The Rise of the Network Society

Second edition
With a new preface

Manuel Castells

WILEY-BLACKWELL
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The Information Age

Economy, Society, and Culture

Volume I

The Rise of the Network Society

"We live today in a period of intense and puzzling transformation, signalling perhaps a move beyond the industrial era altogether. Yet where are the great sociological works that chart this transition? Hence the importance of Manuel Castells' multivolume work, in which he seeks to chart the social and economic dynamics of the information age . . . [It] is bound to be a major reference source for years to come." (Anthony Giddens, *The Times Higher Education Supplement*)

"A brief review cannot do it justice. No other scholar has approached the subject of the information age in as engaging and innovative a way as this author. Strongly recommended for academic libraries." (*Choice*)

A little over a decade since its first publication, the hypotheses set out in Manuel Castells' groundbreaking trilogy have largely been verified. In a substantial new preface to the first volume in the series, Castells demonstrates, in the light of major world trends, how the network society has now fully risen on a global scale.

The book discusses how the global economy is now characterized by the almost instantaneous flow and exchange of information, capital, and cultural communication. These flows order and condition both consumption and production. The networks themselves reflect and create distinctive cultures. Both they and the traffic they carry are largely outside national regulation. Our dependence on the new modes of informational flow gives to those in a position to control them enormous power to control us. The main political arena is now the media, and the media are not politically answerable.

Based on research in the USA, Asia, Latin America, and Europe, Castells formulates a systematic theory of the information society and details the new social and economic developments brought by the Internet and the "new economy."

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Volume II: The Power of Identity

Volume III: End of Millennium

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For Emma Kiselyova-Castells,
without whose love, work, and support
this book would not exist

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Preface to the 2010 Edition of *The Rise of the Network Society*

We live in confusing times, as is often the case in periods of historical transition between different forms of society. This is because the intellectual categories that we use to understand what happens around us have been coined in different circumstances, and can hardly grasp what is new by referring to the past. I contend that around the end of the second millennium of the common era a number of major social, technological, economic, and cultural transformations came together to give rise to a new form of society, the network society, whose analysis is proposed in this volume.

The urgency for a new approach to understanding the kind of economy, culture, and society in which we live is heightened by the crises and conflicts that have characterized the first decade of the twenty-first century. The global financial crisis; the upheaval in business and labor markets resulting from a new international division of labor; the unstoppable growth of the global criminal economy; the social and cultural exclusion of large segments of the population of the planet from the global networks that accumulate knowledge, wealth, and power; the backlash of the disaffected in the form of religious fundamentalism; the rekindling of national, ethnic, and territorial cleavages, ushering in the negation of the other, and thus the widespread resort to violence as a way of protest and domination; the environmental crisis epitomized by climate change; the growing incapacity of political institutions based on the nation-state to handle global problems and local demands: these are all diverse expressions of a process of multidimensional, structural change that takes place in the midst of agony and uncertainty. These are indeed troubled times.

The sense of disorientation is compounded by radical changes in the realm of communication, derived from the revolution in communication technologies. The shift from traditional mass media to a system of horizontal communication networks organized around the Internet and wireless communication has introduced a multiplicity of communication patterns at the source of a fundamental cultural transformation, as virtuality becomes an essential dimension of our reality. The constitution of a new culture based on multimodal communication and digital information processing creates a generational divide between those born before the Internet Age (1969) and those who grew up being digital.

These are among the themes treated in the trilogy of which this book is the first volume, published in 1996 (1st edition) and 2000 (2nd edition). The book did not contain any predictions, as I always kept my distance, as a researcher, from the dubious ventures of futurology. But I identified a number of trends that were already present and observable in the last two decades of the first century, and I tried to make sense of their meaning by using standard social science procedures. The result was the discovery of a new social structure in the making, which I conceptualized as the network society because it is made of networks in all the key dimensions of social organization and social practice. Moreover, while networks are an old form of organization in the human experience, digital networking technologies, characteristic of the Information Age, powered social and organizational networks in ways that allowed their endless expansion and reconfiguration, overcoming the traditional limitations of networking forms of organization to manage complexity beyond a certain size of the network. Because networks do not stop at the border of the nation-state, the network society constituted itself as a global system, ushering in the new form of globalization characteristic of our time. However, while everything and everybody on the planet felt the effects of this new social structure, global networks included some people and territories while excluding others, so inducing a geography of social, economic, and technological inequality. In a parallel development, social movements and geopolitical strategies became largely global so as to act on the global sources of power, while the institutions of the nation-state inherited from the Modern Age and from the industrial society gradually lost their capacity to control and regulate global flows of wealth and information. The historical irony is that nation-states were among the most active agents of globalization as they tried to ride the tiger of unfettered markets and free flows of capital and technology for their own benefit.

By studying empirically the contours of these social and organizational arrangements on a global scale, I ended up with a series of specific analyses on different dimensions of the network society that appeared to be coherent, so that together they provided a canvas of interpretation of events and trends that at first sight seemed to be disjointed.

Thus, while this volume, and this trilogy, does not present a formal, systematic theory of society, it proposes new concepts and a new theoretical perspective to understand the trends that characterize the structure and dynamics of our societies in the world of the twenty-first century.

The relevance of a social theory, beyond the empirical body of evidence gathered to support specific arguments, ultimately comes from its capacity to explain social evolution, either in society at large or in certain dimensions of society. Or, at least, to yield a more fruitful interpretation than alternative analytical frameworks used to study the determinants and consequences of human action in the space and time of the analysis. Seen from this perspective, the first decade of the twenty-first century offers a privileged terrain of observation to gauge the explanatory value of the grounded hypotheses put forward in the pages of this book more than 10 years ago. Again, this is not to verify predictions, since there were none, but to evaluate how accurate was the early identification of major social trends whose development has constituted the fabric of our lives in this historical period. Not so much to vindicate the author of the analysis (he does not feel any such need) as to make further use of the conceptual tools that provided a synthetic view of the process of transformation of our world. Or else to discard those concepts that were of little help in understanding our prospects, dramas, and dilemmas.

Let me review some of the key developments of the last decade, relating them to the analyses presented in this book. I will focus on those trends that refer to the structural analysis offered in this volume, leaving to the new prefaces of volumes II and III the task of proceeding with a similar operation in relationship to the themes treated in those volumes.

I

The global financial crisis that exploded towards the end of 2008 and sent the global economy into a tail spin was the direct consequence of the specific dynamics of this global economy, as analyzed in chapter 2 of this volume. It resulted from the combination of six factors. First, the technological transformation of finance that provided the basis for

the constitution of a global financial market around global computer networks, and equipped financial institutions with computational capacity to operate advanced mathematical models. These models were deemed to be capable of managing the increasing complexity of the financial system, operating globally interdependent financial markets through electronic transactions effected at lightning speed. Second, the liberalization and deregulation of financial markets and financial institutions, allowing the quasi-free flow of capital across the world, and overwhelming the regulatory capacity of national regulators. Third, the securitization of every economic organization, activity, or asset, making financial valuation the paramount standard to assess the value of firms, governments, and even entire economies. Furthermore new financial technologies made possible the invention of numerous exotic financial products, as derivatives, futures, options, and securitized insurance (such as credit default swaps) became increasingly complex and intertwined, ultimately virtualizing capital and eliminating any semblance of transparency in the markets so that accounting procedures became meaningless. Fourth, the imbalance between capital accumulation in newly industrializing countries, such as China and oil-producing countries, and capital borrowing in the richest economies, such as the United States, led to a wave of adventurous lending to a crowd of consumers used to living on the edge of debt, exposing the lenders far beyond their financial capabilities. Fifth, because financial markets only partially function according to the logic of supply and demand, and are largely shaped by "information turbulences", as analyzed in this volume, the mortgage crisis that started in 2007 in the United States after the bursting of the real-estate bubble reverberated throughout the global financial system. Indeed, while a similar real-estate crash in Japan in the early 1990s had severe effects on the Japanese economy, its impact was limited on the rest of the world because of the much more limited interpenetration of securities and financial markets. Last, but not least, the lack of proper supervision in securities trading and financial practices enabled daring brokers to pump up the economy and their personal bonuses through increasingly risky lending practices.

The paradox is that the crisis was brewed in the cauldrons of the new economy, an economy defined by a substantial surge in productivity as the result of technological innovation, networking, and higher education levels in the work force, as analyzed in chapters 2 and 3 of this volume, and as I observed later on during the 2000s in other works. Indeed, focusing on the United States, where the crisis first started, between 1998 and 2008 cumulative productivity growth reached almost 30 percent. However, because of shortsighted

and greedy management policies, real wages increased only by 2 percent over the decade, and in fact weekly earnings of college-educated workers fell by 6 percent between 2003 and 2008. And yet, real-estate prices soared during the 2000s and lending institutions fed the frenzy by providing mortgages, ultimately backed by Federal institutions, to the same workers whose wages were stagnant or diminishing. The notion was that productivity increases would ultimately catch up with wages as the benefits of growth would trickle down. It never happened because financial companies and realtors reaped the benefits of the productive economy, inducing an unsustainable bubble. The financial services industry's share of profits increased from 10 percent in the 1980s to 40 percent in 2007, and the value of its shares from 6 percent to 23 percent, while the industry only accounts for 5 percent of private-sector employment. In short, the very real benefits of the new economy were appropriated in the securities market and used to generate a much greater mass of virtual capital that multiplied its value by lending it to a multitude of avid consumers/borrowers. Moreover, the expansion of the global economy, with the rise of China, India, Russia, Brazil, and other industrializing economies to the forefront of capitalist growth, increased the risk of financial collapse by lending the capital accumulated in these economies to the United States and other markets in the world, so as to sustain the solvency and imports capability of these economies while taking advantage of favorable lending rates. The massive military spending by the US government to fund its adventure in Iraq was also financed through debt, to the point that Asian countries now hold a large share of US Treasury Bonds, intertwining the Asian Pacific and US fiscal policy in a decisive manner. While inflation was kept relatively in check throughout the OECD because of significant productivity growth, as proposed in my analysis, there was a growing gap between the scale of the lending and the ability of both consumers and institutions to repay what they borrowed. Household debt of disposable income in the United States grew from 3 percent in 1998 to 130 percent in 2008. As a result, prime mortgage delinquencies as a percentage of loans increased from 2.5 percent in 1998 to 118 percent in 2008.

Yet, no one could do much about it because the global financial market had escaped the control of any investor, government, or regulatory agency. It had become what in this volume I called a "global automaton" imposing its logic over the economy and society at large, including over its own creators. And so, a financial crisis of unprecedented proportions unfolds around the world at the time of writing, dramatically ending the myth of the self-regulated market,

calling into question the relevance of some mainstream economic theories, and sending governments and business into a frantic scramble to tame the wild automaton that went into reverse and devoured tens of thousands of jobs (meaning family lives) on a daily basis. There is an urgent search for stabilizing remedies, but I fear that by looking for solutions in the formulas of Economics 101, we will be at a loss in the dark world resulting from the failure to regulate a new kind of economy under new technological conditions. This is why investigating the networked structure of our global, networked economy may help to design strategies and policies adapted to the realities of our time.

II

Work and employment have been transformed. But in contrast to the dystopias and utopias foreseen by prophets of doom or evangelists of a new economic age, the relationship between technology and the quantity and quality of jobs has followed the complex pattern of interaction outlined in chapter 4 of this volume. Overall, and in line with historical experience of earlier technological revolutions, technological change has not destroyed employment in aggregation, since some occupations have been phased out and others have been induced in greater numbers. In general terms, the occupational profile of the labor force has been enhanced in terms of required skills and educational level. On the other hand, by globalizing the process of production of goods and services, thousands of jobs, particularly in manufacturing, have been eliminated in advanced economies either by automation or by relocation to newly industrialized countries. Accordingly, hundreds of thousands of manufacturing jobs have been created in these locations so that, on balance, there are more manufacturing jobs than ever in the planet at large. Yet, this job creation and the increased education of the labor force has not resulted in a sustained improvement of living standards in the industrialized world. This is because the level of compensation for the majority of workers has not followed the growth of productivity and profits, while the provision of social services, and particularly of health, has been hampered by skyrocketing costs in health care and limitation of social benefits in the private sector. Only the massive entry of women in the labor force has prevented a decline in the standards of living for the majority of households. This feminization of the labor force has substantially affected the economic foundations of patriarchalism and has opened the way for the rise of woman

consciousness documented in the second volume of my trilogy and in some of my recent writings. Immigration continues to play a significant role in economies and societies around the world, as labor gravitates toward job opportunities. It results in growing multiethnicity and multiculturalism almost everywhere. Globalization also changes the labor markets and places multiculturalism at the forefront of social dynamics. However, as documented in this volume, immigration is not as pervasive a phenomenon as it is usually perceived by native populations that often feel "invaded". While there are almost 250 million migrants in the world, this is a fraction of the global labor force, and affects different countries in different proportions. Yet, the concentration of immigrants in the core of major metropolitan areas in the world accrues their visibility and potential for social tensions. More often than not the growing multiethnicity of societies everywhere is confused with immigration. In fact, immigration is increasing, in spite of the rise of unemployment and heightened border controls, because the uneven development of an interdependent world and the networks of connectivity between societies (including the Internet) offer greater possibilities for the expansion of "transnationalism from below" in the terminology of some analysts of the new immigration.

The main trends of the new labor structure observed in the last decade have taken place along the lines identified in chapter 4 of this book. These are, on the one hand, the growing flexibility of labor, that is the reduction of the proportion of the labor force with long-term employment and a predictable career path, as new generations, the majority of whom are hired for their flexibility, replace an old labor force entitled to job security in large-scale firms. Business consultants and service entrepreneurs have replaced automobile workers and insurance underwriters. On the other hand, there has been a parallel growth of highly educated occupations and low-skill jobs, with very different bargaining power in the labor market. Exaggerating the terminology to capture the imagination of the reader, I labeled these two types of workers "self-programmable labor" and "generic labor". Indeed, there has been a tendency to increase the decision-making autonomy of educated knowledge workers who have become the most valuable assets for their companies. They are often referred to as "talent". On the other hand, generic workers, as executants of instructions, have continued to proliferate, as many menial tasks can hardly be automated and many workers, particularly youth, women, and immigrants, are ready to accept whatever conditions are necessary to get a job. This dual structure of the labor market is related to the structural conditions of a knowledge economy growing

within the context of a large economy of low-skill services, and it is at the source of the growing inequality observed in most societies.

Information and communication technologies have had a powerful effect on the transformation of labor markets and of the work process. However, their effects have been substantially mediated by the strategies of firms and the policies of governments. Thus, when public support of labor unions provokes businesses to agree on job security in exchange for moderate wage increases, stable jobs are protected, but labor creation dwindles because technology is used to substitute automation for labor. On the other hand, when companies have free rein in labor-hiring practices, they tend to achieve their ideal labor force pattern: talent attracted with high salaries, perks, and a degree of autonomy, in exchange for commitment to the company; automation and off-shoring of the core labor force; and subcontracting of low-level service activities (such as cleaning or maintenance) to suppliers specializing in a lowly paid labor force. Thus, there is a wide range of variation of the transformation of labor in the new economy, depending on the level of development, and the institutional environment. In the developing world, the informal economy represents a fundamental component of the labor market. In advanced economies, the public-service sector becomes the refuge of employment for an increasing share of the work force expelled from traditional good-producing sectors. And entrepreneurship and innovation continue to thrive on the margins of the corporate sectors of the economy, increasing the numbers of self-employed as technology allows self-reliance in the control of the means of production of knowledge-based services, from the desk-top quality printer to online services. In sum, the occupational structure of our societies has indeed been transformed by new technologies. But the processes and forms of this transformation have been the result of the interaction between technological change, the institutional environment, and the evolution of relationships between capital and labor in each specific social context.

III

Perhaps the most apparent social change taking place in the years since this book was first researched is the **transformation of communication**, a trend that I analyzed in chapter 5 of this volume. Because the revolution in communication technologies has intensified in recent years, and because conscious communication is the distinctive feature of humans, it is logical that it is in this realm where society has been most profoundly modified.

Computer networking, open source software (including Internet protocols), and fast development of digital switching and transmission capacity in the telecommunication networks led to the expansion of the Internet after its privatization in the 1990s and to the generalization of its use in all domains of activity. The Internet is in fact an old technology: it was first deployed in 1969. But it diffused on a large scale 20 years later, because of several factors: regulatory changes; greater bandwidth in telecommunications; diffusion of personal computers; user-friendly software programs that made it easy to upload, access, and communicate content (beginning with the World Wide Web server and browser designed by Tim Berners-Lee in 1990); and the rapidly growing social demand for the networking of everything, arising from both the needs of the business world and the public's desire to build its own communication networks. As a result, the number of Internet users on the planet grew from under 40 million in 1995 to about 1.5 billion in 2009. By 2009 rates of penetration reached more than 60 percent in most developed countries and were increasing at a fast pace in developing countries. Global Internet penetration in 2008 was still at around one-fifth of the world's population and fewer than 10 percent of Internet users had access to broadband. However, since 2000, the digital divide, measured in terms of access, has been shrinking. The ratio between Internet access in OECD and developing countries fell from 80.6:1 in 1997 to 5.8:1 in 2007. In 2005, almost twice as many new Internet users were added in developing countries as in OECD countries. China is the country with the fastest growth of Internet users, even though the penetration rate remained under 20 percent of the population in 2008. As of July 2008, the number of Internet users in China totaled 253 million, surpassing the United States, with about 223 million users. The OECD countries as a whole had a rate of penetration of around 65 percent of their populations in 2007. Furthermore, given the huge disparity of Internet use between people over 60 years of age and under 30 years of age, the proportion of Internet users will undoubtedly reach near saturation point in developed countries and increase substantially throughout the world as my generation fades away.

From the 1990s onward, another communication revolution took place worldwide: the explosion of wireless communication, with increasing capacity of connectivity and bandwidth in successive generations of mobile phones. This has been the fastest diffusing technology in the history of communication. In 1991 there were about 16 million wireless phone subscriptions in the world. By July 2008, subscriptions had surpassed 3.4 billion, or about 52 percent of the

world population. Using a conservative user-multiplier factor we can safely calculate that over 60 percent of the people on this planet have access to wireless communication in 2009, even if this is highly constrained by income and the uneven deployment of communication infrastructure. Indeed, studies in China, Latin America, and Africa have shown that poor people give high priority to their communication needs and use a substantial proportion of their meager budget to fulfill them. In developed countries, the rate of penetration of wireless subscriptions ranges between 82.4 percent (the US) to 113 percent (Italy or Spain) and is moving toward saturation point. But also, in countries such as Argentina there are more mobile phone subscriptions than people.

In the 2000s we have witnessed increasing technological convergence between the Internet and wireless communication and multiple applications that distribute communicative capacity throughout wireless networks, thus multiplying points of access to the Internet. This is particularly important for the developing world because the growth rate of Internet penetration has slowed due to the scarcity of wired telephone lines. In the new model of telecommunications, wireless communication has become the predominant form of communication everywhere, particularly in developing countries. The year 2002 was the first in which the number of wireless subscribers surpassed fixed-line subscribers worldwide. Thus, the ability to connect to the Internet from a wireless device becomes the critical factor for a new wave of Internet diffusion on the planet. This is largely dependent on the building of wireless infrastructure, on new protocols for wireless Internet, and on the diffusion of advanced broadband capacity.

The Internet, the World Wide Web, and wireless communication are not media in the traditional sense. Rather, they are means of interactive communication. However, the boundaries between mass media communication and all other forms of communication are blurring. E-mail is mostly a person-to-person form of communication, even when carbon-copying and mass-mailing are taken into account. But Internet is much broader than that. The World Wide Web is a communication network used to post and exchange documents. These documents can be texts, audios, videos, software programs; literally anything that can be digitized. As a considerable body of evidence has demonstrated, the Internet, and its diverse range of applications, is the communication fabric of our lives, for work, for personal connection, for information, for entertainment, for public services, for politics, and for religion. The Internet is increasingly used to access mass media (television, radio, newspapers), as well as any form of digitized cultural or informational product (films, music,

magazines, books, journal articles, databases). The Web has already transformed television. The teenagers interviewed by researchers at the University of Southern California (USC) Annenberg Center for the Digital Future do not even understand the concept of watching television on someone's else schedule. They watch entire television programs on their computer screens and, increasingly, on portable devices. So, television continues to be the major mass medium, for the time being, but its delivery and format is being transformed, as its reception becomes individualized. A similar phenomenon has taken place with the print press. All over the world, Internet users under 30 years of age primarily read newspapers on-line. So, although the newspaper remains a mass medium, its delivery platform changes. There is still no clear business model for on-line journalism. Yet, the Internet and digital technologies have transformed the work process of newspapers and the mass media at large. Newspapers have become internally networked organizations globally connected to networks of information on the Internet. In addition, the on-line components of newspapers have induced networking and synergy with other news and media organizations. Newsrooms in the newspaper, television, and radio industries have been transformed by the digitization of news and its relentless global/local processing. So, mass communication in the traditional sense is now also Internet-based communication in both its production and its delivery.

Furthermore, the combination of on-line news with interactive blogging and email, as well as Really Simple Syndication (RSS) feeds from other documents on the Web, have transformed newspapers into a component of a different form of communication: *mass self-communication*. This form of communication has emerged with the development of the so-called Web 2.0 and Web 3.0, or the cluster of technologies, devices, and applications that support the proliferation of social spaces on the Internet thanks to increased broadband capacity, open source software, and enhanced computer graphics and interface, including avatar interaction in three-dimensional virtual spaces. The development of horizontal networks of interactive communication that connect local and global in chosen time has intensified the pace and broadened the scope of the trend that I identified more than a decade ago: the formation of a multimodal, multichannel system of digital communication that integrates all forms of media. Furthermore, the communicating and information-processing power of the Internet is being distributed in all realms of social life, as the electrical grid and the electrical engine distributed energy in the process of formation of the industrial society. As people have appropriated new forms of communication, they have built their own

systems of mass communication, via SMS, blogs, vlogs, podcasts, wikis, and the like. File sharing and peer-to-peer (p2p) networks make the circulation, mixing, and reformatting of any digitized content possible. New forms of mass self-communication have originated from the ingenuity of young users-turned-producers. One example is YouTube, a video-sharing website where individual users, organizations, companies, and governments can upload their own video content. In July 2007, YouTube launched 18 country-specific partner sites and a site specifically designed for mobile telephone users. This made YouTube the largest mass communication medium in the world. Websites emulating YouTube are proliferating on the Internet, including Ifilm.com, revver.com, and Grouper.com. Tudou.com is one of China's fastest growing and most popular video-hosting websites. Video streaming is an increasingly popular form of media consumption and production. A Pew Internet and American Life Project study found that in December 2007, 48 percent of American users regularly consumed online video, up from 33 percent a year earlier. This trend was more pronounced for users under 30, 70 percent of whom visit on-line video sites.

Thus, YouTube and other user-generated content web sites are means of mass communication. However, they are different from traditional mass media. Anyone can post a video in YouTube, with few restrictions. And the user selects the video she wants to watch and comment on from a huge listing of possibilities. Pressures are of course exercised on free expression on YouTube, particularly legal threats for copyright infringements and government censorship of political content in situations of crisis.

Horizontal networks of communication built around peoples' initiatives, interests, and desires are multimodal and incorporate many kinds of documents, from photographs (hosted by sites such as Photobucket.com) and large-scale cooperative projects such as Wikipedia (the open source encyclopedia) to music and films (p2p networks based on free software programs such as Kazaa) and social/political/religious activist networks that combine web-based forums of debate with global feeding of video, audio, and text. Thus, as analyst Jeffrey Cole reported to me, to teenagers who have the ability to generate content and distribute it over the net, it "is not 15 minutes of fame they care about, it is about 15 megabytes of fame".

Social spaces in the Web, building on the pioneering tradition of the virtual communities in the 1980s and overcoming the shortsighted early commercial forms of social space introduced by AOL, have multiplied in content and soared in numbers to form a diverse and widespread virtual society in the Web. MySpace remains the most