

SEIZING THE WHITE SPACE

BUSINESS MODEL INNOVATION *for* GROWTH AND RENEWAL ■■ MARK W. JOHNSON

■■ THE INDUSTRIES + INFRASTRUCTURES OF EACH TECHNOLOGICAL REVOLUTION

TECHNOLOGICAL REVOLUTION	NEW TECHNOLOGIES + NEW OR REDEFINED INDUSTRIES	NEW OR REDEFINED INFRASTRUCTURES
FIRST From 1771—The Industrial Revolution	<ul style="list-style-type: none">• Mechanized cotton industry• Wrought iron• Machinery	<ul style="list-style-type: none">• Canals and waterways• Turnpike roads• Water power
SECOND From 1829—Age of steam and railways	<ul style="list-style-type: none">• Steam engines and machinery• Iron and coal mining• Railway construction• Rolling stock production• Steam power for many industries	<ul style="list-style-type: none">• Railways• Universal postal service• Telegraph• Ports, depots, and worldwide sailing ships• City gas
THIRD From 1875—Age of steel, electricity, and heavy engineering	<ul style="list-style-type: none">• Cheap steel• Full development of steam engine for steel ships• Heavy chemistry and civil engineering• Electrical equipment industry• Copper and cables• Canned and bottled food• Paper and packaging	<ul style="list-style-type: none">• Worldwide shipping in rapid steel steamships• Transcontinental railways• Great bridges and tunnels• Worldwide telegraph• Telephone• Electrical networks
FOURTH From 1908—Age of oil, the automobile, and mass production	<ul style="list-style-type: none">• Mass-produced automobiles• Cheap oil and oil fuels• Petrochemicals• Internal combustion engines• Home electrical appliances• Refrigerated and frozen foods	<ul style="list-style-type: none">• Networks of roads, highways, ports, and airports• Networks of oil wells• Universal electricity• Worldwide analog telecommunications
FIFTH From 1971—Age of information and telecommunications	<ul style="list-style-type: none">• Cheap microelectronics• Computers, software• Telecommunications• Control instruments• Computer-aided biotechnology and new materials	<ul style="list-style-type: none">• World digital telecommunications• Internet, e-mail, and other e-services• Electricity networks• High-speed physical transport links
SIXTH From 2003—Age of cleantech and biotech	<ul style="list-style-type: none">• Renewable energy led by solar, wind, and biofuels• Energy efficiency• Energy storage technologies• Electric vehicles• Nano materials• Synthetic biology	<ul style="list-style-type: none">• Enhanced electricity transmission capabilities• Decentralization of power generation• Connection of electricity and transportation energy infrastructures• Increased availability of water and electricity• Extensive gene data bank links

SOURCE: Carlota Perez, *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages* (Northampton, MA: Edward Elgar Publishing, 2003), 14.

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