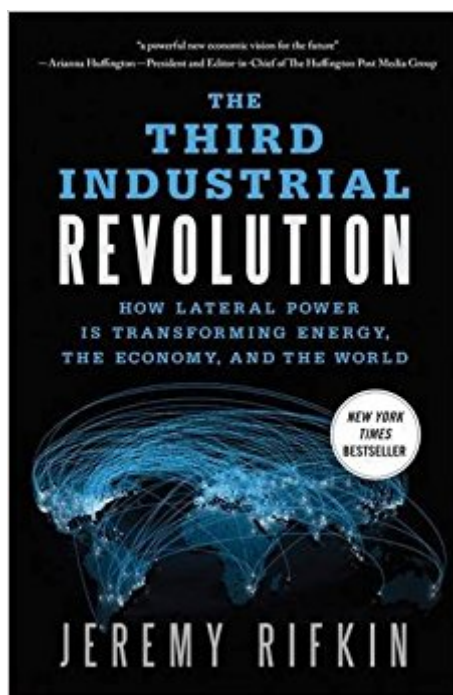




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The Third Industrial Revolution: How Lateral Power Is Transforming Energy, The Economy, And The World



Synopsis

The Industrial Revolution, powered by oil and other fossil fuels, is spiraling into a dangerous endgame. The price of gas and food are climbing, unemployment remains high, the housing market has tanked, consumer and government debt is soaring, and the recovery is slowing. Facing the prospect of a second collapse of the global economy, humanity is desperate for a sustainable economic game plan to take us into the future. Here, Jeremy Rifkin explores how Internet technology and renewable energy are merging to create a powerful "Third Industrial Revolution." He asks us to imagine hundreds of millions of people producing their own green energy in their homes, offices, and factories, and sharing it with each other in an "energy internet," just like we now create and share information online. Rifkin describes how the five-pillars of the Third Industrial Revolution will create thousands of businesses, millions of jobs, and usher in a fundamental reordering of human relationships, from hierarchical to lateral power, that will impact the way we conduct commerce, govern society, educate our children, and engage in civic life. Rifkin's vision is already gaining traction in the international community. The European Union Parliament has issued a formal declaration calling for its implementation, and other nations in Asia, Africa, and the Americas, are quickly preparing their own initiatives for transitioning into the new economic paradigm. The Third Industrial Revolution is an insider's account of the next great economic era, including a look into the personalities and players • heads of state, global CEOs, social entrepreneurs, and NGOs • who are pioneering its implementation around the world.

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“Jeremy Rifkin was always ahead of his time. The New Industrial Revolution confirms that the times have caught up with him. It is no longer possible to ignore his vision for the future of humankind.” • Calestous Juma, Harvard Belfer Center for Science and International Affairs, John F. Kennedy School “Jeremy Rifkin argues that green energy and the internet will revolutionize society and the environment...With the European Union already on board, this is a big idea with backbone.” • Nature “Impeccably argued” | a compelling and cogent argument to overhaul our society and economy in favor of a distributed and collaborative model. • Publishers Weekly “Rifkin connects the two defining technologies of the 21st Century -- the Internet and renewable energies -- giving us a powerful new economic vision for the future. As we look to regrow the economy, generate millions of jobs, and create a sustainable future for our children, the Third Industrial Revolution offers an indispensable roadmap.” • Arianna Huffington, President and Editor-in-Chief of The Huffington Post Media Group “Mr. Rifkin clearly outlines the challenges facing our global community, and creates a vision for business leaders, government and citizens.” • John Chambers, Chairman and CEO of Cisco, Chairman and CEO of Cisco “The creative thinking of Jeremy Rifkin has been inspiring policy makers and citizens alike. This book shows the key role renewables and modern technologies can play in our transition to a low-carbon economy.” • JosĂ© Manuel Barroso, President of the European Commission “This is a remarkable piece of work from one of the foremost thinkers of our time” | Rifkin has come up with a visionary and innovative economic development model that ensures the sustainability of our natural resources and ecosystems. • Rajendra Pachauri, Chairman of the United Nations Intergovernmental Panel on Climate Change “A brilliant new economic paradigm to guide the human journey in the 21st century. Jeremy Rifkin’s comprehensive Third Industrial Revolution vision, which is the centerpiece of Rome’s long-term economic development plan, provides a blueprint for every city in the world to create a sustainable and prosperous society.” • Gianni Alemanno, Mayor of Rome “More than thought provoking” | a call for action to policy makers and business leaders to embrace the opportunity of a society and economy driven by sustainable innovation and powered by renewable and distributed energy. • Rudy Provoost, CEO of Philips Lighting

Jeremy Rifkin is president of the Foundation on Economic Trends and the author of eighteen

bestselling books, including *The Hydrogen Economy* and *The End of Work*. He has been a guest on *Face the Nation*, *The Lehrer News Hour*, *20/20*, *Larry King Live*, *Today*, and *Good Morning America*. The *National Journal* named Rifkin as one of 150 people in the U.S. that have the most influence in shaping federal government policy. He has also testified before numerous congressional committees, and since 1994, Mr. Rifkin has been a senior lecturer at the Wharton School's Executive Education Program at the University of Pennsylvania. Rifkin is chairman of the Global CEO Business Roundtable, which includes IBM, Cisco, Cushman and Wakefield, and has served as an adviser to various global leaders, including Nicolas Sarkozy of France and Angela Merkel of Germany. His monthly column on global issues appears in many of the world's leading newspapers and magazines, including *The Los Angeles Times*, *The Guardian* in the U.K., *Die Sddeutsche Zeitung* in Germany, *Trud* in Bulgaria, *Clarn* in Argentina, and *Al-Ittihad* in the U.A.E. He lives in Bethesda, MD.

     Our industrial civilization is at a crossroads. Oil and the other fossil fuel energies that make up the industrial way of life are sunseting, and the technologies made from and propelled by these energies are antiquated,      explains Author Jeremy Rifkin. He is a lecturer at Wharton business school, on new trends in science, technology, the economy, and society, but more impressively is a consultant to the EU on these issues, and also to the Chinese government. This book is a description of the convergence of new communication technologies with new energy systems to create the Third Industrial Revolution. The first two industrial revolutions profoundly changed history, but came with a huge social and environmental costs. First and Second Industrial Revolutions forged the course of the nineteenth and twentieth centuries. These revolutions were based on fossil fuels       coal, oil, and natural gas, which are only found in specific places. As such, these places require geopolitical management, and often significant military investment to secure access to them. This necessitated a centralized energy infrastructure which set the tone for the rest of the economy and social life for two centuries. First Industrial Revolution had as its centrepiece coal-powered, steam-driven machines. The railroad, was one of its most important achievements, with profound consequences. Building a railroad required more capital than even the wealthiest families of the day could afford singlehandedly. This led to the need to concentrate the capital of investors which resulted in the separation of ownership from the management of the business. The challenges of running a railroad were unique. Hundreds of miles of track had to be laid, rail beds had to be maintained, engines and carriages repaired, systems developed to prevent accidents and extensive up-to-the-moment records. This required layers of management and a gargantuan workforce with

output optimized through top-down command and control, and tasks broken down into fixed, repeatable stages. The railroads led to other necessary businesses like the telegraph industry which also had to be huge. Other mass-producing giants appeared with centralized factories to reduce the cost of production. For example, small farms gave way to agri-businesses that transformed food production into a factory system. An army of people were needed who could write reports and write critical management documents. The school system was organized along the same lines as businesses with top-down management, fixed tasks and outcomes, to best prepare a literate workforce for life in large, centralized, authoritarian businesses.

“The centralized and rationalized business model established during the First Industrial Revolution, carried over to the Second Industrial Revolution (the Oil Age),” Rifkin explains. The character of the oil industry has been gigantism and centralization, because it too required large amounts of capital, economies of scale, and a top-down command and control structure. The Oil Age required the most expensive organization ever conceived to collect, process, and distribute its energy. Gigantism and centralization affected other industries too: modern finance, automotive, power and utilities, telecommunications, and commercial construction.

“In the coming half century, the conventional, centralized business operations of the First and Second Industrial Revolutions will increasingly be subsumed by the distributed business practices of the Third Industrial Revolution.” This is the core message of this book. “We have the science, the technology, and the game plan to make it happen,” says Rifkin and working at the highest levels of the world’s largest economies, he is in a position to know. Hundreds of millions of human beings can now generate their own green energy in their homes, offices, and factories. They can share it with others across intelligent, distributed, electricity networks—an intergrid—just as they do with the information they create and share on the Internet. Here are some facts Rifkin presents: the cost of photovoltaic electricity is expected to decline at a rate of 8% a year, halving the cost of generation every eight years. The commercial growth in solar and wind technology is as dramatic as the growth in personal computers and Internet use, with installations doubling every two years. One hour of sunlight provides enough power to run a global economy for a full year. 40% of the roofs, and 15% of all the building facades in the EU, are suitable for photovoltaic applications. The United States has enough wind resources to power the entire nation several times over. A Stanford University study of global wind capacity estimates that harnessing 20% of the available wind on the planet, would provide seven times more electricity than the world now uses. Hydropower currently makes up the largest portion of green-generated electricity in the world, but the untapped potential, is in small distributed

hydropower installations. The geothermal energy beneath the Earth's surface reaches 4,000 degrees Celsius, and that energy is continuously flowing to the surface. In the United States, the geothermal energy within two miles of the Earth's surface produces enough energy to provide for America's needs for 30,000 years. Biomass includes fuel crops, forestry waste, and municipal garbage. The World Bioenergy Association claims that the world's bioenergy potential is large enough to meet the global energy demand in 2050. Conventional energy (coal, oil, gas, and uranium) employed 260,000 in Germany in 2003, whereas renewable energy by 2007 accounted for 249,300 jobs. Put differently, less than 10% of the energy produced by renewable sources, created nearly as many jobs as all other energy sources combined. The Spanish economy, which supports over 188,000 renewable energy jobs and 1,027 renewable energy companies, has produced five times the employment of the conventional energy industry. We have the ability to change from a carbon-based fossil fuel energy regime to a renewable energy regime. We can reconfigure the buildings of the world, and transform every house into a mini power plant that can collect renewable energies on site. We are able to store the renewable energy so that we can ensure a continuous, reliable supply of green electricity to meet demand. Using Internet communication technology we can convert the electricity grid into an intelligent utility network. Millions of people will be able to send the green electricity they generate on their buildings to the grid to share with others just as information is generated and shared on the Internet. We are seeing the movement of cars, buses, trucks, trains to electric plug-in and fuel cell vehicles powered by renewable energies. We are seeing charging stations across countries where people can buy and sell electricity on the distributed electricity grid. The emerging Third Industrial Revolution, is a function of distributed renewable energies, that will be collected at millions of local sites and then aggregated and shared with others. These renewable energies are found everywhere and are partially free "sun, wind, hydro, geothermal heat, biomass, and ocean waves and tides. We are now able to achieve optimum energy levels and at the same time maintain a high-performing, sustainable economy. These are exciting times and they have already begun.

Readability Light ----+ Serious
Insights High +---- Low
Practical High ----+ Low
lan Mann of Gateways consults internationally on leadership and strategy

More than half the children born today in the United States or Europe will live to see the 22nd Century. In theory. However, if you're unreservedly optimistic about the future of today's young children, chances are you haven't been paying attention. In the face of global warming, overpopulation, resource limits, and the growing number of species going extinct, it's difficult to look

far ahead without wondering whether the human race can truly meet the existential challenges we face. Jeremy Rifkin thinks we can. He is both a realist, and, if at least one of his many books can be believed, an optimist. In *The Third Industrial Revolution*, he lays out a comprehensive platform on which the human race can build a sustainable future. His vision of the future is nothing less than brilliant. To be sure, Rifkin isn't predicting that his vision will take hold. He's hoping it will. The Third Industrial Revolution is, above all, hopeful. Rifkin's vision is complex and wide-ranging. Within the 300 pages of *The Third Industrial Revolution*, he delves into energy, communications, transportation, history, economics, thermodynamics, paleontology, philosophy, psychology, education, and numerous other subjects. It's a dazzling display of erudition. The author notes that the Second Industrial Revolution from which we're now emerging was dominated by the telephone, the automobile, and fossil fuels. That's hard to dispute. The Third Industrial Revolution is being built on the foundation of the Internet and renewable energy, leading humanity forward into a post-carbon era - and that's the part that requires the reader to "suspend disbelief," as the writers of science fiction ask us to do. In this new era, Rifkin writes, "the conventional, centralized business operations of the First and Second Industrial Revolutions will increasingly be subsumed by the distributed business practices of the Third Industrial Revolution; and the traditional, hierarchical organization of economic and political power will give way to lateral power organized nodally across society." For example, in place of most large electric generating facilities, every building will generate its own energy. Any surplus will be sold to others through trading networks managed by the successors to today's electric utilities. Rifkin estimates that the process of building out this Third Industrial Revolution will take 40-50 years, roughly the same amount of time that previous economic upheavals required. This assumes, of course, that global warming and other threatening trends will allow us that much time. Rifkin believes they will, and I'm hoping he's right. "As we approach the middle of the century," he writes, "more and more commerce will be overseen by intelligent technological surrogates, freeing up much of the human race to create social capital in the not-for-profit civil society, making it the dominant sector in the second half of the century." This assertion derives from an earlier book Rifkin wrote, *The End of Work*. It's easy to dismiss this vision as utopian and unattainable, as all utopian visions are. However, Jeremy Rifkin is no idle dreamer. As he explains at great length in *The Third Industrial Revolution*, this vision has been bought whole by the European Union, the Utrecht region of the Netherlands, and the cities of Rome and San Antonio, among many others. Rifkin, his staff, and a growing number of highly placed collaborators in both industry and government offices have been at work since the publication of the book in 2011 helping to develop custom-tailored regional plans consistent with this vision. Rifkin's successful

ongoing engagement with the European Union is especially impressive - and, he reminds us, "the European Union, not the United States or China, is the biggest economy in the world." European officialdom, specifically including such luminaries as Angela Merkel, are now in the process of shifting their economies to incorporate what the author calls "the five pillars" of the Third Industrial Revolution: (1) shifting to renewable energy; (2) transforming the building stock of every continent into micro-power plants to collect renewable energies on site; (3) deploying hydrogen and other storage technologies in every building and throughout the infrastructure to store intermittent energies; (4) using Internet technology to transform the power grid of every continent into an energy-sharing intergrid that acts just like the Internet . . . ; and (5) transitioning the transport fleet to electric plug-in and fuel cell vehicles that can buy and sell electricity on a smart, continental, interactive power grid. This economic transformation will bring profound changes to our lives and our surroundings. "Vertical economies of scale became the defining feature of the incipient industrial age and gigantic business operations became the norm . . . The distributed nature of renewable energies necessitates collaborative rather than hierarchical command and control mechanisms." And all this change is consistent with the new pedagogy beginning to take hold in many schools around the globe, which emphasizes collaboration rather than competition, problem solving rather than rote learning, and what Rifkin calls "biosphere thinking," which places humanity within the context of the web of life on Earth. (Perhaps you've even noticed that people under the age of 18 tend not to think the way we older adults do?) "If it is difficult to imagine a change of this kind, think of how preposterous it must have been to a feudal lord, his knights in arms, and his indentured serfs to conjure the possibility of free wage earners selling their labor power in national markets, each a sovereign in his own right in the political sphere, all bound together by a set of agreed-upon rights and freedoms and a sense of national loyalty." It's hard to disagree with that!

This was a second book I bought, this one to share with friends and family. It is the first book I have read on the world's "economic" crisis which provided a model as to the primary causes. It also offers solutions that can help direct the necessary changes to take place. Most importantly he provides an historical model of this type of industrial change. Rifkin speaks of the coming of a reduction in size of government structures. I find this model especially helpful. The transitions, as he points out, take many years, decades, in fact. And there is a lot of pain, often caused by those opposing the changes. Most of us can bear hard transitions if we see some good in the outcome. Jeremy Rifkin's proposition is that the transitioning to "Lateral (distributed) Power" is the change that provides an empowering, upbeat and to be hoped for outcome. This is not an easy read, but for those

emotionally mature enough to have their notions challenged it is well worth the read. Ponder his premise, and think fresh and open thoughts on the Why of economic and social change. I found it freeing.

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