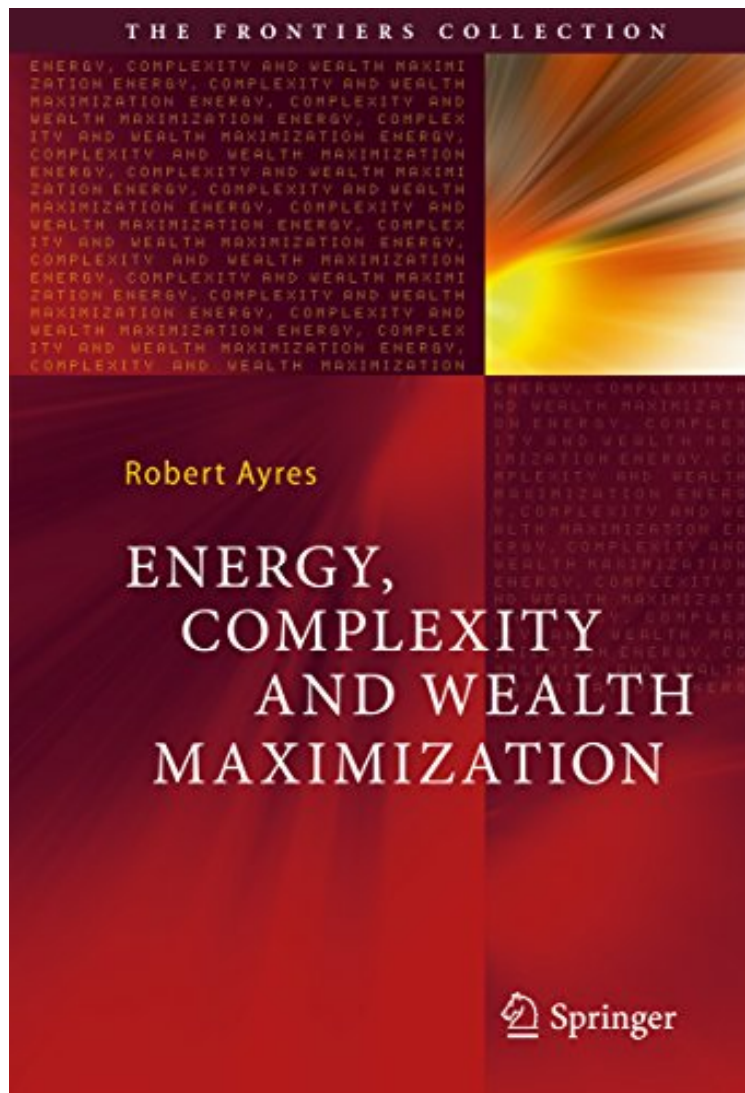


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Robert Ayres

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Robert Ayres : Energy, Complexity and Wealth Maximization (The Frontiers Collection) before purchasing it in order to gauge whether or not it would be worth my time, and all praised Energy, Complexity and Wealth Maximization (The Frontiers Collection):

This book is about the mechanisms of wealth creation, or what we like to think of as evolutionary "progress." The massive circular flow of goods and services between producers and consumers is not a perpetual motion machine; it

has been dependent for the past 150 years on energy inputs from a finite storage of fossil fuels. In this book, you will learn about the three key requirements for wealth creation, and how this process acts according to physical laws, and usually after some part of the natural wealth of the planet has been exploited in an episode of "creative destruction." Knowledge and natural capital, particularly energy, will interact to power the human wealth engine in the future as it has in the past. Will it sputter or continue along the path of evolutionary progress that we have come to expect? Can the new immaterial wealth of information and ideas, which makes up the so-called knowledge economy, replace depleted natural wealth? These questions have no simple answers, but this masterful book will help you to understand the grand challenge of our time.

“Economists and physicists, like oil and water, resist mixing, sadly to the detriment of useful human knowledge. Bob Ayres is the rare combination of a physicist and a resource economist, giving him a unique understanding of the importance of useful energy services to all of life. This unique understanding is critical to the massive challenge human kind now faces – how to continue wealth creation without destroying the planet we call home. This book will almost certainly alter the way we approach this great challenge.” (Thomas R. Casten, Chair, Recycled Energy Development LLC) “This is a must read for those who wish to understand what we've got wrong in our contemporary development paradigm and how we can fix it. By far the most important book in years that will reshape physics the way Darwin and Einstein have done, and will hopefully reshape economics too!” (Dr. Stefanos Fotiou, Director of the Environment and Development Division, UNEP) “Bob Ayres is among the pioneers of this biophysical approach to economics, which may prove to be the most fruitful innovation in economics since Keynes. This extraordinary book crosses disciplinary boundaries to take a broad, evolutionary perspective on human societies as thermodynamical dissipative structures. As natural resources become scarce and quality declines, knowledge is the one ingredient that may save us from following a path analogous to supernovae explosions. At a time when most economists confine themselves to partial and local micro-explanations, Ayres provides a big-picture understanding of the forces that underlie our current economic paradoxes.” (Gael Giraud, Professor of Economics, Ecole Normale Supérieure (Paris), and chief economist, Agence Française pour le Développement) “This magisterial synthesis traces the evolution of order and complexity from the Big Bang to Big Data to Big Dangers ahead. The book delineates the urgent collective challenge of making the ‘great transition’ from an economy that squanders nature’s wealth to a new paradigm rooted in a knowledge-based wealth.” (Dr. Paul Raskin, Founder and President Tellus Institute) “Robert Ayres’ new book is a historic, a contemporary, and a future oriented work of immense depth of thought, written by an author of incredible knowledge and wisdom, and encompassing views and concepts of both social and natural sciences. It is theoretically interesting, empirically relevant and timely regarding integrated assessments of social and natural systems. I think the work is a seminal contribution to looking at the co-evolution of human (economic and social) development and the Earth system, and will especially help to comprehend the new geological era – the ‘Anthropocene’.” (Udo E. Simonis, Professor emeritus for Environmental Policy at the Berlin Social Science Center (WZB)) “In an age of sustainable development goals, there is no more urgent need for the policy makers and the public alike than to have a clear understanding of the complex linkages among energy, innovation, and wealth. Bob Ayres’ book has done a superb job, weaving back and forth between physics and economics seamlessly, in illuminating the history of wealth creation in the past through the conversion of materials into ‘useful things’ based on the consumption of energy, and providing insights into the future when wealth will be created by knowledge accumulation, dematerialization and institutional innovation. It is a must read for all of us who wish for a sustainable future for humanity.” (Lan Xue, Dean of School of Public Policy and Management, Tsinghua University, and Co-chair, UN Sustainable Development Solution Network) From the Back Cover This book is about the mechanisms of wealth creation, or what we like to think of as evolutionary ‘progress’. For the modern economy, natural wealth consists of complex physical structures of condensed (‘frozen’) energy – mass – maintained in the earth’s crust far from thermodynamic equilibrium. However, we usually perceive wealth as created when mutation or ‘invention’ – a change agent – introduces something different, and fitter, and usually after some part of the natural wealth of the planet has been exploited in an episode of ‘creative destruction’. Selection out of the resulting diversity is determined by survival in a competitive environment, whether a planet, a habitat, or a market. While human wealth is associated with money and what it can buy, it is ultimately based on natural wealth, both as materials transformed into useful artifacts, and how those artifacts, activated by energy, can create and transmit useful information. Humans have learned how to transform natural wealth into other forms. Can the new immaterial wealth of information and ideas, which makes up the so-called knowledge economy, replace depleted natural wealth? This seemingly simple question is the grand challenge of the 21st century.