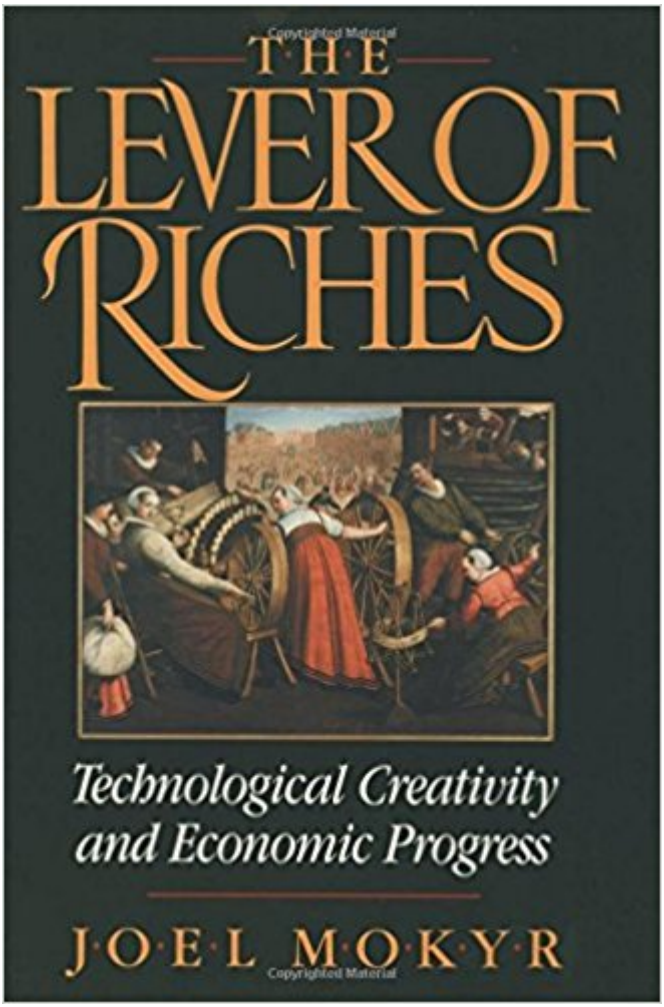
The Lever Of Riches: Technological Creativity And Economic Progress



Synopsis

In a world of supercomputers, genetic engineering, and fiber optics, technological creativity is ever more the key to economic success. But why are some nations more creative than others, and why do some highly innovative societies--such as ancient China, or Britain in the industrial revolution--pass into stagnation? Beginning with a fascinating, concise history of technological progress, Mokyr sets the background for his analysis by tracing the major inventions and innovations that have transformed society since ancient Greece and Rome. What emerges from this survey is often surprising: the classical world, for instance, was largely barren of new technology, the relatively backward society of medieval Europe bristled with inventions, and the period between the Reformation and the Industrial Revolution was one of slow and unspectacular progress in technology, despite the tumultuous developments associated with the Voyages of Discovery and the Scientific Revolution.What were the causes of technological creativity? Mokyr distinguishes between the relationship of inventors and their physical environment--which determined their willingness to challenge nature--and the social environment, which determined the openness to new ideas. He discusses a long list of such factors, showing how they interact to help or hinder a nation's creativity, and then illustrates them by a number of detailed comparative studies, examining the differences between Europe and China, between classical antiquity and medieval Europe, and between Britain and the rest of Europe during the industrial revolution. He examines such aspects as the role of the state (the Chinese gave up a millennium-wide lead in shipping to the Europeans, for example, when an Emperor banned large ocean-going vessels), the impact of science, as well as religion, politics, and even nutrition. He questions the importance of such commonly-cited factors as the spill-over benefits of war, the abundance of natural resources, life expectancy, and labor costs. Today, an ever greater number of industrial economies are competing in the global market, locked in a struggle that revolves around technological ingenuity. The Lever of Riches, with its keen analysis derived from a sweeping survey of creativity throughout history, offers telling insights into the question of how Western economies can maintain, and developing nations can unlock, their creative potential.

Book Information

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Customer Reviews

"An excellent volume outlining in great detail, yet wide ranging in scope, the role of technological change in history. Will make a great supplemental text for our future World Economic History course that I'll be teaching."--Michael Haupert, Univ. of Wisconsin-LaCrosse"Mokyr has demonstrated, yet again, that he is one the best economic historians around. His book is a treasure trove of facts and insights about technological progress often overlooked in other accounts. Further, his argument that economics might do well to adopt the methodology of evolutionary biology instead of the standard application of Newtonian physics is cogent and convincing."--Howard Bodenhorn, St. Lawrence Univ."An informative and well-written study of humankind's progress."--J.M. Skaggs,Wichita State Univ."The history and the examples Mokyr uses are a delight to read."--Business Week"Joel Mokyr is a first-rate scholar who has read a wide body of literature. The book is very well written, lively and engaging. It is closely reasoned and well executed"--Nathan Rosenberg, Stanford University"Joel Mokyr likes telling his story and he tells it well; his book makes for good reading and rereading, and this in itself sets him apart from many of his fellow economic historians."--The New York Times Book Review"[Mokyr's] examples are so comprehensive, his knowledge so detailed, and his conclusions so broad and firmly drawn that the reader comes away full of insight."--The Christian Science Monitor"[A] rich, subtly flavored buffet of theories, ideas, insights and examples."--Wall Street Journal"Lucid and accessible."--Reason"Raise[s] some very insightful questions."--Informationweek

Joel Mokyr is Professor of Economics and History at Northwestern University, and is the author of Why Ireland Starved, The Economics of the Industrial Revolution, and other books in economic history.

Mokyr's latest book, also excellent, focuses on how culture affects economic growth, both positively

and negatively. This older book focuses on the amazing growth of technology and science, primarily technology, through human history. Beginning with classical Greece and Rome, it looks at parallel growth - or lack of it - in China and the Islamic world. It moves on to the surprising technological development in Medieval Europe and how gradually this European growth overtook, and then accelerated, to the point that it could with its technological predominance dominate the entire world.Mokyr is excellent in that he has at his fingertips all of the vast research of economic historians and presents it in an absolutely fascinating way. He shows us how most of the supposed breakthroughs were really the result of clock makers, mining engineers, etc. without specialized science training, intuiting a solution to a problem and then having this breakthrough perfected... by sometimes hundreds of micro-advances by more practical minded people. He persuasively describes why this accelerating technological revolution occurred in Western Europe.

Why were and are some societies so much more creative than others? Joel Mokyr, well known economic historian, tackles this important question. In his view, technological creativity has two components: invention (individual breakthroughs) and innovation (social and economic factors that lead to widespread adoption and improvement of technology).He then takes the reader on a breathtaking journey through classical antiquity, the middle ages, the Renaissance, the Industrial Revolution and the late Nineteenth century. This section alone is worth the price of the book.We learn how while the ancients came up with many sophisticated technologies, it remains an open question as to why many technical solutions eluded them.We learn how medieval Europe (contrary to popular belief about the dark ages), saw many inventions that had eluded the ancients: water driven machines, the horse shoe, the stirrup, the horse collar. By 1200, medieval Europe had absorbed Oriental knowledge, and then surged ahead. By 1500, Europe "controlled more energy, machinery and organizational skill than any civilization, ancient or contemporary". The author does a splendid job in conveying the sense of excitement and creativity that swept Europe. What followed is justly described as "The Years of Miracles". The details of the creative process are beautifully illustrated. One example: "The basic idea for the construction of the atmospheric engine was based on the realization that the atmosphere exists".The next section tries to extract some "regularities" from the narrative. The author examines various hypotheses. This section is the most difficult part of the book and will need careful study. After careful analysis the author presents a biologically inspired hypothesis to answer the question raised in the first chapter. He is careful to point out aspects where the analogy to Biology does not apply. In the author’s view, the proper analogy to the Biological concept of Species is technique itself. "Like evolution, technological progress was neither

destiny nor fluke. Yet the power of Darwinian logic -- natural selection imposed on blind variation -- is that we need not choose between the two".In an epilogue, the author presents a few thoughts on the future -- albeit very hesitatingly and tentatively. One cannot but be impressed by his caution and humility.Does the author succeed in answering the central question? Alas, this reviewer is not learned enough to decide. Many parts of the book rang true given my own experience with technology. It will surely influence and inform my thinking.

Joel Mokyr's Lever of Riches is a book on technological creativity. Throughout his book Mokyr searches for the variables that affect the technological change. As it is deduced from the text that the technology, by itself, is not the only cause of the richness of a nation, but the interactions among the law, trade, administration, institutions and inventions create the vital, and generally short-lived, environment for the technological progress which yields to richness.It is clearly seen from The Lever of Riches that Mokyr follows a scientific methodology with which he tests hypothesises of different historians who tried to solve the technological progress mystery, and he refutes most of these hypothesis by using sound justifications. From chemistry to agriculture, metallurgy to shipping, by narrating the different inventions of the historical periods from classical antiquity to year 1914, Mokyr tries to address the causes of technological progress.I was quite satisfied by the explanations made by Mokyr, especially the attitudes of societies, the techniques used before and after 1850, the policy on patent system, the dispute between guilds and firms, comparison of China and Europe, the evolution of macro and micro inventions which those all together effects the technical progress.There is huge difference between Mokyr, Joseph Needham and Lynn White on the technique they used and the information they provided. In his Science in Traditional China, Joseph Needham mainly focuses on the technological progress and social changes in China which took place for nearly 1500 years. It is not possible to understand from Needham's text why China could not develop a Western-style technological progress model, which Mokyr shows by describing the attitudes of guilds, the emergence patent system, the perception of societies' on value, the techniques (learning by doing, learning by using) used by the European's, the interaction among the countries and many more. The linear reasoning approach applied by the Lynn White is quite different than that of Mokyr's scientific approach. White's solutions to the technological progress phenomenon are basically an incremental technological change in tools and their effect on political and social system. White claims that the usage of stirrup, plough and reinforced armour led to a change in the political system. Despite it has valuable explanations, contrary to Mokyr, White's text does not give us any information on the guilds, the techniques employed for utilization of inventions,

or the developments and their interactions in mining, shipping, and the change of the centre of gravity of technological progress.In the search to answer why Europe led other continents and why England led Europe until 1850, Mokyr examines different sectors (chemistry, mining, metallurgy, etc) one by one and shows how a technical change in one sector affects other sectors. It is obvious from his text that by switching among the sectors and time periods, Mokyr has both vertical and horizontal depth of knowledge on technological change and its agents.In order to understand the Industrial Revolution, the mutual progress made by the humanity shall be inspected, and Mokyr does this. Inventions made in China, medieval Islam and Europe are explained with their effects on society and productivity. But since the Industrial Revolution emerged in England, the text narrated by Mokyr mainly deals with the developments occurred in England and Europe.I think that there is no one-single root cause of the technological progress, but dozens of macro and micro causes that forms the shape, speed, and path of the progress. From The Lever of Riches, we see that, indeed, the technological progress phenomenon is not an easy one which can be explained by a single theory.It was enlightening for me to read how England led others by performing learning-by-doing and learning-by-using technique, a technique which eventually led England behind of Germany and United States due to England's resistance of changing her techniques with the new scientific methods which were mainly generated by the universities.Despite he has questions whether the progress or stagnation is the normal state of a society, I could not see the reason why Mokyr did not focused on the fact that the progress cannot be achieved without stagnation due to the need of consuming the products of the progress.One comment to the book may be that Mokyr seems to be inclined to see the negative sides of the craft guilds, and why he did not mentioned their contributions to the cumulative body of knowledge, which is explained in detail in Civilization and Capitalism, of Braudel.I am totally glad about having read this book, and I believe those who seek the answers for or interested in the technological progress phenomenon will find The Lever of Riches an indispensable source of reference.

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