KONRAD-ADENAUER-STIFTUNG 1|2018

INTERNATIONAL REPORTS

The Digital Future

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Dear Readers,

Will it be permanently dark in the factories of the future – because the autonomous machines working there do not need any light? Will we work only a few hours a week one day because robots and algorithms do most of our work for us? How will digitalisation change our interactions, political decision-making processes, and geopolitical contexts? Prediction is very difficult, especially about the future. Nevertheless, the contributions to this issue do not limit themselves to the current state of digitalisation, but venture a look into the digital future.

There is no doubt that digital progress will continue to change our lives, and especially the way we work. This prospect causes some to hope for a better balance between work and private life. Others fear that people will be replaced by machines and become unemployed. In his contribution to this issue, Aljoscha Burchardt explains what hopes are realistic and what fears are justified.

Going beyond unrealistic hopes and exaggerated fears, it is certain that as the use of artificial intelligence increases, it becomes more important to agree on binding rules for this usage. Olaf Groth, Mark Nitzberg, and Mark Esposito make this clear in their contribution and call for an international Magna Carta for the age of cognitive machines.

The Society 5.0 concept in Japan pursues the goal of a fully networked society. Its initiators hope to solve the urgent demographic and economic problems of the island state. Franz Waldenberger analyses the likelihood of success.

Nowhere is it more evident that digitalisation is changing political decision-making processes than in social media. The fact that anyone in the world can network and exchange ideas with anyone else has its downsides too, as Torben Stephan explains. The challenge for policymakers is to promote the positive elements of digital participation while containing the negative ones.

Using Kenya as an example, Jan Cernicky and Antonie Hutter show that digitalisation has the potential to contribute to increasing freedom and justice. In Kenya, with its dynamically growing digital economy, the young – and numerically superior – digital natives face a social and political elite for whom the internet is

generally new territory. Whether the younger generation can use the internet as a space for open discourse, ensuring more participation, remains to be seen.

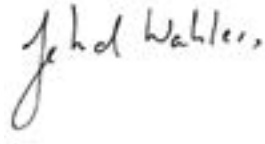
So far, the connections between digitalisation processes and both the international energy and raw material markets have tended to attract less attention than is warranted. The current epochal change in global energy systems is interacting with the digital revolution in many ways. In his contribution, Peter Hefele analyses the opportunities and risks of a digitised energy economy and shows what geopolitical power shifts might result.

Blockchain technology is already receiving a great deal of attention in connection with Bitcoin, the digital currency. In his contribution, Christian Hübner shows that its potential goes far beyond cryptocurrencies. It may even be an alternative to weak government institutions like those we find most commonly in emerging and developing countries.

No one can yet conclusively say whether dark factories will become a normality, people will disappear from production processes, or political decision-making processes will take place only digitally. However, even today, there can be no doubt that our future will unfold in digital space. Therefore, there is no way to avoid the necessity of making this space our own so that we can actively shape our digital future, with all its potential, in the way we want.

I wish you a stimulating read.

Yours,



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The Dark Factory

The dark factory or lights-out manufacturing symbolically stands for the rapidly advancing digitalisation and automation processes in the industry. There is no need for light in a place where manufacturing processes are fully automated, "intelligent" machines and robots are amongst themselves, and humans are not needed anymore. In fact, the future vision of a "dark factory" has already become a reality. Numerous factories all over the world are already able to function without light, some of them even operating permanently in the dark.

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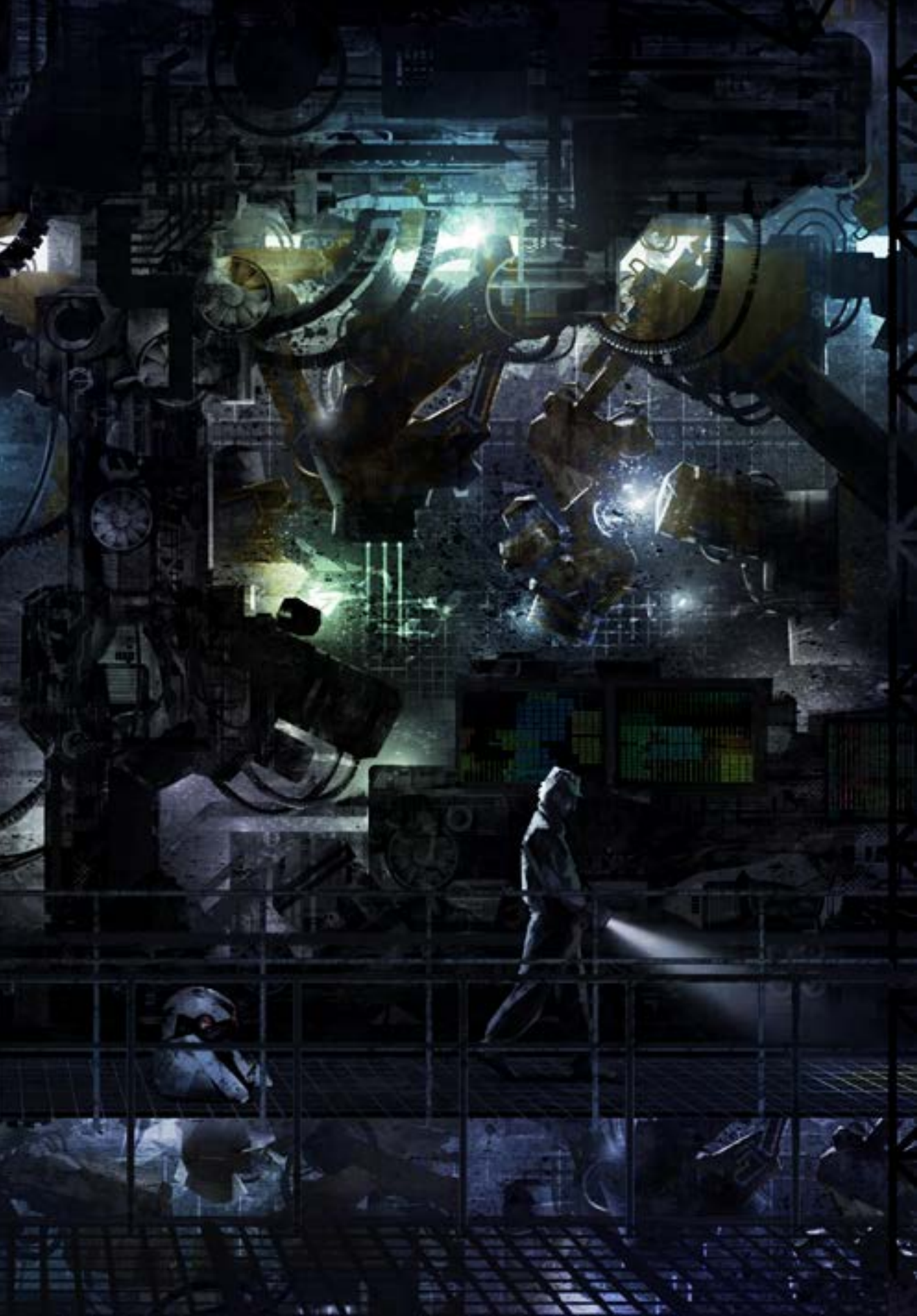

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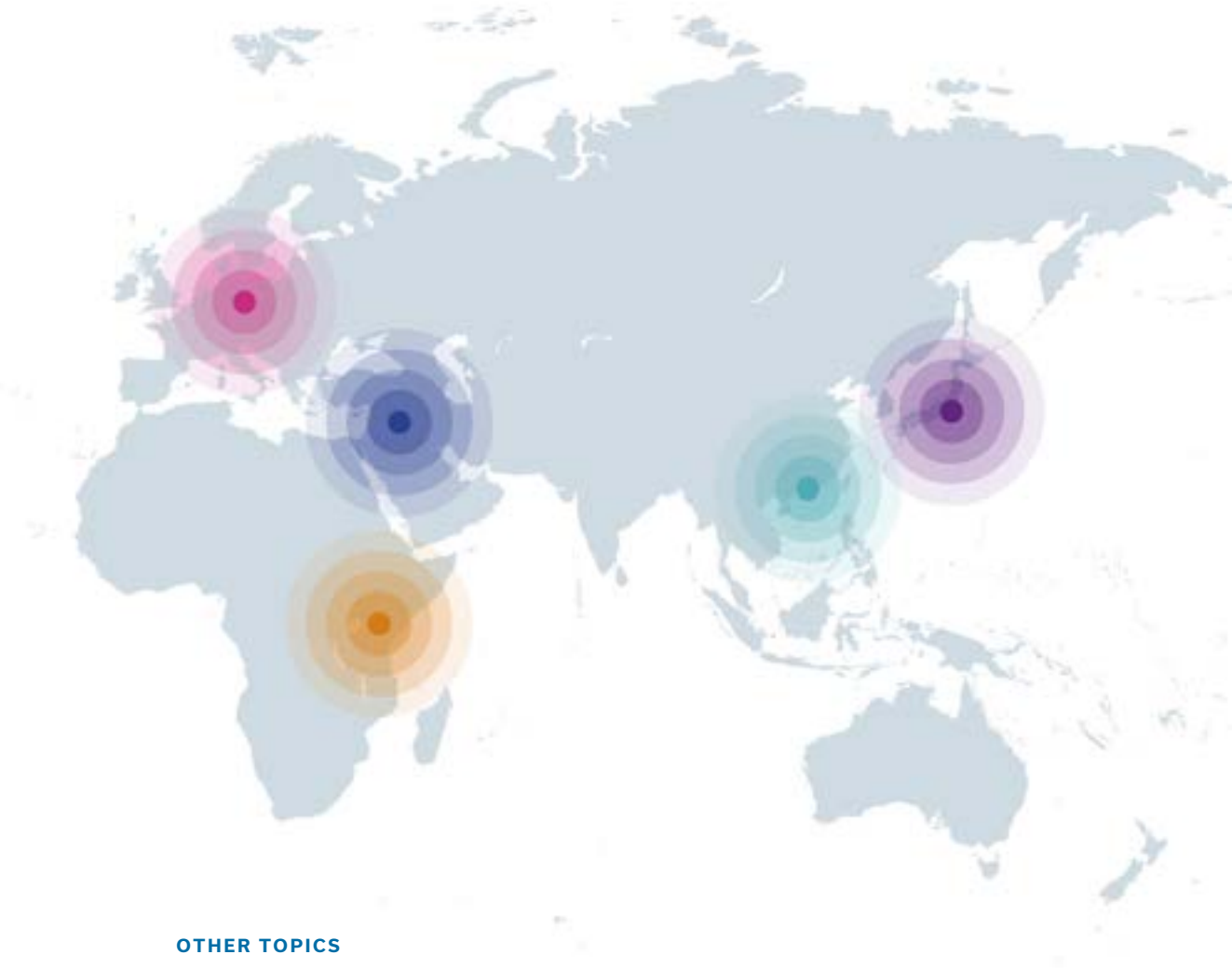

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Interjection

The Digital Future

Humanity Will Not So Swiftly Replace Itself

Aljoscha Burchardt

Terms such as artificial intelligence and machine learning have triggered a wave of expectations, full of both hopes and fears. Hopes that we are on the brink of finding solutions to the great problems of humanity are tempered by fears, most commonly that of being made redundant. A sober look at the facts.

Four Preliminary Questions

To speak of digitalisation today, is also, inevitably, to consider artificial intelligence (AI). This is remarkable in that AI dates back to the mid-1950s, and yet it is only now that it is starting to attract attention. If we are to believe those who shout the loudest, humankind is now facing drastic changes, which are, moreover, wholly without parallel in history.

When it comes to the larger considerations of life, valuable insight may be gained from the key questions posed by the great philosopher from Königsberg, Immanuel Kant: What can I know? What should I do? What may I hope? What is man? These questions take us to the borders between and of knowledge, ethics, religion and ultimately the question of being. In this paper, I will discuss the current situation and the need for action with regard to digitalisation and AI. An interesting answer to the last question is provided by Yuval Noah Harari in his recent book *Homo Deus*. He argues that we are no more than a highly complex algorithm made of flesh and blood. Following this logic, there is no fundamental difference between us and a supercomputer that knows the state of our cells, our hormone levels, our sensory impressions, our experiences, and so on. This, although it seems rather like science fiction, should be kept in mind, if only as an intellectual exercise and I only mention it for the sake of completeness

In Western society we tend to define ourselves by our work, or to be more precise, by our gainful employment. In southern Germany people use the verb *schaffen*, literally to create. When we work, we create. What will happen to us and to our working world in this age of digitalisation? I will now turn the spotlight on this question.

Predictions and Changes

One constantly hears and reads predictions of the future based upon the past, yet these nearly always fall wide of the mark. As AI researchers, we are often asked how digitalisation will change people's working lives. I sometimes wonder how someone like Gottlieb Daimler, at the end of the 19th century, would have responded when asked how the automobile would change the world of work. Perhaps he would have replied that the first thing to do was to build up the network of pharmacies so as to ensure enough fuel for hundreds of cars. He would likely never have imagined that one day Germany would have more cars than men, nor, one supposes, would he have foreseen the fact that the majority of the working population would simply use their cars to commute to work, where they would then be parked all day long. But that's another issue.

Since industrialisation, the working lives of the mainly agricultural population have undergone several radical changes. These changes have not only affected working hours, but also production methods. In the early days of industrialisation, people worked 60 hours a week, including Saturdays. After the Second World War they worked 45 hours a week, whereas today some people work 35-hour weeks. Occupations and entire professions have come and gone in a short space of time. A few years ago, a multitude of workers spent their whole day doing things on typewriters and calculators that we now quickly deal with on our computers – thanks to digitalisation. The sphere of non-remunerated work

has also changed dramatically. My grandmother sometimes told me about her mother's life as a housewife in the 1920s. In winter, she had to carry coal; in summer, she had to buy milk and cheese every day because she had no refrigerator; and in the evenings, they had to head to the local pub if they wanted a beer. Washing day really did take a whole day if the laundry also had to go through the mangle. The arrival, over the last few decades, of all kinds of household appliances meant that the full-time job of housewife – which was considered a normal occupation for around half the population – changed. Now, a working couple can handle the housework in their spare time. Unless they have young children, in which case there is still a need for the mother (or father) to stay home with them.

Working hours and production methods have changed drastically since industrialisation.

The industrial and technological revolutions of the past have never led to mass unemployment – neither the emergence of assembly line production in the 1920s, nor the robots of the 1970s nor, most recently, the computers of the 1980s. Over recent years, studies have been published at regular intervals providing astonishingly detailed predictions about how our working lives will change. Foremost among these is the widely cited study by Frey and Osborne from 2013,[1] which estimates that almost half of all jobs in the United States have the potential to be computerised. In fact, this study appeared before the most recent breakthroughs in the field of AI. But of course such studies are extremely speculative. They categorise groups of occupations according to the amount of social intelligence they require, and then work out a probability for the extent to which machines would be able to demonstrate that social intelligence. A whole dissertation could be written on each of these concepts and assumptions. A more recent study by McKinsey dated 2017[2] shows that technology has, in fact, always created more jobs than have been lost due to the ensuing disruption. So the key question is as follows: will the upcoming wave of digitalisation be any different?

What Are We Really Talking About?

As a specialist in this field, I would like to outline three key concepts that are relevant to the debate: digitalisation, artificial intelligence and machine learning.[3] In a nutshell, artificial intelligence is a tool for the purpose of digitalisation; machine learning is a tool for realising artificial intelligence.

Digitalisation encompasses an array of technical processes that differ in terms of both nature and complexity. Looking back, we can roughly distinguish two waves of digitalisation. The first of these, which gained momentum in the 1990s and is still far from complete, is the switch from analogue data carriers (such as paper, film, tape) to digital equivalents that can be processed by machines. Initially, it was only the carrier medium that changed, for example, a photo was now available as an image file, or an address file, as a database. But the machine was unable to do much more than simply store and play back data. Any work on the content had to be carried out by humans. The second wave of digitalisation, which is currently in full swing, is making data *understandable* to machines. This requires sophisticated analysis and processing capabilities, and AI is often used to do this. The impact of digitalisation is often wrongly attributed to AI. For example, the retail trade's shift towards online retailing is a consequence of digitalisation, and (so far) has little to do with AI.

Artificial intelligence describes Information Technology (IT) applications that aim to demonstrate intelligent behaviour. To different extents, this requires a range of key skills: perceiving, understanding, planning, acting and learning. We currently talk about weak AI, which refers to intelligently helping people to achieve their

goals, i.e. smart interaction and collaboration between humans and machines. *Strong* AI has a more philosophical relevance. It aims to imitate humans, to be, ultimately, a homunculus.

Machine learning (ML) refers to procedures through which computer algorithms learn from data. In other words, they learn to recognise patterns or show desired behaviours without the need for each individual case to be expressly programmed. For example, in the online book trade, algorithms learn that there are certain types of books that are bought by certain categories of customers, without the need to define in advance what a romance novel is, or a young father. Autonomous vehicles can learn by simply having people control them for a while. This method is also used to train automatic image labelling. People label images with information such as whether a face appears cheerful or sad, and after several thousands or tens of thousands of examples, an algorithm can then learn to classify new images by itself. While ML is often used in AI, ML is only one method, an AI tool amongst many. Neural networks and deep learning are also often mentioned, being themselves part of ML.

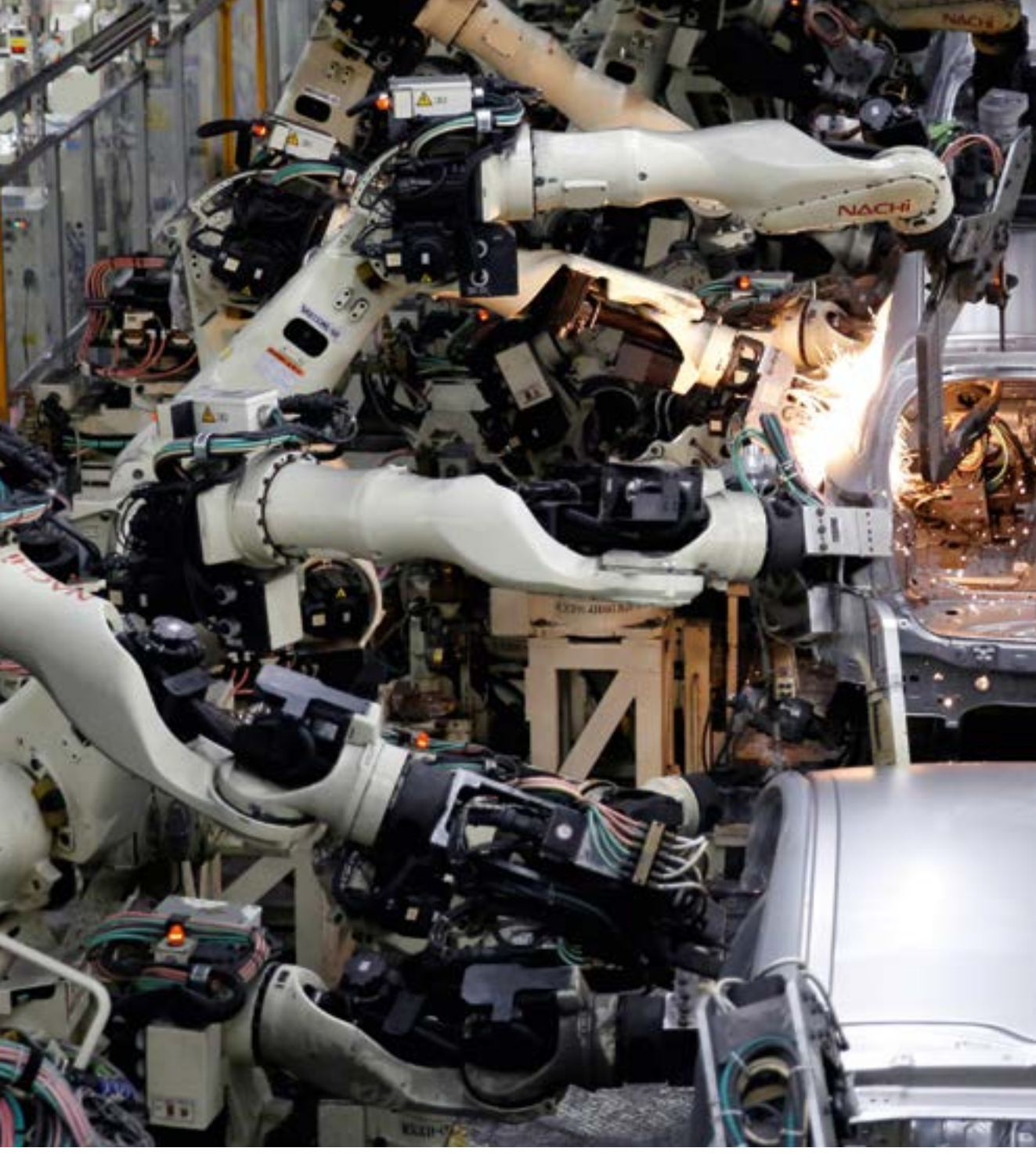
What Jobs Can Be Done by AI?

Now we come to the question "What can we know?" If ML is used as the method of choice, AI can take over repetitive tasks. Indeed, even future actions, relating to changed data, can be derived from the analysis of previously existing data, even if the data situation changes. In order for this to happen, it must be possible to model the patterns or rules of the game. For example, it is relatively easy for a machine to learn how to translate words and phrases from previously translated texts, and in this way create completely new sentences without errors. But analysing existing marketing texts does not allow a machine to learn how to write good, persuasive new marketing copy. One could say that machines can read the lines, but it is only humans who can read between them. Especially in fields such as marketing, it is important to arouse unspoken expectations and garnish them with new plays on words, subtle allusions and so forth. This is where current technology has reached its limits.

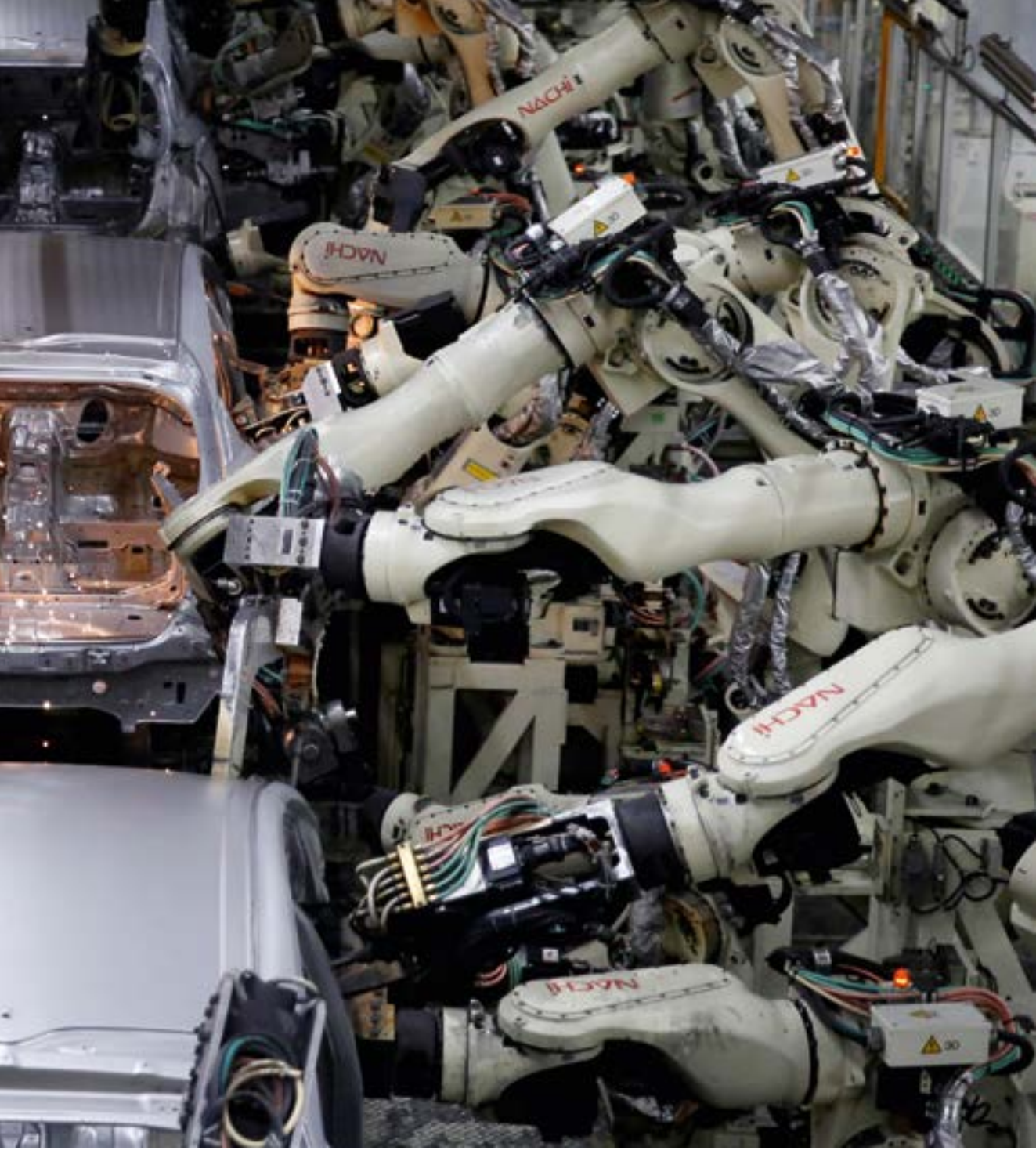
But when it comes to the tasks that machines *can* do, they often do them much better or faster than humans. When evaluating MRI scans, systems that have been trained using tens of thousands of images and their corresponding findings are already superior to experienced physicians who have perhaps only seen a few dozen cases of rare conditions in their career. However, the machines have absolutely no understanding of medical contexts and cannot provide explanations for the diagnoses. In this respect, they remain a tool that expands people's capabilities and backs up their decisions. In the world of translation, Google Translate claims that it machine translates 100 billion words every day. This would be impossible using human translators, just as it is impossible to do without online search engines, which are based on information retrieval using AI. Here, AI is already part of our information society and helps to guide our destinies.

There are some limitations to what machines can do, but what they are able to do, they do better and faster than humans.

AI has great potential in office and administrative work. As previously mentioned, many of us now have to do a number of tasks alongside our other work, such as making appointments, bookkeeping, archiving and filing. This work often consumes a great deal of our productive energy. The same is true of reporting, documentation, taking the minutes of meetings, and so on. One might hope that intelligent technologies will relieve us of this burden in the near future and make many public administration processes faster and more transparent.



When it comes to manual labour, the same rule of thumb applies to whether jobs can be automated. Repetitive, uniform processes are easier to learn than complex ones, which require a great deal of knowledge and the ability to apply what has been learned. One example of this is autonomous driving. Driving on a motorway in the United States can be learned relatively easily with the help of camera images, geo-coordinates, etc. It is, however, harder to



Machines amongst themselves: In tomorrow's factories, humans will rarely be seen. Source: © Toru Hanai, Reuters.

learn how to drive in a mountainous village of southern Europe.

Robots can relieve workers when it comes to lifting heavy weights, overhead work, or bathing a sick or elderly person and putting them to bed. But from a technical standpoint, these kinds of mixed teams of humans and robots are much more complicated than fully automated systems. Health and safety has to be a key priority

in factories where people are walking around while robots are operating. If a robot is passing a component to a human, it will not notice that the person cannot take it because they have been momentarily distracted, for example, by sneezing.

In the area of AI, there is still vast potential for development.

We can only touch upon the technological opportunities and hurdles at this point, but one thing is clear: there is vast potential for development and it would be advisable to explore this further. Such technologies also provide ample potential to achieve a more inclusive society, by supporting those who cannot – or can no longer – participate in working and social life because of cognitive or motor disabilities, or simply because of language barriers.

What Should We Do?

Previous technological and industrial revolutions have generally led to increased productivity, and this has always been accompanied by the question of distributive justice, though only between employees and employers. The rules of the game that can be used to create a balance – on the national level – and satisfy all sides to a certain degree are well known. Perhaps we should slowly adjust to a time in which we only work 20 hours a week and otherwise have time for our children, older people, new citizens, or for pursuing further education, fine arts, and so on. We have to be prepared for this. If, for many of us, the end of gainful employment comes faster than expected, we should have some ideas for new structures. In light of the above, the rule of thumb that lower-paid jobs are the first to be hit does not necessarily apply. In ten years' time, it is more likely that a construction worker will still have a job than an HR manager.

Today, the welfare state is suffering more than ever before from the fact that global corporations such as the AGFA big four (Amazon, Google, Facebook, Apple) are diverting their profits into tax havens. The phenomenon is caused by globalisation rather than digitalisation, but the virtual nature of their products and services makes these practices much easier. There is also another question of distribution, which could even be the decisive one: namely, who has the data? It is virtually impossible for smaller companies to gain critical mass and assert themselves in the face of the huge "data cartels". There are, however, some welcome exceptions, such as the small Cologne-based company DeepL, which offers a machine translation tool that is qualitatively superior to Google Translate. Additionally, to all intents and purposes, we submit our data voluntarily every time we search for something online or click on the news on our phones. All these useful services that are seemingly free are actually paid for with our data. We need a debate about the data economy and potential regulatory measures.

We also need a public debate about how we want technology to be used, with less focus on what is technically possible. If we return anew to the example of the robot that helps caregivers with hard, physical work, then it could be that the robot lifts the bedridden person while the carer makes the bed, washes them, gives them their medication and asks them how they are feeling. Sooner or later it will be possible for robots to wash the person, give them their medication and converse with them. That may sound strange at first. But in light of the shortage of nurses and carers, and situations where one nurse has to monitor three corridors with 60 patients on a night shift, perhaps it is conceivable and indeed the lesser evil if a robot can give a patient something to drink, or clean up vomit, until a member of staff has time to do it. It is a question of priorities and the affordability of alternatives. But above all, the discourse should be objective and not be dominated by doom-mongers or self-appointed technical gurus.

Finally, we still need an answer to the question: "What may we hope?" If we approach this in a general, rather than religious sense, I would say it largely depends on our mindset. Technologically advanced countries, such as Japan and Germany, are better placed to compete on the global stage than countries that still largely rely on manual labour. Despite this, in Germany one often encounters a general mistrust of new technology. This starts with the Germans' love of manually changing car gears, something that is virtually unknown in countries like the US In Germany, even a normal electric car – let alone a self-driving car – triggers fears of loss of control. Here, we must once again develop the inventive spirit of "participating and creating" that drove people like Gottlieb Daimler onwards, despite all kinds of resistance, both human and technical. Technology should expand our horizons, and no-one should ever be replaced by technology. However, those who steadfastly oppose the march of technology will find themselves if not fully replaced, then significantly less relevant.

–translated from German–

Dr. Aljoscha Burchardt is Senior Researcher and Lab Manager of the Language Technology Research Unit at the German Research Centre for Artificial Intelligence, as well as Deputy Chairman of the Berlin Scientific Society.

1 Cf. Frey, Carl Benedikt / Osborne, Michael 2013: The Future of Employment: How susceptible are jobs to computerisation?, Oxford Martin School, 17 Sep 2013, in: http://bit.ly/2FHm5wM [14 Feb 2018].
2 Cf. Lund, Susan / Manyika, James 2017: Five lessons from history on AI, automation, and employment, McKinsey&Company, November 2017, in: http://bit.ly/2AkSzeF [14 Feb 2018].
3 Cf. Bitkom / DFKI 2017: Positionspapier Entscheidungsunterstützung mit Künstlicher Intelligenz, bitcom, 5 Sep 2017, in: http://bit.ly/2HvPOto [14 Feb 2018].

Source: © Yuya Shino, Reuters

The Digital Future

Rules for Robots

Why We Need a Digital Magna Carta for the Age of Intelligent Machines

Olaf Groth / Mark Nitzberg / Mark Esposito

We stand at a turning point in human history, on the threshold of an unknown digital future. A powerful new technology, artificial intelligence (AI), permeates every area of our lives, largely thanks to advances in neural networks, modelled loosely on the human brain. Our societies and economies have become increasingly dependent on the use of artificial intelligence. A new set of rules is needed in order to ensure that freedom, inclusion and growth are safeguarded in the future. In other words, we need a digital Magna Carta for the age of cognitive machines.

Dawn of the Cognitive Age

Artificial intelligence can detect patterns in massive unstructured data sets.[1] In view of the increasing availability of data, it can improve the performance of companies, identify objects quickly and accurately, and enable ever faster decision-making, whilst minimising the disruptive influences of complex political and human circumstances. This constellation raises fundamental questions about the degree of human freedom of choice and inclusion, the significance of which will increase in the coming decades. There are, moreover, crucial differences in the attitudes and approaches of leading nations with regard to these issues. The current differences in the international value structure will intensify and the potential for social and geopolitical conflicts is rife.

In future, to what extent will humans – including the elites and representatives of all positions of power and levels of income – still be involved in decision-making processes? How can we govern this brave new world of 'machine meritocracy'?

In order to find an answer to these questions, we need to travel back 800 years. Upon his return from France, in January 1215, King John of England faced angry barons who wished to end his unpopular rule of *vis et voluntas* ("force and will") over the realm. In an effort to appease them, the King and the Archbishop of Canterbury brought 25 rebellious barons together to negotiate a "Charter of Liberties" that would enshrine a body of rights for the aristocrats to serve as a check on the King's discretionary power. After lengthy negotiations, an agreement was finally reached in June that provided greater transparency in royal decision-making, a louder voice for the aristocrats, limits on taxes and feudal payments, and even some rights for serfs. This was the famous Magna Carta. It, of course, remained an imperfect document, teeming with special-interest provisions of certain social classes. Yet, today we tend to regard the Magna Carta as a watershed moment in humanity's advancement toward an equitable relationship between power and those subject to it. Ultimately, it set the stage for the Enlightenment, the Renaissance and today's constitutional democracy.

Similarly, it is the balance between the ever-increasing power of the new potentate – the intelligent machine – and that of mankind that is at stake today. This is a world in which machines are increasingly involved in the creation of value, produce more and more everyday products, and in which human control over design and numerous other important aspects is being continuously reduced. As a result, our current work-life patterns will, in the long term, irreparably change. This technology, which we have ourselves created, will soon overtake certain cognitive abilities of humans, and thus increase their lead ahead of us in terms of productivity and efficiency at a breathtaking pace.

The consequences of this will become apparent in the following one to two decades. After all, it takes computers mere weeks, or often hours, to recognise complicated patterns in dozens or hundreds of data streams that have been generated as a result of centuries of scientific work and economic activity. And they do it with a precision and tirelessness that is far superior to anything that humans can offer. Acquiring knowledge and insight from this, and communicating decisions, is at the core of cognition, i.e. of thinking.

The cognitive ability of AI will transform human existence over the next 10 to 20 years.

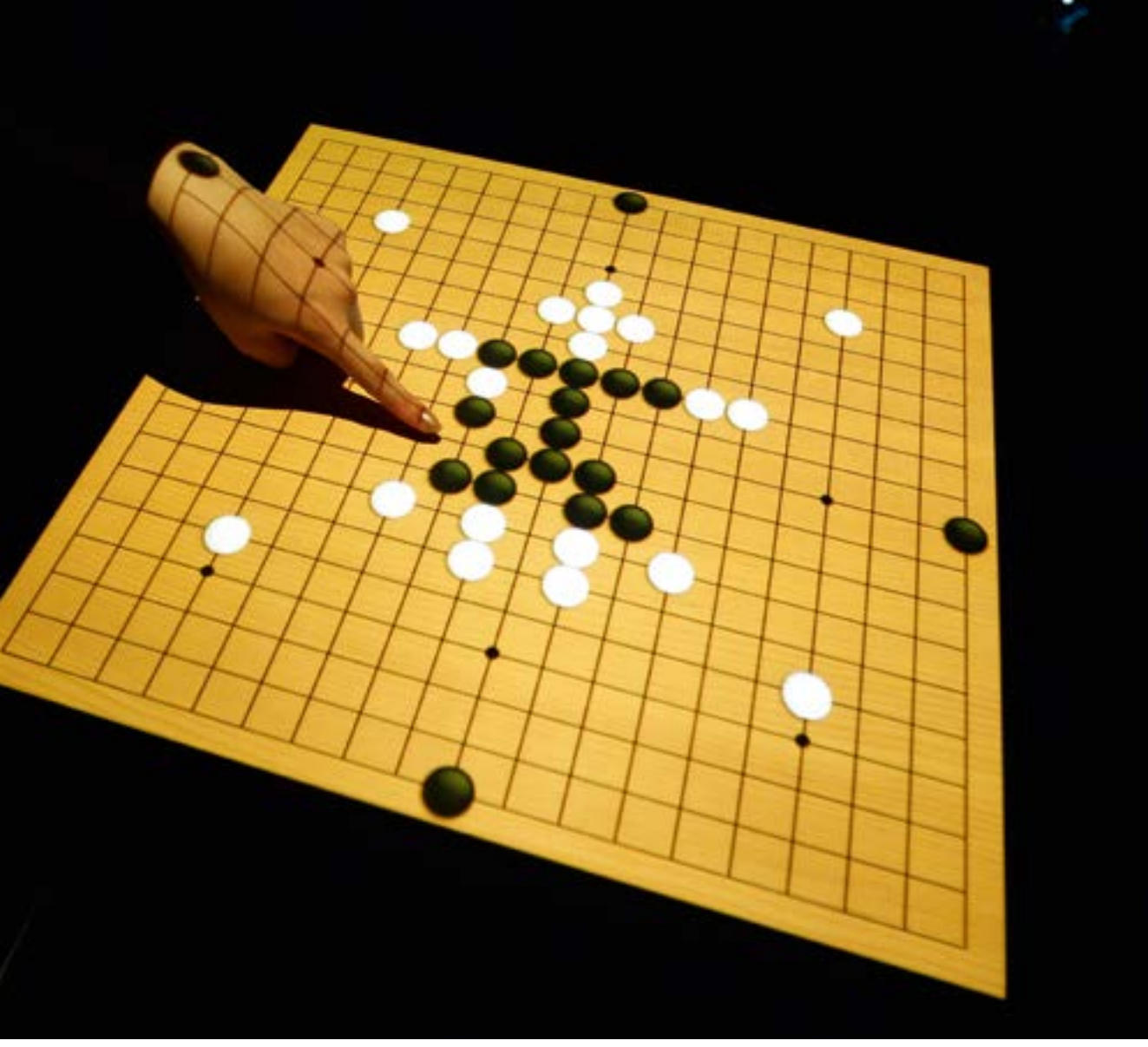
There is no doubt that machines are still decades away from replicating the human brain's intuitive ability to project – a capacity that has evolved over millions of years. With less data, we are still superior to machines, since it is in our DNA to be able to think outside the box, to be inspired, and to come up with ideas as a result of thoughts colliding. Then there is the human being's emotional intelligence, empathy, consciousness, moral understanding and ability to be intuitive, to interpret and to sense things. However, we should not fall into the trap of thinking that intelligent machines can never develop similar skills, which may not correspond exactly to our own, but which could circumvent or replace them to a certain extent. This would not be developed with a view to totally replace humans, but instead to enrich our lives. However, it also exposes us to dangers. The potential for disruption has been ignored mainly due to the fact that Hollywood has given AI so many attractive faces and voices. In the film "Her", AI in the form of Scarlett Johansson certainly stimulates our imaginations, but most realistic, critically-thinking people believe such a phenomenon is still a long way off. However, this critical reflection and realism has the drawback that it may lead to simple mockery of the hype coming out of the United States and China, rather than spurring people to take it seriously and get involved in shaping it.

From Homo Economicus to Homo Digitalis

Cognitive computers and intelligent machines are no longer the stuff of science fiction. There are already many good examples: for instance, demographic change and an ageing population have led Japan to the brink of a crisis, due to a shortage of nurses and care workers. Faced with a need for a million nurses, social workers, and so forth, the country has invested heavily in robot technology to make life easier for older people. Robots are not only used for heavy work such as lifting patients or shopping for the elderly, but also for social services such as simulated contact with pets and fellow human beings, which is offered by more or less realistic, animal-like and humanoid robots (see also the article on Japan in this issue). Meanwhile, the United Arab Emirates has recently set up a separate ministry for artificial intelligence and has started pilot projects using simple robocops to provide basic observation and information services. In Nigeria, applications such as Touchabl.com are being developed so that, for instance, even illiterate people can participate in social production processes, play an active role as consumers, and thus contribute to the economy and develop a digital voice.

However, matters becomes more problematic when personality traits, demographic profiles and a large part of people's social interactions are digitally evaluated and rendered public, thus leading to the violation of personal rights and privacy, as these concepts are understood in the West.

In the US, the UK, in China and in Russia, AI technologies such as facial recognition, speech processing and mood analysis algorithms are being used to prevent crime and terrorism. In this way, police departments in New York City and Los Angeles can track the crime risk of certain individuals and entire neighbourhoods, and deploy officers at the right time. The extent to which these AI applications are, in their entirety,



Go robot, go! Compared to chess, the board game Go poses a disproportionately greater challenge to AI. However, by now, computer programmes have surpassed humans even here. Source: © Kim Kyung-Hoon, Reuters.

subject to privacy and data protection considerations varies considerably from country to country. In some districts of Los Angeles, for example, street cameras capture the faces of people who were in the area when crimes were committed. This, however, means that people who were not actually involved, but who have collected points through correlation, are also added to databases. The admissibility of this procedure is to be determined by a lawsuit being brought by the American Civil Liberties Union. There is a similar approach in New York City, where the New York Police Department (NYPD) uses algorithms supplied by technology companies to ascertain where criminal offences are most likely to occur in the city, so that they can then deploy police officers as a preventive measure. Courts in Wisconsin and Florida are also using predictive analytics to make judgments about what kind of risk a defendant poses, and accordingly, what bail should be set. Here, as in New York, the judges or their "intelligent" technologies cannot say exactly what logic was used to make a certain judgment, because the

algorithms are composed as neural networks that propagate and re-propagate conclusions between different levels of the network at high speed, but without being able to understand them. This goes too far, even for Americans who invoke the transparency of their legal system, so the Pentagon's Defense Advanced Research Projects Agency (DARPA) has launched an "Explainable AI" project.

In China, multi-billion AI systems are currently being developed, which provide every citizen with a public "trust rating".[2] China's internet behemoths and the Chinese government are developing AI-driven systems such as the Zhima Credit (Sesame Credit) programme, which uses data such as praise or complaints from fellow citizens and government agencies to create a ranking list based on a scoring system of up to 800 points for individuals. This calculation also includes basic demographic data. So, for example, a 28-year-old pregnant woman will enjoy a better "rating" than an 18-year-old who purchases a motorbike. Someone who has 700 Sesame Credits is considered to be extremely respectable, whereas a score of 300 may lead to social repercussions, such as not being able to book an international flight. The official aim is to counteract corruption and untrustworthy patterns of behaviour, and to create greater reliability in economic and interpersonal transactions. Anyone who has ever been to China has been

From Alexa to Barbie : It is no longer a thing of the future that everyday objects are surveying us.
Source: © Mario Anzuoni, Reuters.

confronted by the problem of attempting to buy genuine products, such as branded goods. In addition, China has so far lacked a mechanism by which to rate consumer creditworthiness, as guaranteed by credit rating agencies in the US or by the Schufa system in Germany, which is necessary for a functioning economy. However, it is unclear how this system is protected against misuse or how the Chinese consumer can correct mistakes and misunderstandings. Experts also suspect that this will lead to the formation of new social classes, because people with good ratings could shy away from those with poor ratings. However, the most serious consequence of these systems is state control and re-education for the purposes of obedience to the State. In a world in which not only people's criminal activity, but also their demographic characteristics and their interpersonal "rough edges" are closely examined, quantitatively and statistically evaluated and then made public, one has to ask how far we are from the digital branding iron. Participation is currently voluntary, but it is destined to become compulsory by 2020. How will this affect the economic existence and social dynamics of 1.5 billion Chinese people? And will the resultant shifts lead to international repercussions? Will Chinese companies also introduce these systems in developing countries that receive aid from China, for example as part of the new One Belt One Road policy?

The fact is, predictive analytics, AI and interactive robotics already have to be regarded as fixture, being an essential tool for governments and businesses. And it is also a fact that public and political debate, particularly cross-border dialogue, is lagging far behind technological advances.

What Do Machines Know?

However, all this is not limited to the security sector. In every area of our lives, machines are starting to make decisions for us. They recognise our patterns of behaviour and thinking, and those of supposedly similar people across the world. We receive messages that shape our opinions, outlooks and actions based on tendencies we have shown (or which other similar people have shown) in past behaviour. Whilst driving our cars, car manufacturers and insurance companies collect information about our behavioural patterns to offer us ever-improving navigation aids and increasingly autonomous vehicle technology, that makes road traffic safer and more comfortable. We enjoy more and more sophisticated, customised entertainment and video games, the makers of which know our socioeconomic profiles, patterns of movement, and cognitive and visual preferences – knowledge they use to determine pricing sensitivity. The latest development in Mattel's Barbie doll serves as a good example of this. Now withdrawn from the market, it stored information about how children played, responded and spoke on Mattel's servers, so that other adaptive and targeted services could be offered. These might include allowing parents to monitor their children remotely, providing information on children's social behaviour and imagination, and certainly aiding in the development of new products. All this, however, rather smacks of Big Brother, especially as regards commercial interests marketing the data of an unprotected and unknowing minor. Customers were not (yet!) prepared to tolerate such an invasion of privacy. But this is already happening in many ways: today, every smartphone collects such data, distributes it for advertising purposes or uses it for the new, aforementioned improved services and products that are intended to enrich our lives in an ever more targeted way. Scientific Revenue, a start-up located south of San Francisco, enables the developers of computer and mobile games to determine and project the gaming behaviour, context and price sensitivity of players with a view to setting individual prices for a game or in-game purchase. Of course, this is not entirely new. In many places around the world, when negotiating prices for goods and services, the socio-economic impression we give our counterparts plays a role in how the prices get set. AI-enabled digital platforms codify, amplify and scale these processes – but without the desired transparency. Such a degree of individualisation is, on the one hand, enriching and pleasant. On the other hand, we should be aware that

we are already relying on machines to "know what is right for us." And indeed, the machine may get to know us even better than we know ourselves — at least from a strictly rational and empirical perspective. But the machine will not so readily account for cognitive dissonances between that which we purport to be and that which we actually are. Reliant on real data from our real actions, the machine constrains us to what we have been, rather than what we wish we were or what we hope to become.

Personal Freedom of Choice

Will the machine restrict our individual freedom of choice and development? Will it do away with life's serendipity? Will it plan our existence so comprehensively so that we only meet people similar to ourselves, and thus deprive us of encounters and friction that force us to evolve into different, perhaps better human beings? There is tremendous potential for improvement in AI. Some of our personal decisions should in fact be driven by more objective analyses: for instance, a rational synthesis of the carbon footprint for different modes of transport, our schedules and socio-emotional needs could lead to more sensible decisions on environmental policy. A look at the divorce rates in most industrialised countries could lead to the conclusion that it would not hurt to get a few objective, analytical pointers about how sensibly we select a partner and who really is right for whom. After all, our self-image and aspirations do not always coincide with our real behavioural patterns – a phenomenon psychologists call "cognitive dissonance". In addition, more effective curricula and cognitive-adaptive teaching should be developed for different groups of pupils and students with different learning profiles. American AI-experts are already working on systems that can help us avoid food shortages and famines by integrating changes in factors like weather, soil, infrastructure and markets into complex models to provide timely relief. The number of useful applications is almost infinite.

Polarisation or Social Balance?

However, artificial intelligence could also polarise societies by pushing us further into virtual bubbles of like-minded people, reinforcing our beliefs and values without giving us the chance to review, defend, or possibly revise these views through occasional confrontation with dissenting parties. Last but not least, AI could also be misused for digital social engineering, creating parallel micro-societies. For example, room or apartment letting agencies in certain districts might only rent accommodation to tenants with a particular socio-political, economic or psychometric profile, or only rent properties from such providers.

AI is already being used by businesses in selecting their empolyees more rigorously during job interviews.

Businesses could also use AI to help them select their employees much more specifically during job interviews. This is done using algorithms that evaluate the video streams of the various candidates according to the behavioural criteria that are important to the company. This is already happening today to some extent. Promising start-ups such as HireView and Koru in the US are making great strides and are already well-established in the industry, with a customer base that includes Unilever, Urban Outfitters and Vodafone. As a result, these companies are able to provide a more objective method for analysing interpersonal conversations, which are often beset with personal biases. This serves as a counterbalance to the CV, which has turned out to be relatively ineffective in predicting a potential employee's professional success in new situations. It is also sometimes easier to recruit candidates who appear less "glamorous" against the backdrop of their previous experience but whose situational behaviour is better suited to

the company. This could be particularly desirable for minorities, members of which are often overlooked. Ultimately, this will increase an employer's short-term success rate, but it also raises the question of whether an overly narrow method of analysis might not also lead to the excessive homogenisation of the workforce, which, in turn, could restrict companies' longer-term strategic options.

What About Values?

Machines judge us on our *expressed* behaviour and values, especially those implicit in our commercial transactions, because these deliver tangible, hard data. However, they overlook other deeply held values that we do not necessarily express in our actions at the time and for which there are no digitised data points yet. It is difficult for artificial intelligence to grasp newly formed beliefs or changes in our values outside the readily codifiable realm. As a result, it might, for example, make decisions about our safety that compromise the wellbeing of others based on historical data in ways we might find objectionable in the moment. We are complex beings who regularly make value and priority trade-offs within the context of the situation at hand, and sometimes those situations have little or no codified precedent for an AI to process. It is conceivable that an animal-lover's decision to make their self-driving vehicle swerve to evade an animal on the road – thus increasing their own risk of injury – could change when they have children of their own. Will the machine respect our rights to free will, to the evolution of our values, and the privilege of occasionally reinventing ourselves?

Discrimination and Bias

Similarly, a machine might discriminate against people of lesser health or social standing because its algorithms are based on pattern recognition and broad statistical averages. Uber has already faced an outcry over racial discrimination when its algorithms used postcodes to identify which neighbourhoods its riders were most likely to originate from. What kind of people will AI most benefit? Will it favour the survival of the fittest, the most popular or the most productive? Will it make those decisions transparently? And what method of recourse will be available to us should we have to defend ourselves?

We cannot put the genie back in the bottle, nor should we try to.

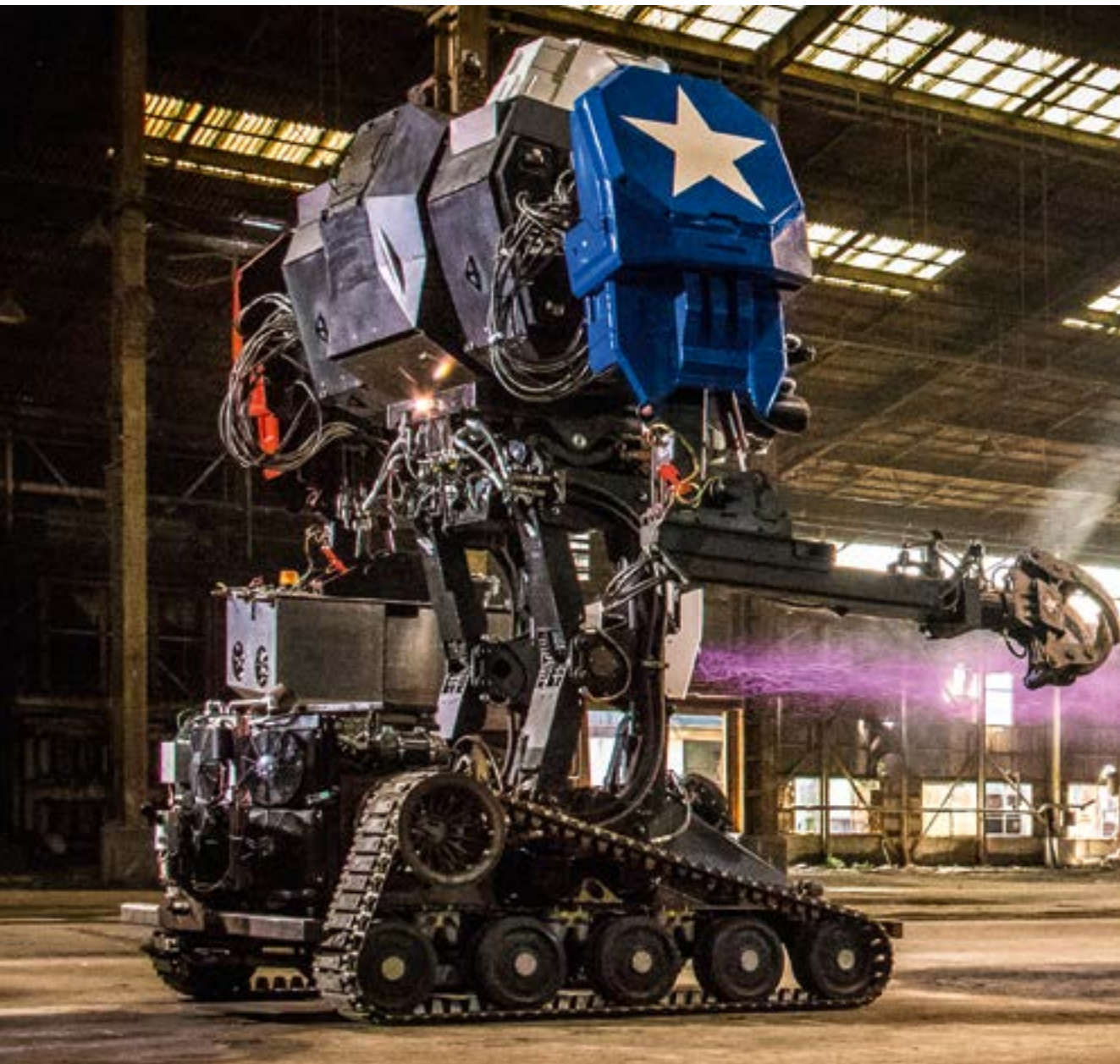
Moreover, a programmer's personal history, predispositions and unconscious biases – or the motivations and incentives provided by their employer – might unwillingly influence the design of algorithms and sourcing of data sets. Can we assume that AI will always maintain objectivity? What kind of AI systems are companies likely to develop? Will they act in the interests of their customers, partners, executives or shareholders? Will, for instance, a healthcare AI system jointly developed by technology firms, hospital chains and insurance companies act first and foremost in the patient's best interest, or will it prioritise financial return?

We cannot put the genie back in the bottle, nor should we try to – the benefits of AI will be transformative, possibly leading us to new frontiers of growth and development in human, social and economic spheres. One does not have to be a fan of utopian or dystopian science fiction to realise that we stand at the threshold of a fascinating and radical change in the evolution of humanity, unlike anything in the last millennium. Revolutions of this kind are rarely smooth. They are almost always chaotic, opaque, and fraught with ethical pitfalls.

A New Digital Ethics

The need for more ethics and responsibility in the digital realm was also clearly articulated during a three-day workshop on "The Future of Work", held at the University of California, Berkeley last November, and attended by representatives from the Organisation for Economic

Co-operation and Development (OECD), business and research. Some professional groups are already addressing this issue: for instance, the Institute for Electrical and Electronics Engineers (IEEE) has already drawn up a professional Code of Conduct. The Institute for the Future of Life, founded by MIT physicist Max Tegmark, is an association of leading scientists and entrepreneurs in the field of AI. Alongside a number of German and Austrian professors, its members include Elon Musk, Stephen Hawking, Ray Kurzweil, and Jaan Tallinn (founder of Skype). The Institute has drawn up the Asilomar Principles, named after a well-known conference centre in California. The Partnership on AI (PAI) is a technology industry consortium whose members include US internet giants Google and Microsoft, plus organisations such as Amnesty International and the American Civil Liberties Union. It is also drawing up guidelines, partly with a view to self-regulating as a way of anticipating future restrictive government legislation. The World Economic Forum (WEF), meanwhile, has just launched the first of a global series of new centres for the 4th Industrial Revolution in San Francisco, including an AI programme



to address these issues. Computer Science and Engineering faculties should also consider how to ensure their students and scientists take a responsible approach to AI design. In his interview with President Obama for WIRED[3] magazine, Joi Ito, director of the famous MIT Media Lab, pointed out that many of the most brilliant AI minds in laboratories such as his are not sufficiently attuned to the needs of people. This is partly because such "nerds" lack the patience to deal with human complexity, emotions and interpersonal politics, preferring to leave them out of the picture.

The AI industry is already working on its own guidelines in anticipation of possible restrictive government legislation.

What these existing initiatives lack, however, is – on the one hand – a truly global approach that addresses the complex mix of different values and definitions of ethics, and – on the other hand – the right blend of participants from different sectors of society, i.e. a multi-stakeholder approach.

A Magna Carta for the Digital Age

Cognitive technologies will not only determine the future of our economy, but also the future of our society. They influence what enters our minds, who knows our minds, with whom our minds cooperate, and how much thought our minds generate relative to machines. This has an impact on the whole fabric of society.

AI has to support mankind's growth as a whole as well as individual development so that people may realise their social and economic potential to the full. It is important to help people to deal with any uncertainties they may have regarding AI; they need to know that politicians will help them to prepare for the changes ahead. Furthermore, incentives must be provided for business and science to encourage them to implement both facets of AI in a purposeful and concerted manner. One way of doing this is through a digital Magna Carta for the AI-driven fourth industrial revolution. This should be a collectively developed charter of rights and values to guide our ongoing development of artificial intelligence. It should lay the groundwork for the future of human-machine coexistence and more inclusive human growth. Whether in an economic, social

Off to battle! Like any other technology, robots and AI can be used for the better or for the worse.
Source: © Michael Mauldin, MegaBots Inc., Reuters.

or political context, we as a society must start to identify rights, responsibilities and accountability guidelines so as to ensure inclusivity and fairness at the intersections of AI with our human lives.

Ideally, the Carta initiative should aim to constitutionalise a global multi-stakeholder institution for AI governance with a central team to track and analyse global developments in the area of AI (think-tank function) and discuss them in public plenary sessions (congress function). This should involve a culture of good faith collaboration amongst representatives from the private sector, governments and non-governmental organisations in the field of AI.[4]

Negotiations between the various economic, scientific, political and social interest groups ought to be conducted via a modern, open congress. This congress should allow for international, multi-sectoral participation, given that considerations relating to AI cross borders and overflow into every area of our lives and society. This requires that not only governments but also non-governmental organisations, academic institutions and business representatives come together at the same table to discuss the cross-border consequences of AI openly, rather than working at cross-purposes. In order to maintain incentives for all sides, the congress should aim to set rules that promote both innovation and equity.

This should be a new multilateral institution, which may act independently or under the auspices of the United Nations. It is vital that the institution's personnel and processes possess outstanding levels of digital proficiency in order to keep pace with the scientific and technical expertise of corporations, entrepreneurs and research laboratories. This is no mean feat, since AI talent is expensive in an environment where global internet companies pay salaries of several million dollars a year. Moreover, the congress should be inclusive, consisting of both physical and digital elements, so that the barriers and costs of participation remain low and dialogue can be driven forward rapidly. The mechanisms of the traditional institutions of the Bretton Woods system do not allow for this. They are equally unsuitable when it comes to ensuring a variety of key digital actors – such as China, India, Russia and Nigeria, all of whom are taking decisive steps towards shaping our digital future – have a formative voice, and are integrated in a constructive and critical manner. We should not be afraid of this openness, particularly in view of the unattractive alternative: just as in the case of the Asian Infrastructure Development Bank, which is managed from Beijing, we could end up with parallel institutions in which countries organise themselves into clubs. Such a situation would be in direct contrast to the global spread of AI technology by corporations and government agencies, as well as to the digital data flow itself, which crosses borders with ease.

With a view to reaching an agreement in the medium term, the focus of the Carta and congress should be, inter alia, the following issues:

1. What role should human freedom of choice play in the use of AI? How should the individual's freedom of choice and rights to privacy be protected? How will these protections be balanced against the needs of society?

2. How should we deal with actors who decide against the use of AI applications (e.g. granting an opt-out)?

3. To what extent can socio-political processes – such as elections, opinion-formation, education and upbringing – be supported by AI and how can the harmful uses of AI be prevented?

4. How can we effectively counter the corruption or falsification of data sets, as well as the potential discrimination against individuals or groups in data sets?

5. To what extent should policies and guidelines delineate the humane and nature-conform use and / or containment of AI?

6. How much importance should be placed upon social and societal benefits in the research, development, promotion and evaluation of AI projects?

7. How can the promotion and training of employees for new employment and personal growth opportunities be integrated into AI-driven automation of production and work processes?

8. How can effective, continuous exchange between different stakeholders be facilitated through AI?

9. What type of permanent international institution do we need that will provide the early foresight thinking, debate forum, and governance mechanisms needed to achieve responsible human and economic growth through AI?

It will not be easy, but unless we have a dialogue on these issues we will not establish sufficient trust in AI within global society so as to capitalise on the amazing opportunities it could afford us. It is only by agreeing upon a set of rules that we will be in a position to jointly steer the future of AI, and to ensure that the social compatibility of these revolutionary new technologies is internationally guaranteed and not only at the service of profit, power and geopolitical interests. Given the significant global capacities, such as the scientific and entrepreneurial talent in this field, if we did not dare to take this step, we would be missing a unique opportunity: to ensure a fair, value-based development of mankind as we step into the fourth industrial revolution – a revolution of cognition.

–translated from German–

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1 Parts of this article have already appeared in the Harvard Business Manager Germany online blog (http://harvardbusinessmanager.de, Oct 2017).
2 Botsman, Rachel 2017: Big data meets Big Brother as China moves to rate its citizens, Wired, 21 Oct 2017, in: http://buff.ly/2l4rzMj [23 Feb 2018].
3 Dadich, Scott 2016: Barack Obama, Neural Nets, Self-Driving Cars, and the Future of the World, Wired, 11/2016, in: http://buff.ly/2dC2AXY [23 Feb 2018].
4 The authors have started to work on a concept for a "Cambrian Congress", which will facilitate both the potential Cambrian-like explosion of opportunity and mitigate the accompanying risks.

Source: © Robert Galbraith, Reuters.

The Digital Future

Of Facebook Revolutions and Twitter Presidents

How Digitalisation Changes Political Decision-Making

Torben Stephan

In 2010, the internet was thought to be an instrument of global democratisation. But with the onset of the "Arab winter", that hope has given way to severe disappointment. Now, the internet is even blamed for the increasing populism. An attempt at a sober assessment.

There are said to be children in the Arab world who are named Facebook. So closely have their parents seemingly connected the "Arab Spring" with that internet platform. Let us set aside for the moment the fact that this spring did not last very long, thereby abruptly ending the legend of the Facebook revolution. This upheaval and the recent movement in Iran show that the internet can support an existing democratisation movement. There are several reasons for this.

Cheap, Fast, and Far-Reaching

The internet is comparatively cheap. Today, anyone can communicate with the entire world without much in the way of financial resources. A user might become a respected author, political analyst, or even a leader. All he or she needs is a smartphone, a couple of free social media accounts, and, of course, talent. Thus equipped, the user can distribute text, audio, and video formats cheaply all over the world – from the living room, at home, or on the move.

For comparison, we recall Paul Sethe's famous quote. The founding editor of the *Frankfurter Allgemeine Zeitung* wrote to *Der Spiegel* in 1965: "Freedom of the press is the freedom of 200 rich people to spread their opinions."[1] This is a not insignificant reason why, as early as the German Empire, the Social Democratic Party had already begun to establish newspapers and is still in possession of a proud media empire today.[2] As the internet spreads, money is no longer the deciding factor. This is undoubtedly a gain for our democracy.

But the internet has also extended our reach. Social media are the main contributors to this development. So-called influencers, that is, people with a particularly large internet following, can reach several million people within minutes with their posts. According to official figures, the daily print run of the world's largest daily newspaper, the *Yomiuri Shimbun* (Japan), amounts to over nine million.[3] For comparison, US President Trump's personal – and feared – Twitter account (@realDonaldTrump) has over 45 million followers by itself. Add the official accounts of the President (@POTUS) and the White House (@WhiteHouse), and the total is currently 83 million followers (admitting significant overlaps among the three accounts).

Another advantage of the internet is its speed. Information travels around the world within seconds. Today, holiday-goers no longer need the local paper sent by mail, arriving two days late. They can read it in real time on their smartphones while keeping up with radio and TV programs. Twitter is usually faster than the news agencies' breaking stories. YouTube, Facebook and Periscope give every smartphone owner the capability of streaming live events taking place on his or her doorstep.

Beauty Tips and Monitoring

Its range and low production costs have given the internet a sharp focus on target groups. Blogs and podcasts tend to cater to specialised interests. Few media newcomers can compete with a traditional medium such as newspaper, radio, or TV. So the bloggers, podcasters, and YouTubers have looked for niches in which to become successful. For example, *Netzpolitik.org*, a blog, is dedicated exclusively to the issues of network policy and digitalisation and their effects on society. Nerdzoom is a regular podcast for computer enthusiasts. And Bibi, a

YouTuber, gives make-up and hair styling tips to almost five million subscribers. Specialised interests which were previously served by public television at one o' clock in the morning (if at all) can now be called up on demand.

But there is a downside to these developments: One would expect that the ability to get in touch and exchange ideas with people all over the world would contribute to international understanding. What we are currently experiencing, however, is more like the opposite: isolation, nationalism, and xenophobia.

This is not what the internet enthusiasts who watched the "Arab Spring" with such euphoria were expecting. It is extremely naive to think that the internet promotes only the good; and in turn, "good" is a matter of definition. The German Internet expert Sascha Lobo expressed the problem in a guest commentary for the *Frankfurter Allgemeine Zeitung* in 2014: "The internet isn't what I had long thought it to be. I thought it was the perfect medium of democracy and self-liberation. The spy scandal and the corporations' mania for control have changed everything."[4] This finding is particularly amusing because the internet – much like the Global Positioning System (GPS), with which every smartphone is equipped – was originally developed from a US Defense Department project (Arpanet). It had little to do with the spread of democratic values. Lobo's disappointment also reveals how much he overestimated the internet and his own expertise. The recognition that the internet is uncharted territory for him, too, was a brutal one.

We should have realised by now that there are two side to every new technology. Hardly anyone in their right mind would accuse the German public service broadcasting of today of engaging in propaganda activities. We have established broadcasting councils and a brace of broadcasting laws to ensure that radio offerings are diverse and balanced. Violations are punished. The Germans have also learned how to use the medium. Whereas in 1933, radio technology was new, unregulated, and the *Volksempfänger* encountered an audience who had not yet learned how to use the new technology.

The internet is not an instrument for improving our society. It can support movements because it makes many things cheaper, faster, and bigger. But it does not distinguish between good and bad movements, between social engagement or pure commerce. The internet itself is value-free. It is we who feed our values into it.

Debates in the Filter Bubble

One thing is already clear today. The Internet is disruptive. It changes our economic system, our communication, and, of course, our society. Amazon has changed the retail trade, PayPal the payment system. We no longer buy our music in shops; instead, we stream it on Spotify. Uber is shaking up the taxi industry. And, of course, the internet is also influencing our democracy.

The new capabilities have not really improved the culture of political debate. People seem to pay more attention to inflammatory posts than to hard facts. Few online debates have anything like a competition of ideas. They more closely resemble ideological positional warfare. Comments quickly become personal.

This is mainly due to algorithms – computer program codes that are used by Internet search engines (such as Google) and social media (such as Facebook, Twitter, and YouTube). These algorithms have considerable influence on our perception. They decide what information we receive and what information we do not. In addition, social network algorithms suggest friends and groups that fit our behaviour to date. If a user likes the Facebook page of the *Borussia Mönchengladbach* football club, people in his area who are also *Borussia* fans are suggested to him as friends. In addition, he receives more and more posts about the club, even if they come from people he does not know. Or he may receive a suggestion to join the fan club's Facebook group. This puts the user in a filter bubble which restricts his information flow largely to topics related to this club or to football.

The Selfie Generation: Topics such as data security and privacy are often not the main concerns for adolescents.
Source: © Peter Power, Reuters.

But it also works with views, parties, or other political groups. What may be innocuous in the context of a football club, may well become problematic in a political filter bubble. The information Google has already collected about a certain person determines the results of that person's searches. Internet activist Eli Pariser made this discovery "when he had two friends enter the keyword 'BP' into Google's search bar shortly after the oil spill in the Gulf of Mexico. One of them received investment tips for the oil industry, while the other received reports on destruction of the environment."[5] "Filter Bubble" is what he called the phenomenon in his book of the same name.

The filter bubble phenomenon is not new. People used to choose their daily newspapers according to their political convictions. To put it simply, conservative readers tended to favour the *Frankfurter Allgemeine*, while liberals tended to opt for the *Frankfurter Rundschau*.

However, even a newspaper with a political leaning will usually publish various positions.

That is part of the journalistic trade. Even groups of regulars at bars are seldom unanimous in their opinions. But the social network algorithms ensure that increasingly like-minded people get together.

Since 2016, many journalists have tested this out for themselves. They have created second identities on Facebook and liked some radical right-wing pages. The effect was always the same: The algorithm recommended other pages, groups, and users with the right-wing views. They were pulled into a filter bubble of supposedly like-minded people and henceforth received only right-wing hate messages targeting foreigners, the federal government, the lying media, and conspiracy theories of all kinds.

The phenomenon is problematic for our political decision-making, especially because we tend to trust information that we expect. This is the psychological phenomenon of selective perception. In extreme cases, it can lead to people finding false reports of crimes committed by migrants, for example, more credible than fact-based research in their daily newspapers.

Ideological Fight Using Fake News

One outgrowth of the filter bubble phenomenon is digital "echo chambers". If the above-mentioned football fan joins the *Borussia* group, he will scarcely be able to announce that he also has a soft spot for FC Bayern Munich. That's how the group suppresses deviating opinions. The conviction that there can be only one *Borussia*, on the other hand, is encouraged by the group. In extreme cases, this leads to us vs. them thinking. Transferring this behaviour to the political arena quickly leads to extreme groupings that are incrementally moving away from the fundamental principles of our democracy.

Moreover, society is increasingly splitting up into different camps. The Filipino publisher and publicist Maria Ressa has vividly illustrated this. As early as 2011, she was already using Twitter search terms (so-called hashtags) and Twitter user profiles to make political groupings visible on social networks. Two clearly recognisable camps (pro/con) were tweeting with the hashtag #GOP (Grand Old Party, the nickname for the US Republican Party). The two camps were connected by only a few people. This means that the way the US was beginning to split into political camps that live as though they were in different worlds was already obvious in 2011.[6]

In the 2016 US election campaign, it became clear how irreconcilable these camps were. There are no more debates. Unpleasant facts are dismissed as fake news or opinion. Climate change? Just an opinion. The theory of evolution? A matter of faith. Reports that the president's campaign team cooperated with the Russians? Fake news.

It usually takes only a few minutes for the media to inform their viewers, listeners, and readers about current events. Decisions by parliaments and governments are also much more transparent today than they were only a few years ago. The new capabilities should mean that citizens are always well informed. Instead, inaccurate reporting, rumours or malicious slander are on the rise. They quickly spread through the internet and are difficult to counter.

The phenomena of filter bubbles and echo chambers is problematic for the political decision-making process.

Nor is the phenomenon of inaccurate reporting new. Inaccurate stories may appear in any newspaper. However, there is a trend on the internet towards *intentionally* spreading half-truths or even lies in order to exert political influence. Since the algorithms of social media are designed to prefer frequently read texts, sensational news travels at breakneck speed.

What is surprising is how uncritically many responsible citizens deal with the information they receive via social media. Facebook, Twitter,

and the rest have so far made little effort to verify the veracity of their users' claims. It is therefore the responsibility of each individual to critically examine the accuracy of a report before sharing it further. Of course, this responsibility overwhelms many people. Until now, the proper use of the new medium has been taught in very few schools.

The refugee crisis has shown that false information can be a serious threat. In October 2017, the German Foreign Office was forced to launch the Rumours About Germany information page (rumoursaboutgermany.info), which lists the "seven big lies of traffickers". Previously, masses of false reports were spread via social media. In these posts, potential refugees were promised welcome money of several thousand euros, real estate gifts, or lucrative jobs if they made it to Germany. Millions of refugees have set out, believing the false promises. Many have lost their lives as a result. And for those who did make it to Germany, a bitter disappointment was in store.

Social media are a playground for the beneficiaries of disinformation: security agencies, conspiracy theorists, profiteers.

The Populist Algorithm

Politicians have quickly learned to adapt to the new technologies. They have always favoured new players, while the established parties have struggled. This is mainly due to the fact that the internet rewards pointed statements, sarcastic or derisive criticism of government officials, and taboo-breaking populist parties. That is because they generate more reactions. Even all the well-meant counter-arguments to populist tweets contribute to the dissemination and popularity of those very tweets.

The Alternative for Germany (*Alternative für Deutschland*, or AfD, an anti-immigrant party) began 2018 by breaking a taboo. AfD delegate Jens Maier called the son of tennis legend Boris Becker and his ex-wife Barbara a "Halbneger" (an impolitic word for "mulatto") on Twitter.[7] The German Association of Judges (Maier is a judge by profession) saw this as a "calculated provocation". In Germany, Becker's name still guarantees the highest level of attention. The message, however, is directed only at Maier's (potential) voters.

Most populists take just this line. It is a tactic. The media excitement and the many reactions harness the logic of the algorithm to maximise the exposure of the posts. This allows populists to reach those on the fringes who want a new style of politics. Philippine President Rodrigo Duterte, US President Donald Trump, and the AfD in Germany were able to convince their voters that they would change the "decaying political system". Thanks largely to social media, this message reached an outsized audience. It is striking that both the two presidents and the AfD have pushed forward very purposefully into the echo chambers which were favourably disposed towards them. They managed to meet these discontented people where they were and get them to vote.

In Search of the Gatekeeper

In his first press conference as US president, Donald Trump changed the prevailing media system with a single sentence. By telling an antagonistic CNN reporter, "I'm not going to give you a question. You are fake news", Trump made it clear that he is no longer dependent on traditional media.[8] Let us remember that, at the beginning of the 21st century, if a politician wanted to promote his policies, he first had to court the journalists. Ideally, these gatekeepers would then gather other opinions and write an article comparing the views. Then along came Facebook. And, in Trump's case, Twitter.

Today, Trump can communicate directly with his target groups: voters, donors, and other politicians. He no longer needs the traditonal media. They have lost their gatekeeper function. While it is much more democratic for a head of government to be able to communicate with a citizenry unfiltered, the Trump case shows that it does not necessarily improve quality.

The question is, who is the gatekeeper now? Because it is quite obvious that not everything can be published on social networks. First of all, there are laws that limit even freedom of expression. Personal defamation, threats of violence, and denial of the Holocaust are all crimes in Germany. A discussion on this score has been in full swing at least since Minister of Justice Heiko Maas introduced the Network Enforcement Act (*NetzDG*) to the Bundestag. At its core, the *NetzDG* provides for severe fines for Facebook and other social media networks if they do not delete hate posts within 24 hours. Interest groups, civil rights activists, lawyers, and data protectors are up in arms about the law. Some fear that Facebook will delete too much (censorship) when threatened with horrendous punishment. The others do not think that a listed company should be assuming sovereign functions of the state.

The traditional media have lost their gatekeeper function.

NetzDG may seem like a snapshot. However, even traditional media publishers must, on a daily basis, weigh what they will publish on their websites and what they will not. They are responsible for claims that their publications make, offline and online. Responsible parties are mentioned in the site legal information, which is a mandatory part of a website, at least in Germany. Large publishers – especially the tabloid media – employ entire legal departments to examine critical articles.

So the question of why a commercial website operator such as Facebook should not be held responsible for what is published on its website is only fair. Facebook's important role in shaping political opinion is undisputed, as is its role as gatekeeper. This is because Facebook actively deletes posts – at least those that violate the company's own "community standards". And these standards are not always identical with laws and practices outside the United States.

Espen Egil Hansen, editor-in-chief of the Norwegian daily *Aftenposten*, wrote in an open letter to Facebook boss Mark Zuckerberg, "You are the world's most powerful editor" and "I think you are abusing your power".[9] What had happened? The reason for Hansen's annoyance was an Aftenposten article which was also published on Facebook with the Pulitzer Prize-winning picture of the naked "Napalm girl", Kim Phuc, from the Vietnam War. Facebook classified the post as "pornographic" and deleted it. Hansen felt Facebook had restricted him in his "editorial responsibility".

Interestingly, the BBC had revealed just a few months earlier that Facebook had declined to delete images of scantily clad children in obvious groups such as "We love schoolgirlz" because they did not violate Facebook community standards.[10]

So it is clear that Facebook is already actively intervening in publications. It decides what may and may not be published according to its self-defined rules. It has appropriated the role of gatekeeper for itself. It also controls the algorithm that decides what users get to read – and, above all, what they do not. This is the classical task of the editor.

The Clash of Cultures 2.0

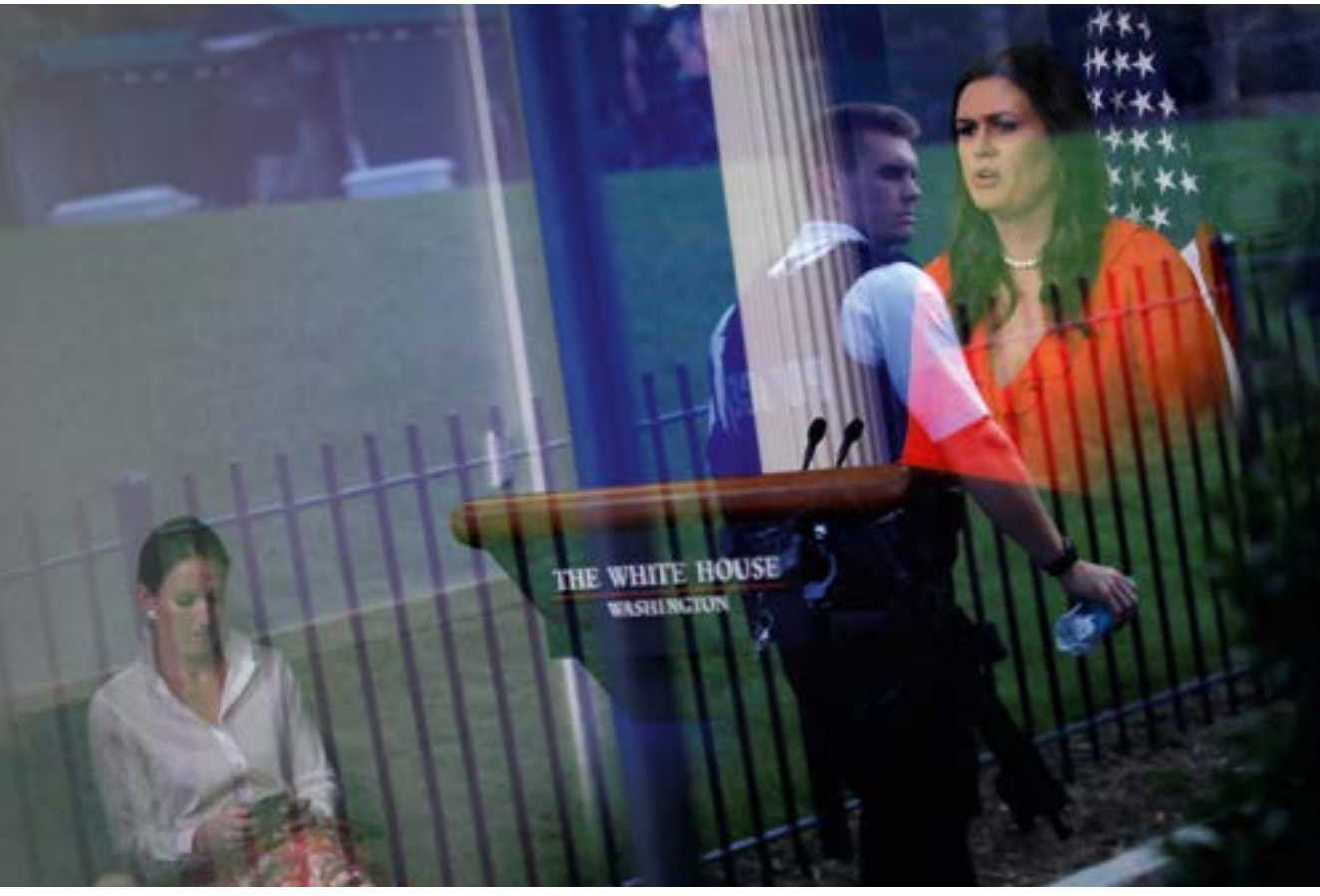
The world is currently experiencing very disruptive technological progress. The internet and smartphones are in the process of profoundly and permanently changing our economic and social conditions and the way we work and live. It is not for nothing that what has just happened is often compared to the Industrial Revolution in the 18th and 19th centuries, which, thanks to mechanisation, electricity, and the invention of mass production, led to greater relative prosperity. On the other hand, however, social ills also increased: The rural population shrank because people moved to work in the cities. The working conditions were poor, and the work was often monotonous. The late effects of industrialisation, such as global warming, are now being noticed.

It took several legal and cultural adjustments to mitigate the negative consequences of the Industrial Revolution. Labour laws were amended to improve working conditions. Otto von Bismarck introduced social legislation. Urban infrastructure was modernised. Even the 2015 Paris climate accord can be added to these measures.

The legislators must react to the changes brought on by the digital revolution.

It is therefore impossible to foresee the consequences of the digital revolution for us today. It is certain, however, that it is already time to react with legislation to the changes we do know about and which have been described above. Countries all over the world are trying to do this in one way or another.

Many are finding it difficult to translate their existing standards to the digital age. The German *NetzDG* is one example of this. A panel discussion during the annual Network Research Conference in Hamburg in 2017 clearly showed why. There, the chief German lobbyist for Facebook encountered the State Secretary from the Ministry of Justice. Two worlds collided. While State Secretary Gerd Billen criticised Facebook's lack of transparency and unwillingness to cooperate, lobbyist Eva-Maria Kirschsieper railed against state censorship.



Old news: The traditional press conference has become less important during Donald Trump's first mandate. Instead, the "Twitter President" prefers to communicate directly via smartphone. Source: © Carlos Barria, Reuters.

The cultural struggle for online sovereignty between the American internet company and the German government became exceedingly obvious. For while the industrial revolution of the 18th and 19th centuries took place within the framework of nation states, allowing laws to be adapted at the national level, the changes brought about by the internet have global impact. The Facebook terms of service are derived from a system of American laws and values. The handling of the photo of the Napalm girl illustrates this. Nudity is more taboo there than in Europe. Nazi symbols, on the other hand, are no problem. So how does Germany ensure that German laws are respected on Facebook, an American platform, and that American values are not imposed on us?

The Chinese have found a simple solution. Facebook, Google, YouTube, and many other platforms are not available in the People's Republic – at least not without technical tricks and considerable loss of speed. The software blocking access is nicknamed the Great Firewall of China. In place of these platforms, Chinese internet companies offer services that are in some cases even superior to those in the West. For example, the smartphone messenger service WeChat already offers functions that make it possible to pay by smartphone not only throughout China, but also in popular Chinese travel destinations such as Switzerland. However, such services also have a major disadvantage for users: They are completely monitored and censored.

However, surveillance and censorship are not the only reasons for the Chinese solution. Economics also plays an important role. Approximately 30 per cent of each Uber trip ends up at the parent company in the US With Uber's competitor, *Didi Chuxing*, this money stays in the country. Tencent, the company behind the WeChat messenger service, had over 19 billion euros in sales in 2016 – with a sharply upward trend. The Chinese are very successful at protecting their internet market and its approximately 700 million users.

Another good reason is probably security policy. It has been clear since the revelations by Edward Snowden, the former NSA agent, that US security agencies are making intensive use of internet technology to spy on people from other countries.[11] It is also known that American software and internet companies are willing to cooperate with the US security agencies.[12]

Questions of data protection, surveillance, human rights, national laws, and cyber security have become closely intertwined.

China is also closing itself off vigorously in similar areas: In 2014, the Chinese government announced that it would upgrade about 200 million government computers from Windows XP to *Kylin OS*, a version of Linux adapted to Chinese needs. The professed aim was to become more independent of foreign suppliers. Authorities refused to allow a transition to Windows 8. A spokesman for the authorities confirmed that China intended to develop its own operating system based on Linux.[13] The fact that the project is based at the Chinese National University of Defense Technology (NUDT) is a clear indication that the concern being addressed is cybersecurity. The Chinese Ministry for Industry and Information Technology funded the project.[14]

The issues of data protection, surveillance, human rights, national laws, and cybersecurity will occupy the world for a long time to come. This is because the world is now not only globalised, but also closely networked. Anyone who does not have the desire (and, above all, the ability) to isolate themselves from the internet, as China has, will have to make compromises. This is also true of the European Union, which is currently focusing its debate on data protection. Negotiations on the EU-US data Privacy Shield protection agreement are increasingly becoming a tug-of-war. The agreement is not static.

"We will review it every year, and should problems arise, we will immediately begin work to address them," says EU Digital Commissioner Andrus Ansip.[15] According to the new EU Data Protection Ordinance, European citizens' personal data may no longer be stored on servers outside the EU without further legal ramifications. This shows that there are intense efforts in Europe to assert the continent's own interests.

However, the German *NetzDG* also needs revision. In its present form, it is all too often cited as a precedent by undemocratic regimes. Such citations generally overlook the fact that in Germany, the deletion of any post can be appealed – on the basis of freedom of expression. Nevertheless, the law damages the Federal Republic of Germany's reputation because it was not thought through to the end.

This cultural struggle will occupy several generations. These are ethical, legal, economic, and, of course, political issues. These questions cannot be answered nationally because the internet does not recognise borders. And in any case, they must not be answered nationally. Otherwise, the consequences could be isolation, protectionism and, in the worst case, isolationism. Ultimately, people determine whether the Internet will strengthen or weaken democracy. We cannot shift this responsibility onto a piece of technology.

–translated from German–

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Source: © Gregory Olando, Reuters.

The Digital Future

The Digital Natives Are Coming!

How Social Media Are Changing Political Discourse in Kenya

Jan Cernicky / Antonie Hutter

In many regions of the world, the ideal of the internet as an instrument of political freedom has not been fulfilled. Instead, the internet is increasingly used as a means of maintaining power for the elites. In many African states, and especially in Kenya, this conflict has not yet been resolved. Here, the youth, who make up the majority of the population, have a good chance of creating a freer, fairer society via the internet. But without well thought-out support, they are unlikely to succeed.

Introduction

According to the World Bank's definition, Kenya is no longer a developing country.[1] It has become a middle-income country and possesses the fourth-fastest-growing internet market in the world. The M-Pesa mobile payment service that has been developed here, is regarded as a model for modern payment systems worldwide. A large number of start-ups have been founded around this service, and are now expanding rapidly. In the social and political spheres, too, the internet – and especially social media – has become an influential instrument of political decision-making. This trend will become even more pronounced because the extremely high birth rate will result in the usually internet-savvy young generation in Kenya, playing an increasingly significant role in the coming years. This generation of digital natives is currently faced with a social and political elite for whom the internet is new territory at best. Especially in rural areas, where the authorities are often not even able to write, this rift is even deeper. In countries such as Kenya, the young generation therefore has the rare opportunity to use their position of relative strength to depose the old elites, and define for themselves how the internet will influence social decision-making processes in the future.

Internet and Social Media in Kenya

Kenya is considered to be one of the most advanced countries on the continent in terms of digitalisation. Today, 85 per cent of the population in Kenya are registered with mobile phone providers. There are almost 30 million internet users, and 70 per cent of the population have access to mobile internet. Social media are widespread. According to a June 2016 report by the Blogger Association of Kenya (BAKE)[2] social media platforms such as blogs, Twitter, and Facebook have become an effective tool for Kenyans to exchange information on political topics of interest to them and to demand their freedom of speech. In this respect, social media provide a platform for political dialogue and influence opinion-forming. Twitter is especially important here. In 2016, Kenya had over 700,000 confirmed, active monthly users on the platform, the majority of whom access Twitter on a daily basis. This is more than in Germany, which has a much larger population.

A central element of the Kenyan internet wonder is M-Pesa, a mobile payment service provider. Even though the idea is not from Kenya, and other mobile operators now offer mobile payment services as well, M-Pesa operated by Safaricom, a mobile operator in the Vodafone Group, remains synonymous with mobile payments far beyond Kenya. The original idea of sending the most frequently used prepaid phone credit in Kenya to another mobile phone subscriber, quickly became a fully-fledged payment system.

M-Pesa developed so rapidly because there were previously hardly any low-cost options for

School 1.0: In terms of digitalisation Kenya is one of the most advanced countries on the African continent, but it is still a long way to the digital classroom. Source: © Thomas Mukoya, Reuters.

transferring money from the larger cities to rural areas. However, doing so is of great importance in Kenya because of the high number of internal economic migrants who commute between rural and urban areas. In many cases a family member, usually the husband, works in a city while the families remain in the countryside. Today, more than 80 per cent of Kenya's adult population use mobile payment services – this even applies to illiterate nomads.

The rapid acceptance of M-Pesa among the population and the integration of digital payment services into the economy, placed Kenya on the global digital map. M-Pesa's dynamism has spawned numerous digital innovations that have established themselves in Africa and led to multinational companies such as Craft Silicon and Cellulant.

This also resulted in ever more international capital finding its way to Kenya. One example is the company Accelerators 88mph. In August 2013, the company invested 500,000 US dollars in its third group of start-ups in Kenya and increased its total financial commitment to two million US dollars with 32 start-ups, in which it holds stakes of between ten and 25 per cent. These start-ups include, for example, the social travel network, Tourist Links, the Yum

food delivery website, the Iprocure mobile agricultural payment start-up, and the Booknow mobile ticket platform. The sums invested may seem small from a global perspective, but the fact that there is international investment in start-ups here is a revolution for Kenya.

Another important element of the information and communication technology landscape (ICT) in Kenya is iHub, which was founded in 2010 by Eric Hersman, one of the co-founders of *Ushahidi*; a website that collected eyewitness reports of violence via text messages and Google Maps. iHub is a technology incubator that promotes innovation and collaboration between its tech start-up members. It is also a regional precedent, whose concept has been reproduced in other countries. There are now more than 70 similar tech centres on the African continent, for instance.

The developments mentioned above, may be some of the reasons why Kenya was named in a study by Tufts University in 2017 as the fourth-most-important growing digital economy among 60 industrialised and emerging countries. The Digital Planet 2017[3] report finds that Kenya's digital economy is highly dynamic and has great potential for growth in the coming years.

Political decisions also contributed to this positive development. One of Kenya's first major steps in ICT was the connection of underwater fibre optic cables from the Indian Ocean to Nairobi in the autumn of 2007, with the aim of providing millions of people with fast internet access. 2008 witnessed the publication of the first national ICT Master Plan, covering a period of five years (2008 to 2012,). It is now part of the Vision 2030 development agenda launched by Kenya's former President Mwai Kibaki that same year.

At the time, Kenya was one of the first African countries to join the Open Government Data Initiative, launched in 2011. To date, 75 countries have committed themselves to the initiative, and other countries are preparing to join. Supporters of the initiative agree to develop action plans for greater transparency, civic participation, and administrative modernisation in their countries and to carry out regular review processes. In this context, the government has been actively recruiting data scientists since 2014 with the aim of developing an e-governance that can be accessed by everyone.

Kenya is considered the fourth-most-important growing digital economy.

However, success seems to be moderate; the authors' experiences with Kenyan e-government tend to be negative, for example. In fact, even though the application routes have been digitalised and most official procedures are initiated on the appropriate internet portal,[4] it is still necessary to visit the authorities in person, and it is often unclear why the digital route was necessary to begin with. These may be teething troubles, but difficulties may also be due to the on-going insufficiency of digital infrastructure in Kenya and, above all, the poor quality of staff training.

The government's lack of understanding of digital dynamics is also evidenced by the Kenyan ICT plan mentioned above. Since it does not deal with the basic components needed to develop an ICT industry, such as high-quality higher education in conjunction with developing a network of IT companies, which contributed to the success of Silicon Valley. Instead, a housing development costing ten billion US dollars, Konza Tech City, is being planned and is primarily described as a real estate project. Real estate is the classic source of income for those in power, and once again it is evidently impossible to break this paradigm.

So it is not surprising that, despite the growth described above, Kenya remains at a very low level of digital framework condition development compared to more developed countries.

In 2016, Kenya was ranked 52nd out of 60 countries surveyed in the field of digital economy development and was second among the six African countries in the survey. When compiling the indices, researchers evaluated the selected countries in four main areas – the robustness of infrastructure, the ability and willingness of consumers to use digital technology, the legal and policy framework, and the level of innovation and change. Training in the IT sector also remains weak compared to the international standard. It therefore comes as no surprise that many of the founders of start-ups and visible blogs studied at prestigious universities abroad.

The growth of the Kenyan digital industry is not due to, but in spite of, state regulations.

Hence, the highly acclaimed growth of the Kenyan digital industry is not due to, but in spite of, the state infrastructure and regulations. However, this is certainly not a disadvantage for internet-savvy young people, since it allows them to create free spaces whose principles the ruling elite can scarcely understand.

Development of the Internet as a Political Forum

At almost the same time as Kenya's connection to the international fibre optic network, another event was shaping Kenya's politically active internet community: the civil war-like clashes following the disputed presidential elections at the end of 2007. These clashes were the first historical event in Kenya to be influenced by the use of social media. Only via the internet was it possible for Kenyans of the diaspora in particular to obtain information about actual events in the affected regions. The traditional media held back to the point of self-censorship, fearing that reporting might escalate the situation. In order to document the atrocities committed in a manner that was independent of the political interest groups, the *Ushahidi* ("witness" or "testimony") platform was founded after an appeal by Ory Okolloh, a well-known blogger. The platform was used to document reports of violence via SMS, which were also associated with a physical location. This internationally visible reporting on the violence committed and the pressure of the Kenyan diaspora which was thus informed, provided an important impetus for achieving ultimately successful, high-level international mediation in the conflict. This is regarded as the birth of Kenyan internet activism, which was initially supported primarily by political blogs written by such people as Okolloh, Daudi Were, and Charles Ng'ang'a Wairia (in Swahili).

The "Arab Spring" in 2011 gave new momentum to internet activism. During this time, for example, the hashtag #Kenya28Feb developed into a movement which mainly focuses on cohesion among Kenyans and is still active today. Yet, the confrontation with the "Arab Spring" also led the government to devote more attention to monitoring unwelcome opinions on the internet.

This trend was intensified by the terrorist attack on the Westgate shopping centre in September 2013, whose traumatic effect is still felt in Kenyan society to this day. The attackers used social media to publish (effectively live) graphic images from the shopping centre, in order to use them as propaganda. This placed the focus on the use of the internet by criminals and terrorist groups.

The government and parliament reacted with tough anti-terrorism laws that were passed at the end of 2014, generally referred to as "security laws". In some areas, these laws weakened the essence of the rule of law. The laws had a particularly large impact on the media and the liability regulations for content distributed on social media; because the terrorist attacks were so recent, however, protests against them only occurred sporadically.

What is particularly important here is the introduction of a criminal charge for offensive or inciting statements, commonly referred to as

hate speech.[5] However, the Kenyan Supreme Court weakened the relevant provisions, since freedom of speech must not be subject to restrictions across-the-board. According to the court's decision, the burden of proof that something can be interpreted as hate speech lies with the prosecuting authorities. This means that all expressions continue to fall under free expression unless it can be proven that they are hate speech, which is very difficult in practice. There is therefore only one documented case of an internet activist who was convicted of hate speech; who in turn had to serve a three-month prison sentence. There have, however, been at least six cases since 2016 in which citizens have been arrested and detained because they were accused of hate speech.[6] But all of them were released quite quickly, since it was not possible to press charges. At the moment, the passage under discussion tends to be used to intimidate disagreeable bloggers.

Nevertheless, global comparison shows Kenya doing quite well with regard to the freedom of the internet: In the internet freedom survey conducted by Freedom House, Kenya scored a remarkable 29 points on a scale of 0 (best) to 100 (worst).[7]

How Are Young People Using Their Freedoms?

The use of the internet as a political instrument has changed considerably since 2007. While the

A picture of the past: Bloggers with their notebooks shaped the early stages of web activism. Today, the scene mainly communicates via Twitter and Instagram. Source: © Thomas Mukoya, Reuters.

scene was dominated by active bloggers at that time, they have been replaced by users of Twitter and, to a lesser extent, Instagram.

The commercialisation of the internet has gained momentum in Kenya, too.

The remaining blogs are very strongly commercialised and deal with areas where targeted advertising is obvious, such as fashion, food, and technology. A few individuals who used to be considered political bloggers, such as Aurther Mandela (Xtian Dela), now use their profiles primarily as advertising platforms. Scarcely any political messages can be discerned from them. Nevertheless, political blogs continue to make an appearance, such as Kenya Today,[8] which is close to ODM, the opposition party. However, these are hard to distinguish from internet editions by traditional newspapers and do not fill a substantial gap in the relatively free Kenyan media landscape.[9] Newspapers that are visible at a national level also report on corruption scandals and – depending on their political orientation and owners – are quite critical of politics. Blogs therefore tend to fill gaps in questions of youth culture or specialised technology, for which there are no adequate media products in Kenya. Albeit, at least since the controversial 2017 elections, the Kenyan government has taken a much more restrictive stance towards the press. Whether this will have consequences for the use of blogs remains to be seen.

Twitter has become a very relevant tool for political and social mobilisation. It is not a tool for discussing complex interrelationships, but rather for placing specific issues on the daily agenda by means of fast-paced, short messages, usually including some photos. Boniface Mwangi,[10] with nearly one million followers on Twitter, is very successful at this. For example, in May 2015, the announcement that President Kenyatta intended to fly to the inauguration of the new Nigerian president with a delegation of 60 people, caused such an outcry that the trip had to be cancelled and was reduced to a small delegation under the vice-president. Since Mwangi tweeted about the president's official speeches being flown in printed form by plane to the various provinces, there has also been a switch to more modern and cost-effective communication channels for this, too. The introduction of public toilets in courthouses is also a result of Mwangi's tweets. The Kenyans on Twitter group[11] recently managed to publicly and critically discuss the president's list of persons to be honoured for special services to the country. This in turn led to completely different individuals being honoured informally on the internet and political statements being associated with them.

So far, however, only this type of small, isolated topic has been set in motion using short campaigns on the internet. The really big challenges – corruption, the ailing education system, and the various obstacles to young people who want access to formal employment and political influence – obviously cannot be adequately addressed on Twitter. Even Mwangi admits that this is the case: "Twitter is good at making a lot of noise. Successful political mobilisation still requires activity in the non-virtual world."[12]

This is not simply theoretical knowledge. Mwangi, Ory Okolloh, and other internet-savvy young people from Nairobi's well-educated middle class, founded the UKWELI party in 2015 and stood for election in 2017. The UKWELI Party is not an internet-based party like the European Pirate Parties, for example. On the contrary, it stood for election with a programme to combat corruption, provide better opportunities for young people and women, and improve the quality of state services with very concrete ideas for enhancing the lives of the young middle class. During the election campaign, it benefited from experience in the use of social media, but ran its election campaign primarily in direct contact with people on the street.[13] Although it addressed the pressing problems of most Kenyans, conducted a very professional election campaign, and above all addressed

people under 40 years of age (who make up the clear majority of voters), not one candidate won a mandate in the national or any of the regional (county) parliaments.

One reason for this is Kenya's majority voting system, in which ethnic affiliation and bribes play a major role in many cases. In some constituencies, it is therefore considered a great success to reach second or third place during the first attempt. At the same time, it is disappointing because a clear majority of Kenyans are against ethnic politics and vote-buying.[14] Thus, if responses to surveys are honest, it should actually be possible to achieve a majority in elections using such a programme.

A representative of UKWELI Party explains why it is not that simple: "Small, short campaigns are very effective. It is easy to mobilise quite a lot of people for them. But when the campaign has reached its goal, people feel that they have made their contribution to politics, are satisfied, and return to everyday life. It is very difficult to win them over to politics in the long term."[15]

Structural problems such as bribery of voters cannot be solved with internet campaigns alone.

Thus it is not to be expected that young people who can be mobilised on the internet for a campaign against the president's trip to Nigeria with an excessively large delegation, will also reject bribes during elections. This connection does not follow. Structural problems such as bribery of voters cannot be solved with internet campaigns[16] alone – the reasons for such problems are far too complex.

The UKWELI Party reacted to this knowledge early on, launching a door-to-door campaign in the real world. It was probably too late for this election. The challenge now is to prepare for the 2022 elections at an early stage, skillfully connecting the virtual and non-virtuall worlds. The chances should be good; after all, about a quarter of the electorate will be eligible to vote for the first time in the upcoming elections – and in Kenya, these new voters will almost all be digital natives as well.

Generational Conflicts

Thus Kenya – like many other African states – is faced with a fascinating generational conflict based on many fault lines: On one side, there are young relatively well-educated people (by African standards), for whom the internet is a normal part of life, and who are systematically distanced from power and resources by the older generation; on the other, there is the 50+ generation which, especially in rural areas, is often scarcely able to read and perceives the internet as more of a threat, but has a large part of the resources at its disposal. The younger generation constitutes a clear and constantly growing majority.

Having said this, the internet most clearly depicts the difference between the two worlds. Although the most important Kenyan politicians maintain Twitter profiles with many followers, they only use them as an additional channel to spread messages that are also delivered via other media.[17] They do not seem to understand Twitter's function as a quick campaign tool for specific issues. This is underscored by relatively amateurish online smear campaigns primarily against the opposition. These campaigns, apparently carried out by an American media company, hardly had any impact because they merely repeated assertions that had already been made in traditional media. Nor does the fact that President Kenyatta and opposition leader Raila Odinga have hired highly visible social media activists as communications advisers, and that President Kenyatta pays groups of bloggers, such as the "36 bloggers", to disseminate their opinions, do much to change this change this impression. According to internet expert Mark Kaigwa,[18] these internet specialists are very far removed from the powerful men in the internal hierarchies, and have no influence

on the development of communication strategies. They are there to distribute prescribed messages as effectively as possible via their followers. Nor are they included in the political line of the politicians distributing money.

This describes a change which, according to Kaigwa, is currently underway: A few years ago, internet activists mainly formed a kind of "virtual NGO" in which political and social opinions were formed quite spontaneously, but the commercialisation of the internet has gained momentum in Kenya, too. In this context, it is not only the political elite who pacify internet activists by giving them money, but as discussed above, the advertising industry to a greater extent; the latter is diluting the political effectiveness of internet activists through product placement, without having an explicitly political agenda.

Conclusions

As described above, many factors seem to be coming together in Kenya that can pave the way towards a free, dynamic internet as a space for social and democratic freedoms. On the other hand, the newly re-elected government already exhibited authoritarian tendencies in the last legislative period and indicated – immediately after the (subsequently annulled) elections in August with its crackdown on several NGOs[19] and on several television stations in January 2018 – that these tendencies can be expected to intensify further. China, too, which no longer defines its interests in Kenya solely in terms of trade policy, but is also seeking political allies on the African continent, will support these tendencies with its technical expertise. The necessary Chinese IT equipment suppliers, such as Huawei, already have a strong presence in Kenya. In addition, the commercialisation of the internet provides for a gradual dilution of political content.

It therefore remains unclear who will prevail in the medium term. Will the old generation hang on to the resources while the young people occasionally engage in short pinprick campaigns? Or will the internet activists and young politicians succeed in changing the social and political awareness of the younger generation, achieving better political participation opportunities in the long term and thus a chance to gain fairer access to state resources and high-quality government services?

There is definitely a chance that they will follow the latter course. As described above, with respect to technology, Kenya is far removed from countries such as China that can largely control the internet. In addition, the courts have proven that they are fully committed to protecting freedom of expression, including on the internet, and do not shy away from conflict with the government. Despite the restrictions imposed by the aforementioned security laws and a judiciary that is not always fully functional, Kenya remains a constitutional state. This is precisely where the legal basis for the use of the internet is defined in the conflict between legislators and the highest courts.

The young generation therefore has the opportunity to further develop the internet as a space for open discourse. This is not without risk, however, because opponents who do not really understand what is happening on the internet tend to react harshly and disproportionately. Given this constellation, it would be naïve to believe, based solely on their greater knowledge of the internet and numerical superiority, that the Kenyan digital natives will automatically assert themselves and maintain the internet as a space for free expression. Targeted support, not only from individual internet activists and their groupings, but also from specialised lawyers, critical media, and NGOs, as well as cooperation with courts and governmental regulatory agencies, seems necessary if this goal is to be achieved.

–translated from German–

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11 You can follow them at #KOT on Twitter.
12 From a conversation between Dr. Cernicky and Boniface Mwangi, Dec 2017.
13 During the election campaign, the KAS in Kenya followed a UKWELI party candidate, Samantha Maina, with a camera. The video is available at https://bit.ly/2GaAWEC [22 Feb 2018].
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15 From a conversation with Dr. Cernicky.
16 An example of this is the quite visible campaign #notwithmyvote, which ran during the elections in 2017.
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18 Cf. Ndemo, Bitange / Weiss, Tim (ed.) 2017: Digital Kenya – An Entrepreneurial Revolution in the Making, Palgrave MacMillan, Basingstoke.
19 This concerned, for example, the International Development Law Organisation (IDLO) and the Kenya Human Rights Commission (KHRC).

Source: © Toru Hanai, Reuters.

The Digital Future

Society 5.0

Japanese Ambitions and Initiatives

Franz Waldenberger

Facing pressing challenges in demography, politics and society, Japan seeks salvation in a digital future. All aspects of life shall be interconnected to make life easier. Prime Minister Shinzo Abe and his government are determined to turn this idea into reality soon.

Japan's society is rapidly ageing. Statistics show that by 2030, 40 per cent of the population will be 60 years and older. The solution to tackle the challenges ahead? Technology. The idea of "Society 5.0" emanated from the need to master the challenges of digitalisation and connectivity.

Thus far, Japan has introduced a series of initiatives regarding Society 5.0 by different actors, namely by the Cabinet Office, the Prime Minister, the Ministry of Economy, Trade and Industry (METI) and *Keidanren*, Japan's leading business organisation. How these actors and initiatives will be able to shape the future of Japanese society, constitutes an endeavor of crucial importance.

Japan has the second largest IT sector of all OECD countries.[1] It invests heavily in Information and Communication Technologies (ICT) related Research and Development (R&D) and its IT hardware products are highly competitive in international markets. Japanese researchers made major contributions to "ubiquitous computing", while Japan's telecommunication industry took a leading role in the development of the mobile internet. The country also boasts one of the highest penetration rates of mobile broadband.

However, Japan does not host a vibrant startup eco-system comparable to Silicon Valley that seems to provide an ideal testing field when it comes to exploring the potentials of digitalisation, connectivity, big data, artificial intelligence (AI) or blockchain technologies.[2] Like Germany, Japan maintains a relatively large manufacturing sector, yet it was Germany which first attracted international attention with *Industrie 4.0* as its national framework and platform to comprehensively exploit the opportunities implied by digitalisation and connectivity.

Since 1998 Japan has organised an annual Global ICT Summit and has been launching its own initiatives with regard to ICT as part of its

- general economic policy (Prime Minister and its Cabinet),
- industrial policy (Ministry of Economy, Trade and Industry),
- science and technology policy (Cabinet Office / Council for Science, Technology and Innovation and Ministry of Education, Culture, Sports, Science and Technology), and
- its ICT strategy (Ministry of Internal Affairs and Communication).

In 2013, following the announcement of its ICT growth strategy, the government officially declared that it will make Japan "the world's most advanced IT Nation".[3]

The first industry specific responses to *Industrie 4.0* were the establishment of three (!) industry consortia, the Robot Revolution Initiative in May 2015[4], the Industrial Value Chain Initiative in June 2015[5], and the Internet of Things (IoT) Acceleration Consortium in October 2015.[6] In addition there have been initiatives by the Japan Association of New Economy[7] and the Internet Association Japan.[8] As some of these terms might sound cryptic, it may be unnecessary to explain the technical details of the above mentioned consortia. However, the mere creation of these initiatives demonstrates the strong response *Industrie 4.0* has triggered in Japan.

The most comprehensive framework recently promoted by the Japanese government is "Society 5.0" (see table 1). Society 5.0 is used to highlight Japan's unique position and role in mastering the challenges of digitalisation and connectivity. The term was introduced in the 5th Science and Technology Basic Plan of January 2016 with explicit reference to the national IoT initiatives in the US, Germany and China.

Society 5.0

The 5th Science and Technology Basic Plan formulates the ambitious goal of making Japan a world-leader in the creation of a "super smart society". The so-called Society 5.0 represents a state that appears almost utopian, a perfectly connected, highly efficient and inclusive society, which fully integrates the cyber and the physical world.[9] Eleven systems are defined as tasks that need to be accomplished to achieve the final goal. The core is made up of three systems addressing important social and economic needs and requiring urgent action on a national level. All systems are addressed by separate initiatives, require close collaboration between academia, industry and government and are to be coordinated and integrated through a common

Table 1: Society 5.0 – Japan's Initiatives at a Glance

Institution	Cabinet Office / Council for Science, Technology and Innovation	Prime Minister of Japan and His Cabinet / Japanese Economy Revitalisation Headquarter
Title	The 5th Science and Technology Basic Plan[10]	Growth Strategy 2017[11]
Focus	Core systems: intelligent transportation systems, energy value chain, new manufacturing systems, additional systems: global environment information platform, infrastructures, hospitality, smart food chain systems, disaster resilience, integrated material development systems, smart production systems	Policy areas / strategic fields: „extension of healthy lifespan", "realisation of mobility revolution", „creating next generation supply chains", „building and developing pleasant infrastructures and towns", „FinTech"
Supporting areas	Technological domains: Cybersecurity, IoT system architecture, AI, device technology, network technology, edge computing, mathematical science	Cross-sectional tasks: 1. enhancing sources of value creation (platform / systems for exchange and use of data; IT related education / human resources; innovation / venture eco-systems), 2. reforms to support value creation (reform test cases; reducing administrative burdens; corporate governance reforms; expanding private / public partnerships and private finance initiatives), 3. better integration of local economies (SMEs, services, agriculture, tourism / sports / culture)
Japan's strengths / advantages	Technologies: Robotics, sensor technology, actuator technology, biotechnology, human interface technology, material / nanotechnology, light / quantum technology	Japan facing severe demographic as well as energy / environmental challenges; pressing labour shortages; availability of big data

platform (the "Society 5.0 service platform"), that is yet to be launched. The "5th Plan" further lists several technological domains considered as fundamental for the promotion of the above systems and emphasises technologies, which are relevant for the eleven systems as well as for the fundamental technological domains and where Japan is in a leading position.

Society 5.0 plays a pivotal role in the recently updated growth strategy under "Abenomics". Approved by the Cabinet in June 2017 under the title "Future Investment Strategy – Towards the Realisation of Society 5.0" (in Japanese), the Growth Strategy 2017 sees the efforts undertaken towards Society 5.0 as "the key to break secular stagnation and achieve mid-and-long-term growth". It argues that Japan is in an advantageous position to take the lead because

- it faces severe challenges like the rapid ageing of its population, the de-population of rural areas and energy and environmental issues, where Society 5.0 is expected to deliver urgently needed solutions,
- fears of mass unemployment associated with the 4th industrial revolution will be less relevant for Japan as the country's labour force is rapidly shrinking,

Institution	METI / Industrial Structure Council – New Industrial Structure Committee	*Keidanren*
Title	„Future Vision Towards 2030s"[12]	Rebuilding Japan through the realisation of Society 5.0 (only in Japanese)[13]
Focus	Specific strategies: Mobility (people and things); smart supply chain and production systems; health and nursing care; living (new cities, sharing economy, FinTech)	Tokyo 2020 as model case); region (advanced data analysis & robotics to agriculture, automated driving, robotics & smartphones to improve child and elderly care, a work environment in support of family life, diversified and decentralised energy system, resilient infrastructure); products and services (optimising value chains, fostering technologies where Japanese industry excels – devices, materials, supercomputing, ensuring international competitiveness of SMEs – top craftsmanship, new 3D printing); infrastructures (smart construction systems, big data & AI for asset management, virtual Japan); cyber space (data infrastructure, digital twin infrastructure, cyber security, resilience, etc.)
Supporting areas	Cross-sectional tasks: better rules (IP, data, standards, regulations); innovation eco-systems (CoEs, industry-academia collaboration, AI roadmap, venture business); rejuvenating economic system (risk capital, business restructuring, governance); human resource development and management; social security systems; regional economies, SMEs; developing business overseas	Comprehensive reforms / adaptions in five areas: public administration, legal system, technology, business organisation, human resources, education, work styles, social acceptance.
Japan's strengths / advantages	abundance of „physical" data; manufacturing technologies; pressing social issues	no explicit emphasis

Source: Author's compilation.

- the country has a competitive edge in integrating virtual data from the internet with real data provided by various service industries, transportation and manufacturing systems.

The Strategy 2017 specifies certain policy areas for future investment and outlines cross-sectional tasks needed to be tackled in order to realise the value creation potential of digitalisation and connectivity.

Society 5.0 represents a state that appears almost utopian.

Society 5.0 has also been incorporated in METI's "New Industrial Structure Vision", projecting the evolution of industry up to 2030. The outline defines a number of strategic areas and cross-sectional tasks. Strategic areas are further subdivided into subthemes with a future vision, a roadmap and breakthrough projects sketched for each subtheme. METI sees Japan capable of taking the lead in the realisation of Society 5.0 due to its abundance of well documented physical data, advanced manufacturing technologies and pressing social issues. In March 2017, METI announced the Japanese version of connected industries as an integrated part of a "human centric" Society 5.0. The concept incorporates three pillars:

1. a digital society based on co-working of humans and machines,
2. multilevel cooperation across regions, borders and time,
3. human resource development.

The concept has been promoted and further developed in a series of roundtables organised by METI in cooperation with representatives from Japanese industries. *Keidanren* endorsed the concept of Society 5.0 in its policy proposal "Toward realisation of the new economy and society" as early as April 2016. In July 2016, it came up with a proposal specifically targeting the use of data ("In pursuit of an environment for utilisation of data. Towards the achievement of Society 5.0"). In February 2017, *Keidanren* published a comprehensive action plan to rebuilt Japan with Society 5.0 as its key concept.

In July 2017, as a follow-up to the G7 Information and Communication Ministers Meeting in April 2016 in Japan, the Japanese Ministry of Internal Affairs and Communication published

Wedding 5.0: In the long run, society 5.0 is seen as an argument to push for fundamental reforms of Japanese social institutions. Source: © Yuriko Nakao, Reuters.

a first draft of guidelines for Research on Artificial Intelligence (AI) as a basis for international discussions. The aim is to achieve multi-stakeholder participation and sharing of best practice among the G7 and OECD countries.[14]

Preliminary Assessment

Society 5.0 has certainly become the dominant framework for Japanese discourse about the next industrial revolution. But what exactly defines it?

Comprehensiveness is the first pillar of the said framework. Society 5.0 moves beyond industry in the narrow sense. It fully embraces the potential social transformations inherent in the digitalisation and full-fledged interconnectedness. The second characteristic is issue orientation; i. e. the potential of digitalisation and

connectivity are not discussed from a purely technological point of view (what is technologically possible), but with regard to their contribution to Japan's urgent social and economic issues, like ageing, depopulation, energy, productivity, regional revitalisation, disaster resilience. Furthermore, the entire process is laid out in a way that sees itself as a driver of reform: Society 5.0 is not only seen as the "new growth engine", but also as an argument to push for fundamental reforms of Japanese economic and social institutions. Lastly, a Japan specific focus matters: With reference to existing strengths of Japanese industry, Society 5.0 emphasises specific technology areas where Japan should take a lead, like the integration of virtual and physical data (sensor technology, autonomous driving, smart value chains / manufacturing systems), robotics / AI, new materials, blockchain / FinTech.

Comprehensiveness and issue orientation represent some of the pillars of Society 5.0.

To be sure, the policy proposals sketch very ambitious goals and appear utopian in many respects, but this is typical of Japanese policy initiatives.

Despite the common frame of reference provided by Society 5.0, the many ideas, proposals and initiatives remain only loosely coordinated. While this might not be surprising given the complexity and uncertainty surrounding the new digital future, it points to a typical structural problem confronting such a national strategy; namely the organisational boundaries within the public administration, between companies, industries or industry and academia. These boundaries obstruct the cross-sectional coordination and collaboration necessitated by the system-wide implications of Society 5.0, and engender numerous duplications of efforts. It remains to be seen whether the new vision can create a strong enough momentum or sense of common mission to overcome the structural barriers, otherwise its implementation will be greatly constrained by lack of coherence and integration.

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Source: © Darley Shen, Reuters

The Digital Future

Of Streams of Data, Thought, and Other Things

Digitalisation, Energy Policy, and Innovation Capacity From an Asian Perspective

Peter Hefele

What influence do digitalisation processes have on the use of energy and raw materials? What innovation dynamics result from the potential, still far from exhausted, of these developments? And what influence does all this have on the geoeconomic and geopolitical interrelationships in the international system? This article addresses these questions from an Asian perspective.

Big Data, Industry 4.0, Smart Cities – digitalisation is seen all over the world as *the* silver bullet for innovations in politics, business, and society. This is also particularly true of the fast-growing, often still very young societies in the Asia-Pacific region. Optimism about progress, enthusiasm for technology, and joy of experimentation create a unique digital ecosystem here, one which eagerly embraces innovations and creates rapidly growing markets with extremely high competitive pressure for companies. But beyond the everyday world of *WeChat*, *Line*, *Viber*, and *Alipay*, dramatic upheavals in traditional value-added chains are looming in the course of the ongoing digitalisation process. These, in turn, are connected to tectonic shifts of the geopolitical and geoeconomic map. And the centre of all this is access to and use of energy and raw materials, as it has been many times before throughout history. The significance of the correlation between these developments and rapidly progressing digitalisation processes has not yet been fully understood, let alone politically managed. Usually, only isolated processes, services, and products are taken into consideration. What is much more decisive, however, are the dynamics of innovation that digitalisation can trigger and that, for the most part, can only be adequately understood within a larger system context.

This article will therefore examine questions of future energy and the use of resources in more detail, focusing on its interactions with digitalisation processes and their innovation potential. It will address technologies and innovations beyond the strictly technical aspects. This is because social and political innovations that are triggered by digitalisation, but that digitalisation can also (in the best case) regulate, are far more significant. Ultimately, this is about building institutions and shaping change processes by political means.

Three important development axes of future digitised energy and resource systems will be presented in light of their respective effects on geopolitics, the (global) energy industry, and (global) society. They not only affect the Asia-Pacific region, but also fundamentally call into question the prerequisites of our prosperity and the power of Germany and Europe to shape policy. In concrete terms, this concerns

1. geopolitical shifts in power,
2. the transformation of energy systems, especially in urban areas, and
3. the opportunities and risks inherent in a far-reaching digitalised energy industry.

Starting Situation

First, some essential characteristics of the existing global energy and raw materials system will be discussed in order to gain a reference point for the dynamics and possible direction of movement of the current changes.

After a brief euphoria at the end of the Cold War, the liberal world order created at the end of the Second World War is now being eroded to an unprecedented degree. What is often forgotten is that this world order, commonly referred to as *pax americana*, was essentially also a world

energy order. Its main features were established as early as the 1920s, but it did not come into full effect until after the Second World War and was based almost exclusively on a specific production and distribution regime for fossil hydrocarbons, especially oil and gas. The importance of free markets was always emphasised in the energy policy debate at the time, but this tended to be an ideological smokescreen given the oligopolies and cartels on the energy markets.

The world order that is commonly referred to as *pax americana* was primarily a world *energy* order.

It is therefore not surprising that the current geopolitical upheavals – greater than those in virtually any other field – are emerging primarily in the global energy and raw materials markets. The latter are now the focus of all major regional and geopolitical actors' (geo-)political, economic, and military strategies. Energy and raw materials have become key issues in the global public discourse. Whereas the importance of market processes used to dominate, it is now becoming increasingly common to speak of a "securitisation" of raw materials – energy and raw materials as essential sources and instruments of national power (projections). Many therefore view the great game as being not only back in Central Asia, rich as it is in energy and raw materials. Unfortunately, these processes often go hand in hand with an autocratisation of political systems, where several factors play a role: for example, the monopolisation of political *and* economic resources in the hands of small elites in response to resource bottlenecks, or as a basis for legitimacy for (real or artificially created) intra- and interstate conflicts.

However, contradictory developments can also be found in the energy markets themselves, where phenomena of abundance and scarcity often occur in a direct local and / or temporal context. It is not without good reason there has been a move away from placing the finite nature of fossil fuels and raw materials (oil peak) in the foreground of discussions about energy policy over the last few years. From a global perspective, no serious bottlenecks are likely to arise in the foreseeable future, either in terms of available quantities or price trends. The local and technological diversification of sources of supply and the hedging of risks through financial market instruments and government regulation – to name but a few mechanisms – are at a very high level worldwide; a development to which the experience of the oil crisis of the 1970s certainly contributed. In short, national and global energy and raw material systems are more resistant to shocks than the general public often assumes it to be.

However, shortages and conflictual developments threaten energy and raw material systems elsewhere. This is where innovations must come into play to an unprecedented degree: in intelligently using fossil-based economies and production methods and dealing with their consequences, avoiding and coping with the consequences of climate change, combatting social inequalities, distortions, as well as political instability and the autocratisation of political systems.

Against the backdrop of these developments, which often give little cause for optimism, it is therefore important to look for the causes, justifications, and driving forces behind innovations and innovation dynamics. And to ask ourselves what kind of innovations they might be and what role digitalisation plays, and ultimately how and under what conditions such innovations could be created.

Geopolitical Market and Power Shifts

Renewable energies are increasingly proving to be disruptive technologies and are changing value-added processes, which will challenge the existing structure of entire economies. Yet these effects also apply to newer, low-emission forms of the extraction and use of fossil

and non-fossil hydrocarbons (such as liquid fuels derived from biomass or carbon capture, storage and utilisation, CCSU). Those initially affected are traditional producer countries such as the Gulf States or Central Asian republics. However, "fossil" economic structures and established business models are coming under massive pressure to adapt in consumer countries as well. In many cases, producer countries and regions are already experiencing a critical "burden syndrome" which is exacerbated by the above-mentioned effects. A regionally and globally oriented security and development policy must proactively mitigate and hedge these massive distortions in the existing production countries and distribution systems; since it is highly unlikely that the negative effects can be avoided entirely. These efforts must include ensuring that there is fair access to resources, and that the negative environmental and climate impact be at the centre of a forward-looking international raw materials policy. To this end, the ability to make forecasts must be significantly improved at all decision-making levels (households, companies, nation states). Governments and companies should avoid being caught in so-called lock-in situations at all costs: one-sided dependencies on certain raw materials or customers. This does not happen when open and innovation-promoting standards and fair market conditions prevail. Regional and global consultation and coordination mechanisms must also be strengthened due to the considerable potential for conflict in security policy. It is in the core interest of Europe and Germany to shape and enforce them.

Renewable energies are increasingly proving to be disruptive technologies, challenging the structure of entire economies.

Energy Transformation and Urbanisation

Worldwide, the degree of urbanisation is currently around 55 per cent – and rising. This development will continue unabated over the next few decades, especially in the Asia-Pacific region, Africa, and Latin America. At the same time, urban energy demand is growing at a disproportionately high rate and already accounts for around 75 per cent of global energy consumption. In most cases, urbanisation proceeds largely unplanned. Today's dominant development patterns cement long-lasting dependencies on fossil fuels due to inadequate traffic planning, lack of energy efficiency in buildings, etc. At the same time, these spaces could represent a unique environment, serving as future laboratories. *Smart solutions* based on intelligent data collection and networking have enormous potential to increase energy and resource efficiency. In Asia in particular, however, there is a risk of misusing digitalisation as an instrument for comprehensive monitoring and behavioural control, in order to enforce apparently more efficient top-down decisions. This would and will massively restrict the diverse, decentralised, innovation-promoting opportunities for and by citizen participation in new technologies. More than any other type of space, cities offer opportunities for cross-sectoral policy approaches. They can provide examples for entire economies. Thus far, transformation processes have been too often carried out in "silos". The ambitious German energy revolution must also urgently promote intelligent networking (in both the physical and conceptual sense), in order to create the infrastructure for a new digital economy 2.0. At the same time, and especially in Asia, the required energy transformation cannot be limited to renewable energies. At present, there are no realistic scenarios that would suggest that the (dominating) role of fossil (and nuclear) energy sources will be abandoned in the next 50 years. Therefore, new solutions for security risks and emission avoidance have to be found. In this context, it is already becoming apparent that the importance of the production and use of primary raw

materials is in relative decline and that, in the course of circularisation and digitalisation, the intelligent use and recycling of raw materials will become key fields of economic value creation.

Digitalisation and Use of Energy and Resources

Both the analysis and the conceptual management of the effects of digitalisation on today's

energy and resource systems, are still in their infancy. Fears and hopes are often balanced, but all forecasts indicate that the risks, costs, and benefits of this upheaval will be very unevenly distributed. Key developments that will have a major impact on the energy policy landscape will be briefly outlined below.

Electrical energy as a share of total energy use will increase significantly over the next few decades. The pace of this increase will largely depend on progress in storage technologies and electromobility. From a technical point of view, electrical energy offers the highest potential for efficiency gains and cross-sectoral approaches. With regard to the necessary regional energy market integration (European Energy Union, ASEAN, Northeast Asia), electric grids will take centre stage.

This development cannot be imagined without *accelerated digitalisation* if we want to ensure scalability, maximum coverage, and further increasing shares of renewable energies and their decentralised use. However, this requires an appropriate regulatory framework that will primarily break the energy market monopoly structures that are still in place and open up new business models for small and medium-sized enterprises.

The digitalisation of networks and processes in the energy and infrastructure sector entails increased *vulnerability* to cyberattacks. However, the awareness and understanding of this type of threat is growing much slower than the technical capabilities of the attackers. Open standards, a shift in awareness among manufacturers and users, and cross-sectoral policy and action approaches are essential for effective hazard prevention.

As has been described, considerable social and political instability is to be expected in the course of shifts in demand and the devaluation of government and private assets (as a result of *decarbonisation strategies*, for example).

Disruptive technology: Renewable energies are changing value creation processes, calling into question the existing structure of whole economies. Source: © Marcelo del Pozo, Reuters.

"Transformation consultancy" for transforming economies and developing new business models, must be urgently pressed forward.

The *key role of critical and rare raw materials* is underestimated in many cases, both for digitalisation and the further increase in the share of renewable energies. It is precisely in this area that there are often extreme dependencies on a few suppliers, and the elimination of these dependencies must be pursued with some urgency. At the same time, a broad field of innovation with a view to substitution and more efficient material cycles (circular economy) is emerging here.

Germany as a Digital and Energy Policy Competence Centre

If we take a look at the challenges posed by digitalisation and the energy revolution – and only a few of them have been addressed in this article – we discover an astonishingly large number of classic topics in which Germany traditionally has great strengths and which can be updated or upgraded digitally. Here are three major fields of action:

Reforming and Opening up Markets and the Role of Small and Medium-Sized Enterprises as Innovators

The disruption of established markets means that new value chains must and can be created. This will create market niches for innovative companies in the course of digitalisation, since existing cost structures can be overcome more easily through a more cost-effective scaling of processes, for instance. In the energy sector, a considerable number of start-up companies have established themselves, offering new product and service portfolios such as smart metering, and thus challenging established suppliers. However, this potential can only be exploited if fair access conditions are met. Direct and indirect network effects (such as those associated with such market-dominant providers as Amazon or Microsoft) that often function as effective market entry barriers and require intelligent state regulation, should be considered in this context.

Role and Importance of Metropolises as Innovation Centres

Metropolises, functioning as nodes of globalisation, have established themselves as independent actors in global politics. Important ideas emanate from them, as international climate diplomacy has shown. Their role as laboratories of the future will be demonstrated not least in the Asia-Pacific region, where metropolitan areas will become the predominant type of settlement within the next two decades. However, they will be able to develop their innovation potential only if their autonomous political role in the state structure is strengthened and sufficient public participation opportunities for citizens are provided. Here, digitalisation opens up a wide range of options for data use and data networking, from intelligent energy and resource use to transparent public and private services geared towards individual needs.

The increasing danger of cyberattacks must be met with international legal regulations and multilateral conflict resolution.

The Importance of Regional Multilateral and Cooperative Security Architectures

The digitalisation of vital infrastructures, in the energy sector, for example, is already quite advanced. Increasingly frequent governmental and private cyberattacks reveal the vulnerability of these systems, and in many cases and for good reasons, can be seen as new forms of warfare with enormous potential for escalation. The development of international legal regulations and mechanisms of multilateral conflict avoidance and conflict resolution, has so far been entirely inadequate. Access to energy and raw materials (such as rare earths) has already been used several times as a means of exerting pressure between states.

Global energy systems are currently undergoing an epochal upheaval that is interacting with the digital revolution in many ways. Both developments offer Germany enormous innovation potential that goes far beyond technical solutions. Germany is in demand globally as a partner when it comes to complex challenges – be it in the creation of new value chains, in sustainable development strategies, or in regional conflict management.

–translated from German–

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Source: © Aly Song, Reuters

The Digital Future

More than Just Bitcoin

The Potential of Blockchain Technology, Using the Example of Latin America

Christian Hübner

Today, blockchain technology (BT) has already claimed a prominent position in the sphere of digitalisation. It is becoming increasingly clear that it has countless potential applications, that extend far beyond the Bitcoin digital currency. Eventually, it might even be a safe alternative to weak state institutions, particularly in emerging and developing countries.

Only recently, the US iced tea manufacturer Long Island Iced Tea Corp. renamed itself Long Blockchain Corp. The value of the company's shares subsequently rose by 200 per cent. What has become clear, is that blockchain technology (BT) is predicted to have a great future, at least from an investor's point of view. While the US company offers its iced tea in a specific number of flavours, the potential uses of BT are only very slowly starting to emerge. But one thing is already clear today: The well-known Bitcoins are only the tip of the blockchain iceberg.

A blockchain can basically be understood as an expanding database that is updated and stored on many computers at the same time. The database works like a public cash book that chronologically records all the transactions of the parties involved. The database is updated by combining all the transactions carried out during a certain period into blocks. These blocks are then chained together, using cryptographic methods, to ensure that each new block is linked to all previous blocks in such a way that it cannot be modified. The Blockchain is then complete. Confidence in this data technology and software arises from the fact that the transactions are transparent, i.e. verifiable, and can be viewed by the parties concerned, as well as being permanently monitored on a decentralised basis by the blockchain network. BT is therefore considered to be secure – and, of course, also due to the high level of encryption required. Data stored in a blockchain cannot be deleted. Users can carry out transactions directly with other users without using intermediaries, and these transactions may be anything that can be represented digitally, such as money, contracts, pictures or music. Blockchain users can remain anonymous by using pseudonyms. What is really special about blockchains, however, is that an intermediary is no longer required if two or more people want to make a transaction. Blockchain technology cuts out the central actors such as banks, which would otherwise have to be trusted to make money transfers. The Economist put it very succinctly in a special edition dedicated to BT entitled "The Trust Machine".

For policymakers, BT adds an entirely new dimension to digitalisation. While developments such as artificial intelligence, industry 4.0 and the "Internet of Things" already represent a considerable challenge for political decision-makers and the economy, BT actually calls state sovereignty itself into question. Because of its decentralised nature, blockchains promise security and transparency without any superordinate authority. This is an attractive approach, especially for people in countries where faith in state institutions has been shattered. This is true in many Latin American countries, where persistent corruption, banking crises and political instabilities have served to paralyse development. BT addresses this issue by offering itself as a safe alternative to weak state institutions, so there are numerous potential governance applications for the technology. With the exception of the well-known Bitcoins and other digital currencies, blockchain technology has so far mainly been tried and tested within the start-up scene. However, large multilateral institutions such as the United Nations (UN), the global banking market – including central banks – and numerous governments, have all been taking an interest in the technology both in a positive and negative sense, for some time now.

Will Bitcoin Kill Off Central Banks?

At present, the best-known BT application is Bitcoin. Bitcoins are "mined" by creating new blocks within a blockchain as described above. This process takes place in the form of a competition, with rewards going to those in the network who are the first to create a new block. Special computers in the Bitcoin network check whether the new block is correct, i.e. whether it complies with all cryptographic standards. Currently, each new block is worth 12.5 bitcoins. Bitcoins are tradable for anyone who has a corresponding internet account. As time goes by, it becomes increasingly difficult to create new blocks due to the underlying cryptographic process. As a result, more and more computing time is required for each new block. Environmentalists are critical of this aspect because of the associated increase in power consumption, and Bitcoin's effect on climate change has become a hot topic of debate ("climate killer: Bitcoin"). The main problem is the carbon-intensive coal-fired power plants that are used to generate electricity specifically in those countries where many bitcoins are being mined at the same time. Newer approaches attempt to resolve this issue by generating electricity from renewable energies or using more energy-efficient computers. Newer blockchain technologies have also become available that offer alternatives to the energy-intensive mining process.

State sovereignty is called into question by blockchain technology.

The key difference between Bitcoin and traditional currencies such as the US dollar or the euro, is that Bitcoin does not need a central bank. Users can transfer bitcoins between themselves in a decentralised way using BT. Bitcoins can also be used as a direct payment method in many places, such as cafés and restaurants. It is also possible to convert it to other currencies such as the euro or US dollar. The exchange rate for 12.5 bitcoins (i.e. the creation of a block) into euros is approximately 101,911.50 euros (as at 7 February 2018).[1] This is a highly attractive exchange rate and one of the reasons why numerous Bitcoin mining farms have started to emerge. By far the most bitcoins are now produced in China. This is an interesting development, considering that China has just banned trade in bitcoins. This also serves to prove just how difficult it can be to regulate the transfer of bitcoins. The only way to control it effectively would be to take control of the entire internet. Bitcoins are also being mined in Latin America, especially in Venezuela, where the huge amounts of energy required for the computing process come very cheap, and this in spite of fierce government opposition.

In Latin America, Bitcoin has long since outgrown the start-up scene and now represents a real alternative to established banking processes. Therefore, it comes as no surprise that many commercial and private banks in countries such as Argentina, Brazil, Mexico and Chile are now trying to develop their own platforms for digital currencies. In addition to Bitcoin, there are also numerous other digital currencies, including Ether and Ripple. However, Bitcoin continues to dominate the market and you can even use Bitcoin ATM machines.

Financial and banking crises have been an important, perhaps even key trigger for the use of Bitcoin in Latin America. This has been most evident in Argentina. The misguided monetary policy of the Kirchner government up until 2015, which essentially led to the devaluation of Argentinian savings and uncoupling from the global financial market, led Argentines to look for alternatives. And Bitcoin provides such an alternative: no state-controlled central bank and no falsified public statistics, but instead

Miner: Mining has established itself as a term for the resource-intensive process of creating Bitcoins – today primarily taking place in big server farms.
Source: © Daniel Becerril, Reuters.

the possibility of making cross-border payment transfers worldwide via the internet. A smartphone or computer with internet access is all that is required. Trade in bitcoins increased steadily until the election of Macris in 2015, and then slowly declined again with the opening up of the Argentinean financial sector.

For Venezuela, there is no democratic, Argentina-style happy ending on the horizon. The devaluation of the Venezuelan bolivar continues apace. What's more, the state-owned oil company PDSV, which is making a growing contribution to the state budget, has become increasingly inefficient and unprofitable due to years of mismanagement, so Venezuela is finding it increasingly difficult to stay solvent. Venezuela has also been unable to service its bond debts; at the last debt summit, chocolate was on offer instead.[2] Venezuela's President Maduro has replaced the newly elected parliament with a conformist National Chamber, while opposition parties have recently been banned from taking part in the 2018 presidential elections. It is therefore hardly surprising that more and more Venezuelans are transferring their savings abroad. Restrictive laws have been passed in an attempt to stop this from happening. However, the Venezuelan government's options are very limited if private assets are being transferred using bitcoins. Prior to this particular development, Venezuela also announced that it would create its own internet currency similar to Bitcoin, the "Petro". The Petro is to be secured by

Venezuelan oil, gas, gold and diamonds. Venezuelan President Maduro also announced that he intended to propose this cryptocurrency approach to OPEC.[3] The aim of this move is pre- Venezuela could intend to avoid international financial sanctions. To what extent this might actually work is open to question. Ultimately, the attractiveness of Bitcoin lies in the fact that no central authority has control over it, whereas this would be the case with the Venezuelan government and the Petro.

The examples of Argentina and Venezuela show that many people view digital currencies based on blockchain technology such as Bitcoin as established alternatives, especially though not solely when their country's institutions are failing. The state loses fiscal sovereignty when people use digital currencies, which can be a good thing if governments are abusing fiscal policy to the detriment of their citizens and if they are using devaluations of their own currency to hold on to power. Against this background, Bolivia and Ecuador have officially banned Bitcoin, albeit with little success. But this can also be very negative if a government needs to change its financial framework in order to cope with global crises, but then lacks the instruments to do so. Many central banks are already looking into the issue of digital currencies and are considering to what extent they should rely on blockchain technology themselves. Tunisia and Senegal have converted their central banks to blockchains. Blockchains were also a hot topic in the discussions on the banking sector held at the recent economic forum in Davos. The issue of cryptocurrencies is to be addressed within the framework of Argentina's upcoming G20 presidency at the request of European governments such as France and Germany. At present, there is a very heterogeneous approach to regulating digital countries around the world, with everything from full financial market integration to ongoing analyses, pilot projects and total bans. On the whole, however, it is clear that there is a move towards more regulation. Yet, there is also a worrying trend towards digital currencies being increasingly used by authoritarian regimes to circumvent capital market controls and financial sanctions. In addition to Venezuela, Belarus has also announced the introduction of its own cryptocurrency.[4] And we have known for some time that North Korea has been dealing in bitcoins. And now Russia is also showing an interest in developing its own "cryptoruble" mainly as a way of avoiding capital market sanctions imposed by the US government.[5]

It is worrying that authoritarian regimes are using digital currencies in an increasingly active way.

As far as central banks are concerned, digital currencies do not necessarily have to be perceived as competition. Digital currencies could perform an important stabilising function during times of crisis. When a state is hit by a financial or other political crisis, citizens have the opportunity to relocate their assets at a stateless level in order to avoid inflation and market barriers, while still being able to invest in their own country at the same time. For central banks, the existence of such alternatives may have a disciplinary effect. Necessary reforms would have to be carried out more quickly, as central banks could hardly be used for political abuse.

From a development policy perspective, the crucial question is to what extent a stateless currency can contribute to improving people's lives. Blockchain technology addresses one of the biggest development policy obstacles in Latin America: the informal sector. Many people are not officially registered and therefore have no access to financial services.[6] The independence of digital currencies from states inevitably means that regional restrictions within banking sectors, such as access to international financial markets or international money transfers, can easily be overcome. Exchange into foreign currencies is also possible without any national restrictions. Microloans are easier to provide in instances where there is little banking

infrastructure. For businesses, it would also be considerably easier to invest in and operate international branches in regions with high capital market hurdles or inflation risks. It is therefore conceivable that digital currencies could reduce the financial risks associated with investing in developing and emerging countries. Small companies and start-ups in Latin America in particular could benefit enormously from this.

The price volatility of Bitcoin and its effects on the financial system as a whole, are of particular importance to the current discussion. Many individuals from the financial and banking worlds have repeatedly warned that Bitcoin is a bubble and that collapse is only a matter of time. Already back in 2013, the economist and Nobel prize-winner Paul Krugmann wrote an article in The New York Times under the heading *Bitcoin is Evil*.[7] Recently, even Agustín Carstens, the General Manager of the Bank for International Settlements (BIS, the "central bank of central banks"), joined in the debate with the statement: "What was originally conceived as an alternative payment system without state participation, has become a mixture of financial bubble, pyramid scheme and environmental catastrophe".[8] The danger of a bubble is certainly real, but it is not really relevant in terms of the basic stabilising role that Bitcoin could play for the assets of people in fragile states. The volatility of the currency merely proves that digital currencies, just like other types of currency, are subject to classic financial and economic forces, including speculation. In this respect, investors in this currency are also free to exchange them. In view of the recent falls in the value of Bitcoin (see fig. 1), some capital market companies have also started to remove Bitcoin from their portfolios and to refrain from participating in any further speculation. Facebook has even banned advertising for digital currencies on its network. There is a kind of private-sector self-regulation going on, which makes state intervention, as many central bankers have demanded, seem unnecessary. Added to that is the fact that digital currencies' share of the global financial market is pretty marginal compared to other currencies

Table 1: Bitcoin Regulation in Latin America

Country	Status
Argentina	no statutory regulation – classified as private property
Bolivia	illegal
Brazil	legal – classified as a commodity
Chile	legal – not classified
Colombia	no statutory regulation
Costa Rica	legal – classified as a currency
Cuba	legal – classified as a currency
Ecuador	illegal
Mexico	restricted use – classified as a currency
Nicaragua	legal
Peru	no statutory regulation

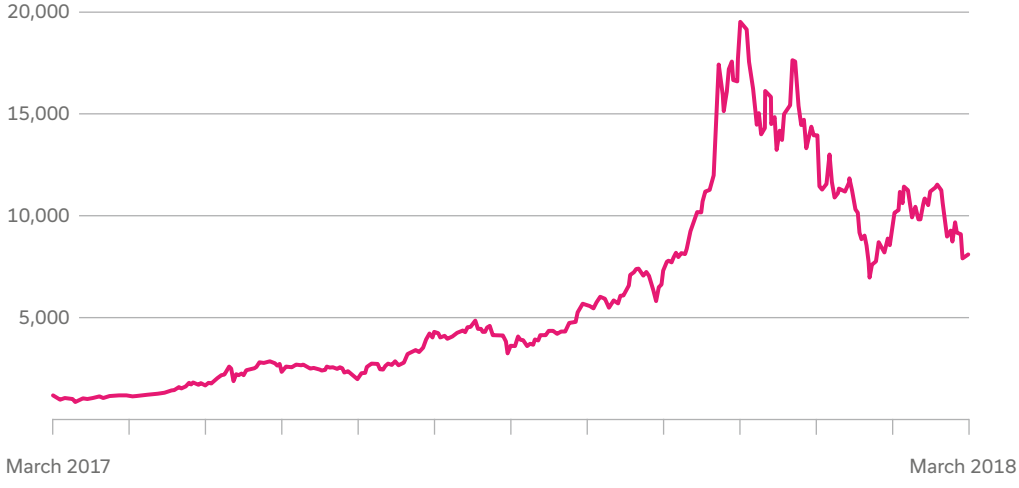
Source: Coin Dance 2018: Global Bitcoin Political Support & Public Opinion, in: https://coin.dance/poli [5 Jan2018].

such as the US dollar or the euro. It has to be said that there have also been several Bitcoin crashes in the past, but its value has always soared again in the wake of those crashes. The accusation that it is a pyramid scheme, i.e. that investors are fraudulently incited to finance the earnings of other investors without being aware of this fact, is also not true. When it comes to Bitcoin, there is simply no central authority that could act fraudulently.

From the governance perspective, the picture for digital currencies is ambivalent.

There is a problem when it comes to tax, however. It is especially the financially weak states with a large informal sector, that are highly dependent on tax revenues. However, Bitcoin and other cryptocurrencies are difficult to monitor, which may result in revenues not being recorded. One of the best-known weaknesses, but also strengths, of digital currencies such as Bitcoin, is the anonymity of their users. In a positive sense, this means that corrupt or fragile regimes can be circumvented. But this can also be used to trade in illicit goods such as weapons and, particularly in Latin America, drugs. Albeit in recent years, law enforcement agencies, especially in the USA, have managed to reduce this kind of illegal trade, at least with regard to Bitcoin. For example, there are now software programmes that can track Bitcoin movements – and hence illegal activities – with much greater accuracy. However, newer cryptocurrencies are able to fool these kinds of software programmes, leaving something of a grey area. On the other hand, the theft of digital currencies is also on the increase. Hackers regularly succeed in illegally obtaining digital currencies through complex online attacks. Their targets may be cryptocurrency exchanges such as the Japanese Coincheck – from which 429 million euros were stolen – or private internet accounts (wallets).[9] Such thefts can cast a negative light on cryptocurrencies, but as with all technical innovations, consumers and developers will probably have to go through a learning curve when it comes to cryptocurrency security. The use of digital currencies is unlikely to decrease over the long term, however.

Fig. 1: Bitcoin Price Progression in US Dollars



Source: CoinMarketCap 2018: Cryptocurrency Market Capitalizations. Bitcoin (BTC), in: https://coinmarketcap.com/currencies/bitcoin [16 Mar 2018].

Overall, there is some ambivalence towards digital currencies such as Bitcoin from a governance perspective. Bitcoin and other digital currencies operating on the basis of blockchain technology, have the potential to reduce the influence of central banks. But this does not necessarily have to be a bad thing, as it could also serve to limit political influence on central banks and therefore also the risk of abuse. It could mean that central banks gain greater independence. Thus, the main challenge will probably be accepting a loss of fiscal sovereignty and not trying to prevent it. Digital currencies open up huge opportunities for people in fragile states and for those who hitherto had no access to financial markets. Against this backdrop, authoritarian regimes themselves must not succeed in abusing digital currencies in order to circumvent capital market controls. The result would be a discrediting of digital currencies and the associated potential for development policy.

Potential Governance Applications: Sustainability Certification

One of the main potential applications for blockchain technology is for supply chain disclosure. As mentioned at the start of this article, a blockchain captures every transaction and records it in a way that prevents it from being subsequently modified. Today, end consumers want to know that a product has complied with environmental and social standards from the beginning to the end of a production process. For this reason, many countries have issued the appropriate guidelines and regulations, which aim to ensure compliance with these standards. In Latin America in particular, there are many such regulations, but they are simply not being implemented. It is expensive for businesses to do this, as they have to document all production and processing steps centrally. If other companies are involved, they have to request the relevant reports from them. This process is not only expensive, but also prone to errors and fraud due to the use of local middlemen. There is often little that public supervisory authorities can do to counteract this problem. Moreover, emerging and developing countries are particularly likely to view mandatory compliance with such standards as of minor political importance. External certification service providers are therefore often called upon to guarantee compliance with standards. A kind of self-certification industry has now evolved. However, this means that there is still something of a grey area between what is being reported and what is actually happening on the ground. In the end it has to be trusted.

BT can provide full and transparent supply chain disclosure without the use of intermediate entities. Initial attempts are currently underway to use a blockchain to make coffee production – still one of Latin America's main exports – totally transparent. The start-up company Bext360, has developed machines the size of a photocopier that can be used by coffee bean producers in the country of origin to directly track the quality and price of beans.[10] To do so, beans are poured into the machine, where they are photographed and evaluated using artificial intelligence or software algorithms. The producer is then immediately provided with information on the quality and price of the beans. A third entity (person or company) that may have provided this service in the past, is no longer required. The coffee beans can now be uniquely identified during every subsequent processing stage until they are enjoyed in the café or office. In addition to the information on country of origin, further information such as growing and working conditions can of course also be mapped with full transparency. Another start-up company, Provenance, has devoted itself to this particular issue and has developed the appropriate software for it.[11] But it is not only the coffee production middlemen that are likely to become superfluous; expensive certification systems will also need to reconsider their business model.

Combatting Climate Change

The significance of a transparent and forgery-proof supply chain would be even greater if the Amazon rainforest's ability to counter climate change, could somehow be captured in a

Deforested: Blockchain technology could also be used for the protection of the climatically indispensable Amazon rainforest. Source: © Paulo Whitaker, Reuters.

blockchain. Because of its size, the Amazon has a considerable influence on the global climate. Its rainforests act as a global lung that absorbs and stores the CO_2 that is so harmful to the climate. Preserving the Latin American forest is therefore the goal of many national and multilateral conservation programmes, which provide a good political framework for potential blockchain start-ups. The UN is trying to dissuade forest owners from carrying out deforestation by providing financial compensation or alternative use models as part of its "Reducing Emissions from Deforestation and Forest Degradation in Developing Countries" (UN-REDD) programme and other initiatives.[12] The programme can be financed directly via funding or via the issuance of CO_2 certificates, which are then sold to the industry that requires the necessary proof.

Today, 16 Latin American states have signed up to UN-REDD. The programme is also included in almost all the national climate protection plans (NDCs) developed by Latin American countries. In the future, it is safe to assume that CO_2 certificates and CO_2 pricing based on an emissions trading scheme or taxes, will gain in significance. CO_2 markets, for example, are listed as a climate protection instrument in the Paris climate agreement, which will be progressively implemented over the coming years. The member states of the Pacific Alliance – Peru, Colombia, Chile and Mexico – have agreed to adopt CO_2 pricing in the future and to cooperate on voluntary emissions trading. In addition, Canada, Colombia, Costa Rica, Chile, Mexico and the governors of California, Washington, Alberta, British Columbia, Nova Scotia, Ontario and Quebec have adopted a declaration for supraregional cooperation on CO_2 pricing throughout America. Further initiatives such as the International Carbon Action Partnership (ICAP) and the Carbon Pricing Leadership Coalition, even intend to expand this approach on a world-wide scale.

Start-ups and established companies alike are already trying to profit from these political frameworks by capturing CO_2 certificates on blockchains and making them tradable. The start-up company CarbonX, for example, has adopted the approach of using certificates from the UN-REDD mechanism.[13] Certificates are converted into a digital currency using blockchain technology and then given to companies, which in turn create an incentive for consumers to purchase environmentally-friendly or sustainable products. Consumers then receive a certain amount of the digital currency when they purchase local products with a low carbon footprint, and can use this currency to buy other products. This approach makes it possible to bring CO_2 certificates from the UN-REDD forest protection programme to the end consumer.

Other approaches such as the corporate cooperation between IBM and the Chinese Energy Blockchain Lab go one step further by converting emissions trading systems to systems based on blockchain technology.[14] Emissions trading based on a blockchain would also have the potential to capture CO_2 certificates from all over the world and make them tradable without national borders. Latin America in particular, with its vast areas of forest, may well be able to benefit financially from such a system. For example, if a coal-fired power plant operator in Europe is obliged to produce CO_2 certificates because it

emits CO_2, it could use the decentralised blockchain network to locate the relevant providers, such as forest owners in Latin America. The certificate is visible and verifiable for all parties concerned. It is also conceivable that smart contracting models could be used to secure the trade. After that, automatic mechanisms such as the forfeiture of CO_2 certificates would be activated if, for example, part of the forest that is represented by a CO_2 certificate were felled. At the same time, the automatic mechanism would also include a recourse claim (payment settlement, e.g. in Bitcoin or other cryptocurrency) for the user of the emission certificate. Blockchain technology could ultimately help emissions trading to achieve a global breakthrough.

Clean Energy

In recent years, Latin America has become one of the world's most attractive locations for investments in renewable energies. The liberal economic course adopted by many countries such as Mexico, Chile, Colombia, Peru and Argentina has led to the gradual opening up and modernisation of what were previously highly restricted energy markets. Auctions are one of the key regulatory instruments for the expansion of renewable energies in Latin America. Due to intense competition, the costs associated with new wind and photovoltaic systems have consistently fallen throughout the region. Prices reached during the most recent auctions in Peru and Mexico in 2016, are similar to those for hydroelectric power, which currently dominates the electricity sector. Mexico and Chile have the lowest prices in the world.

BT could also be used for green electricity certification and trading of electricity within a neighbourhood.

The expansion of renewable energies in Latin America could be given a further boost by blockchain technology. It is assumed that it will have an impact on almost all areas of the supply chain in the energy industry. The Federal Association of the German Energy and Water Industries (BDEW) sees six potential areas for improvement.[15] It believes that

1. the charging infrastructure in the area of electro mobility,
2. the certification of energy products,
3. neighbourhood models,
4. system services,
5. the electricity wholesale market and
6. asset management

could all benefit from the technology.[16] The energy industry is thus facing further disruptions. The global expansion of renewable energies and the decline in the value of fossil fuels have already caused a major upheaval in the energy industry and rendered numerous business models obsolete.

The biggest changes in the Latin American energy industry could be brought about by the development of new neighbourhood models, as well as green electricity certification. Blockchain technology makes it possible to have direct trading of electricity within a neighbourhood. If, for example, someone has a photovoltaic module on the roof or a wind turbine in the garden, they can use it to sell the surplus electricity that is generated directly to the neighbourhood. Centralised electricity brokers would no longer be necessary. Decentralised power supplies could therefore be an attractive option in Latin America, where grid connection is still very poor in many rural areas. Green electricity certification, on the other hand, allows consumers to check the source of the electricity they consume. If it is important for the electricity consumers to know that their electricity actually comes from renewable energy sources, they can find out for certain via the blockchain. The start-up company SolarCoin has even issued its own digital currency for this purpose.[17] This means that every owner of a solar system registered with SolarCoin receives a SolarCoin for every megawatt hour of electricity. This can then be used to trade. A SolarCoin is currently worth about five euro cents

(as at 8 February 2018).[18] In Latin America, companies from Mexico, Brazil, Argentina, Chile, Peru and Colombia are all participating in the scheme. Imagine how many SolarCoins there would be if all renewable energy plants were to participate, and what an attractive additional source of income this would provide for investors and the owners of solar power plants. The green electricity certification model could also be used to promote regional added value in the area of renewable energy development. In this way, SolarCoins and the like could also be used to reward regional contributions in particular.

Land Ownership

Maintaining land title records in Latin America is not a straightforward task that can be achieved by simply using a land registry or cadastral office. Not only because precisely these offices are often susceptible to corruption, but also because the appropriate legislative framework as a whole is absent in many cases. There have also been a considerable number of redistributions of land ownership rights in many Latin American countries in recent decades due to a wide range of political and historical developments. The expansion of land use for agriculture, mining and forestry, along with the use of hydroelectric power and the search for oil reserves, has and continues to significantly change land ownership patterns in many Latin American countries. This process was and still is susceptible to high levels of corruption. The Peruvian lawyer and entrepreneur Rodolfo Orellana, for example, was arrested in 2015[19] for falsifying documents with the help of a network of lawyers and notaries in order to obtain the title deeds to estates in Peru. The Peruvian authorities ended up entering him as the owner of the properties in the official property register. The stolen estates were then sold, earning him millions.

Here, blockchain technology could be used in a particular way to help prevent corruption. There is no reason why land ownership rights could not be transferred using a blockchain, on which transactions would be permanently recorded in a transparent manner and could not be subsequently falsified. Honduras decided to go down this route in 2015. The plan is for a blockchain to be developed in cooperation with the US start-up Fatcom, that will list all ownership claims. However, it is unclear just how much progress the project has actually made so far.[20] In Brazil, another start-up, Ubitquity LLC, working in cooperation with the Brazilian *Cartório de Registro de Imóveis* (land registry), has started to develop a blockchain solution for the recording of land title records.[21] The pilot project will initially take place in the Pelotas and Morro regions of southern Brazil. Commenting on the project, the CEO of Ubitquity LLC said: "The blockchain allows ownership and title disputes to be handled in a fair and transparent fashion, and serves as a backup in case the original is destroyed or misplaced".[22]

Land title records captured on a blockchain are secure and can be communicated in a transparent manner. In addition to curtailing illegal land sales and seizures, this can also save considerable expense. The typical third entity, the notary, would basically become superfluous to requirements.

Conclusion

BT can make a significant contribution to the future development of Latin America. It provides a robust alternative to weak state authorities in the fight for democratically legitimised laws and standards that have only been applied to a limited extent, or not at all. BT could therefore provide democratic structures with a new legitimacy, especially in developing and emerging countries. The decentralised currency Bitcoin, which functions as a kind of alternative currency to those issued by politically misused central banks, is already a perfect example of this. However, the technology itself can also be abused, as evidenced by the increasing use of digital currencies by authoritarian regimes to circumvent international capital market barriers. It is also difficult to curb the trade in illegal goods. The fact that a blockchain never forgets also presents a potential problem. If public administrations or social media services, for

example, opted to work on a blockchain basis, it would probably be very difficult to enforce a right to be forgotten. It is therefore vital for the future use of BT that free and democratic societies provide the greatest possible freedom in the ongoing development of the technology. This will require both political courage and trust. At the end of the day, this is the only way that it will be possible to counteract the misuse of BT by authoritarian regimes and to exploit the technology's potential opportunities in the long term.

In practice, there are already numerous areas of potential application for BT in Latin America that could provide positive benefits. Supply chain disclosure using BT can help local producers generate new income. Combatting climate change and protecting the rainforest could be improved by blockchain CO_2 trading and could also create new sources of income. The expansion of renewable energies could also receive an additional boost. Land ownership titles could be maintained in a transparent and permanent way. These are just a few examples of many that are currently being worked on by Latin American start-ups in particular. Not all of them will achieve a sustainable business base, but some of them will achieve a breakthrough and make a significant contribution to positive, long-term developments in the region.

–translated from German–

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Source: © Thaier Al-Sudani, Reuters

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Scattered Dreams

The Independence Referendum, the Fall of Kirkuk and the Effect on Kurdish and Iraqi Politics

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Even before the official defeat of the so-called Islamic State (IS) in Iraq, the Kurdish independence referendum has brought the country on the brink of yet another civil war and has fundamentally changed the political situation in the country. Iraq's new reality necessitates a shift in German Iraq policy, including an adjustment of the Federal Republic's military contribution to the country.

In October 2017, before the official end of the fight against the so-called Islamic State (IS), Iraq almost slipped into a new civil war over the disputed oil capital of Kirkuk. The escalation of tensions was a direct result of the controversial Kurdish independence referendum of 25 September and a sign that internal Iraqi conflicts have begun to overshadow the joint struggle against IS sooner than expected. The situation remains explosive, as Iraqi-Kurdish Peshmerga are now facing regular Iraqi armed forces and primarily Shiite militias along the former IS front in northern Iraq. The destruction of an Iraqi battle tank of American production on 20 October 2017 by the Peshmerga underlined that the present parameters of Western engagement in Iraq no longer enjoy much validity.

For various reasons, including a serious misinterpretation of Western military support against IS as long-term political support for independence, Kurdish President Masoud Barzani's independence referendum placed the Kurdistan Region of Iraq (KRI) in a precarious position in the summer of 2017. What followed that October not only pushed the Kurdish dream of an independent state into the distant future, but also raised the question of whether Kurdish politicians will be able to lead the KRI back onto the democratic path it followed between 2003 and 2013. Today, the conflict between Erbil and Baghdad undermines stabilisation efforts of the international community, which focus on rebuilding areas liberated from IS rule and allowing displaced Iraqis to return to their homes. The aftermath of the referendum and Barzani's resignation have given rise to the threat of a power struggle within Kurdistan, which not only weakens the Kurdish position vis-à-vis Baghdad, but also calls into question the reliability of Iraqi Kurdistan as an important partner in the fight against terrorism.

1. The Kurdish State Project and the Referendum

The Kurdish Pseudo-State

Even before the 25 September 2017 referendum, Iraqi Kurdistan exhibited many characteristics of an independent state. The Iraqi constitution of 2005 recognises the KRI as an autonomous region with far-reaching executive and legislative rights.[1] Iraqi Kurdistan has its own regional parliament, its own regional government, and its own armed forces, the Peshmerga. In the last twelve years, the Kurdish Regional Government (KRG) has further extended this autonomy from the Iraqi state beyond its constitutional authority.

With its 14 foreign missions, Erbil has thus far pursued a largely independent foreign policy and monitored its external borders independently. In the course of its disputes with the Iraqi central government in 2014, the region began unilaterally exporting oil from the Kurdish territories directly to Turkey instead of through Baghdad.[2] Moreover, since the beginning of the fight against IS in 2014, the Kurds have succeeded in occupying about a third of the disputed territories in Iraq,[3] including the city of Kirkuk. Kirkuk plays a crucial role in the Kurdish quest for independence, not least because of its economic power. Until October

2017, about half of the Kurdish oil production stemmed from the province's oil fields,[4] financing up to 80 per cent of the Kurdish budget.

The oil-rich province of Kirkuk is of critical importance to Kurdish efforts at independence.

During the referendum on 25 September, voters decided whether the "Kurdistan region and the Kurdish territories outside the administration of the Kurdistan region" should become independent. According to official figures, 72 per cent of the electorate took part in the vote, which, controversially, also included the disputed areas controlled by the Kurdish Peshmerga. Returns showed 93 per cent voted for independence.[5]

President Barzani's Motives and Goals

From the outset, the referendum represented an almost unilateral initiative by President Barzani and served three objectives: First, it was intended to increase the pressure on Baghdad and the international community to gain guarantees for a Kurdish succession before parliamentary and presidential elections in the KRI, which were scheduled (but never seriously planned) for November 2017. As per the Kurdish constitution, Barzani would not have been allowed to run in the elections again.[6] Second, Barzani aimed to divert attention away from the political and economic problems in the KRI that would have dominated the Kurdish domestic agenda after IS would have ceased to constitute an imminent threat. Since 2015, President Barzani had *de jure* governed without a valid mandate, and had effectively frozen parliament by expelling its speaker, a member of the opposition *Gorran* party. The Kurdish economy, meanwhile, suffered from a lack of reform and the toll of the fight against IS.[7] Third, the referendum was intended to cement and legitimise Kurdish control over the disputed areas, especially Kirkuk.

The Barzani Camp Miscalculates

During the run-up to the referendum, the Iraqi central government, the most important neighbours, Iran and Turkey, and large parts of the international community, including the US and Germany, had clearly positioned themselves against the referendum. Among the Kurds themselves, the resistance was considerable, although muted in public. Politicians in Barzani's own Kurdistan Democratic Party (KDP), as well as elements of the second-largest party, former Iraqi President Jalal Talabani's Patriotic Union of Kurdistan (PUK), spoke against the referendum behind closed doors. The opposition party, *Gorran*, publicly called for deferral.

Barzani's insistence on the vote despite the clear opposition was widely considered a gamble that appears to have been based on two critical misconceptions. First, Barzani misinterpreted the international community's military support in the fight against IS as political consent to a Kurdish state project.[8] Barzani hoped that, despite general opposition, important international partners like the US would eventually end up supporting Kurdish secession. Second, Barzani felt strong enough in his own Kurdish camp; the resignation of PUK chairman Jalal Talabani from politics following his 2012 stroke and the death of Nawshirwan Mustafa, head of Gorran party, in May 2017, convinced Barzani he could push the referendum through even against opposition party resistance.

The consequences of Barzani's miscalculation were immediately apparent in the wake of the referendum. Contrary to what Barzani had anticipated, the government in Baghdad, with the support of Turkey and Iran, succeeded in politically and economically isolating the KRI within a few weeks. The Iraqi government blocked international air traffic to Erbil and Sulaymaniyah, carried out joint military maneuvers with Turkey and Iran on the KRI's borders, and urged the two countries to partially close their borders.[9] While Tehran exerted considerable political and economic pressure on its traditional Kurdish partner, the PUK, Barzani did not receive the expected

support from Turkey, his most important foreign ally, to balance the Iranian pressure.

The Fall of Kirkuk

The fall of Kirkuk on 16 October 2017 was the dramatic climax of the referendum's aftermath. Within 48 hours, regular Iraqi security forces and Shiite militias supported by Iranian military advisers gained control of much of the province, largely without fighting. The coup was preceded by breakdowns of both the political and military Kurdish fronts. A wing within the PUK, led by Hero Talabani, the widow of Jalal Talabani, reached an agreement with the Iraqi central government, after which large parts of the PUK Peshmerga gave up their positions in the Kirkuk area. Moreover and contrary to Barzani's expectations, the international community remained neutral on the matter of Kirkuk. In the aftermath of Kirkuk's fall, the Kurdish Peshmerga also withdrew from other disputed areas in the provinces of Ninawa and Diyala. By 20 October, Iraqi Kurds had lost about one-fifth of the territory they had controlled four days earlier.

The loss of Kirkuk has set the Kurdish state project back by years, if not decades. Today, the KRG controls an area which roughly falls within the Kurdish borders of 2003. The loss of the Avana Dome and Bai Hassan oil fields in Kirkuk province, which together generate about 280,000 barrels of oil a day, reduced Iraqi Kurdistan's production capacity by about half, leaving it scarcely in a position to achieve financial independence.[10]

The loss of Kirkuk set the Kurdish state project years back.

On 29 October, Barzani accepted the consequences of the Kirkuk fiasco, announcing what was widely considered by the media as his resignation for the 1 November. In a meeting of the Kurdish parliament held the same day, his executive powers were transferred *ad interim*[11] to the Kurdish Prime Minister, the Chairman of the Kurdish Security Council, the KRG Justice Council, and the parliament's "spokespeople" – including the two Deputy Speakers of Parliament appointed by the KDP and the PUK.

2. Referendum and the Fall of Kirkuk in the Context of Kurdish Domestic Politics

The Intra-Kurdish Dimension of the Fiasco

The fall of Kirkuk has clearly exposed the fundamental fault lines among Iraqi Kurds. Since 1975, Kurdish politics had been defined by the duality of the Barzani and Talabani families, who had divided political and economic power in the Kurdish Iraqi territories among themselves.[12] This balance of power, which had guaranteed stable political conditions in post-2003 KRI and a unified political stance vis-à-vis Baghdad, has tilted increasingly toward Masoud Barzani since 2012. The political withdrawal of Barzani's most important counterpart, Jalal Talabani, on health-related grounds led to an imbalance of power within the KRI that was further aggravated by the growing infighting within the PUK. The Talabani wing of the party, which traditionally strives to maintain the dominance of the PUK dynasty, was challenged by a reform-oriented camp concentrated around Kurdish Vice President, Kosrat Rasul Ali and former Kurdish Prime Minister, Barham Salih. The political successes of the opposition *Gorran* party also put the Talabanis under pressure in Sulaymaniyah, their traditional power base. *Gorran* had splintered away from the PUK in 2009 and had become the second-strongest political force in Kurdistan in the 2013 elections.

The power struggle over the succession of Jalal Talabani, which had smouldered since 2012, culminated at the worst conceivable time for Kurds — when Kosrat Rasul's camp supported Barzani in his Kirkuk gamble while the Talabani wing withdrew its forces following its side deal with Baghdad. The independence referendum was already regarded by much of the Talabani wing as an attempt by Barzani to cement his

power in Kurdistan at their expense. Three factors were decisive in the Talabani decision to withdraw from the political and military front against Baghdad:

1. The de facto defection of Najmaldin Karim, the governor of Kirkuk appointed by the PUK, to the Barzani camp further threatened the Talabanis' already dwindling political and economic access to Kirkuk. The city is regarded as the traditional sphere of the family's influence.[13]

2. The death of Jalal Talabani on 3 October 2017 threatened to intensify the power struggle within the PUK.

3. The closure of the Iranian-Kurdish border by Tehran and the Iranian embargo on Kurdish petroleum products following the referendum increased the economic pressure on the Talabanis.

From the Talabani family's point of view, the agreement reached with the Iraqi central government under Iranian mediation thus appeared to be the lesser of two evils in comparison to being used in what they saw as a Barzani power grab.

Implications for Kurdish Policy

As a result of the events of October 2017, the political situation in the KRI remains volatile and marked by internal Kurdish power struggles. Relations between the Barzanis and Talabanis are the worst they have been since the 1990s, when the two factions were on opposite sides of a bloody civil war: The KDP and Kosrat Rasul wings of the PUK accuse the Talabanis of treason, and there are signs of an increasing division between Erbil and Sulaymaniyah. Barzani ordered the withdrawal of all KDP Peshmerga from Sulaymaniyah and Halabja on 17 October, as well as all PUK Peshmerga from Dohuk and Erbil. For their part, the Talabanis aim to consolidate their power over the PUK and the eastern parts of Kurdistan.

The conflict between the two clans has also fueled conflict between moderates and hardliners within the KDP and PUK. The KDP is split between a camp of Kurdish nationalist hawks led by Masoud Barzani and his son Masrour, and a more consensus-oriented camp around Nechirvan Barzani, his nephew. While Masoud, who remains the most influential person within the party as Chairman of the KDP Politburo, and Masrour are pursuing a course that is irreconcilable with the PUK and the Iraqi

central government, Nechirvan, the Prime Minister, is attempting to negotiate with Baghdad and Sulaymaniyah. The conflict today takes the form of an implicit power struggle between Nechirvan and Masrour over the future succession of Masoud Barzani.

The death of Jalal Talabani and the loss of Kirkuk have sparked an intra-party division between the Talabani and Kosrat Rasul camps of the PUK that threatens to tear the party apart. Even before the referendum in September 2017, Barham Salih had split away from PUK to found his own party. The *Gorran* Party, too, is in a transitional phase after the death of its charismatic leader, Nawshirwan Mustafa, in May 2017. However, it stands to benefit from the fragmentation of the PUK and the general dissatisfaction among the Kurdish public. Still, *Gorran* lacks the means to engage in the power politics[14] that would allow it to play a greater political role.

Fighting IS: Within a few years, the Iraqi central government and its allies have managed to defeat the so-called Islamic State militarily. Source: © Goran Tomasevic, Reuters.

Undeterred by the intra-party contention, Barzani continues to cling to power, complicating a much-needed consolidation of the political system and an end to the region's constitutional crisis. Despite the President's formal resignation, the region continues to suffer from a lack of democracy and weak political institutions. The Kurdish regional parliament has become a rump parliament. Long-overdue parliamentary elections were postponed from November 2017 to July 2018 in a plenary session on 24 October without the participation of the *Gorran* party.[15] The *Gorran*-appointed Speaker of Parliament, denied access to his own parliament since 2015, resigned on 26 December as a result of the lack of parliamentary progress.

Intra-Kurdish power struggles characterise the political situation in the Kurdistan Region of Iraq.

The transfer of Barzani's executive power was inadequately defined and leaves a great deal of room for interpretation. Command over the Kurdish armed forces was not transferred to Prime Minister Nechirvan Barzani, for example. Masoud Barzani's old cabinet, meanwhile, continues to "fulfil its duties and responsibilities".[16] Barzani also remains Chairman of the High Political Council (HPC), which was formerly created as the High Referendum Council to execute the vote. The HPC is composed primarily of KDP members and KDP-affiliated PUK leaders such as Kosrat Rasul and forms a democratically unjustified parallel government, through which Barzani can continue past the parliament to determine the fate of Kurdistan.

The region's political instability leaves the restoration of a united "Kurdish front" against Baghdad unlikely in the foreseeable future, reducing Kurdish influence in Iraq. At the same time, the Kurdish people's resistance to their government is growing in the wake of the political and economic crisis. The end of December saw the region's largest protests in more than two years, with several demonstrators killed by Kurdish security forces.

3. Baghdad's Reaction and Implications for Iraqi Politics

Above all, Kirkuk's reclamation is a political success for Iraqi Prime Minister Haider al-Abadi. The Iraqi state was on the verge of collapse when he took office following the IS conquest in September 2014. A moderate consensus candidate, Abadi has since succeeded in overcoming the difficult legacy of Shiite hard-liner Nouri al-Maliki, militarily defeating IS,[17] preventing a Kurdish secession, and placing much of the disputed territories back under central government control.

Abadi and the Reclamation of Kirkuk

Outside Kurdistan, the independence referendum was rejected by a broad front of Sunni Arab and Shiite leaders and politicians.[18] Their opposition stemmed primarily from the inclusion of the disputed areas, which are home to significant numbers of both sects.

The pressure on Abadi had risen sharply in the run-up to his push on Kirkuk. Shiite hard-liners in particular were sharpening their rhetoric, which threatened to significantly undermine the moderate Prime Minister. On 27 September, in a resolution boycotted by the Kurdish deputies, the Iraqi parliament called on Abadi to place Kirkuk back under the control of the central government using military force if necessary.[19] Kirkuk's reclamation thus became decisive for Abadi's political survival. By refusing to shy away from military confrontation and regaining control of Kirkuk, a moment of considerable risk for Abadi, the Shiite Prime Minister neutralised the hawks in his own camp.

Strengthening Baghdad at the Expense of the Kurds

After years of watching Erbil act as though it were a second Iraqi government and on equal footing, Baghdad has seen the balance of power

shift in its favour following the events of September and October 2017. The Kurdish coalition in the Iraqi parliament, the Kurdistani Alliance, was already severely damaged by the dismissal of KDP finance minister, Hoshyar Zebari, in September 2016[20] and finally split with the fall of Kirkuk. The result has been a weakening of Kurdish voices in Iraqi politics and new leverage for Baghdad, which has sought to pit rival Kurdish factions against one another through bilateral agreements. The Talabani wing's cooptation during the Kirkuk crisis showed just how effective such pressure could be.

Erbil is now more economically dependent on Baghdad after the loss of oil fields in Kirkuk. Although the KRG is constitutionally entitled to a certain percentage of the Iraqi budget based on the Iraqi Kurdish population, those payments ended in 2014 following disputes between the two governments over the unilateral export of oil by the Kurds. The amount itself has become another tool for Baghdad to keep pressure on the region. Due to the fact that there has not been an official census in Iraq since 1987, the KRG and the Iraqi transitional government had agreed in 2004 on a transfer payment of 17 per cent of the budget. The 2018 budget only foresees 12.67 per cent for the KRI..[21]

Renewed military confrontation between Baghdad and Erbil cannot be ruled out.

Baghdad's goal is to regain the full authority over the Kurdish territories outlined in the constitution. As a precondition for new talks, for example, the regional government has been asked to declare the referendum results invalid, hand over all border crossings to the Iraqi authorities, and end unilateral oil exports. An agreement between Baghdad and Erbil is unlikely to be reached before the end of the Iraqi provincial and parliamentary elections scheduled for May 2018. However, a renewed military confrontation between Baghdad and Erbil cannot be ruled out if relations continue to deteriorate. The tense situation in northern Iraq, where skirmishes between the two sides continued for weeks after Kirkuk and where Iraqi security forces, Shia militias, and Kurdish Peshmerga are still facing each other, could trigger another escalation.

Iraq's Political System Remains Unstable

Despite the success in the fight against IS and the – from Baghdad's point of view – positive developments in Kurdistan, fundamental problems continue to plague the Iraqi political system. After years of war, a democratic culture has slowly begun to develop in the country, with a functioning parliament and a democratically elected government. Yet, Shiites and Sunnis continue to quarrel among themselves. Sunni Arabs face a crisis of legitimacy and representation complicated by the fight against IS. The Shiite bloc is increasingly divided into Iran-friendly hawks led by Maliki and moderate, consensus-oriented players like Abadi. Iraq's political fragmentation means that Abadi's leadership will continue running the gauntlet.

The relative weakness of the political system means that Iran-friendly Shiite militias are more likely to succeed in establishing a "state within a state" along the lines of the Lebanese *Hezbollah*. These groups have done much of the fighting against IS, control large parts of the areas liberated from IS in central Iraq, and were able to further expand their influence in the course of the Kirkuk operation.[22] *Badr*, *Asa'ib Ahl al-Haq*, and *Kata'ib Hezbollah*, the three strongest groups with the closest links to Iran, were all involved in the retaking of Kirkuk.[23] They remain in the city today, long after the operation, further strengthening Iran's influence in Iraq.

4. The Role of the International Community

International Opposition to the Referendum

The US and the regional powers of Turkey and Iran have typically been on different sides of

recent Middle Eastern conflicts, most notably in Syria and Iraq. Yet, in their opposition to the referendum, the three were surprisingly unanimous – albeit for different, and sometimes contradictory, reasons. A common concern was that Kurdistan's secession would set a dangerous precedent and spur further destabilisation in the region. The opposition of Turkey and Iran was grounded largely in domestic concerns, since both countries are home to large Kurdish minorities.[24] All three countries are also reported to have agreed that a direct military confrontation between Baghdad and Erbil would pose an immediate threat to the fight against IS in Iraq.[25]

Ankara and Washington were also likely concerned that detaching Kurdistan from the Iraqi central state would have made Iraq susceptible to even greater Iranian influence. The Kurdish minority – along with the Sunni-Arab minority – has traditionally acted as a counterweight to the Shiite majority in Iraq. Leaving the KRI as a part of Iraq allows Kurds and Sunni Arabs to balance Iran's strong influence on Baghdad.[26]

Individual interests also shaped the actions of these three important regional players. For Ankara, the inclusion of the disputed territories in the referendum posed a threat to the important minority of Sunni Turkmen in Kirkuk. Turkey sees itself as the Turkmen's protector. For Iran, on the other hand, an independent Kurdistan would have meant a threat of Israeli influence in close proximity to its own borders. Israel has traditionally enjoyed very good relations with the KRG and was one of the few countries anywhere in the world to support Kurdish independence efforts. For the US, an Iraqi Kurdistan secession would have meant a definite failure of the state-building project after the 2003 intervention.

The common resistance of the three countries took shape according to these interests. On 4 October, the Turkish and Iraqi governments coordinated their actions on the margins of a meeting between President Recep Tayyip Erdoğan and President Hassan Rouhani in Tehran, isolating the KRI politically and economically.[27] Cooperation between Turkey and Iran on the Kurdistan question reflects a general rapprochement between the two states, one that could already been observed in the Astana talks on the Syrian civil war since the beginning of 2017. As in the case of

A blessing in disguise: A couple that fled from Mosul gets married in a nearby refugee camp.
Source: © Zohra Bensemra, Reuters.

Turkey, President Barzani overestimated support from the US in the conflict between Baghdad and Erbil. The US administration did not actively take sides in the Kirkuk confrontation. It seems quite likely that allowing Abadi, who is considered as an important ally by the US administration, to defeat the Iranian hawks in his own camp played a role in Washington's considerations.

The Fall of Kirkuk in the Context of Iranian Influence in Iraq

Despite Iraqi leader Abadi's gain in popularity following the recovery of Kirkuk, events in October once again highlighted the extent of Iranian influence in Iraq. For the first time since 2003, Tehran has actively intervened in Kurdish politics, using targeted economic and military pressure to divide Kurds and pit the PUK against the KDP. Iran, with the help of the Tehran-backed Shiite militia, succeeded in building a credible military threat that would make the loss of Kirkuk inevitable for the Kurds.[28] Qassem Soleimani, commander of the Quds forces of the Iranian Revolutionary Guards, played a decisive role in this, travelling to Sulaymaniyah several times in the run-up to the Kirkuk operation.[29]

The fall of Kirkuk may well have strengthened Iranian influence in Iraq. Even before October, Iran-backed Shiite militia groups controlled large parts of central Iraq liberated from IS. The Kirkuk operation added an oil-rich and strategically important province.[30] Kirkuk's seizure added to the popularity of militias across Iraq, a noteworthy trend as the country's parliamentary elections approach. Political wings of militias like the *Badr* Organisation are among those competing for votes. Tehran also succeeded in strengthening its ties to the PUK, while the referendum alienated the KDP from its traditional partner, Turkey.

Threat to International Stabilisation Efforts

The dispute between the Iraqi central government and the KRG has considerably delayed and even jeopardised the efforts of the international community to stabilise territory liberated from IS. There are nearly three million internally displaced persons in Iraq at the end of 2017 that remain unable to return to their homes.[31] Iraq's future stability will depend on their return and on the rapid reconstruction of liberated areas, most of which are located in disputed territories. Further military confrontations between Baghdad and Erbil threaten to overshadow the fight against IS, which has shifted into a classic underground terrorist organisation. Despite its military defeat in Iraq, the organisation still has the ability to destabilise the country with terrorist attacks, particularly in liberated areas like West Mosul and Ramadi. Ending the IS threat for good will require close cooperation between Iraqi and Kurdish Iraqi forces in the future.

5. Conclusion and Significance to Germany

Kurdish President Barzani has done a disservice to the Kurdish Iraqi state project with his misguided referendum. By clinging to power, he now continues to endanger the democratic achievements of the Iraqi Kurds over the past decade and a half. KRI politics have been significantly damaged through the referendum, and the region's future is uncertain. The restoration of the political balance lost in 2012, overdue generational change in leadership, and the capacity of Kurdish politicians to recover from the referendum debacle could be hindered by Barzani's lingering presence outside of democratic structures.

From a German and European point of view, the most important thing now is to prevent Iraq from being destabilised again.

Recent policies enacted by the region are poised to rob it of the very attributes that attracted the international community's attention and support in recent years. Today's KRI does not resemble an anchor of stability in the fight against international terrorism, much less a potential engine of reconstruction and economic development in Iraq. As such, it is hardly a model of democracy for the region.

From a German point of view, the referendum was a breach of trust, since the Kurds had

repeatedly assured the Federal Government and the Bundestag that the independence issue was on hold until the end of operations against IS and the revival of the region's democratic structures. In view of the clear position of European governments prior to the referendum, accusations by Iraqi Kurdistan that it has been abandoned by its Western allies are entirely unfounded.

Germany's Iraq policy since 2014 has been based on supporting Baghdad and Erbil in the fight against IS and assisting with the resulting humanitarian disaster. With the military defeat of IS and the failed Kurdish referendum, these conditions have now changed, necessitating a shift in the focus of German Iraq policy. From a German and European perspective, the most important task now is to strike a balance between Baghdad and Erbil and to prevent Iraq from further destabilisation. The timely holding of elections for the Iraqi parliament and the Kurdistan regional parliament in 2018 is an essential prerequisite for overcoming the internal crises.

An adjustment of the German military contribution to the Kurdish parts of Iraq should be considered as the Bundestag debates a mandate extension this spring. At the same time, consideration should be given to strengthening security cooperation with Baghdad.

Factors favouring continued military engagement in the KRI include the following:

1. the importance of the Kurdish government as a partner in the fight against IS (especially in the area of intelligence cooperation),
2. the continued support for the reform of the Kurdish security sector (with the aim of strengthening the Peshmerga Ministry and separating Kurdish security forces from party structures),
3. the existing training needs in individual military capabilities and partial capabilities of the Kurdish security forces (logistics, medical services, and military engineering), and
4. the opportunity to ensure, through international engagement in the Kurdish territories, that the newly strengthened central government will not overreach in the coming negotiations.

Increased involvement in central Iraq offers opportunities to do the following:

1. support Iraqi security forces in their fight against remaining IS structures, which operate primarily on central Iraqi territory, by providing advice and training (in the areas of logistics, medical care, and military engineering),
2. contribute to the necessary empowerment and reform of the Iraqi security sector (also with the regard to the containment of Shiite militias),
3. dispel the common impression in Baghdad that a German/European bias for Kurdistan exists in the dispute between the central and the regional government, and
4. contribute to the long-term stabilisation of a united Iraqi nation state.

Despite the political crises and the undeniable influence of external players, Baghdad and Erbil will remain central partners for Germany and Europe in stabilisation efforts for the entire region. Nevertheless, an escalation of the conflict between the central and regional governments must be understood as a clear red line for German military engagement in Iraq.

–translated from German–

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1 The corresponding competences are set out in Articles 116 to 121 of the Iraqi constitution. Article 121 stipulates that autonomous regions in Iraq have legislative authority in all areas outside the exclusive authority of the Iraqi central government. This exclusive authority for example encompasses monetary and foreign policy.

2 The Constitution is unclear on the exploitation of Iraqi oil resources. While Article 111 stipulates that natural resources are "the property of all Iraqis", Article 112 mentions that they are to be administered jointly by the central government and the provinces or autonomous regions. The Kurdish regional government invokes Article 112 to legitimise its export of oil. The dispute between Baghdad and Erbil escalated in 2014 over outstanding transfer payments from the Iraqi central government to the KRI. As a result, the KRI unilaterally began exporting oil through Turkey, predominately from the Peshmerga-occupied province of Kirkuk.

3 The disputed territories traverse Iraq in a 500-kilometre-long swath of land stretching from the north-west to the south-east. The areas form a transition zone between the Arab and Kurdish parts of Iraq and are claimed by both the KRG and the Iraqi central government. In addition to Kurds, Shiite and Sunni Arabs, a large number of minorities such as Turkmen, Yezidis, and Christians live in these areas. Article 140 of the Iraqi constitution stipulates that a referendum by local populations on association with Baghdad or Erbil was to be held by 31 December 2007. Because the vote has never been taken, the areas are still disputed.

4 Cf. Rivin, Paul / Friedman, Brandon 2017: Kurdistan's Economic Woes, Iqtisadi: Middle East Economy 7: 8, 30 Oct 2017, pp.1-2, in: http://bit.ly/2FNcRiv [20 Feb 2018]. Other sources indicate as much as three quarters. Cf. Shavit, Eldad / Lindenstrauss, Gallia 2017: Baghdad Regains Control of Kirkuk: Strategic Implications, INSS Insight 984, 23 Oct 2017, p.1, in: http://bit.ly/2yNcP9y [20 Feb 2018].

5 Cf. Chulov, Martin 2017: More than 92% of voters in Iraqi Kurdistan back independence, The Guardian, 28 Sep 2017, in: http://bit.ly/2xLGXC7 [20 Feb 2018].

6 Barzani is said to be personally motivated to win Kurdistan independence, both to burnish his own role in history and as an obligation to his family. He is said to have promised independence to his father, Mustafa, the founder of the KDP and once the most important Kurdish leader in Iraq, as the elder Barzani lay on his deathbed.

7 The president's term of office expired in 2013 following two legislative periods and was extended by two years solely on the basis of a cross-partisan compromise. In 2015, Barzani refused to leave office. Demonstrations have been increasing ever since, resulting in several deaths. The KDP began stepped up measures to counter critical media and citizens, in response. Because it suspected *Gorran* in particular of backing the protests, Prime Minister Nechirvan Barzani dismissed the four *Gorran* ministers that October and replaced them with KDP officials. The former *Gorran* member and speaker of parliament Yusuf Mohammed Sadiq has since been denied entry to parliament.

8 Talks with Iraqi government officials, Baghdad, 22 and 24 Nov 2017; talks with Kurdish members of the Iraqi parliament, 25 Nov 2017.

9 Since the KRI is landlocked, it is directly dependent on neighbouring countries. More than 75 per cent of all KRI products are imported, including 90 per cent of foodstuffs. Cf. Badawi, Tamer 2017: The Dilemma of KRG Trade, Carnegie Middle East Center, 18 Oct 2017, in: http://ceip.org/2gQ89q6 [20 Feb 2018].

10 Even before the fall of Kirkuk, from 2014 onwards, the KRG was scarcely in a position to pay out full salaries in the region without regular transfers from Baghdad. Without the oil fields and a resumption of monthly payments from Baghdad, this goal has become even less attainable.

11 The transfer of powers is valid until the next parliamentary and presidential elections in Kurdistan. Cf. Connelly, Megan 2017: Is Barzani Stepping Down or Stepping Up?, Carnegie Middle East Center, 9 Nov 2017, in: http://ceip.org/2zqeh2D [20 Feb 2018].

12 In the wake of the Washington Agreement, which ended several years of civil war in 1998, and a "strategic agreement" in 2007, Masoud Barzani and Jalal Talabani agreed on the division of political and economic power within the KRI. The Peshmerga, for example, do not form a homogeneous entity, but are largely subdivided into KDP and PUK units, each under the direct command of the parties. The KRI is also divided geographically. The KDP dominates the provinces of Dohuk and Erbil, while the PUK's sphere of influence encompasses Sulaymaniyah and Halabja.

13 A special focus of the conflict between the KDP and the PUK is the question of oil revenues from the province of Kirkuk. The KDP gained control of the Bai Hassan oil field in 2014 and concluded an agreement with Baghdad in 2016. This agreement stipulated a division of income from oil exports from the Kirkuk region between the Iraqi central government and the KRG, which is dominated by the KDP. The PUK therefore received scarcely any economic benefit from Kirkuk. The conflict nearly escalated in March 2017, when PUK security forces occupied the Northern Oil Company headquarters in Kirkuk. Cf. Reuters 2017: Kirkuk oil flows in jeopardy again as Kurdish tensions grow, 3 Mar 2017, in: http://reut.rs/2mSWYxg [20 Feb 2018].

14 This primarily applies to the Peshmerga. Unlike the KDP and PUK, the *Gorran* Party controls no armed forces.
15 Cf. Reuters 2017: Iraqi Kurdistan parliament delays presidential elections by eight months, 24 Oct 2017, in: https://reut.rs/2yNTBkn [20 Feb 2018].
16 Connelly, n.11.
17 On 9 December 2017, five months after Mosul's recapture, Abadi officially declared that the military struggle against IS was over.
18 Sunni Arab opinion on the referendum was divided. The majority of Sunni Arab politicians, supported primarily by Turkey, opposed the referendum. For example, Iraqi Vice President Osama al-Nujaifi, a key ally of Turkey and of former President Barzani, took a clear stand against the referendum in the run-up to the vote. Only a small minority of Sunnis supported by Qatar backed Barzani's plans. Cf. Utica Risk Services 2017: Inside Iraqi Politics 164, p.6.
19 Cf. Reuters 2017: Iraqi parliament asks leader Abadi to take back Kurd-held Kirkuk, 27 Sep 2017, in: https://reut.rs/2fRcEjL [20 Feb 2018].
20 At the time, the PUK and *Gorran* deputies broke with the KDP and voted for the dismissal of Zebari, a close ally of President Barzani. Cf. Utica Risk Services 2017: Inside Iraqi Politics 139, p.5.
21 Cf. Rudaw 2017: KRG to prioritize salaries in 2018 budget, 11 Dec 2017, in: http://bit.ly/2sbVXrS [20 Feb 2018].
22 Some of the groups have existed since the first Gulf War and dominate the so-called Al-Hashd Al-Sha'abi, an umbrella organisation formed in 2014 during the fight against IS. The Al-Hashd Al-Sha'abi encompasses between 40 and 60 non-state militia groups, the majority of them Shiite, totalling more than 100,000 fighters. Even though Prime Minister Abadi is the nominal supreme commander of the organisation, the militias operate autonomously to a great extent. Since the 2000s, Iran-friendly groups – Badr in particular – have been able to penetrate the Iraqi security sector, foremost among them the Iraqi Ministry of the Interior. Due to the relative weakness of the regular Iraqi security forces, the pro-Iranian groups also control large parts of the liberated areas in the provinces of Diyala and Salah ad-Din. They are therefore a significant power factor in Iraq, existing alongside state institutions and threatening to sideline them. On this see also Steinberg, Guido 2017: The Badr Organization – Iran's Most Important Instrument in Iraq, SWP Comment 26, in: http://bit.ly/2xW9MJT [20 Feb 2018].
23 Cf. Cafarella, Jennifer / Kassim, Omer 2017: Iran's Role in the Kirkuk Operation in Iraq, Institute for the Study of War, 8 Nov 2017, in: http://bit.ly/2nHokII [20 Feb 2018].
24 In Turkey, the armed conflict with the Kurdish Workers' Party (PKK) escalated after the failure of the peace process in 2015. In Iran, clashes between the Kurdish minority and the government have intensified since April 2017.
25 The two IS attacks in Tehran in June 2017 were the first of their kind in Iran and underscored the importance of the fight against IS to the Iranian administration. Five of the six June IS attackers were Iranian Kurds. Cf. Milani, Mohsen 2017: The Turbulent History Shaping Iran's Opposition to an Independent Iraqi Kurdistan, World Politics Review, 14 Nov 2017, in: http://bit.ly/2BXNiZI [20 Feb 2018].
26 The argument occasionally put forward by Kurdish Iraqi politicians, that an independent Iraqi Kurdistan could be an effective bulwark against Iran for US interests in the region, is not particularly plausible. An independent Kurdish state would hardly have the potential to act as a counterbalance to Iranian influence in the region due to its limited size – geographically, in population, and in military and economic strength – and location.
27 Cf. Regencia, Ted 2017: Erdogan, Rouhani united in opposition to Kurdish state, Al-Jazeera, 4 Oct 2017, in: http://aje.io/xnhjb [20 Feb 2018].
28 Cf. Hawramy, Fazel 2017: How Iran helped Baghdad seize back Kirkuk, Al-Monitor, 17 Oct 2017, in: http://almon.co/2xs9 [18 Dec 2017].
29 Cf. Georgy, Michael / Rasheed, Ahmed 2017: Iranian commander issued stark warning to Iraqi Kurds over Kirkuk, Reuters, 20 Oct 2017, in: https://reut.rs/2iozP8W [20 Feb 2018].
30 CF. Kassim, Omer / Cafarella, Jennifer / Goulet, Zachary 2017: Iran Solidifies Influence in Kirkuk, Institute for the Study of War, 21 Nov 2017, in: http://bit.ly/2Ei8Oh2 [20 Feb 2018].
31 Cf. International Organization for Migration 2017: Iraq Mission – Displacement Tracking Matrix, in: http://iraqdtm.iom.int [20 Feb 2017].

Source: © Murad Sezer, Reuters.

Other Topics

How to Combat the Causes of Refugee Flows

The EU-Jordan Compact in Practice

Manuel Schubert / Imke Haase

The 2016 Supporting Syria and the Region Conference in London heralded a decisive paradigm shift in European development cooperation in the midst of the Syrian refugee crisis. In the process, not only were new sources of finance mobilised, but development policy focus was also shifted to long-term strengthening of initial host country resilience. In light of the EU-Jordan Compact, this article shows the extent to which the promising approach of a Compact has proven itself in practice.

Jordan at the Centre of Refugee Flows

Roughly 65 million people around the world have fled their homes.[1] Syrians currently represent the largest single refugee population: A total of twelve million Syrians have fled, more than half of the country's population. More than 50 per cent of these are internally displaced, while the majority of those who are abroad fled to neighbouring countries: Turkey took in 2.8 million Syrians, Lebanon 1.1 million, and Jordan 0.7 million.[2]

Its relative stability has repeatedly made the Jordanian kingdom the first port of call for refugees in the conflict-ridden region. In addition to more than 630,000 Palestinian refugees, people reaching Jordan included 130,000 Iraqis, 30,000 Yemenites, and over 20,000 Libyans in various waves (see fig. 1).[3]

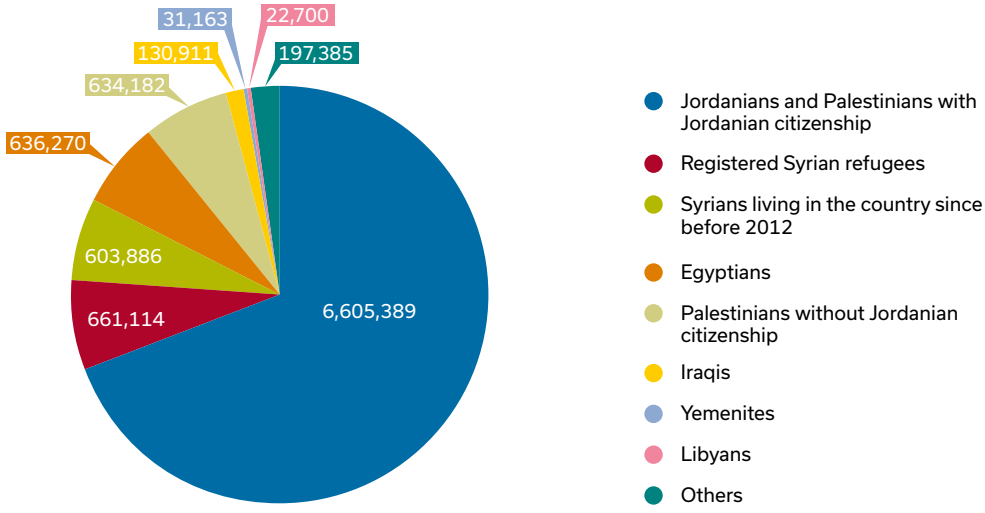
About 660,000 Syrian refugees currently registered with the United Nations Refugee Agency (UNHCR) account for almost seven per cent of the total Jordanian population.[4] Official Jordanian figures cite 1.3 to 1.4 million Syrian refugees in the country, but probably include the approximately 600,000 Syrians already living in Jordan since before 2012.[5]

About 90 per cent of Syrian refugees in Jordan entered the kingdom within the first 18 months of the Syrian conflict. The high inflow posed an immense challenge for the Jordanian authorities and, ultimately, for international organisations. The prices for housing and food exploded throughout the country within a few months. To ease its overburdened infrastructure, the Jordanian government enacted revised entry regulations in May 2013, tightening up regulations on refugee immigration. In practice, the borders have been closed since.

About 20 per cent of the refugees live in one of the two official refugee camps, Zaatari and Azraq, where basic necessities are provided free of charge.[6] The remaining 80 per cent of refugees live outside these camps, mostly in the capital of Amman and in cities in the country's north. Many refugees outside the camps are in acute danger of poverty. This was particularly evident in 2015, a year of crisis during which massive financial bottlenecks in the UN World Food Programme led to a startling increase in the number of households with insufficient food supplies (from 48 per cent in 2014 to 86 per cent in 2015). Although there are no official figures, it is assumed that during this period, about one third of the approximately 226,000 Syrian refugee children, mainly in urban areas of Jordan, worked illegally and for that reason failed to attend school lessons. There has been little change in the years since. The Human Rights Watch estimates that 60 per cent of Syrian refugee families depend on their children's income.[7]

The social handling of the Syrian refugee crisis in Jordan is shaped by the country's history, especially by the experiences of multiple waves

Fig. 1: Jordanian Population by Country of Origin



Source: Ghazal 2016, n. 4. Compilation: Manuel Schubert / Imke Haase.

of refugees. Fears, that Syrian refugees might remain permanently in the country initially fuelled resentment among the Jordanian population. Narratives about cut-throat competition in local labour markets were (and remain) widespread among the Jordanian population. In fact, it is not easy for many Jordanians to find employment, especially the young. According to World Bank estimates, Jordan's youth unemployment rate (34 per cent) is one of the highest in the region.[8] However, most Syrian refugees work in the informal low-wage sector, which is not very attractive for many Jordanians, who tend to have better formal education. For this reason, competition for jobs is more likely to come from migrant workers, most of whom come from Egypt and Southeast Asia.[9]

Refugee Crisis in Europe from 2015 Onwards

From a European point of view, flight and migration have long been perceived as primarily regional problems that mainly should involve regional actors – that is, the neighbouring countries. In the course of the "refugee crisis" in Europe, a rethink took place in this respect. As early as the summer of 2014, there were already initial signs that more and more refugees were undertaking the risky journey to Europe. In the spring of 2015, the actual wave of refugees began; in May of that year alone, nearly 40,000 refugees reached Germany. In August, the German government raised its refugee forecast to 800,000 arrivals, four times as many as the previous year. "We can do it," said Chancellor Angela Merkel at the summer press conference in Berlin on 31 August 2015. With the arrival of 890,000 refugees and migrants in 2015 and a further 280,000 by the end of September 2016, Germany received more asylum seekers than any other EU country. Most of them came from Syria, Afghanistan, Iraq, and Eritrea.[10]

If the refugees themselves are asked about the reasons for their flight to Germany, a majority of the interviewees say that they fear war and violence (70 per cent), or persecution (44 per cent). Before fleeing to Germany, about 40 per cent of the refugees spent at least three months in a transit country or initial host country. Around 40 per cent say that they left their initial host country involuntarily, and continued their journey because of the precarious living conditions, discrimination or persistent persecution

there.[11] This coheres with UN reports, according to which many Syrians from initial host countries set out for Europe in 2015 to escape poverty, lack of employment or, in some cases, sharpening of national residence regulations. Nor at the time was there much hope of an early end to the war in Syria, and thus a speedy return home.[12] In this respect, the conditions in the various initial host countries seem to be central push factors for secondary waves of migration to Europe.

Supporting Syria and the Region Conferences in London and Brussels

The Supporting Syria and the Region conference on 4 January 2016 in London, to which the heads of government from Great Britain, Germany, Kuwait, and Norway and the UN Secretary-General had issued invitations, marked a visible paradigm shift in development policy: The aim of the conference was to obtain long-term commitments for additional technical and financial support from the governments of the initial host countries and from international donors. In return, access to jobs and education for Syrian refugees and poorer sections of the population in initial host countries were to be improved. The international community agreed to provide some twelve billion US dollars in loans by 2020 and a further 40 billion US dollars in guaranteed loans – record sums.[13]

The central decisions of the London Conference culminated in two agreements, known as Compacts, one between the EU and Jordan and one between the EU and Lebanon. A separate agreement was reached with Turkey in March 2016. The Compacts marked an important step in the region's development policy, away from a short-term and chronically underfunded policy of emergency and initial aid for refugees toward a tighter interlinking of economic and development policy instruments with the aim of enhancing economic resilience and absorption capacity in the host countries. This step was to facilitate the transition from humanitarian aid to sustainable development cooperation. However, no specific commitments have been made to protect refugees, including a legal right of residence.[14]

In the following months, the EU concluded other such country-specific Compacts with other key countries, including Niger, Nigeria,

International Financial Assistance

At the London Donors' Conference, six billion US dollars were pledged to support needy Syrians in Syria itself and in the host countries of Jordan, Lebanon, and Turkey in 2016, and another 6.1 billion US dollars for the period from 2017 to 2020. In the event, nearly eight billion US dollars was provided in 2016. Of the promised 6.1 billion US dollars for the period from 2017 to 2020, about 2.8 billion US dollars, or 46 per cent, had been made available by February 2017. Of the guaranteed loans of 40 billion US dollars for the period from 2016 to 2020, 31 per cent, or 12.6 billion US dollars, have been provided to date. Jordan received a total of 2.3 billion US dollars in support in 2016, 1.4 billion US dollars in grants and 923 million US dollars in loans.

At the follow-up conference in Brussels, an additional six billion US dollars were pledged for 2017 and 3.7 billion US dollars for the following three years. By mid-2017, 4.4 billion US dollars had been provided, 74 per cent of the promised amount for 2017, and 1.4 billion US dollars for the next three years. The Brussels conference also saw pledges of further loans of 30 billion US dollars for the period of 2017 to 2020, of which 2.5 billion US dollars have so far been made available. Of the aid, Jordan has so far received 626 million US dollars (July 2017) and 374 million US dollars in the form of loans.

Mali, Senegal, and Ethiopia, within the framework of a Migration Partnership Framework, or MPF. In addition to incentives for voluntary return, these include new legal channels for migration and long-term investment in the host countries to combat the causes of flight. In total, the MPF has earmarked a total of almost eight billion euros for the next five years.[15]

The Compact principle is also in vogue internationally. On 19 September 2016, for example, the first UN summit on migration movements was held. The result was the ratification of the "New York Declaration", which provides for the formulation of two new global agreements. One Compact deals with refugees, the other with migrants. For the Refugee Compact, the aim is to define mechanisms that come into effect in the event of acute refugee crises. In contrast, the Migration Compact does not concern practical questions, but basic issues, since there is no binding definition of the term *migrant*, and also because international law is vague and scarcely developed. Results of the discussions and intergovernmental negotiations are expected in September 2018. A look at the European Compacts that emerged after the London Conference in 2016 is therefore also worthwhile in the context of the global Compacts currently being discussed.

Central Components of the Jordan Compact

The Jordan Compact specifically aims to create medium-term residence prospects for refugees in Jordan, and to increase employment opportunities for Syrians and Jordanians alike. The focus is on an additional trade agreement with the EU that complements the existing EU-Jordan Association Agreement.

In principle, this is a classical measure to promote employment and the economy: It facilitates the export of Jordanian products to the EU, increasing the turnover of Jordanian companies and therefore generating more local employment; this is the economic logic. A key position is taken by the part of the association agreement that defines the rules of origin – that is, determines on the basis of the value chain which products are classified as "made in Jordan." According to the association agreements, this refers to products in which no more than 30 to 50 per cent of the final product (depending on goods category) could previously be produced outside Jordan.[16] The Jordan Compact adapted this hurdle to favour of Jordanian producers: With the establishment of the Compact,

No longer a provisional solution: Zaatari, which is located in the north of Jordan, is one of the world's largest refugee camps and hosts around 80,000 people. Source: © Mandel Ngan, Reuters.

export goods could consist of up to 70 per cent non-Jordanian materials and primary products – a decisive competitive advantage for Jordanian companies interested in European markets.[17]

However, the simplification of the rules of origin does not have comprehensive application. First of all, only 52 product groups are covered by the agreement. They include minerals such as salts, acids and oils, plastics and skins, furs and wood, stone, slate, ceramics, glass and bottles, metals, tools, electronic machines, video equipment, motors, and furniture and toys. However, cotton, yarns, carpets, fabrics, clothing, and shoes are not covered.[18] Secondly, the saleable products must be manufactured in one of 18 selected industrial and development zones. Thirdly – and this is where economic

EU-Jordan Association Agreement

The EU's relations with Jordan are based on the Euro-Mediterranean Association Agreement, which came into force on 1 May 2002. Association Agreements are close economic cooperation agreements between third countries and the EU. The aim is to make trade as free as possible by abolishing restrictions on the movement of goods. Recent association agreements often include provisions covering political dialogue and close cooperation in the fields of culture, science, and education.

The Association Agreement with Jordan incrementally established a free trade area between the EU and Jordan in accordance with WTO rules, complemented in 2007 by an agreement to further liberalise trade in agricultural products. Since May 2012, the EU has also been conducting a "special dialogue" with Jordan on a deeper and more comprehensive Free Trade Agreement (DCFTA).

policy meshes with development policy – the companies based in the zones must employ Syrian refugees. The quota for Syrian employees is currently 15 per cent. Starting in 2019, it will be 25 per cent.[19] The plan is to use this mechanism to initially bring 200,000 Syrian refugees into legal employment in selected occupations that are close to production. As soon as this threshold is reached, the plan states that the simplified rules of origin will also apply to companies outside the industrial zones.

The Jordan Compact aims to create medium-term residence prospects for refugees in Jordan.

The Jordanian government is complementing the Jordan Compact with far-reaching tax concessions and exemptions for companies settling in one of the industrial zones. More than 100 million US dollars was also invested in the infrastructure of the industrial zones. Some of these zones are located in the immediate vicinity of Zaatari, Jordan's largest refugee camp – a potential location advantage.

Inventory: What Has the EU-Jordan Compact Achieved?

Two years after the donors' conference in London, the Jordan Compact's progress is sobering. So far, only two Jordanian companies have managed to export to the EU under the Jordan Compact. They delivered goods worth about 500,000 euros to Spain and Cyprus. Seven other companies currently meet the formal export criteria, but have not yet been able to generate sales.[20] Why is it that the Jordan Compact has so far been unable to promote exports or employment?

1. Competitiveness of Jordanian Products

A central reason for the Jordan Compact's modest achievements is the Jordanian economy, which as a whole is not geared to international sales. In the view of Youssef Shammali, Secretary General of the Jordanian Ministry of Industry, Trade and Supply, it is important to advance Jordanian-European business networks and to promote Jordanian products more aggressively in Europe.[21]

Salah Isayyied, founder of a consulting firm for Jordanian companies in Germany, believes that the expectations of the Jordanian business are not realistic at the moment. On the Jordanian

side, he thinks there is a lack of knowledge of how to market products on the EU market – and cites the lack of significant success stories so far as one reason for this belief. He says that the market conditions and gaps in Europe need to be examined more closely.[22]

In mentioning market gaps, Isayyied addresses an important point. The central question in the Jordan Compact is which Jordanian products can prevail on the EU market in the open product categories. The economy in the resource-poor country is exposed to high logistics costs compared to the rest of the region, and this systematically undermines the competitiveness of Jordanian products. The EU's competitive and, in some areas, heavily subsidised markets mean that Jordanian products have poor sales prospects even under the simplified rules of origin.

In addition, the restriction to 52 product groups could pose a serious barrier to market entry. Many companies that are already successfully exporting to the EU are active in the chemical industry, mechanical engineering, or the clothing and textile sector. And it is just these sectors that have been only partially covered by the Jordan Compact so far.

2. Location Stipulations

Another conceptual weakness of the Jordan Compact is the limitation of the simplified rules of origin to goods produced in one of the 18 selected industrial zones. The primary effect of this restriction is to provide incentives for start-ups to establish themselves at the subsidised locations. For existing companies, especially those which are already successfully exporting to the EU, the Jordan Compact is therefore far less attractive. For them, the savings secured by the move would have to overcompensate the costs of completely relocating the company. The industrial zones are therefore quite likely to be of interest primarily for company expansion. However, it is not clear that such "mixed operations" can then still benefit from all the advantages of the Jordan Compact.

In addition, the infrastructure in the industrial zones is underdeveloped. During the last months, a couple of companies complained about insufficient energy provision in their zones. According to them, production has regularly been shut down due to power breakdowns, which gradually threatens the existence of the new businesses.

External Trade Between Jordan and the EU

- The EU is Jordan's largest trading partner, accounting for 16.9 per cent of Jordan's total trade in 2015. Jordan is the EU's 58th-largest trading partner, representing 0.1 per cent of total EU trade with the world.
- The EU currently imports goods worth 0.4 billion euros from Jordan. The most important import goods are chemicals (47 per cent of all imports) followed by machinery and transport equipment (14 per cent of all imports).
- The EU currently exports goods worth 4.1 billion euros to Jordan (as of 2016), especially machinery and transport equipment (35 per cent) followed by agricultural products (19 per cent) and chemicals (16 per cent).
- The two-way trade in services amounted to 1.5 billion euros in 2014, of which 0.6 billion euros were EU imports and 0.9 billion euros EU exports.

3. Favourisation of Natives

Jordanian economic law provides for a 50 per cent resident quota for all companies based in the Kingdom. While this increases the chances for Jordanians to find employment, it also creates a systemic wage gap between Jordanian and non-Jordanian employees. Given otherwise equal employee quality, Jordanians will always be able to impose higher salaries than their foreign competitors from Syria, Egypt, or Asia. From an operational point of view, this regulation reduces profits, and at the sector level, it creates a decisive competitive disadvantage for labour-intensive production in Jordan – for just those enterprises that are the focus of the Jordan Compact.

4. Costs of Legalisation

The Jordan Compact also aims to legalise existing employment.[23] One problem, however, is the lengthy and complicated application process. Dozens of steps must be taken by both the future employer and the refugee to obtain a one-year work permit. Maha Kattaa, response coordinator for the Syrian refugee crisis at the International Labour Organization (ILO), says, "The difficulty [...] is not only the process itself, but also the fact that it is not the refugee who applies for a work permit, but the refugee's employer. [But] refugees are usually engaged in seasonal work – they receive daily wages and move from one employer to the next. In these industries, there is no employer interested in applying for a one-year work permit for someone who works only three months for [one employer]."[24] For that reason, the Jordanian government recently simplified the process for work permits for the agricultural sector: Syrian refugees can now get a work permit through agricultural cooperatives which allows them to switch between different employers within the association.

The costs incurred in the legalisation of existing employment are another important factor. Developments over time show that the number of work permits applied for or issued grew by leaps and bounds when the application fees were waived. A significant increase in the number of applications for work permits was also observed when the employer's obligation to prove that a new employee is registered with the social security system was temporarily suspended.[25]

So far, there have been scarcely any incentives to employ Syrian refugees legally in Jordan.

As a rule, it is illegal to employ Syrian refugees who have no work permit or are not registered for social insurance. In practice, however, such "formalities" play a minor role, as they do for thousands of Egyptian and Asian guest workers. The likelihood of detection is low, and penalties for non-compliance are comparatively moderate.[26] In this respect, there are hardly any incentives to employ Syrian refugees legally in Jordan if additional non-wage labour costs are incurred as a result.

5. Incentives for Refugees

Charles Simpson, a scientist at the Boston Consortium for Arab Region Studies, describes how the regulations of the Jordan Compact fail to provide sufficient incentives for Syrian workers: "One obstacle is [...] the fact that so many Syrian refugees were already active in the informal economy at the time of the work permit initiative."[27] The net wages in the informal economy are comparatively high, so that alternative legal employment is often not worthwhile for individual reasons. In addition, many Syrians in the non-manufacturing industry work more flexible hours under less physically difficult working conditions. On top, wages in the textile industry, in which the majority of the newly founded companies is operating, are relatively low. Especially this sector is also confronted with a shortage of skilled labour force: The Syrian textile industry was originally located in and around Aleppo, whose refugees primarily fled to Turkey rather than to Jordan.

The restriction to 18 industrial zones also makes legal work within the Jordan Compact unattractive for many refugees. The vast majority of Syrian refugees live outside the two official refugee camps. Most of the 18 industrial zones are usually located far away from the major metropolitan areas. Transport costs and times would therefore have to be borne by the refugees themselves. According to a survey conducted by UNHCR, the majority of women in the Zaatari refugee camp are not willing to commute to the industrial zones due to safety reasons and concerns about being absent from their families for too long.

The provisions of Jordanian labour law, which allow Syrian refugees to be employed only in certain occupations, exacerbate the problem. Refugees still do not receive a work permit for closed occupational groups such as teachers, engineers, and the medical professions. In other sectors, such as construction or services, there are the national quotas already mentioned.

6. Start-Ups and Formalisation of Illegal Businesses

Small businesses account for 80 per cent of all new jobs in Jordan. For the majority of Syrian

Recommendations for Action

1. Every Syrian refugee should have unrestricted access to the Jordanian labour market, meaning that
   a. Work permits should be independent of employers, and refugees should be able to apply for them; or, ideally, they should be abolished entirely,
   b. Work permits should not be issued for certain occupations only, but cover all activities,
   c. Refugees should be able to set up businesses without national partners and without guarantees or security deposits.
2. The 18-industrial-zone restriction should be lifted. A (power-)infrastructure, which meets minimum requirements of the private sector, should be provided.
3. The 52-product-group restriction should be lifted.
4. The favourisation of natives in the form of the minimum quota for Jordanian workers should be abolished.
5. Penalties for illegal employment / undeclared work should be increased.
6. Controls on illegal employment / undeclared work should be enhanced.
7. Public and / or private labour market agencies should be established to provide a market platform for supply and demand.
8. A public (local) transport system should be established to minimise the individual transport costs to the industrial zones in Jordan.
9. Government investment in infrastructure, especially with regard to favourable transport routes to the EU (and the region) should be made.
10. Employers and employees should pay into the taxation and social protection systems in the long term.

refugees, especially women, who often work from home, this (partially) self-employed activity is the primary source of income. Starting in the summer of 2016, Syrian refugees were to be given the opportunity to formalise these micro-enterprises and establish new businesses within the framework of the Jordan Compact. The corresponding legal framework conditions for small and medium-sized enterprises was originally imposed in the 1950s and, regardless of craftsman origin, has been sketchily implemented in the past. Although important standards and regulations have been revised in the course of Jordan Compact, there appear to be serious problems with the uniform application of the new rules.[28] Nor were all important laws subject to revision. For example, foreigners, including Syrian refugees, must register as investors if they want to set up a company. To do this, a Syrian founder must not only find a Jordanian business partner, but also document a minimum balance of 50,000 Jordanian dinars (about 59,500 euros) with a national bank – an incredibly high market entry hurdle for most Syrian refugees.[29]

The lack of traditional labour market exchanges in Jordan makes it difficult to place Syrian refugees.

7. Lack of Labour Market Structures

Another problem with the recruitment of Syrian refugees – one that remains unaddressed in the Jordan Compact – is the general lack of traditional labour market exchanges. For example, there are no public or private institutions providing employment services or exchanging job offers and job searches. A study by the ILO showed that a large proportion of the Jordanian companies were prepared to hire refugees, but there was no centralised placement agency. Syrians also expressed willingness to work in the industrial companies, but here too, many emphasised the lack of a placement agency. Thus, both refugees and Jordanians remain equally dependent on non-transparent and inefficient methods of identifying job opportunities, such as personal or family contacts.[30]

8. European Investment

Officials have repeatedly argued that the Jordan Compact would attract foreign investment. So far, however, no European company seems to have expressed any interest in setting up or investing in the industrial zones.[31] Salah Isayyied explains this by citing the continuing unattractiveness of the Jordanian market and the country's questionable position as a production location: "The agreement alone is not attractive for a company [...] Tax rebates, investment laws, [etc.] alone provide no motivation for a company to invest in Jordan [...] Germany receives such offers from every country in the world." He continues, "One wonders: How strongly developed is Jordanian industry, and what are its preconditions? What infrastructure is available? Transport routes to the EU, security in the country, etc. – lots of questions are open. And a company needs concrete answers to make a decision to invest in a foreign country."[32] It is therefore not particularly surprising, he says, that most foreign investments in Jordan come from the Gulf States and are therefore not aimed at the European sales markets. Particularly investments from Europe, however, would be a key success factor for the Jordan Compact. Up to date, no single new job has been created as part of the Compact, existing jobs were only formalised or substituted, respectively.

9. Fiscal, Economic, and Socio-Political Effects

In general, there are different opinions about the extent to which free trade agreements are at all suitable as development policy instruments for stabilising absorption capacities. The Jordanian textile industry, for example, grew into a significant part of the Jordanian production sector as a result of similarly structured agreements between Jordan and the US. However, it is precisely these agreements that are also criticised for not making any contribution to Jordanian general tax revenue, as companies are largely

exempt from taxes and levies under the umbrella of the agreements. Moreover, critics also claim that hardly any Jordanians are employed, since exemptions mean that 70 to 80 per cent of all employees are guest workers from Southeast Asia. Most of the profits and salaries are therefore be transferred abroad, they say, and generate no further demand effects on the domestic market.

Conclusion

The EU's agreements with important initial host countries for Syrian refugees signalled a remarkable development policy turnaround. The aim was not only to provide financial aid, but also to enhance the resilience and absorption capacities of initial host countries in the long term. In this context, the Jordan Compact has gradually become a role model. It has generated awareness for sharing responsibility on the international level and has served as blue print for similar agreements with African countries.

This paradigm shift must be viewed as a positive one. But a little more than two years after the first donor conference, the Jordan Compact case study reveals conceptual weaknesses. Above all, a real improvement in the living conditions of refugees and Jordanians alike requires a more courageous opening of the markets and the creation of an infrastructure that promotes employment (see recommendations for action).

While the EU would have to give up its hesitancy to open its markets, Jordan would have to take a critical look at domestic hot-button issues, such as national favourisation and essential investments into infrastructure, and set up employment agencies.

Despite all the existing difficulties, integrating Syrian refugees promises considerable opportunities for the Jordanian economy. There are no language barriers, and Syrian refugees tend to have skills that are highly relevant for employment in Jordan. As well, salaries and wages paid to Syrians are likely to stimulate domestic demand, and thus have a higher multiplier effect.

Finally, the case study of the EU-Jordan Compact shows that the accuracy of fit and effect of the agreements must in reality be continuously reviewed and, as necessary, supplemented by concrete economic and labour market measures. Otherwise, the ambitious Compacts risk failing to meet their own requirements.

–translated from German–

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1 Cf. UNHCR 2017: Global Trends. Forced Displacement in 2016, 19 Jun 2017, in: http://unhcr.org/5943e8a34 [13 Dec 2017].
2 Cf. UNHCR 2017: Syria Regional Refugee Response, as of 3 Jul 2017, in: http://bit.ly/Wh105k [5 Aug 2017].
3 No official statistics are available on the exact number of Palestinian refugees in Jordan. The majority of Palestinian refugees are Jordanian citizens. Estimates indicate at least 50 per cent of the population.
4 There are 9.5 million people living in Jordan, including the Syrian refugees (status: Jan 2016). Cf. Ghazal, Mohammad 2016: Population stands around 9.5 million, including 2.9 million guests, The Jordan Times, 30 Jan 2016, in: https://shar.es/1MyHYU [13 Dec 2017].
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12 Cf. UNO-Flüchtlingshilfe 2015: Syrien: 7 Gründe für die Flucht nach Europa, 28 Sep 2015, in: http://bit.ly/20qwG3Q [10 Apr 2018].
13 On 5 Apr 2017, the follow-up to the conference in London took place in Brussels: At this meeting, representatives of 70 countries agreed to provide additional grants worth ten billion US dollars for 2017 to 2020 and 30 billion US dollars in loans. Cf. Supporting Syria and the region: Post-Brussels conference financial tracking, Report Three, p. 3, in: http://bit.ly/2xEsbhf [13 Dec 2017].
14 Jordan has not signed the 1951 Geneva Refugee Convention, so Syrians admitted to Jordan have no formal refugee status. A 1998 declaration of intent between the Jordanian government and the UNHCR, which was amended in 2014, stipulates that Syrian asylum seekers may remain in the country until their status has been clarified. Cf. Carrion, Doris 2016: Düstere Aussichten: Syrische Flüchtlinge in Jordanien, Bundeszentrale für politische Bildung, 11 Jul 2016, in: http://bpb.de/230886 [13 Dec 2017].
15 Cf. Mercator Dialogue on Asylum and Migration (MEDAM) 2017: Sharing responsibility for refugees and expanding legal immigration, 2017 MEDAM Assessment Report on Asylum and Migration Policies in Europe, in: http://bit.ly/2AGFP5x [13 Dec 2017].
16 For example, the 30 per cent applied to food content such as confectionery, cocoa, or cereals. The maximum of 50 per cent applied to weapons, oils, copper, or other metals, for example. Cf. Official Journal of the European Union 2013: Regional Convention on pan-Euro-Mediterranean preferential rules of origin, 26 Feb 2013, in: http://bit.ly/2AGAhYu [13 Dec 2017].
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20 Cf. Ghazal, Mohammad 2017: Only two Jordanian companies benefiting from EU relaxed rules of origin, The Jordan Times, 24 Jul 2017, in: http://bit.ly/2uXDDK1E [13 Dec 2017].
21 Cf. ibid.
22 Skype interview with Salah Isayyied, founder of International HuMan Power, 26 Jan 2017.

23 In the period from January 2016 to January 2017, the Jordanian Ministry of Labour issued 45,000 work permits (as of Aug 2017: 57,106), narrowly achieving the self-set target of 50,000 work permits for this period. For about 330,000 Syrians of working age, this also means that only 18 per cent of them have been put into formal employment, meaning that 87 per cent of the working population are still without employment or work illegally. Cf. ILO 2017, Work permits and employment of Syrian refugees in Jordan: Towards formalizing the work of Syrian refugees, in: http://bit.ly/2ys8DZh [5 Aug 2017]. Until December 2017 73,000 work permits were issued. But critics state that some permits are now double counted, because the numbers include permit renewals as well as permits for Syrians changing their workplace. Cf. Howden, Daniel / Patchett, Hannah / Alfred, Charlotte 2017: The Compact Experiment: Push for refugee jobs confronts reality of Jordan and Lebanon, in: http://issues.newsdeeply.com/the-compact-experiment [10 Apr 2018].

24 Interview with Dr. Maha Kattaa, Response Coordinator for the Syrian refugee crisis at the ILO, Amman, 6 Feb 2017.

25 Cf. Razzaz, n. 6; cf. ILO, n. 2.

26 Skype interview with Charles Simpson, scientist at the Boston Consortium for Arab Region Studies (BCARS), 25 Jan 2017. BCARS has carried out a study with the UNHCR in Jordan on the process of work permits. Cf. Kelberer, Victoria 2017: The Work Permit Initiative for Syrian Refugees in Jordan: Implications for Policy and Practice, BCARS, Feb 2017, in: http://bit.ly/2lDs0fH [13 Dec 2017].

27 Cf. ibid.

28 Background interview with Bryn Boyce, Deputy Tender Program Director for the International Rescue Committee (IRC), Amman, 22 Mar 2017.

29 Cf. IRC 2017: In Search of Work. Creating Jobs for Syrian Refugees: A Case Study of the Jordan Compact, Feb 2017, p. 15, in: http://bit.ly/2yrPAi2 [13 Dec 2017].

30 Cf. ibid., p. 13.

31 Cf. Staton, Bethan 2016: Jordan Experiment Spurs Jobs for Refugees, Refugees Deeply, 25 Jul 2016, in: http://bit.ly/2adDfVH [13 Dec 2017].

32 Cf. Isayyied 2017, n. 2.

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