Saudi Arabia.<sup>21</sup> Only recently, political scientist Anne-Marie Slaughter warned: "Dictators are creating and sharing tools for greater population control than ever before."<sup>22</sup>

**What Does This All Mean?**

Whereas it is clear that the West must be resolute in facing the challenge of China's digital authoritarianism, choosing the right means is proving to be more difficult. China is a competitor who is an integral part of the globalised economic and innovation cycles from which the West benefits. In contrast to the Cold War era, systemic competition entails close links and mutual dependencies beyond the purely inter-governmental level. In lieu of being cut, they should be organised more cleverly.

**In terms of breadth, China is currently neither a leading global innovator nor an autonomous actor in the area of innovation.**

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*Factual Analysis Instead of Panic*

In order to do this, it is at first important to correctly classify China's development in the innovation and high-tech sector. China has made enormous progress and can now boast some globally competitive and innovative companies in certain areas of the high-tech sector. However, in general, China is currently neither a leading global innovator nor an autonomous actor in the area of innovation. China leads the group of middle-income countries in the Global Innovation Index, but it slumps to 14<sup>th</sup> place compared

to the advanced industrialised nations. As regards patent applications, it is also clear that a much larger share of Western innovations continue to be registered in China, and that Chinese patents are diffusing far more strongly into emerging and developing countries.<sup>23</sup> Although there has been an enormous increase in the number of Chinese patents, their quality still lags behind that of their Western counterparts.<sup>24</sup> With regard to R&D spending by private companies – which accounts for a much larger proportion of global R&D spending than government funding – China has a stronger presence in the world’s top 2,500 than in the past. Yet only one Chinese company – Huawei – is in the group of 50 companies with the highest R&D spending in 2018.<sup>25</sup> In 2018, China produced more unicorns than the USA and attracted more venture capital in the start-up sector. Nevertheless, China’s innovation ecosystem as a whole is still at an early stage and heavily dependent on foreign basic innovations and external expertise.<sup>26</sup> Even in the field of artificial intelligence, which China has identified as a strategic core area, the country only has six of the world’s 100 most successful AI start-ups.<sup>27</sup>

If we look at the research landscape, China is among the world leaders in a number of high-tech fields – including AI, quantum computing, and battery technology. Even in the Nature Index, today China ranks second in the natural sciences, directly behind the US.<sup>28</sup> A closer look, however, shows that the most influential publications (in the natural sciences) continue to predominantly come from the West.<sup>29</sup> The majority of leading scientific institutions (in the natural sciences) are Western universities, too.<sup>30</sup> What is more, if we add together various European states’ performance in the Nature Index, China would take third place behind the US and Europe. The story is similar when we look at the field of AI. In an informative ranking – based on research contributions to the world’s leading AI conferences – only two Chinese universities (ranked 15<sup>th</sup> and 22<sup>nd</sup>) are in the Top 40 Global AI Organisations. As an AI research location, China is also clearly lagging behind the US and Europe (aggregated).<sup>31</sup>

The same pattern emerges in the high-tech sector. On the one hand, China has risen to become the world’s largest exporter and can boast leading global companies in selected industrial sectors.<sup>32</sup> However, a more in-depth look at its exports shows that a significant proportion of high-tech products are “merely” manufactured in China, so the profits flow back to Western technology companies.<sup>33</sup> Despite all its successes, China’s high-tech sector still demonstrates weaknesses in basic research and enabling technologies, particularly in the semiconductor sector.<sup>34</sup> Finally, a look at China’s innovation ecosystem shows that, in spite of all the impetus for change to state structures, there are still considerable deficits. Eliminating them will involve a long march rather than a short leap.<sup>35</sup>

For the West, this means that China must be taken seriously as a competitor in innovation, but without over-egging its capacity for innovation. When it comes to the whole spectrum of innovation, China is still more dependent on the West than vice versa. The West could use this asymmetry as a tool to enforce its interests. As opposed to descending into fatalism, China’s progress should be taken as a sign that the West ought to strengthen and network its innovation systems so as to maintain its innovative edge. In some areas, China is a world leader in innovation, so forms of cooperation with Chinese innovation systems could afford opportunities for the West. Achieving this would require China and the West to operate on a level playing field, and to prevent illegitimate technology transfers and breaches of intellectual property rights. Cooperation with China must be based on rules and reciprocity.

**China does not shy away from completely excluding certain foreign platform companies, social media and search engines.**

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### *Fair Trading and Rule-Based Cooperation*

Precisely this is almost non-existent at the moment, and it is quite rightly being demanded by the US in the current trade dispute.<sup>36</sup> A critical look at China's approach to innovation highlights three issues. The first is the targeted transfer of technology and lack of respect for intellectual property rights. For many years now, Chinese companies have made strategic investments in Western high-tech companies and subsequently transferred the expertise back to China. By the same token, foreign companies are forced to enter into joint ventures in order to access the market, so that know-how flows into China. Linked to this is the accusation that China is deliberately using research collaborations and academic exchange programmes for the purposes of transferring knowledge and technology. On top of this, China is not taking adequate action at home against the infringement of intellectual property rights. Some experts have even accused the Chinese state of actively participating in industrial espionage.<sup>37</sup> A further issue is how the Chinese market is isolated from international competitors, especially in the digital economy and the IT sector. Even though China has facilitated access to the Chinese market for foreign companies and investors since joining the WTO, these areas are subject to unique restrictions. China does not even shy away from completely excluding certain foreign platform companies, social media and search engines.<sup>38</sup>

The last practice concerns the competition-distorting promotion of Chinese companies at home and abroad.<sup>39</sup> Through a range of policy measures, such as industrial interventions, the state helps Chinese companies in emerging industries to become national champions. Moreover, China is promoting the internationalisation of these companies – including along the New Silk Road – so that Chinese companies can continue to scale up or reduce overcapacity abroad. Ultimately, thanks to state support, Chinese companies enjoy irregular competitive advantages in key emerging industries. Combined with low costs, this enables them to crowd out companies in other countries.

As a first step towards resolutely opposing these practices, the West must take far more decisive action against China's deliberate efforts to



promote the technology transfer. Several Western countries and the EU have already adopted stricter regulations to monitor foreign direct

investment in the high-tech sector, and have introduced measures to prevent Chinese investors from buying up leading Western technology



Educational performance: China's innovation ecosystem is still heavily dependent on basic innovations and foreign expertise. Source: © Aly Song, Reuters.



companies. Europe's support for the USA's WTO case against China is also a step in the right direction.

## **In the long-term, the aim must be for China to adapt to the norms of fair and free trade.**

One way to strengthen these measures would be to set up transatlantic investment screening and for Western nations to share their results. However, it is important that only those Chinese investments and acquisitions posing a serious threat to the digital sovereignty of Western countries are prevented. It is also necessary to intensify the debate that has already begun in the West about academic exchange programmes and research collaborations with China. In the long-term, the aim must be for China to adapt to the norms of fair and free trade – by applying political pressure if need be. For this to succeed, the West is also called upon to restore the World Trade Organization's ability to find answers to the challenges of Chinese innovation policy, and to enforce them.

### *Regulating Illiberal Digital Mass Surveillance*

Furthermore, the West ought to put a stop to the illiberal application of key digital technologies. To this end, the international agenda should lend more weight to the debate on regulatory options for advanced surveillance technology. An obvious focus here would be on facial recognition and its importance for today's mass surveillance systems. Tying it in with the current debate in specialist circles would be a possibility.<sup>40</sup> It is also worth considering whether the issue should be integrated into the international human rights framework.<sup>41</sup> Unlike the AI ethics discussion, instruments, mechanisms and structures have been established in this framework to exert political pressure on illiberal states for regulation. Within this framework, many international organisations are actively engaged in

protecting human rights worldwide, and there are also a number of civil society actors who can exercise political pressure on illiberal regimes in the event of surveillance technology abuse. Another subject for discussion should be how the spread of such technologies can be contained from the West's point of view. One starting point at the international level would be the inclusion of digital mass surveillance systems into the debate on arms control in cyber and information space. Another approach would be to integrate such systems directly into existing export control regimes at both national and international level.

### *Working Together to Perpetuate a Liberal Order for the Digital Space*

As we stand on the threshold to a new age, it will also be important for the West to develop a liberal order for the digital space based on its values and principles. This must not only be distinct from illiberal ideas of order but also provide answers to the challenges of our time; whether that be the protection of privacy, social polarisation, fake news or how to deal with Big Tech companies. If the end result is to be a strong liberal order, it will require the West to unite in standing up for its values and to cooperate with non-state forces that advocate freedom in the digital age.

## **Conclusion**

Recent systemic competition in the high-tech sector may be on everyone's lips, but this article shows that China is neither the world's innovation leader nor capable of developing pioneering innovations with complete autonomy. China has made considerable progress in innovation in key digital technologies and emerging industries, but the West is still ahead in terms of the breadth and depth of its capacity for innovation. However, China's dynamic development underlines the fact that the West cannot afford to rest on its laurels. If the West wants to prevail in the new system conflict over the long-term, it has to put hysteria and fatalism to one side, and work on strengthening its own innovation systems

and advocate its values in the high-tech sector. It also needs to insist upon reciprocity and clear rules in its relations with China. If all this is to succeed, it will be necessary to act in unison and make wise use of interdependencies rather than resorting to divergence and protectionism. The next chapter of history could end well for the West, provided it takes the reins in a united and resolute manner.

*–translated from German–*

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