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China 4.0

Party and Society Debate the Digital Transformation

David Schulze and Nadine Godehardt

The development of China's Internet attracted great attention among foreign observers in 2016. This was due to record sales in Internet trade, extensive hacker attacks on private companies and government agencies, huge investment programmes for start-ups, a new controversial Internet law and the growth of government Internet censorship. China 4.0 stands for both control and creativity. How does that work? What is the Chinese public saying about the opportunities and risks of the digital transformation? What goals is the government pursuing, particularly with their Big Data and Internet Plus strategies? And what are the consequences of a new law on Internet security which comes into force in June 2017? New frameworks are being defined that could shape long-term cooperation with China on issues surrounding digitisation. An analysis of opinions emanating from Party members, economists, the military and scientists sheds light on the positions that are currently dominating Chinese discourse on the subject. It also poses the question to what extent China might become a laboratory for the global digital future.

On 16 November 2016, representatives from the largest international IT companies gathered at the Third World Internet Conference held near Shanghai. Chinese President Xi Jinping reiterated China's vision for the future of the Internet in a video message shown at the opening ceremony of the conference – to focus on international cooperation, national sovereignty, expansion of global infrastructure and promoting national Internet economies. These cornerstones reflect both domestic developments and the new role China will play in the global Internet.

At the World Internet Conferences, which have taken place in China since

2014, the country presents itself as a digital global player, open to the world. However, a closer look at Xi's speeches at these conferences reveals that the government is primarily interested in expanding and securing its own national Internet and domestic Internet trade. As a result, China's leadership under Xi strives to achieve a political balancing act – between openness, innovation and international cooperation, on the one hand, and controlling the core technology and ensuring national (i.e. digital) sovereignty, on the other.

Digitisation as a Key Policy Objective

Efforts to digitise China effectively are a core component of Xi's political strategy. Digital innovation and technologies are intended to support national economic growth in the long term. Digitisation gives China the opportunity to economically overtake Western industrialised nations and become an IT superpower. Political initiatives such as the Internet Plus and Big Data strategies, both adopted by the State Council in 2015, underpin the ambitions of Xi's government to realise the Chinese dream – the re-emergence of the country as a superpower – by all available means. At the same time, Internet Plus and Big Data outline the framework within which the government, media and industry must operate.

Both strategies emphasise the benefits of the new information technology for business and the government. They could reduce costs, increase efficiency and boost productivity. On one hand, the strategies look at the reform and investment tasks of the administration and, on the other hand, emphasise the need for data security and control. Big Data focuses specifically on the collection, exchange and automated analysis of information by the government and companies. The potential of IT development and its transformational power are being compared with the Industrial Revolution. Similarly, it is said that digitisation will permanently change all areas of daily life and society.

Furthermore, the government aims to reduce China's outward military vulnerability and technological dependence as well as strengthening its geopolitical participation. Digitisation is, therefore, a code word for efforts by China to secure its economic significance in the long term and to ensure that, as a global IT power, the country is more influential on international bodies.

The government's internal decision-making and control processes in the area of digitisation have been centralised since the Central Leading Group for Internet Security and Informatization and the Cyberspace Administration of China were established

in 2014. These structural changes, the numerous speeches by President Xi Jinping and Premier Li Keqiang and the national strategy papers form an initial cornerstone of China's vision for the future of (global) Internet governance. It is mainly national policies, standards and processes that are currently being defined. In the medium term, however, this could mean that co-operation with China becomes difficult, especially in the digital economy, because the rights of foreign companies in the country need to be repeatedly renegotiated. At the same time, however, the Chinese government emphasises its openness to international cooperation. It already announced at the first EU-China Roundtable on Digital Cooperation in July 2015 that it had an interest in European-Chinese cyberspace cooperation and – in line with the new development initiative of Xi's government – in establishing a 'Digital Silk Road'.

The new Cyber Security Law, adopted on 7 November 2016, shows that China's decisions have already had an impact on the global economy. Even the draft legislation has been heavily criticised in the West because it means the Chinese government is placing an even greater focus on the potential risks of the Internet and the state's control function. The aims of the legislation are defending national and civilian interests, maintaining critical infrastructure and peace in society whilst also ensuring individuals are protected against cyber-crime and data theft. Apart from conventional data protection and cyber defence, however, its most daring reform is to remove anonymity from the Web. Internet providers must now verify the identity of users when offering network access or data services; otherwise they risk fines and closures. In addition, data collected by domestic providers of 'key digital infrastructure' may only be stored in that country. This means that transferring such data abroad would require a security check and approval by government bodies. In particular, this applies to foreign companies and their data traffic. In this respect, China's legislation

on Internet security also has global consequences, while, at the same time, it gives an indication of Chinese priorities should global digitisation become regulated.

Opportunities for Business and Society

China is currently in a stage of rapid digitisation – economically, socially and politically. Despite strong regional variations in broadband availability, in 2014, it entered the ranks of countries with Internet coverage of more than 50 percent of the population.

In the coastal regions and major cities, Internet coverage is already at the same level as Western industrialised countries. In 2015, investments in China's IT communications rose by 34.5 percent, faster than in any other sector. Indirectly affected industry branches also grew, the express delivery services industry, for instance, increased by around 48 percent. There were a total of 20.7 billion deliveries, 15 billion more than four years ago. In addition, a majority of the world's Internet users live in China and their number continues to grow steadily. Nearly all Chinese netizens use mobile Internet (92.5 percent); one quarter use only their smartphones to access the Web (24.5 percent).

The general population has welcomed the new technologies enthusiastically. Communication, purchases and payments are increasingly taking place via the mobile Internet. WeChat, originally a smartphone application for instant messaging (similar to WhatsApp), has become a universal social platform since 2011. The app, produced by Internet giant Tencent, is used by schools, businesses, the government and private individuals alike. Innovative features that support and enhance cultural traditions increase users' identification with the application. This applies, for example, to electronically sending *Hong Bao*, originally envelopes containing gifts of money presented to friends and relatives on special occasions.

More than 97 percent of all Internet users in China use WeChat. At Chinese New Year 2016, around 420 million people sent gifts of money using the application. Fast and easy communication as well as integrated functions for account management, investments and speculation, for shopping, orders, navigation etc. also make the application useful for migrant workers, micro-entrepreneurs and people in remote areas. Users can keep in touch, coordinate and communicate in larger groups and over long distances all using one application; it is easier and more efficient than a combination of email, text messaging and other apps. WeChat is already used to register on public Wi-Fi networks and increasingly also for access to public institutions, such as making hospital appointments. In 2014, the People's Liberation Army (PLA) used the application to send messages from the Party to Chinese peacekeepers serving abroad.

WeChat is a symbol of China 4.0. Firstly, it is a great app for which more and more features were developed in a very short time. Communication in China takes place almost exclusively via this app. Secondly, many Chinese netizens no longer leave the app when engaging in other activities on the Internet. The Internet is becoming a kind of (WeChat) intranet. The app is an example of what direction future developments in the mobile Internet market might take.

However, the Internet economy not only offers opportunities for major, well-established IT companies, it is also particularly attractive for the increasing number of university graduates in the country. As China's economic growth slows, many, encouraged by the government, are launching start-up companies in areas such as entertainment, technology or finance. Last year, the volume of sovereign wealth funds (SWFs) for start-up investments tripled to 1.5 trillion renminbi (206 billion euros). This figure is five times greater than all other venture capital funds in the world combined. The 780 government funds, most of them at the provincial and city level, monitor the nationwide start-up industry and evaluate

Table 1
China: Growth through Digitisation

	<i>Internet sector as a share of GDP^a and global rank</i>	<i>IT comm./software (investments in tangible assets [billions of EUR])</i>	<i>New enterprises registered per annum (millions)</i>
2010	3.3% (7th)	31.89	1.76
2011		28.98	2.00
2012		35.87	1.96
2013	4.4% (5th)	41.12	2.50
2014		54.69	3.65
2015			4.44

^a <http://tech.sina.com.cn/ji/2014-07-25/10509516789.shtml>.

Source: National Bureau of Statistics, <http://data.stats.gov.cn/easyquery.htm?cn=C01&zbs=A0G0T&sj=2013>.

potential candidates. In some cases, competitions are advertised in which start-up founders have to pitch their idea to a jury of fund managers. The winners no longer receive direct subsidies as they once did, instead they are given risk capital, access to work materials and support in establishing their companies. This is intended to sustainably increase success rates and create a capital market in which more private investors can participate in the future.

Start-up founders can become billionaires in this emerging industry. Take Wang Tao, for example. His company DJI controlled more than 50 percent of the non-military US drone market in 2016. Xiaomi, a Chinese smartphone manufacturer, is the most valuable start-up in the world with a market value of 46 billion US dollars. With a smartphone designed by Frenchman Philippe Starck and launched in China at the end of 2016, Xiaomi surpassed Apple for the first time as a manufacturer of innovative smartphones.

The success of many companies is motivating founders and developers. Some of them, like Qin Zheng, CEO of ANTVR, a Virtual Reality (VR) tech start-up, see the Internet, artificial intelligence and virtual reality as opportunities to achieve peace and understanding between people around the world. His enterprise is designing a universal VR device which, unlike products

from Google or Apple, is intended to be compatible with all phones and computers. The headset and adjustable controller can be altered and further developed by users and developers. The 29-year-old aerospace engineer, Qin Zheng, cannot complain about a lack of attention. He has already met Chinese Vice President, Li Yuanchao, the former French Prime Minister Jean-Pierre Raffarin and a delegation of young Polish parliamentarians. Chinese online media call it ‘VR diplomacy’. Qin Zheng himself claims, “I just want to tell the world: the Chinese can also research groundbreaking technologies”.

Digital Challenges for the Education Sector

Despite all the enthusiasm for digital development, China is also discussing the accompanying risks for the state and society. Experts have correspondingly taken stance in scientific studies, press articles and online publications. In the field of pedagogy, they see the Internet as a challenge for the personal development of children and adolescents, particularly with regard to their worldview and value system. They represent the concept of digital civic courage which aims to generate a sense of responsibility and commitment to a ‘harmonious and orderly development of the digital society’. Among the risks of long-term use of digital products, the authors listed various dependencies, promoting violence or gambling addiction, emotional blackmail and alienation from reality, but also health problems. They suggest the trend towards digitisation of work and education increases the risk of irresponsibility, selfishness and plagiarism; they ultimately fear social destabilisation through lies, rumours, bullying and hacker attacks.

This is offset by the opportunities to improve teaching offered by digitisation – for autonomous and distance learning, as well as adult education. One example is the website Yiban, a non-profit platform for education, daily life and entertainment.

Founded in 2007, it shows what a virtual university campus might look like. It therefore not only supports the internal organisation of training and extracurricular activities, but also the content of exchanges between universities.

In 2014, the Chinese government set up a series of offices for Internet education at universities. It was reacting to concerns about cases of bullying, violence and suicides at the country's universities – events blamed on inadequate social integration among students. At the same time, the new facilities were also supposed to improve students' ideological education. Led by the Ministry of Education, or more precisely, the local departments of ideological and political work, the task of local offices is to support the digitisation of higher education. There are currently no comparable initiatives for the country's primary and secondary schools.

The Threat of Digitisation

In Chinese military circles, the Internet and digitisation are perceived as major new threats. In an article for the political theory journal *Qjushi*, which is published by the Central Party School in Beijing, Yuan Yi quotes the words of President Xi, "Without Internet security, there is no national security". The author is a graduate of the Academy of Military Sciences of the People's Liberation Army. As he writes, the Internet represents a fifth battlefield after land, sea, air and space. Despite all the economic progress, the military threat from the Internet could prove to be an Achilles heel for national security. He cites several specific examples of the subversive effect of cyber attacks, such as the successful hacker attacks from Russia on critical infrastructure in Estonia, related attacks on the al-Gaddafi regime in Libya's civil war in 2011 and the role of online movements during the Arab Spring. To counter these attacks, the author recommends training specialists to develop military technology to defend against and weaken enemy attacks as well as developing

psychological operations to influence public opinion in other countries, thereby acting as a deterrent. Yuan Yi recommends Plan X, a US Defense Advanced Research Projects Agency (DARPA) programme, as a model for coordinating research into cyber warfare. The programme combines academic, industrial, commercial and private expertise. DARPA was established in 1958 to secure the technological superiority of the US through targeted support. The agency does not conduct any research itself, but coordinates, evaluates and finances corresponding projects such as ARPANET, the precursor to the Internet.

Other experts, however, emphasise that the danger of spreading false and harmful information on the Internet could threaten the military as a political institution. Critics argue that the ideological training of soldiers cannot keep pace with the development of the Internet as a source of information, ideas and entertainment. Rather, it might be preferable to improve training in the political and technical aspects of the Internet, establishing sources of reliable political information on the Internet and controlling public opinion on military issues.

Suggestions like these are being discussed in more detail by lecturers at the VBA Academy of Communication Sciences in Chongqing. They point out that the traditional cultural activities of the army have become less relevant and corresponding reforms are needed. Their focus here is on smartphone Internet which may have heralded a 'micro-revolution'. Mobile blogs, news services, music and film offers have called into question the functionality of the conventional cultural work of the military. Military communications may only be successfully reformed by developing 'micro-ideas' and 'micro-strategies'. The authors use phrases like 'being in touch with the people' and 'humanisation' to describe how the media would have to adapt to netizens. In their opinion, the anonymity and virtuality of the Internet might even be beneficial for communication within the military

because these factors would weaken the influence of rank. Moreover, both communication between the generations in the military and the exchange of ideas between the army and the population could also be improved.

Communication experts recommend a strategy of military culture media that, firstly, assigns a more active role to the 'micro-world', secondly, is linked to the needs of netizens in terms of games and training and, thirdly, aims to coordinate the efforts of the media to achieve a 'united front on the Internet'. To achieve this, apps would have to be developed that meaningfully enhance and complement military training whilst, at the same time, remain compatible with core digital culture.

Golden Opportunities, Bleak Future?

Numerous opportunities, risks and threats associated with China's digital transformation are addressed in these very different discussions. Given the rapid and often difficult-to-predict developments, however, it is not apparent whose opinion will prevail: the optimists who expect a better future through technology or the realists who warn of incalculable risks. Nevertheless, some experts are trying to identify a general trend in digitisation. Yun Yanhui, an expert at the China Center for Information Industry Development (CCID), stresses that with advances in mobile communications and Internet technology, there is a growing feeling of being 'trapped in the digital world'. That going 'too fast' and 'too close' causes a loss of personal space. The sheer volume of data collected leads to a dependence on evaluating algorithms by the companies that offer them and by the government authorities that control them. Yun Yanhui evokes the dystopia of a 'digital dictatorship' in which people will find themselves at the mercy of these powerful institutions. At the same time, they may lose their own subjectivity because machines would supersede human expertise.

While, according to 'techno-optimists', there are golden opportunities, this vision

describes a bleak future in which society diverges into polarised groups no longer in contact with each other and not recognising any common organisations. The divisions would be exacerbated since there will only be a few creatives who understand the technology and a much larger number of consumers who would only use the digital products. In addition, it must be assumed that the situation of marginalised groups on the other side of the 'digital divide' would be magnified still further. This would apply to those people without adequate access to the Internet and the associated economic and social resources. To find ideas for resisting such a development, Yun Yanhui is looking back to the early days of the Internet. Values such as equality and self-determination that were originally associated with the Internet were intended to promote cooperation for the common benefit of the different groups in society. They required a stronger sense of community and public awareness of the value of personal spaces.

The first signs that such an awareness is emerging appeared in January 2016 when the founder of WeChat, Zhang Xiaolong, called for a limit on the number of messages that could be sent so as not to overburden users. The Xinhua News Agency reported an 'information explosion' on WeChat. When supervisors and work colleagues constantly send messages to each other, even on weekends, this will contribute to many users feeling as though they have been 'taken hostage' by the platform.

There are, however, also researchers who are more optimistic about the developments. Chen Chuan, a lecturer at the Institute of Sociology of the Central Party School in Beijing, acknowledges the risks of parallel societies forming on the Internet with differing opinions, but he also believes the Internet has the potential to reduce social conflicts. In particular, the Internet might defuse tensions in communication between the government and the people. Here, the author is referring to the government's current feedback system which is often a cause of conflict and dissatisfaction. Formal peti-

tions are slow and ineffective; informal protest or tacit agreements with local administrations are unsafe, opaque and unfair. Chen Chuan believes that governments could better represent even more people at district, provincial and national level with a recognised, legitimate mechanism for decision making, in which the general population would also participate, thereby significantly increasing the legitimacy of the Party among the population. However, a move from tyranny to governing by consensus would require considerably more fairness, justice and transparency.

China as a Laboratory for the Digital Future

In many areas, China is like a laboratory for the digital future. The speed of the country's digital transformation, coupled with the simultaneous use of new digital technologies by many hundreds of millions of people, allows us insights into digitisation that cannot be obtained elsewhere.

Under the leadership of Xi Jinping, the topic of digital transformation has finally been given top priority. It is no longer just a matter of closing off and controlling the Internet with the help of the 'Great Firewall' – the unofficial name of the Chinese Internet censorship programme – it is now a question of promoting creativity within the Chinese Internet. The government sees digitisation as a chance to be at the forefront of progress that promises prosperity and global power status. This is highlighted by the comprehensive National Digitisation Strategy, the Internet Plus initiative, new legislation on Internet security and the ambitious long-term goal of setting technological standards in Internet infrastructure, Internet business and Internet security.

At the same time, the government has also addressed the security policy risks, technological dependencies and military weaknesses resulting from digitisation. These concerns reflect warnings by Chinese military experts who are even more explicit about the consequences of uncontrolled

discussions and dissemination of soft power on the Internet. In their view, technological independence should be accompanied by cultural influence and sovereign control over public opinion in order to prevent foreign infiltration as well as criminal and terrorist activities.

In terms of economic policy, digitisation is considered a 'new industrial revolution' which should increase efficiency and output both in business and in administration. The government is creating incentives for innovative start-ups, promoting the development of new technologies and, in doing so, can rely on support from the private sector. Pioneering companies such as Alibaba, a major e-commerce company in China, Tencent or Xiaomi play a prominent role by creating new industries and jobs and inspiring emulators. The Internet economy is becoming a potential source of sustainable growth and a social power factor. The population is benefitting from new products and services; many people hope that the technological progress will lead to a better future with less poverty, injustice and conflict.

Other experts see the risks of social polarisation and alienation on the Internet. Children, adolescents and students run the risk of uncoupling themselves from the rest of society, submerging themselves in virtual fantasy worlds and becoming victims of addiction, crime or exclusion. In addition, businesses and even the government could be tempted to delegate decisions to Big Data algorithms which, in the long term, might incapacitate human institutions.

The topics and issues dominating internal Chinese discourse on the digital future also deal, to a large extent, with states and societies beyond the 'Great Firewall'. There are, therefore, a number of possible areas for exchanging ideas between Germany and/or the EU with China on the social, economic and political challenges of digitisation. One example is the 'Internet of Things', on which the EU and China adopted a joint White Paper in 2016. Furthermore, it is important to integrate the cross-cutting issue

of digitisation into existing dialogue mechanisms between Germany and/or the EU and China in order to develop common standards in a variety of fields for the digital future. In the long term, the security of data and (critical) infrastructure requires global solutions. This is the only way to ensure economic and political cooperation in the digital age.

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