THE DIGITAL WAR
HOW CHINA’S TECH POWER SHAPES THE FUTURE OF AI, BLOCKCHAIN AND CYBERSPACE
“The Fourth Industrial Revolution may impose significant challenges for many of the smaller countries, especially those that are lack of technology resources and have large labor forces that might be replaced by AI. But it may also be a leapfrogging opportunity for them, if those countries embrace the new technology revolution just as keenly and the Digital Silk Road from China provides necessary support. Winston Ma’s latest book on digital economy is a cutting-edge text that spotlights the digital transformation in China and its global impact through the Silk Road in the cyberspace.”

– Professor Klaus Schwab, Founder and Executive Chairman of the World Economic Forum

“As the United States and China head down the ill-conceived path of digital and technology decoupling, The Digital War must be read before these policies become irreversible. Winston’s Ma’s insider’s view of China’s digital development takes the reader down a path too rarely tread by those trying to understand China.”

– Stephen A. Orlins, President, National Committee on U.S.–China Relations

“If you’re not paying attention to China’s digital transformation, you’re missing the emergence of the world’s new technology superpower, one whose innovations will drive rapid economic advances and alter the balance of global economic power. Thankfully, Winston Ma has delivered exactly the kind of comprehensive, timely and thought-provoking account you need to get up to date. Don’t miss the vitally important read.”

“China is determined to make innovation an engine for the next stage of the country’s development, and no sector has been more creative or dynamic than the mobile economy, which in some areas has surpassed even the United States. Winston Ma’s deep dive into this fiercely competitive, constantly evolving industry dissects the companies, personalities and forces that are transforming China and that inevitably will influence commerce far beyond its shores.”

– John L. Thornton, Co-Chairman, Brookings Institution

“Having worked at both the Wall Street and China Investment Corporation, Winston Ma seems eminently qualified to give both Western and Chinese readers a unique perspective on the development of China’s digital economy. This is the go-to-guide for companies and investors seeking to understand China’s grand tech ambitions, what the Chinese players’ strategy is, and where the huge opportunities are.”

– Dr. Chen Datong, Founding Partner, West Summit Capital

“The book is appropriately titled, The Digital War, but my great hope is that we can use technology to build a greater understanding between East and West.”

– Anthony Scaramucci, Founder & Managing Partner of SkyBridge
Praise for
CHINA’S MOBILE ECONOMY
(the beginning of Winston Ma’s pentalogy on China’s Digital Revolution and Tech Power)

“One of the best 2016 business books for CIOs”.

– i-CIO.com

“Every company – and every country – must succeed at digitization to compete successfully in the twenty-first century. Winston Ma delivers the rare book that is both an outstanding survey of a fast-changing and vitally important economic landscape and a delightful ‘field guide’ that will enrich your understanding of what’s really happening on the ground”.

– Dominic Barton, Global Managing Partner, McKinsey & Company

“Winston has written a first of its kind – timely, insightful, and eminently readable analyses of the world’s fastest growing mobile economy. A must read for anyone interested in China, the mobile economy, or technology more broadly. Eye opening and thoroughly enjoyable”.

– Reuben Jeffery III, President and CEO, Rockefeller & Co., Inc

“As the world moves to mobile technologies, and with China now the world’s largest market of Internet users, all stakeholders have to think about China’s economy, market, and society from a completely new perspective. This is an indispensable book for understanding the emerging shape and scale of opportunities in the Middle Kingdom and beyond”.

– Rod Beckstrom, Co-author, The Starfish and the Spider: The Unstoppable Power of Leaderless Organizations and former President and CEO of ICANN
“Chinese society is experiencing a rapid transformation, becoming increasingly industrialized and digital-based. The Chinese internet population has officially entered into the age of mobile internet. This extraordinary book explains how the internet has been the engine that catapults commercial activities from offline to online and towards ubiquity”.

– Dr. Xiaodong Lee, President and CEO, China Internet Network Information Center (CNNIC)
THE DIGITAL WAR
To Angela – I love you dearly
Contents

Foreword The Digital War to End War by Anthony Scaramucci  xiii
Author’s Notes and Acknowledgments xvii
About the Author xxi
Preface xxiii

PART ONE  From “Mobile Economy” to “Digital Economy”  1
Chapter 1 China’s Leap into 5G iABCD  3
Chapter 2 The World’s Largest Mobile Economy  43

PART TWO  China’s Digital Transformation and Innovation  71
Chapter 3 Big Data on the Digital Middle Class  73
Chapter 4 The AI-powered Internet Celebrities and Fans Economy  105
Chapter 5 The Heartland of Blockchain and Fintech  143
Chapter 6 O2O and the Shared Economy  178
Chapter 7 From C2C to 2CC: “Innovated in China”  210
Chapter 8 Land of Big Data and Its Legal Framework  241
Foreword

The Digital War to End War

The explosion of China’s mobile economy has paved the way for an even more transformational technology revolution in the country. So, naturally, Winston Ma is back with a tour-de-force on the latter subject, having enlightened us on the former only four short years ago. Ma, with his impressive business and academic background combined with a unique multicultural life experience, is the perfect messenger to explain the current and future state of the world’s “digital war”.

“If data is the new oil, then China is the new OPEC”. While now cliché, the catchphrase provides a useful framework for understanding the progression of digital power. With a population of 1.4 billion people, a society of mobile-first internet users, and dominant super-apps in WeChat, Alibaba, and Meituan, China has a massive set of data from which to train AI systems – the more promising avenue for AI development (as opposed to rules-based AI) for the foreseeable future.

However, the availability of data is only one-half of the equation when it comes to technological advancement. The other half is the ability to collect and process that data dynamically. In addition to having the world’s greatest reservoir of data, China has become the leader in developing tools to harness it. For example, it is the leader in developing 5G infrastructure. President Xi Jinping has publicly placed an emphasis on building platforms and providing incentives to incubate blockchain startups. Perhaps, most importantly, China has committed to supporting and nurturing the world’s greatest tech minds, especially in fields like deep learning, at a time when America (at least temporarily) is attempting to wall itself off.
Ma begins the book with a discussion of the “Sputnik moment” for China when it comes to developing advanced technologies. When AlphaGo, an artificially intelligent system developed by Google’s DeepMind lab, handily defeated world champion Ke Jie in a three-game series of the popular game “Go” in May 2017, it spurred an all-out commitment by the government and business leadership in the country to dominate the future of AI.

As a result of a laser focus on digital transformation, the portrayal of China as a copycat of intellectual property is now outdated. While China’s tech community used to operate like a rules-based AI, mimicking American technology companies, it now operates more like a neural network, originating ideas and learning through data analysis. The most obvious example of this phenomenon is Chinese technology giant Meituan, which was originally launched based on the Groupon model in the United States. While Groupon ultimately failed, Meituan has flourished into one of China’s most influential tech giants.

The success of China’s campaign to become the dominant global player in data-driven technologies also leads the reader to a philosophical question about the role of government in society. Government intervention has been an accelerator, not a deterrent, to the development in China of the “iABCD” technologies—the Internet of Things, AI, blockchain, cloud computing, and data analytics. While US politics are today characterized by reactive short-termism and divisiveness, China is effectively executing on 20-, 50-, and 100-year plans. Just as I believe Chinese leaders could learn from elements of the American system, the United States must learn from the rapid progress made by China.

While Ma’s earlier book, China’s Mobile Economy, is a great prequel to The Digital War, he does a brilliant job of providing stand-alone context within his latest work. An American audience may only have learned about WeChat due to President Donald Trump’s efforts to block the app in the United States. However, understanding the scope of WeChat, one of the most
powerful apps in the world, is key to understanding the rise of China’s digital prowess. The goofy short-video platform of TikTok, on the other hand, is a more recent phenomenon, and it has amassed huge number of US users since the COVID-19 pandemic. In fact, Bytedance, the parent company of TikTok, is the only technology firm, bar Apple, with more than 100 million users both in China and in the Western markets.

Ma has produced a terrific and highly accessible field guide to understanding how the digital economy is accelerating in China, and what that rapid growth means for China’s place in the world. (Both WeChat and TikTok, e.g., are the subjects of US President Donald Trump’s executive order to restrict their operations in the United States.) It is an honest and balanced account of the opportunities being seized on by the Chinese and the significant challenges that remain. While the innovation that gave rise to China’s mobile economy was impressive, the possibilities created by its progress in the data economy are virtually limitless.

This book is appropriately titled *The Digital War*, but my great hope is that we can use technology to build a greater understanding between East and West. At a time when the United States is pulling away from the rest of the world under President Trump, China is filling the void. The Belt and Road and Digital Silk Road initiatives are strengthening infrastructure, trade, and investment links between China and emerging market economies. However, the internet is also bifurcating in unproductive ways. Every country in the world is now being forced to choose between China and the United States. In my opinion, the immense potential of Sino-American collaboration is too great an opportunity to miss.

While certain elements of our cultures will likely always remain incompatible, the United States and China have the ability to address myriad intractable global problems together, especially relating to health, climate, and security. The answer is not pulling out of the World Health Organization (WHO) or the Paris Climate Accord. The answer is using data and
technology to produce better, fairer, supranational systems and more effective, innovative solutions. Smart, open-minded young experts like Ma – and those who heed the analysis contained in his book – are the ones who will make that possible.

Anthony Scaramucci
Founder and Managing Partner of SkyBridge
Winston Ma

In the middle of 1990s, the early days of China’s tech and Internet boom, I majored in electronic materials and semiconductor physics at Fudan University in Shanghai. Aiming for graduate studies in the United States, I diligently studied English for the TOEFL and GRE exams, and I also took a national exam for a professional certificate that is no longer relevant two decades later—“software programmer”.

Back then, China had so few software programmers that the central government organized national qualification exams to encourage the young generation to study computer science. Sensing the tremendous potential of China’s tech revolution, I sat in a one-day exam to solve coding problems in C, Fortune, and Pascal languages before I became a “nationally certified software programmer”. Today, however, those programming languages are “old” for coding, and there is no need for such a national exam because every year hundreds of thousands of Chinese college students graduate from computer science majors—even highly specialized major like artificial intelligence (AI).

No doubt, over the past two decades, China has evolved to be a worldwide tech leader. Thus, in 2016, I shifted my focus to China’s digital innovation for my book series on China with China’s Mobile Economy: Opportunities in the Largest and Fastest Information Consumption Boom (also with Wiley publishing).

Compared to my previous book, Investing in China: New Opportunities in a Transforming Stock Market, published in 2006, the book on China’s internet-based “mobile economy” was a much more challenging project. For one thing, China’s
economic model was transformed from decades-long double-digit rapid growth into a more sustainable growth model based on innovation and consumption. For another, the explosive growth of smartphone users, e-commerce, and online content consumption and creation led to a digital revolution in almost all industries and business sectors.

What I never expected then was that China’s digital transformation would become so dynamic and powerful that I would have to write one book each year to cover its leap forward. After *China’s Mobile Economy* (English, 2016), I published my book serial in different languages—*Digital Economy 2.0* (Chinese, 2017), *The Digital Silk Road* (German, 2018), and *China’s AI Big Bang* (Japanese, 2019)—before I returned to work with Wiley again to publish this book, in English, with the China–US tech war in the background.

* * *

A book on such a complex and fast-moving topic would not have been possible if I had not been blessed to work with and learn from an amazing group of mentors in business, law, and tech investments.

My deepest thanks go to Dr. Rita and Gus Hauser at the New York University (NYU) School of Law, and John Sexton, the legendary Dean of NYU Law School when I was pursuing my LL.M degree in Comparative Law. My PE/VC investing, investment banking, and practicing attorney experiences all started with the generous Hauser scholarship in 1997.

During his decade-long tenure as the President of NYU, John kindly engaged me at his inaugural President’s Global Council as he developed the world’s first and only GNU (global network university). My NYU experience was the foundation for my future career as a global professional working in the cross-border business world. Great thanks to John Sexton, the legendary Dean of NYU Law School when I was pursuing my LL.M degree in Comparative Law.

My sincere appreciation to both Mr. Lou Jiwei and Dr. Gao Xi-qing, the inaugural Chairman and President of China
Investment Corporation (CIC), for recruiting me at its inception. One of the most gratifying aspects of being part of CIC is the opportunity to be exposed to a wide range of global financial markets’ new developments. The unique platform has brought me to the movers and shakers everywhere in the world, including Silicon Valley projects that linked global tech innovation with the Chinese market.

The same thanks go to Chairman Ding Xue-dong and President Li Ke-ping, whom I reported to at CIC in recent years. Similarly, thanks to Linda Simpson, senior partner at the New York headquarters of Davis Polk & Wardwell, and Santosh Nabar, Managing Director at the New York headquarters of J. P. Morgan. Those two former bosses on Wall Street gave me a foundation to develop a career in the global capital markets.

Many thanks to Mr. Jing Liqun, President of Asian Infrastructure Investment Bank (AIIB) and formerly the Supervisory Chairman of CIC, for educating me about Shakespeare’s works besides guiding me professionally. The readings on Hamlet, Macbeth, and King Lear improved my English writing skills, and hopefully, the writing style of the book serial is more interesting and engaging than my previous finance textbook *Investing in China*.

For such a dynamic book topic, I benefited from the best market intelligence from a distinctive group of institutional investors, tech entrepreneurs, and business leaders at the World Economic Forum (WEF), especially my peers at the Young Global Leaders (YGL) community and Council for Digital Economy and Society. Professor Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, has a tremendous vision of a sustainable, shared digital future for the world, which is an important theme of this book.

My gratitude goes to many other outstanding friends, colleagues, practitioners, and academics who provided expert opinions, feedback, insights, and suggestions for improvement. For anecdotes, pointers, and constant reality checks, I turned to them because they were at the front line of industry and business practices. I would particularly like to thank the
friends at the West Summit Fund, which I set up at CIC in 2009 for cross-border investments between Silicon Valley and China. Over the last 10 years, we’ve had great fun together.

On its journey from a collection of ideas and themes to a coherent book, the manuscript went through multiple iterations and a meticulous editorial and review process by the John Wiley team, led by the book commissioning editor Gemma Valler. Our long-term collaboration started with my 2016 book, and in 2020, just months before this book, we worked together and released another new work, *The Hunt for Unicorns: How Sovereign Funds Are Reshaping Investment in the Digital Economy* (October 2020). The managing editor Purvi Patel and copyeditor Barbara Long contributed substantially to the final shape of the book. Special thanks to Gladys Ganaden for her design of the book cover and figures.

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About the Author

Winston Wenyan Ma, CFA & Esq.

Winston Ma is an investor, attorney, author, and adjunct professor in the global digital economy. He is one of a small number of native Chinese who have worked as investment professionals and practiced as capital markets attorneys in both the United States and China. Most recently, for 10 years, he was Managing Director and Head of North America Office for China Investment Corporation (CIC), China’s sovereign wealth fund.

At CIC’s inception in 2007, he was among the first group of overseas hires by CIC, where he was a founding member of both CIC’s Private Equity Department and later the Special Investment Department for direct investing (Head of CIC North America office 2014–2015). He had leadership roles in global investments involving financial services, technology (TMT), energy, and natural resources sectors, including the setup of West Summit (Huashan) Capital, a cross-border growth capital fund in Silicon Valley, which was CIC’s first overseas tech investment.

Prior to that, Ma served as the deputy head of equity capital markets at Barclays Capital, a vice president at J.P. Morgan investment banking, and a corporate lawyer at Davis Polk & Wardwell LLP. A nationally certified software programmer as early as 1994, Ma is the book author of Investing in China: New Opportunities in a Transforming Stock Market (Risk Books, 2006), China’s Mobile Economy: Opportunities in the Largest and Fastest Information Consumption Boom (Wiley, 2016; among “best 2016 business books for CIOs”), Digital Economy 2.0 (2017, Chinese),
The Digital Silk Road (2018, German), and China’s AI Big Bang (2019, Japanese).

He is also an adjunct professor at NYU School of Law. Relating to his course “Sovereign Investments & Regulations”, he published The Hunt for Unicorns: How Sovereign Funds Are Reshaping Investment in the Digital Economy (2020) with Wiley.

Ma has served on the boards of multinational listed and private companies. He was selected a 2013 Young Global Leader at the World Economic Forum (WEF) and has been a member of the Council for Long-Term Investing and Council for Digital Economy and Society. He is a member of New York University (NYU) President’s Global Council since its inception, and in 2014, he received the NYU Distinguished Alumni Award.

The author can be reached on LinkedIn for comments and feedback on The Digital War: How China’s Tech Power Shapes the Future of AI, Blockchain and Cyberspace.
Preface

In May 2017, China hosted the historical match of the weiqi game (the “Go” game) between Ke Jie, the world’s No.1 ranked player and world champion, and the AI (artificial intelligence)-enabled computer Go program named AlphaGo, designed by the DeepMind Lab of the US internet giant Google. The Wuzhen showdown was ripe with suspense and symbolism—human versus machine, intuition versus algorithm, tradition versus modern, and with the AI machine’s straight 3–0 win over the world’s best human player, the unequivocal rise of the “digital economy”.

Almost overnight, the internet business community in China started discussing “the second half” of the mobile economy era, which in 2013–2016 drove a boom in e-commerce and mobile entertainment. In particular, the image of a top human player crying at his loss to AI has triggered a great sense of determination and urgency among Chinese businesses and companies: either adapt to the fast-evolving technology of AI, big data analysis, and computer chips to upgrade – or be destroyed. Since 2017, the new key words have been data and intelligence.

As covered by my 2016 book China’s Mobile Economy (published by Wiley and called one of “the best 2016 business books for Chief Information Officers” by i-CIO.com), China has built the world’s largest mobile internet economy, powered by the world’s largest group of internet users, smart devices, mobile applications, and social networks. China’s digitally connected new middle class has led to a seismic change in the Chinese consumer market. Even for multinational corporations that
have done business in China for many decades, a comprehensive rethink of their strategies in China may be necessary.

Today, China’s consumer-focused Internet is transforming into a more enterprise-oriented Internet, characterized by faster 5G mobile networks and more advanced digital technologies, including the Internet of Things, artificial intelligence (AI), blockchain, cloud computing, and data analytics (iABCD). Across just about every industry sector, Chinese companies have rushed to learn how 5G iABCD digital technologies can be integrated into their businesses to unlock value from nontraditional angles (see figure above). In short, China is leaping forward from “mobile first” to “intelligence first”.

For example, Tencent, one of the highest-valued Chinese internet companies, with its roots in gaming and online services, has made dramatic changes in response to the new trend. In 2018, for the first time in six years, Tencent announced a major restructuring to move from a consumer-only business toward one that caters to industries as well. The restructuring includes the creation of a new Cloud and Smart Industries Group, focusing on artificial intelligence, cloud service, Big Data and security; furthermore, Tencent has formed a new technology committee to better coordinate fundamental technology research across the company.

As a result, the next phase of development is referred to as the “second half game” of the mobile internet economy. The market expects far more profound and broader transformation of China’s economy to come from “intelligent +” (data economy)
than from earlier years of “internet +” (mobile economy). The years 2017 to 2018 were an even more important inflection point for China’s digital transformation than the 2014–2015 inflection point (see the following figure). We are at the cusp of another major digital revolution in China.

This shift has profound implications for emerging markets that are looking at China as a reference case when they work on their own digital transformation. That means they need to look beyond mobile phone and digital wallet; instead, they must start positioning themselves for the next phase of AI and the digital economy – now. The billion-user messaging service of the WeChat app (Tencent), the US$30 billion and more total GMV (Gross Merchandise Value) in 24 hours on the Single’s Day, and the “smile-to-pay” functions creating a cashless society are already snapshots from the past.

For example, yes, the November 11 (Singles’ Day) festival remains the world’s largest online shopping day, beating Black Friday and Cyber Monday combined. However, the highlight of late is no longer the GMV number but the advanced data technologies involved. Because the logistics issue of Singles’ Day—the inventory, distribution and delivery of numerous orders close to US$40 billion in a short span of time—is such a challenge, Alibaba’s logistics affiliate, Cainiao, has used AI techniques and GIS (Geographic Information System) to determine the fastest and most cost-effective delivery routes in a variety of complex road networks, including both rural villages and crowded urban areas.
As such, China’s leaping forward may also give the rest of the world (emerging markets) a sense of urgency. But it may also be a leapfrogging opportunity for them, if those countries embrace the new technology revolution just as keenly. From “mobile” to “digital”, what’s truly extraordinary is the decisive commitment from the Chinese government. It plans to become possibly the world’s first AI superpower through its ambitious move to embrace the AI and Fourth Industrial Revolutions.

Furthermore, in late 2019 President Xi urged that China should accelerate the development of blockchain to “seize the opportunity”, in remarks that marked the first major world leader to issue such a strong endorsement of the widely hyped—but still unproven—technology. During the 2020 coronavirus pandemic, China launched the “New Infrastructure” initiative in May, which acts as a stimulus to help stabilize the economy against COVID-19 disruptions, as well as a foundation for China to stay competitive and succeed in the age of Industry 4.0.

Meanwhile, the rise of China’s tech power has also disrupted the global competition landscape, challenging the long-held dominance of America’s Silicon Valley. In fact, the years of 2019–2020 may be remembered as an important inflection point for the global digital economy, from collaborative co-existence to head-on tension. It is critical for the United States and China to reach a new equilibrium to collectively lead innovation in the age of AI because at the core of the digital economy is the free flow of trade, capital, intellectual, and data. Global dialogue and cooperation are ever more important for a shared digital future of the world.

The book is organized in three parts, as follows.

**Part One: From “Mobile Economy” to “Digital Economy”**

The two chapters in Part One lay the foundation for the rest of book. China is the largest homogenous digital market in the world, unified by the same language, culture, and mobile
payment system. They provide an overview of China’s mobile internet revolution during the last few years and how the mobile economy set up the foundation for the forthcoming industrial revolution.

**Chapter 1: China’s Leap into 5G iABCD**

The opening chapter is an overview of China’s digital transformation. Chinese internet companies have turned themselves into tech companies, and they subsequently help companies from all sectors of the economy to digitally transform. Blockchain is the latest addition to the innovation mix, and the Blockchain BaaS services from tech giants are enabling entrepreneurs to focus on building new applications, leading to a wave of blockchain startups in China.

**Chapter 2: The World’s Largest Mobile Economy**

Chapter 2 explains the evolution of mobile internet businesses in China during the past years. In addition to the unrivalled internet user population size, what also makes the China market unique is the fact that China is the largest “mobile first” and “mobile only” market in the world. One extraordinary example is Singles’ Day (a Chinese holiday on November 11, now the world’s largest shopping day), which in 2019 had more than US$38 billion GMV in 24 hours, connecting buyers and sellers from more than 200 countries across the world—with more than 90% transacted from mobile terminals.

Still, China’s mobile internet market shows no sign of slowing down in innovation, and the competition between the leading giants and the hungry upcomers is ever fierce. The mobile infrastructure, corresponding data accumulation, and industries digitalizing their businesses along the way, collectively provide a powerful foundation for China’s AI innovation and digital transformation today.
Part Two: China’s Digital Transformation and Innovation

The chapters in Part Two cover in detail Chinese companies’ digital transformation, which is reshaping retail, financial, entertainment, transportation, lifestyle services, education, smart hardware, and many traditional industries. China is one of the most interesting innovation centers in the world and where the new generation startups are pioneering 5G iABCD innovation.

Chapter 3: Big Data on the Digital Middle Class

There is no longer a single, one-size-fits-all definition of the Chinese consumer. The key to all industry sectors is to personalize products and services to serve the varying needs and demands of millions of Chinese consumers. In this chapter, the case studies of Hema “new retail”, Pinduoduo C2M social e-commerce, and “Big Data” movies are all successful examples of consumer data-driven OMO (online-merge-offline) models. E-commerce giants such as Alibaba and JD.com had acquired “bricks-and-mortar” stores way before Amazon had acquired Whole Foods. Now they set up fully “digitalized” stores to integrate online and offline operations and data.

Chapter 4: The AI-powered Internet Celebrities and Fans Economy

This chapter covers the digital entertainment revolution in China, where average users, or fans, are at the center of the fans economy. New social media platforms are pivoting from “elite”-centered community toward the untapped grassroots crowds derived from smaller cities, younger age, lower social status, and less glamorous-looking groups. Numerous examples of the new fans economy are examined: the bullet screen of Bilibili, the boom of online novels, the revival of Weibo (China’s Twitter), the struggles of video streaming sites like Youku and iQiyi, and the rise of short-form video platforms like Tik Tok and Kuaishou.