ALGORITHMIC GOVERNANCE ON THE NEW SILK ROAD: AN ESSAY ON POWER AND TECHNOLOGY ACROSS CITIES AND REGIMES

GOVERNANÇA ALGORÍTMICA NA NOVA ESTRADA DA SEDA: UM ENSAIO SOBRE PODER E TECNOLOGIA ATRAVÉS DE CIDADES E REGIMES

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Abstract: In recent years, fast development of technologies such as artificial intelligence and Big Data analytics, along with the popularization of global platform services like Google, Facebook, Amazon, Baidu and WeChat led to major impact on elections, public opinion, privacy and other core socio-political processes in Western democracies. China has established ambitious policies towards becoming a global leader in artificial intelligence in the next decade, and some of the largest Chinese technology groups are now exporting know-how in *smart city* solutions to a growing number of cities and countries along the Belt and Road Initiative. The companies providing technology are the same that support the Chinese government with technical systems for surveillance of minority groups in Xinjiang, or develop pilot programs for China's controversial *social credit system*. New regulation has recently made it compulsory for large private Chinese companies in strategic sectors to have members of the communist party at the highest management level, formally blurring the lines between public and private interests in the way these companies operate in China and abroad. Also, the unprecedented economic development of China in the last decades and its new global geopolitical influence add to a number of challenges currently faced by liberal democracy. This article looks into the interdisciplinary nexus of China's expanding geopolitical influence, the increasing relevance of algorithmic systems in the public and private sector, and the crisis of liberal democracy. The author briefly introduces four cases of *smart city* initiatives where these factors intertwine, and points towards the need for further research on emerging fields such as *algorithmic governance*. The abovementioned topics and cases are presented in the context of the author's ongoing doctoral research project at the Otto-Suhr-Institut für Politikwissenschaft, Freie Universität Berlin.

Keywords: Algorithmic governance. Democracy. Technology. China. New silk road. Artificial intelligence. Big Data. Smart cities.

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Resumo: Nos últimos anos, o rápido desenvolvimento de tecnologias como inteligência artificial e análise de Big Data, somado à popularização de plataformas online como o Google, Facebook, Amazon, Baidu e WeChat, passaram a gerar impacto significativo em eleições, na opinião pública, na privacidade e em outros processos socio-políticos essenciais das democracias no Ocidente. A China estabeleceu políticas públicas arrojadas no sentido de se tornar líder global em inteligência artificial na próxima década, e algumas das maiores empresas chinesas de tecnologia atualmente exportam sua experiência em soluções para *cidades inteligentes* para um crescente número de cidades e países associados à *Belt and Road Initiative*. As empresas que fornecem tecnologia para esses projetos também trabalham com o governo chinês em sistemas de vigilância utilizados no monitoramento de minorias étnicas em Xinjiang e desenvolvem projetos piloto para o controverso *sistema de crédito social* atualmente em implementação no país. Leis recentes tornaram compulsório que grandes empresas chinesas em setores estratégicos possuam membros do partido comunista chinês no mais alto nível gerencial, formalmente confundindo os limites entre interesses públicos e privados em relação à maneira como essas empresas operam na China e em outros países. Além disso, o desenvolvimento econômico sem precedentes vivenciado pela China nas últimas décadas e sua crescente influência geopolítica aumentam os desafios atualmente enfrentados pela democracia liberal. O autor apresenta brevemente quatro casos de *cidades inteligentes* onde os fatores acima interagem e aponta para a necessidade de novas pesquisas em áreas interdisciplinares emergentes como *governança algorítmica*. Os tópicos são discutidos no contexto do projeto de pesquisa de doutorado atualmente desenvolvido pelo autor no Instituto Otto-Suhr de Ciências Políticas da Universidade Livre de Berlim.

Palavras-chave: Governanca algorítmica. Democracia. Tecnologia. China. Nova rota da seda. Inteligência artificial. Big Data. Cidades inteligentes.

1 Introduction

Many social science scholars currently argue that the prevailing liberal democratic order, which has gained ground during a large part of the 20th century, is not capable of handling its own growth or providing answers to present or future challenges, resulting in the prevalence of illiberal regimes (ZAKARIA, 1997; IKENBERRY, 2010; MOUNK, 2014; ENDERLEIN, 2018; DIAMOND, 2019). Traditional ways of governing seem to be overwhelmed, and while many societies have democratic ideals, they lack informed, engaged citizens that can act on these values, often resulting in a government that "neither knows, nor implements the public will" (KAKABADSE *et al.*, 2003). This has contributed to increasing disillusionment towards democratic processes and institutions. Research into causes of the escalating challenges to liberal democracy have led to a variety of theories and arguments, including economic, cultural and political factors (ZÜRN, 2018; ABOU-CHADI, 2017). More recently, widely publicized usage of social networks and platform services to influence public opinion and election outcomes in several Western countries have generated stronger awareness of—and flourishing research on—the emerging role of technology in processes and institutions that are at the core of social and political systems. Data leaks, fake news, software *bots*, *nudging* and *filter bubbles* have strongly affected the outcomes of the UK Brexit referendum, the 2016 elections in the United States and the 2018 elections in Brazil (BHAYA, 2018; TUFEKCI, 2015; AMOORE, 2017).

Predictive algorithms statistically determine areas where crimes might take place, guiding police action while also, in many cases, automating biases and racial profiling in public security. Face recognition systems use machine-learning technology to identify individuals among crowds in public areas, with or without public knowledge or consent. GPS systems in mobile mapping applications allow online platform services to determine and store detailed data about where people are at each time of the day, when and where they go, how frequently, and how long they stay.

Recent high-profile cases where some of the main characteristics of these new socio-technical systems can be observed include Google's controversial initiative to finance a new *smart city* in a waterfront area in Toronto, CA, developing the area into "the most innovative district in the entire world" (BLISS, 2019), and also China's unchecked use of surveillance technology to monitor the Uighur population in the province of Xinjiang, along with the ongoing development of a *social credit system*. Firstly, these cases show that the borders between public and private sectors are becoming increasingly blurred, particularly in technology-related fields. For example, in one of the most criticized offers by the US-based search company, Google has proposed to finance the full development of the Toronto Quayside district in exchange for a (permanent) percentage of all tax revenues in the area. While the CEO of Google's subsidiary SidewalkLabs, responsible for the Quayside project, denies any "interest in monetizing personal information", media reports disclosed an internal program aimed at packaging and selling location data originating from millions of cell phones on the future district. In China, the suppliers of technology for surveillance systems in Xinjiang and for pilot programs of the *social credit system* are mostly private companies, which are required by Chinese National Security Law to provide customer data to government agencies, while also using it to offer personalized commercial services to vast user bases. Large Chinese private companies, especially those operating in strategic sectors, traditionally have representatives of the Chinese communist party as top executive cadres, forming virtual "party cells" at the highest management level and leading to parallel, unofficial public/private structures (LIN, 2018; NITSCH, 2018). Secondly, the cases above indicate that the unchecked development and use of new technology is not limited to specific regimes. Van Dijck (2019) argues that we now live in a global "platform society", characterized by two major ecosystems of online platforms—US-based and China-based—with widespread impacts on individual life and sociopolitical institutions. Despite the fact that the two ecosystems operate in increasingly similar ways (LUCAS, 2019), Van Dijck emphasizes one main difference: the US-based ecosystem (Facebook, Amazon, Google, Microsoft, Apple etc.) is led mostly by market forces and benefits from a largely unregulated space, while China-based conglomerates and platforms (Huawei, Baidu, Alibaba, Tencent, among other) have strong political, economic and strategic government support. Finally, the examples of Toronto, Xinjiang and the *social credit system*, as well as of US and China-based platform ecosystems draw attention to the fact that these new socio-technical assemblages operate simultaneously at multiple levels, from individual to global, amassing significant economic and political power and challenging traditional jurisdictions and regulatory mechanisms. Google, Facebook, Tencent and Alibaba offer their services worldwide and have data-centers in many countries, and with

growing adoption of decentralized systems such as blockchain, it is seldom clear where personal data is stored, processed or commercialized.

China's Belt and Road Initiative (BRI) is currently one of the most relevant contexts where the Chinese government's strategic and foreign policy goals visibly align with commercial interests of major Chinese technology infrastructure providers. Also known informally as the "New Silk Road", and often compared to the US Marshall Plan (CHINA'S..., 2019; SHEN; CHAN, 2018; KOZUL-WRIGHT; POON, 2019), the BRI was publicly announced by President Xi Jinping in 2013, and since then it has evolved to become China's main foreign policy initiative and the largest infrastructure development effort worldwide, embodying and shaping China's "going out" effort. The initiative officially aims at improving connectivity and economic flows between China and the rest of the world by financing a number of large-scale physical and technological infrastructure projects in multiple countries, distributed along a "Silk Road Economic Belt" and a "21st Century Maritime Silk Road". Planned investments by Chinese banks, construction and technology enterprises are reported to range from US$ 1 trillion (PERLEZ; HUANG, 2017) to US$ 8 trillion (MING, 2018), and include railways, roads, oil and gas pipelines, ports, power plants, among other major projects (MERICS, 2018). In spite of uncertainties regarding the economic feasibility of many projects and China's capacity to deliver on promised investments (HILLMAN, 2019; WO-LAP, 2016), over 125 countries have signed agreements with China to participate in the BRI (KUO, 2019).

The positive international response to the BRI has led the Chinese government to expand the initiative by developing a *Digital Silk Road*, introduced as a scientific program aiming at improving telecommunications infrastructure in developing countries, and also as a powerful range of tools that will help fill scientific knowledge gaps and support international collaboration towards the United Nations Sustainable Development Goals (SDGs). The *Digital Silk Road*, or *Digital Belt and Road* (DBAR), encompasses the design, funding, development and operation of large-scale technical systems, including GPS and remote sensing satellites (*Beidou* satellite program), submarine and terrestrial internet cables, online data platforms, 5G mobile networks, among other infrastructure projects (DBAR, 2019; HUADONG, 2018).

As part of the *Digital Silk Road*, China has been actively promoting the implementation of *smart cities* both internally and in over 100 cities in 40 countries (HO, 2017; LAU, 2018; HE, 2019). The concept of *smart city* involves organizations, institutions, services, and a variety of technologies: cameras with face recognition software for general identity verification and public security; GPS-enabled terminals for obtaining real-time location of citizens, vehicles and fleets, or police units; high-speed (5G) mobile networks to enable upcoming new public and business services, such as autonomous cars, e-Health, smart energy grids, and wearable devices; and also artificial intelligence (AI) software systems to collect and analyze vast amounts of data. As the first China-funded *smart city* projects get underway in Belt and Road countries, discourse by public officials and suppliers praising global collaboration, shared values and efficiency meet more somber media reports (YANG, 2018; ANDERLINI, 2019). China is the largest global market for *smart city* pilot projects and home of most technology suppliers on the BRI (CNBC, 2018). While many countries welcome China as an investment partner, and technology infrastructure

development can bring concrete improvements in areas such as crime reduction and mobility, BRI projects have focused predominantly on economic development, with limited attention to socio-political impacts, particularly at the local level. Several factors make this a reason for concern.

From a social and political perspective, technology is neither neutral nor objective: concepts of objectivity, truth and trust are contextually defined and may change as a result of various factors (RIEDER; SIMON, 2016). Technologies are funded, designed, developed or used for a reason, which may be aligned to different and conflicting values and institutional agendas, contributing, for example, to politicization, de-politicization, or re-politicization (HANSEN, 2015). Apart from intrinsic aspects of the various technologies it promotes, the *Digital Silk Road* itself can be seen as a *dispositif* in the Foucaultian sense, bringing together an "heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions" (FOUCAULT, 1980 apud GAILING, 2016). These *policy assemblages* are permeated by relations of power and knowledge, and in the case of DBAR, which focuses mostly on developing countries, the socio-political outcomes of these relations often interact with contexts involving illiberal regimes, weak institutions, lack of regulation, large informal economies, armed conflict, poverty, displacement (RIZK, 2017), as well as issues of *data colonization* (HARARI, 2019).

Media reports indicate there are over 500 *smart city* initiatives in China (ANDERLINI, 2019), and according to the Australian Strategic Policy Institute (ASPI), Chinese technology companies are involved in the financing, development and/or operation of *smart city* projects in 115 cities worldwide (ASPI, 2019). Given the scale of the Belt and Road Initiative, the disrupting role of technology in core socio-political processes, and the challenges currently faced by liberal democratic regimes—which include the potential international validation of the Chinese governance model as an alternative to the global liberal order—it is important to understand if and how China is exporting its internal norms and practices regarding technology policies to different regimes through BRI projects, and what this means for liberal democracy. The fact that a large number of China-backed *smart city* projects may impact local governance is particularly relevant, as the latter remains the most accessible level of engagement with the State for the vast majority of people. Cities are where people participate regularly in decisions that affect their lives and exercise their rights and obligations, making good local governance a basic condition for democracy.

Technologies such as GPS, face recognition and mobile networks tend to become ubiquitous both in constitutional democracies and in autocratic regimes. Nevertheless, the impact they have on human life depends on the governance model adopted. As China extends and consolidates its global influence through the Belt and Road Initiative and advances its goal of becoming a global leader in artificial intelligence by 2030 (ROBLES, 2018), Western democracies raise concerns about the extent to which Beijing's economic expansion also mean the international legitimation of the Chinese political system. The current literature on the Belt and Road Initiative offers limited comparative insight into how the adoption of technology infrastructure financed and developed by China impacts power relations and public participation

in local governance across different regimes. The author's ongoing doctoral project proposes a comparative analysis of how *smart city* initiatives financed and developed by Chinese companies impact power relations and public participation at the local level in different political regimes. The project aims at contributing to the flourishing literature on the Belt and Road Initiative, while also exploring and developing a new interdisciplinary research nexus between Policy Analysis, Chinese Studies, and Science and Technology Studies.

2 Literature review

This essay aims at introducing and discussing sociopolitical challenges that lie at the nexus of three current facts: the international crisis of liberal democracy, the popularization of algorithmic systems in the private and public sectors, and the global rise of China as an economic and political power. The following paragraphs present an overview of recent research literature on each of these topics.

2.1 Liberal democracy in crisis

After the end of the Cold War, Fukuyama's "end of history" and Hungtington's "clash of civilizations" proposed, respectively, that liberal democracy would remain as the one universal ideology, and that ideological conflicts that marked the 20th century would be replaced by cultural ones, where religion, heritage and tradition would take the main stage. Since then, many authors have analyzed geopolitical changes and developed theories trying to explain the rise of illiberal regimes in the last decades. In an influential article, Zakaria (1997) discussed the rise of illiberal democracies and stressed the historical differences and necessary tensions between democracy and constitutional liberalism, claiming that rule of law is a stronger determinant of the development of stable democratic regimes than elections and other mechanisms of political competition. In his work on hybrid regimes, Diamond (2002) pointed out that at the turn of the 21st century many countries were adopting the form of electoral democracy, but were actually authoritarian or pseudo-democratic regimes with some type of political competition. Mounk and Foa (2016) demonstrate that support for democracy has fallen sharply in younger generations in both sides of the Atlantic, citing a 'democratic disconnect' that currently hollows out liberal democratic regimes.

But why is this happening? And why is it happening now? Authors researching the challenges to liberal democracy and the rise of illiberal regimes have proposed a variety of ideas. Zürn (2018) discusses three main theories: economic, cultural and political.

The economic theory argues that in spite of overall global economic development and decrease in poverty in the last decades, globalization has generated winners and losers, and inequality has continued to rise, particularly within nation-states. Citizens who feel they did not benefit from the way global capitalism developed protest by joining authoritarian populist parties or leaders with anti-establishment discourses. The second theory envisions a cultural backlash by more conservative parts of society against excessive liberalism (i.e. regarding beliefs about sexual

orientation, foreign culture and music, dress codes etc.) especially in urban centers of Western democracies. More conservative citizens, which often live in rural areas, identify with traditional values, and as such do not feel represented by progressive liberal leaders. Finally, the political explanation claims that the crisis of liberal democracy is the outcome of multiple socio-political factors over the last several decades. In Germany and Western Europe, the "catch-all" parties (Volksparteien) that gained majority after World War II had to make many compromises once in power, and as they grew in size and influence, these parties morphed into professionalized bureaucracies run by experts and elites, losing touch with their political origins and with voters. As globalization and "denationalization" settled in (ZÜRN, 1997), a significant decline of trust in parties and other majoritarian institutions led to the rise of *non*-majoritarian institutions (i.e. central banks, constitutional courts, international institutions), where decisions are based on technical expertise and take into consideration more global aspects of social concerns (global poverty, migration, climate change). These institutions have an intrinsic bias towards liberalism, open borders and progressive values, and as their influence reached national and subnational policies, more conservative citizens felt they had "lost control" of their countries, eventually migrating towards populist and nationalist movements. Other authors also attribute challenges to liberal democracy to problems deriving from formal as well as informal institutions. Azari (2019) posits that an obsession with elections has made politics in the United States increasingly about position taking and performative conflict, while relevant informal institutions, such as the accepted norms by which elected presidents address the public, have not received enough attention from researchers (AZARI; SMITH, 2012).

Fung (2007) offers an interesting perspective: he proposes that every conception of democracy must present three basic components to be complete. First, it must provide an "articulation of values that relate collective decisions and actions to interests and views of individuals". Second, it should "recommend institutions that advance its underlying values (i.e. political liberties, competitive elections, universal suffrage, civic associations, referenda, town meetings, peak bargaining arrangements)". Finally, Fung argues that the values and institutional prescriptions are connected by assumptions about political psychology and capabilities of individuals and also about sociopolitical dynamics. Based on Rawls' (1971) idea of *reflective equilibrium* (which states that our conception of justice aligns with our moral sensitivity when everyday judgments we make align with our moral principles), Fung develops the concept of *pragmatic equilibrium* and applies it to democracy. A democracy is in *pragmatic equilibrium* "when the consequences of the institutions it prescribes realize its values well and better than any other feasible institutional arrangements over a wide range of problems and contexts".

As political scientists try to make sense of the increasing predominance of illiberal democracies and of changes in the public perception of democratic regimes and institutions, new fields of inquiry have recently emerged with the goal of investigating social and political implications of the widespread adoption of new technologies in the private and public sectors.

2.2 Algorithmic governance

Exponential growth in the flow of digital data (LENARD; RUBIN, 2013), along with the rapid development of technologies for data processing such as machine learning, neural networks and deep learning, and also the evolution and popularization of personal computers and smartphones, have led to widespread adoption in business and government of algorithmic systems based on artificial intelligence and Big Data (COLETTA; KITCHIN, 2017; ZARSKY, 2016). Platform services such as social networks, search engines and video sharing websites play a major role in this process, attracting billions of users across the planet to useful and seemingly free services. Network effects transformed these businesses into global monopolies, creating powerful regional online ecosystems based on the extraction, analysis and commercialization of data services and technologies to the private and public sectors. Algorithmic systems currently "make and mediate social fabric", "shape social and cultural formations" (BEER, 2009) and seem to disrupt every area in which they are applied, which has led an increasing number of scholars to argue that we are now in an era of widespread algorithmic governance (KITCHIN, 2017) or algorithmic governmentality (ROUVROY, 2016). In this context, algorithms play a major role in the exercise of power, the automation of social discipline and control, the establishment of new tools to deal with social and political risk (AMOORE, 2017) and the increase in efficiency of capital accumulation (ZUBOFF, 2015; KITCHIN, 2017).

Technical or managerial approaches to social problems involving automated decision-making in the public sector (i.e. "de-biasing data") tend to ignore basic principles of political systems, such as conflicting interests and values, as well as the importance of institutions as arenas where competing conceptions of society are negotiated. These are crucial factors that play out in multiple ways in different policy areas, and particularly across different political regimes. In spite of several social risks (JANSSEN; KUK, 2016), Big Data analysis, reactive algorithms and human in the loop algorithmic processes may offer significant improvements to policy making and public services, mainly by detecting correlations in large datasets that humans may not be able to analyze as efficiently (YEUNG, 2017a) (WIRTZ; MÜLLER, 2018). However, the predictive use of Big Data and unsupervised artificial intelligence (i.e. deep learning or reinforcement learning) in automated decision-making (ADM) is what represents the "holy grail" of algorithmic systems (YEUNG, 2017a), contributing to concerns about "black box" decision-making and raising issues of accountability, liability and fairness (KITCHIN, 2017; KAR; THAPA; PARYCEK, 2018). Simultaneously, filter bubbles, nudging, and social ranking systems skew political understanding and engagement in ways not fully understood (SAURWEIN; JUST; LATZER, 2015; HELBING, 2016; REISCH, 2018). These factors already impact civic and political action by individuals and institutions, as well as major electoral processes and global geopolitics, regardless of the fact that the practices they involve have not been thoroughly debated and are largely unregulated in most countries (TUFEKCI, 2015; YEUNG, 2017b). Intrinsic elements of software code such as transparency, defaults and standards can also be used to determine or nudge individual and social behavior (SHAH; KESAN, 2003). Just and Latzer (2017) claim that as an institution, software impacts societies like laws, contracts and

values that are imprinted in algorithms. The algorithmic personalization and individualization of reality construction changes the perception of shared social reality, which is the base of social order, and therefore algorithms need democratic legitimation. In this sense, from a political and policy perspective, the international adoption of technology and data infrastructures financed, developed and operated by countries with different political regimes and social contracts raises important questions regarding regulation, policy choices, power relations, public participation, and civil rights, among other issues. This is particularly true in the context of political instability that characterizes current times.

2.3 The Rise of China and Smart Cities on the *Digital Silk Road*

Three factors make the concept of algorithmic governance particularly relevant for discussions about the ongoing challenges to liberal democracy: first, the economic and geopolitical rise of China and its turn towards centralization of power under Xi Jinping; second, the significant investment China has made in disruptive technology sectors (i.e. artificial intelligence, Big Data, space technology, telecommunications) and the way the country has adopted these technologies for surveillance and social control; finally, the large number and fast growth in the international adoption of *smart city* technologies, particularly initiatives financed and developed by Chinese companies along the Belt and Road Initiative.

China's economic progress and geopolitical rise in the last few decades have proven that liberal democracy does not hold a monopoly on the claim to prosperity (ZÜRN, 2019). For some time, this presented no particular threat to democratic systems, as the Chinese regime slowly opened and became more flexible to political reforms. Xi Jinping's government brought a renewed concentration of power, giving rise to claims of a 'new Maoist authoritarianism', characterized by a revitalization of the Chinese Communist Party, economic strengthening of the State sector, and reinforcement of ideology in policy matters (SO, 2019). Since Xi took power, the government has also explored novel, technology-driven tools for social and behavioral control. Monitoring and surveillance have become pervasive: in 2017 there were over 170 million surveillance cameras in operation across China, and this figure is expected to more than triple by 2020 (HERSEY, 2017). Since 2015 the city of Beijing has had blanket video surveillance with 100% coverage (HUANG, 2015). China's *Social Credit System* (*shehui xinyong tixi*)—a framework of ratings used to assess individual and institutional actors on the "lawfulness and morality" of their actions (CREMEERS, 2018)—makes use of Big Data sourced from private and public data sources. The system has already been applied, among other cases, to deny access to transportation, loans, jobs in the public sector and other types of benefits to millions of Chinese citizens, generating widespread fears of an Orwellian state, notably among Western media (KÜHNREICH, 2018) (MCDONALD, 2019). Interestingly, recent studies show that a large majority of citizens—particularly older people and wealthy urban residents with high levels of education—*support* the Social Credit System, viewing it as a legitimate instrument for increasing trustworthiness within Chinese society, as well as a frame through which benefits can be obtained (KOSTKA, 2019).

With nearly 800 million people connected to the Internet and more than half of its population living in urban areas, China needs its cities to work better. The same is valid for the rest of the world: the number of people living in cities is expected to grow by 2.5 billion in the next three decades (UNITED NATIONS, 2018), bringing further challenges to local governments that are already overwhelmed. Despite many examples of concrete benefits brought about by new technologies to policy sectors such as urban mobility and public security, critical literature on *smart cities* has pointed to multiple problems: the predominance of techno-centric urban governance solutions and a neoliberal ethos (KITCHIN, 2014; CARDULLO; KITCHIN, 2018), procedural and regulatory problems in the public implementation of algorithmic processes (BRAUNEIS; GOODMAN, 2017), reproduction of unequal power relations (KLAUSER; SÖDERSTRÖM, 2015; RODRIGUES, 2017), and the need for further comparative research with more nuanced empirical evidence (KITCHIN, 2016). Recently, as the Belt and Road Initiative drew academic and media attention and China's success in exporting *smart city* technology and infrastructure governance models gained visibility, initial reports warned of early signs that China is "exporting AI-driven authoritarianism" (AKITA, 2019), and that Chinese technology "could spread authoritarianism around the world" (MAZA, 2019). More critical scholars refer to China's technology export model as "algorithmic authoritarianism" and coin terms such as "the China stack" (HO, 2018)—an authoritarian "end-to-end digital ecosystem" and "technological public-private consortium". They argue that this new techno-social context has allowed the Communist Party to renew its hold on society and boost national economy, while Chinese citizens willingly adopt the conveniences offered by these advanced technologies. Additionally, EU-funded research initiatives investigate topics such as "Authoritarianism 2.0" (STOCKMANN, 2019). In summary, up to now, economic progress and intensive focus on technology development have allowed China to successfully renegotiate the social contract fiercely guarded by liberal democracy.

Despite plenty of evidence on Beijing's non-democratic practices and their impact on civil and human rights, the critical literature on China tends to ignore nuances of the country's political and policy processes. For example, in her study of central-local relations in dam-induced resettlement in China, Habich-Sobiegalla (2016) demonstrates that the role of civil society organizations has grown significantly in Chinese policy-making in recent years, with some authors referring to the new model of state-civil society relationships in China as "consultative authoritarianism" (TEETS, 2013, 2014, 2015 apud HABICH-SOBIEGALLA 2016). This further illustrates the need to better understand how Chinese politics and norms interact with local governance in different political regimes in the context of the Belt and Road Initiative.

3 Theoretical background

Michel Foucault has done extensive work on power relations between citizens and government through complex regimes of practice, coining terms such as *governmentality* and *dispositif*. Michael Dean has elaborated and qualified these concepts through aspects such as emphvisibility, *technology*, *forms of knowledge* and *identity*. This section will briefly discuss the

Foucaultian concept of *governmentality* and Dean's *analytics of government*, along with research on public participation and policy diffusion, as initial elements of a theoretical framework for analyzing sociopolitical impacts of China-backed smart-city initiatives across different regimes.

3.1 Governmentality and policy diffusion

Foucault's concept of governmentality aims at demonstrating "how the modern sovereign state and the modern autonomous individual co-determine each other's emergence" (LEMKE, 2002). Rose (1999 apud HUXLEY, 2007) affirms that governmentality analyzes "the emergence of particular regimes of truth concerning the conduct of conduct, ways of speaking the truth, persons authorized to speak truths, ways of enacting truths and the costs of doing so". It involves also "the invention and assemblage of particular apparatuses and devices for exercising power and intervening upon certain problems". Governmentality addresses the ways through which a wide range of technologies of government—such as legal, political, administrative, financial, architectural, professional, and jurisdictional institutions—interact with everyday procedures and mechanisms of standardization, measurement, interpersonal comparison, medicine, family life, education or surveillance, in order to influence the processes by which individuals are governed and constituted as certain types of subjects (GAILING, 2016; TUCKER, 2014). Foucault's idea of power is intrinsically *productive*: it "creates what is taken for granted in society" (GAILING, 2016). It defines what individuals take to be truth, and in doing so, leads them to adopt certain roles in socio-political contexts, enabling the deployment of political rationalities and agendas (MILLER; ROSE 2008 apud GAILING, 2016). Despite the fact that individuals are free to make choices, and that power can also be fragile, power assemblages as seen by Foucault make it difficult for citizens to define themselves in ways that contradict the prevailing logic.

A dispositif is

> a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions—in short, the said as much as the unsaid (FOUCAULT, 1980 apud GAILING, 2016).

The three most important aspects of a dispositif are: a focus on assemblages of very different material and non-material elements and the networks between them; a strategic goal of these assemblages permeating the relations of power and knowledge; and the historical evolution of the assemblages, allowing for the observation of how its composing relationships change over time (AGAMBEN, 2006; BASU, 2010 apud GAILING, 2016). The first aspect shows that Foucault's interest was not so much on what power is or who has it (he argues that power cannot be possessed), but on the qualities it displays and the effects it has through its interactions with the plurality of socio-materialities that surround it. It is necessary to follow the connections and associations in order to understand the dispositif. The strategic goal of the Foucaultian dispositif lies on the fact that it usually responds to an urgence, which can be understood in English as an emergency or a need (CABORN, 2007). This can apply to any type of need or discourse:

economic, social, technical, political, religious, moral etc. The third aspect of a dispositif, its historicity, is important in the observation of changes in the genealogy of power relations: for example, how conflicting dispositifs, knowledge forms and practices co-exist, interact, and succeed one another.

Recent studies of algorithmic governance have attempted to formulate and discuss typologies of algorithmic selection applications and their implications in governance (SAURWEIN; JUST; LATZER, 2015), as well as taxonomies of algorithmic configurations and their impacts on regulation (YEUNG, 2017a). The objects of these efforts can also be seen as Foucaultian dispositifs, operationalized as technologies of government and technologies of the self in a context of governmentality. Characteristics and outcomes of different dispositifs can be studied, for example by comparing algorithmic systems with more traditional components of control systems, by which governments set standards, gather information and enforce these standards when deviation is found (YEUNG, 2017a). By using artificial intelligence and Big Data, predictive algorithms allow different agents to infer private information and behavior which have never been publicly disclosed anywhere (HILL, 2012; TUFEKCI, 2015), obviating new dispositifs which establish, reinforce or change regimes of truth, power relations and political agendas, as described by Foucault.

Michael Dean (2010) frames governmentality as an analytics of government which seeks to understand regimes of practice—the historically constituted, routinized and ritualized ways people do things in certain places and at certain times (i.e. formal or informal institutions). He argues that in order to understand regimes of practice one must look into the assemblages that constitute them and that also lead to relatively stable forms of institutional practice. These include

> routines of bureaucracy; technologies of notation, recording, compiling, presenting and transporting of information; the theories, programs, knowledge and expertise that compose a field to be governed and invest it with purposes and objectives; the ways of seeing and representing embedded in practices of government; and the different agencies with various capacities that the practices of government require, elicit, form and reform (DEAN, 2010, p. 37).

Dean posits that by emphasizing "how" questions, an analytics of government reveals the conditions under which regimes operate. He distinguishes four key dimensions of this process: first, particular regimes of practice imply characteristic forms of visibility, prioritizing and highlighting certain aspects while obscuring and hiding others. For example, techno-centric views of urban governance often present in smart-city initiatives emphasize potential benefits of the efficient management of systems, technology and data, prioritizing them over other governance approaches which may focus on distributional issues, resource sustainability or public participation. A second dimension of this analysis involves technical aspects of government: the means, mechanisms, instruments and technologies by which authority is constituted. From economic models to algorithmic systems or specific discourses, Dean argues that the techne of government is an essential element for values to be realized and rule to be accomplished. The

third aspect an analytics of government reveals are forms of knowledge, which play a major role in giving rise and transforming specific forms of truth. Knowledge here refers to the "connection of government and thought" and implies both material forms (graphs, sets of regulations, texts etc.) and a "mentality"—ways of viewing practices and institutions. The fourth dimension considers the various individual and collective identities that regimes of practice and programs of government try to form, and through which they operate. The relevance of this axis of inquiry lies in identifying how governments elicit, foster and attribute capacities, qualities and statuses to different agents, and also to what extent these agents come to experience themselves through these (self-) attributed identities. This involves definition, enforcement and change of conduct, duties and rights, qualities etc.

A focus on "how" questions also implies that the assemblages, agents, processes, as well as the multiple dimensions of governments are flexible, and thus constantly in flux due to pressure from different sources. Policy science offers various theories, frameworks and models for exploring policy formation, stability and change, from initial ideas of the iron triangle of policy making (congress, administration and interest groups) to Heclo's work on *issue networks*, Sabatier's *Advocacy Coalition Framework*, Pierson's *path dependence* and Roger's *diffusion of innovation*, among other. In recent decades, globalization and the rise of international organizations have contributed to increased exchange between policy makers, and technology development has greatly facilitated access to information, leading to growing interest in concepts of *policy diffusion*, *policy transfer*, and *policy learning*. Dolowitz and Marsh (1996) have worked on issues of agency and content in policy transfer, such as *who* is involved in transferring policy, *what* is transferred, *to what extent*, and also if there are *constraint factors*. Stone (2004) conceives the international transfer of hard policies and soft norms as a constitutive element of transnational governance, focusing on international organizations and global public policy networks. In his study of global norms and local non-state courts in Bangladesh, Berger (2017) demonstrates that when norms are transferred to a new context, social and political dynamics at the destination only change if the meanings of the norms are intelligible to people in this specific social context.

Broad sociopolitical impacts resulting from the adoption of algorithmic systems in the public and private sectors renew the need for identifying, disaggregating, and critically evaluating new and complex socio-technical systems. Foucault and Dean offer interesting approaches on how to structure a theoretical analysis of government, technology and power relations, while studies on policy transfer and diffusion bring light into how (and how well) norms and policies travel. Another area of research closely associated to power relations and to the legitimacy of policy making is public participation, particularly at the local level, which is where citizens frequently exercise their political views and interact with the State.

3.2 Public participation

While Arnstein (1969) has laid out an important modern typology of participation focusing on redistribution of power, later used by many researchers who have contributed to the development of participation as an academic discipline in the last decades, Webler

(1999) argues that the field is still characterized by "rich experiential knowledge and a growing, but scattered theoretical literature consisting mostly of case studies, handbooks, surveys and models describing discrete phenomena". Several scholars have placed issues of power, legitimacy, diversity, and the role of expertise as major concepts in participatory processes and research (FREIRE, 1987; QUICK; BRYSON, 2016; STOKER, 2013; STEWART, 2009). Fung (2007) posits that in a participatory democracy conception, direct participation makes policies and laws democratically valuable through mutual agreement, which improves outcomes; self-creation of solutions, increasing the value of the final results; and the transformation of participants, which happens when they elucidate and solve their own problems, and also when they identify the partiality of their views, enlarging their perspectives in ways that generate consensus.

The Democracy Cube is a conceptual model of public participation proposed by Harvard scholar Archon Fung (2006). The model incorporates as analytical elements three important dimensions of participatory processes: a) *participant selection*, which determines the adequacy of representation, b) *modes of communication and decision-making*, ranging from superficial consideration of opinions to intensive learning, negotiation and collective deliberation and c) *allocation of authority and power*, a key aspect that defines to what extent collective decisions become policy. Fung's model considers each of these elements within a spectrum, and places them as axes in a three dimensional space. This enables researchers to perform systematic comparative analysis of participatory governance by verifying how empirical data on stakeholder engagement relates to different institutional configurations for participation, thereby contributing to substantiate academic inquiry as well as policy recommendations. Fung's Democracy Cube enables a systematic analysis and visualization of public participation in different settings, which is important in order to obtain relevant results in a comparative analysis. The model incorporates a specific axis qualifying aspects of authority and power in public participation, which supports the analysis of local power relations proposed by this project. The other two axes—participant selection and modes of communication—are also permeated by power relations, allowing for interesting discussion of participatory processes in the context of ideas proposed by Foucault, Dean, and other governmentality scholars.

The theories and concepts described above offer an interesting frame of reference for analyzing the dissemination and adoption of China-backed *smart city* initiatives in different regimes along the Belt and Road Initiative. What happens when policies and norms are transferred to contexts where the adoption of new technologies has weakened the social fabric, polarizing public opinion and radicalizing political thought? What are the roles of ideology and regime type in policy transfer? What are key components of *smart city* policy assemblages and what aspects of governance do these prioritize or hide? How does the adoption or rejection of specific technologies promote, attribute or change individual and collective identities? To what extent does collaboration with China in *smart cities* promote or hinder public participation at the local level? Are there broader implications for liberal democracy? These questions illustrate the wide range of conceptual and theoretical issues involved in the topics discussed in this article, as well as the need for further research.

4 Cases

This section will briefly introduce four examples of *smart city* initiatives where technology infrastructure involves Chinese companies. The cities where these projects take place are located in countries with very different political regimes (Hangzhou/China, Duisburg/Germany, Quito/Ecuador, Memphis/USA), and several controversial issues related to policy-making and sociopolitical processes can be initially identified in all cases. During the course of the doctoral research these cases will be systematically analyzed and the results will be made available in scientific journals. As the goal of this article is to introduce the key topics and briefly discuss the main cases, the research methodology will not be detailed.

4.1 Hangzhou City Brain (China)

With nearly 5000 years of history marked by a succession of well-known dynasties and warring periods until the establishment of the first Republic of China in 2012 and finally the People's Republic of China in 1949, the Middle Kingdom has had plenty of experience with non-democratic political systems. The new republic brought major economic, political and social turbulence, including the "Great Leap Forward", a failed accelerated development policy responsible for the largest famine in human history (over 30 million deaths) (SMIL, 1999). Sixty years later, China has largely traded political rights, civil liberties and privacy for economic development and security, and presents the world with a credible alternative to liberal democracy. The country's problematic record of human rights violations and the frequent accusations of unfair trade practices by international commercial partners have not kept Western scholars from pointing to China as the "main global driving force in political theory and action" (BACKER, 2018). Recent developments such as the *social credit system*, unchecked surveillance and imprisonment of ethnic groups in Xinjiang, and the arrest of student protesters in Hong Kong were widely reported by international media, drawing global attention to non-democratic practices.

Hangzhou, one of China's ancient cities, with a population of nearly 10 million, is the capital of the Zhejiang province and one of the country's main tourist destinations due to its natural beauty and cultural heritage. The city's famous West Lake is a UNESCO World Heritage Site and has been immortalized by countless poets and painters. As in many Chinese cities, coal is the largest energy source, accounting for 70% of energy consumption (ZHANG *et al.*, 2008). With China's development in the last decades, Hangzhou saw a large growth in population, followed by an unprecedented increase in the number of registered vehicles in the metropolitan area—from 126.000 in 2001 to 1.832.000 in 2010 (ZHANG, 2010). Serious problems with traffic and pollution ensued, and despite investments in road capacity, traffic systems, public transport and bicycle rental systems, in 2016 the city was the 4th most congested in China. It is against this background that Chinese tech giant Alibaba's "City Brain" solution was rolled out in Hangzhou in July 2017. The system began by monitoring traffic and using data from the transportation bureau, public transportation systems, a mapping app and thousands

of surveillance cameras (BEALL, 2018). The company claims that by controlling 128 traffic lights in Hangzhou, City Brain was able to increase car speeds by 15%, reduce by 10% the time drivers spent on highways, and decrease by 50% the time it took ambulances to reach their destination in emergency cases, without crossing red lights (CHOU, 2018). The system has already been deployed in several other cities in China, Malaysia, and is currently being offered to cities worldwide (LEE, 2018).

The efficiency of City Brain depends, in large part, on collecting as much data as possible—artificial intelligence (AI) algorithms need to process large amounts of data in order to learn how to identify and differentiate objects, people, movement, patterns etc. According to Xian-Sheng Hua, deputy managing director of AI at Alibaba, the City Brain solution is about "comprehensive cognition". Alibaba can track almost every car on every road in Hangzhou, allowing the system to predict the traffic flow 10 minutes ahead of time with 90% accuracy (REVELL, 2017). The same capabilities apply to identifying people, movements and behavior, and can be used to control anything or anyone Chinese authorities define, including criminals, but also political dissidents, activists, protesters, or journalists critical to the regime. Alibaba's Hua claims that "in China, people have less concern with privacy, which allows us to move faster" (REVELL, 2017). The possibility of predictive data analysis being used to estimate or determine citizen's future behavior based on previously collected data (CHRISTIN; ROSENBLAT; BOYD, 2015) is a major concern, as the complexity of the algorithms, the fact that they are proprietary, problems with data bias, and the absence of strong government watchdogs in China can make it nearly impossible for a regular citizen to argue against a legal decision based on an algorithmic system.

4.2 Smart City Duisburg (Germany)

Several German governmental agencies, market initiatives, consumer associations and civil society organizations have recently engaged in active discussions about the future of artificial intelligence and automated decision-making in Germany and Europe. The EU-wide approval in 2018 of the General Data Protection Regulation (GDPR) was mostly well received by industry and the public, and has served as a model for similar legislation around the world. Cities like Berlin and Mannheim (JUNG, 2018; STUTTGARTER ZEITUNG, 2019) are testing and implementing public video surveillance systems, and Munich has been using predictive policing algorithms since 2014 (BRÜHL; FUCHS, 2014). These tests and experiments in the public sector generate significant media coverage and public pressure, leading government authorities in Germany to take a reasonably cautious approach before permanently adopting socially or politically controversial technology. The *German AI Strategy*, currently under discussion, aims at balancing market, state and social interests by regulating the development and deployment of artificial intelligence systems in the country and addressing some of the main social concerns, such as fairness, transparency, avoiding bias and labor risks. These discussions are happening in a context of increasing political conflict over migration and security, which have been major issues in the recent regional expansion of nationalist-populist movements, marked by the entrance of

far-right party AfD in the German parliament in 2017.

A former Hanseatic city dating back to roman times, Duisburg lies at the confluence of the Ruhr and the Rhine rivers, in the German state of North-Rhine Westphalia. Historically associated with chemical, steel and coal industries, it was heavily bombed and almost fully destroyed during World War II. Since the 1960's, the city has suffered the effects of a decline in industrial activity and also of structural economic changes. While in the 1970's North-Rhine Westphalia boasted the highest GDP per capita in West Germany, it is now burdened by almost 40% of the nation's municipal debt (FREUND, 2019). The recent Energiewende (phase out of non-sustainable energy sources) has brought extra pressure to coal-based companies in the region, leading to increasing unemployment.

In the last few years, Chinese investment has brought the promise of new life to Duisburg. The city has the largest inland port in Europe, with 21 docks and 40 kilometers of wharf. The port's mix of shipping and rail freight and its central location in Europe are strategic for the distribution of Chinese products arriving in Germany and Europe through the New Silk Road, as well as for German and European exports to China. Duisport, the management group operating the port, expects E-commerce and its business with China to be the most important sales drivers in the future (FREUND, 2019).

In early 2018 the city of Duisburg signed a Memorandum of Understanding with Huawei Enterprise Business Group for a long-term strategic cooperation that intends to transform Duisburg into an "innovative and digitalized Western European model city", including the setup of a Joint Innovation Center (HUAWEI, 2018). Initial plans included the expansion of the city's WLAN network, "intelligent classrooms" with WiFi and broadband for local schools, intelligent street lamps, cloud-based eGovernment solutions, and systems for supply networks and traffic management. The company will offer 5G LTE technology and broadband networks, required for self-driving cars, future logistics management, among other areas. The final goal is to transform Duisburg into an attractive city to residents, business and investors, while also opening new markets for the Chinese company at the heart of Germany - Europe's economic and political powerhouse.

The Duisburg Smart City project highlights both local socio-political and technical issues as well as broader debates regarding the presence of Chinese companies in Europe. While the collaboration has shown initial positive results and might be an important seal of approval by a German government about Huawei and Chinese investment, it also obviates the level of economic and technological dependency on China that many public officials in Europe and worldwide subscribe to. All data from the Duisburg project is stored at the Rhine Cloud, an online platform developed by Huawei. A new Cyber Security Law approved in 2017 in China requires Chinese companies to provide Chinese government authorities full access to data if required, as well as unspecified "technical support". The Law states that telecommunications service providers must "obey social norms and commercial ethics, be honest and credible, perform obligations to protect network security, accept supervision from the government and public, and bear social responsibility" (WAGNER, 2019). The vagueness of some of these provisions is a reason for concern, as they lend the government greater room for maneuvering or bending due

legal process for political reasons. Also, as mentioned previously, the presence of communist party cells at the top management of most major Chinese businesses blurs the lines between private and public decision-making (LIN, 2018; NITSCH, 2018). Some media reports state that, because of China's laws and administrative practices, Huawei would be forced to hand 5G data to the Chinese government, if asked to do so (KHARPAL, 2019) - which both the company and the Chinese government strongly deny. The Duisburg case is an interesting opportunity to understand how a Chinese "technology giant" and the Chinese government interact with local government in a stable democratic European country, in an effort to implement advanced technologies that involve sociopolitical and security concerns, as well as expectations of economic development.

4.3 Quito ECU 911 (Ecuador)

The origins of Ecuador can be traced back several thousand years, when the first tribes populated the region. Around the year 1000 AD the Kingdom of Quito was established, and later conquered by the Incas, who travelled north from Peru to expand their empire. The first Europeans arrived in the early 1500's, and the Spanish established a thriving colony based on exploitation of indigenous labor. Since independence in 1830, Ecuador has experienced significant levels of development with high levels of inequality, as well as "boom and bust" economic cycles and many instances of political upheaval, including nearly twenty years of military rule. Recent politics has been marked by leftist president Rafael Correa (2007-2017), and in the last few years by conservative Lenin Moreno, Correa's former Vice President, elected in 2017. Ecuador is one of the most biodiverse countries in the world, and Ecuadorian Christiana Figueres served two terms as Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC). The country has also received global media attention by offering asylum to journalist Julian Assange, founder of Wikileaks, who remained for seven years at the Ecuadorian Embassy in London, until having his asylum withdrawn in 2019, allegedly for publishing on Wikileaks documents linking Moreno to a corruption scandal.

Recent political history in Ecuador makes the country an interesting case for research on algorithmic governance in different political systems. As in other countries in the region, populist regimes are a mainstay in Ecuadorean politics, with some scholars arguing that populism has been the "most important political phenomenon in contemporary Ecuadorian history" (DE LA TORRE, 1997), epitomized in the figure of José María Velasco Ibarra, who dominated the country's politics for four decades and was elected president five times. Other prominent political leaders also embodied populism and its more typical techniques, including the "leader of the poor" Abdalá Bucaram, and Rafael Correa, who spoke of himself as the leader of "'the citizens' revolution" and was elected president of Ecuador three times. The project to be studied in this case (ECU 911) was deployed during Correa's regime, and may provide important insights as to how Chinese technology companies and the Chinese government interact with a populist regime in a developing country in the Global South.

Rafael Correa's three terms as president of Ecuador (2007-2017) are a crucial factor towards understanding the evolution of the country's recent relationship with China, and also

the specific topics discussed in this article. Correa was part of Latin America's *pink tide*, a period during which several countries in the region elected left wing leaders who turned away from neoliberalism, implementing different versions of a progressive economic and social agenda. In the case of Ecuador, these policies led to concrete social improvements, including significant rise in the minimum wage, reduction of poverty and inequality. After defaulting on the country's foreign debt in 2008, which excluded Ecuador from traditional financial markets, Correa increasingly turned to Chinese companies and financing for infrastructure development. Telecommunications, oil and hydropower were some of the sectors that saw rapid expansion. By 2014, there were 70 Chinese companies operating in Ecuador, and the country had received US$ 19 billion in financing from Chinese banks (ELLIS, 2018). This period coincided with the consolidation of Correa's power after his second presidential victory in 2013. Understanding democratization as an increase in social spending at the cost of pluralism, civil rights and the rule of law, Correa denounced parties, shut down legislature, attacked private media, and filled control institutions with supporters. Some scholars argue that, by that time, most Ecuadorians appeared "willing to trade their freedoms for economic prosperity" (DE LA TORRE, 2013)—an analysis that resembles the Chinese social contract.

In 2008, an Ecuadorian delegation toured the Beijing surveillance system set up for public security during the Olympic Games. Impressed with the results, they reported their impressions back to the Ecuadorian government. In early 2011, facing high crime rates, Rafael Correa made surveillance a national priority for public security. After closed-door discussions with military attachés at the Chinese Embassy in Quito, during which details of a Chinese-made technology system were agreed, Ecuadorian officials travelled back to China for further consultation with the companies in charge of technology development, including state-owned China National Electronics Import and Export Corporation (C.E.I.E.C) and Huawei (MOZUR *et al.*, 2019). Within months, a contract was signed with no public bidding process: Ecuador would get a Chinese developed surveillance system paid for by Chinese loans. In exchange, the South American country would provide one of China's most important import commodities: oil.

ECU 911 has grown into a countrywide surveillance system operating in 16 regional centers in Ecuador, including the capital Quito. The system analyzes video footage from 4300 surveillance cameras (many with face recognition technology), as well as thermal cameras, drones capable of night vision, an automated platform for sending video evidence to courts, and an artificial intelligence research laboratory inaugurated by Xi Jinping himself (ROLLET, 2018). The surveillance system is also used for security in airports at major cities, and there are media reports of ECU 911 footage being used at SENAIN, Ecuador's National Intelligence Agency. Activists opposed to Correa's regime claim that surveillance technology is one of the ways by which China has supported and emboldened Correa's authoritarian practices (MOZUR *et al.*, 2019).

As described above, the political environment in Ecuador in recent years and the process that led to the implementation of ECU 911 make this a relevant case for studying political and social aspects related to China-backed *smart cities* in different regimes.

4.4 Memphis Police Department (USA)

Several factors make local governance in the United States an important aspect of the issues discussed in this article. First, the country's ongoing retreat from global governance institutions is directly associated to current changes in the international order and the rise of China to the global stage. By withdrawing from major global accords (i.e. the Paris Agreement, the UN Human Rights Council, UNESCO, the UN Global Compact for Migration, and more recently the World Health Organization), the United States has enabled incumbent powers such as China to claim a renewed geopolitical role, and many scholars argue that the XXI century will be marked by a bipolar US-China world order. Second, the United States is still the most powerful nation in the world, and as such, the stability (or lack thereof) of US institutions matters. Azari (2019) argues that the constitutionally designed tensions between US political institutions have been exacerbated by new factors such as an obsession with national presidential elections, a mismatch between local representation and national politics, congressional infighting, growing polarization, as well as mass media and social media. The impacts of these tensions are particularly visible in areas that have long been subject of social conflict, such as racial inequality. Finally, the recent trade conflicts between the United States and China have accentuated changes in power balance, particularly in strategic industry sectors such as technology. China's massive investments in artificial intelligence and the global presence of state-owned and state-supported Chinese technology conglomerates are shifting power scales towards Beijing. Concrete local implications of this new scenario can be witnessed not only along China's New Silk Road, but also in many US cities.

With a population of approximately 650.000, Memphis is the second largest city in the state of Tennessee, and the 26th largest in the United States. Located along the Mississippi river, the city has been historically associated with the production and transportation of agricultural goods such as cotton and lumber. The largest employer is international courier corporation FedEx, which maintains its global hub at Memphis International Airport, making it the second busiest cargo airport in the world. Considered the birthplace of *blues*, Memphis' culture and arts scene is associated with major names in music and entertainment. Graceland, Elvis Presley's former estate, is located in the city, and music stars like BB King, Roy Orbison and Johnny Cash often recorded their albums at historical Sun Studios.

Racial conflict in Memphis dates back to the times of the slave trade, when the city's location made it a favored operation base for dealers supplying enslaved black workers to plantations in the Mississippi delta. The assassination of Martin Luther King Jr. at the Lorraine Motel in 1968 placed Memphis at the center of the civil rights movement in the United States, with many groups protesting police abuse and political persecution. During the next decade, the city developed a large-scale surveillance program aimed at monitoring dozens of community organizations, including anti-war movements, student unions, racial justice groups and the Klu Klux Klan. By 1976 this program had an annual budget of $ 1 million (corresponding to $ 4 million today), and local police was engaging in unconstitutional spying of non-criminal citizens. In 1978, the American Civil Liberties Union (ACLU) sued the local police department for

politically-driven compromising of citizens' civil rights, securing a consent decree (the first in the nation) banning the Memphis police from all future monitoring of constitutionally-protected political activity (LARTEY, 2018). Four decades later, the problem persists: in 2017 the ACLU filed a new lawsuit, claiming that the city of Memphis was keeping a blacklist of activists who were members of the racial justice movement Black Lives Matter, and using this to keep citizens with no criminal record under surveillance. The organization argued that the city violated the 1978 consent decree by keeping a "City Hall escort list", sharing "Joint Intelligence Briefs" with local, state and national security agencies and the military, creating false social media accounts to "friend" online activists and bypass their online account security measures, among other actions (ACLU, 2017). In 2018 a district court ruled in favor of the ACLU, and ordered the police department to revise its policies and bolster training (LOS ANGELES TIMES, 2018).

Chinese surveillance systems manufacturer Hikvision has been selling cameras to the Memphis Police Department since 2007, and today there are more than 1000 cameras installed throughout the city. Police officials argue that cameras became essential since the department lost 500 officers in 2016 due to budget cuts. Camera surveillance leads to nearly 100 arrests annually. Hikvision is the largest global producer of camera surveillance systems. The company is valued at approximately $40 billion, and in the first semester of 2018 sales to overseas markets grew 26.7 percent year on year. The Chinese government owns over 40% of the company, with state-owned China Electronics Technology HIK Group as the biggest shareholder.

In August 2019 the United States Senate passed the National Defense Authorization Act, banning the US government from buying Chinese-made surveillance equipment from several Chinese firms, including Hikvision and Hangzhou-based Dahua Technology. However, government agencies claim that the regulation is unclear, and the equipment is also sold in the US market as "white label" through various licensing agreements, making it "nearly impossible" to remove all systems from US stores (FORBES.COM, 2019a; LOS ANGELES TIMES, 2018). Recent studies show widespread use of commercial *predictive policing* solutions based on algorithmic systems and Big Data, such as PredPol (USA), HunchLab (USA), PRECOBS (Germany) and KeyCrime (Italy). While public and private actors developing and using these systems claim significant reduction in crime rates, researchers have also revealed new problems leading to civil rights issues, including data bias, unfairness, lack of transparency and automatization of structural inequalities. China is expected to have 600 million surveillance cameras installed by 2020, and many of the companies developing and selling these systems worldwide are also responsible for providing and operating systems for the surveillance and control of ethnic minorities in Xinjiang, and pilot programs of China's *social credit system*. How does the implementation of Chinese technology for public safety interact with norms and institutions in a US city marked by historical sociopolitical conflicts originating from racial inequality and excessive surveillance? How does this context compare with other cities and political regimes where sociopolitical inequalities entangle with different levels of institutional and political stability? The case of racial conflict and Chinese surveillance technology in Memphis can help provide valuable comparative data to the present project and also bring new insights into research on algorithmic governance and the blurring of private and public sector in Chinese foreign policy.

5 Conclusion

Chinese banks and business conglomerates currently finance, develop and operate technology and data infrastructure for *smart city* initiatives in over 120 cities and more than 40 countries, many of which have signed agreements with the Chinese government to take part in projects related to the Belt and Road Initiative. Most of these companies also provide technology and support to Beijing in technical systems used for surveillance of minority groups in Xinjiang, or for China's controversial *social credit system*. Technology policies in China are not subject to the legal, civil and media scrutiny characteristic of democracies, and recent legislation requires large Chinese technology companies to fully cooperate with Beijing. Government support may lead to fast development of critical technology sectors in China, and algorithmic systems have proven to be effective in some policy sectors. Nevertheless, as Chinese companies expand internationally and deploy major *smart city* infrastructure projects in countries with democratic regimes, questions arise regarding social and political implications. This is particularly relevant considering the fast adoption of algorithmic and automated decision-making systems, the impact they have in socio-political processes like elections and public opinion, the present scenario of political instability in many countries, and the fact that *smart city* projects happen at the local level, where citizens often exercise their political views.

In this article, the author has discussed emerging research literature as well as theoretical concepts at the interdisciplinary nexus of China's expanding geopolitical influence, the increasing international adoption of algorithmic systems in the public and private sector, and the crisis of liberal democracy. Four cases of *smart-city* initiatives where Chinese companies play a significant role have been introduced. The article has been developed in the context of the author's ongoing doctoral research project in Public Policy and Management at the Freie Universität Berlin. The project aims at developing a systematic comparative analysis of socio-political aspects of *smart city* projects involving Chinese companies, at the local level, across different political regimes. In doing so, the author hopes to contribute new empirical data to interdisciplinary research on algorithmic governance, comparative policy analysis, and Chinese foreign policy.

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