

## Book Review

# Smaller Faster Lighter Denser Cheaper:

## How Innovation Keeps Proving the Catastrophists Wrong

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*Smaller Faster Lighter Denser Cheaper: How Innovation Keeps Proving the Catastrophists Wrong*

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In this book the author discusses (in his words) “How innovation keeps proving the catastrophists wrong” presents the discussion that will be presented along this book. Although the book is divided in four parts, the main arguments fall in just two big categories. The first two parts (1<sup>st</sup> and 2<sup>nd</sup>) make a great effort to show that the more impressive revolutions are related to technological advances that happened since the modern age. In this moment there is one structured short analysis of how these developments could overcome the natural resources limitations. The second half of the book (3<sup>rd</sup> and 4<sup>th</sup>) presents an extensive discussion about energy and their alternatives. In this case the author makes a strong defense of traditional sources of energy against other alternatives like solar, wind, biofuels, etc.

The author’s vision in these first two parts is very optimistic, mainly in part one when he discuss how the main innovations could overcome the resource limitations and expand production making the world smaller, faster, lighter, denser and cheaper. In some sense this view that highlights the role played by technology to overcome challenges is not so evident in the last two parts and in this moment we can notice that this book can be located in the intense discussion related to what kind (source) of energy will be most important in the future. This discussion is the background of the book and become evident using the logic presented as one natural trend in our development (faster, cheaper and denser). It’s interesting to see the main parts of the book with more details.

In part I, “The push for innovation, its consequences and the Degrowth Agenda” there is a comprehensive description of the main innovations in our time. During the presentation the author’s argument that the trends of innovation are creating a world smaller, faster, lighter, denser and cheaper becomes more concrete. In this sense the author presents some great innovations like the vacuum tube, the Diesel motors, the Microscope and the Digital Communications as part of this world of

intense innovations. At the end of this part the author makes one hard critic to the neo-Malthusianism criticizing the lack of credibility in the sciences advances to the humankind to produce more with an increasing productivity. During the entire book we can see one strong critics about the “collapse anxiety” generally associated with green movements and its critics to the natural resources use.

In part II, “Our Attosecond World: how we got here, Where we’re going, and the Companies Leading the Way”, there is a description on how things became lighter and faster in our society with examples obtained from advances in cars and engines and, in a second moment, with the computer industry (from ENIAC to iCloud). There is an interesting discussion relating that “Denser Means Richer: Highly Urbanized Countries Are Wealthier”. In this sense, the prosperity was made possible by the denser food production of the urbanized countries. At the medical field we are noticing the development of one cheaper applied technologies giving an “individualized medicine that is enabled by digitizing humans” generating a better patient care with a reduced cost. Progress and wealth appears as two natural consequences of the technological developments produced by humans acting in the search for improvements. Interesting to notice that negative environmental aspects of the urbanized societies (as for example the recent hydro crisis in some regions) don’t appear in any part of the discussion.

In part III, “The Need for Cheaper Energy”, one turning point emerges with a strong defense of the use of fossil energy (oil and coal) despite the advance of green energy. In the chapter 17, when the author shows that there is a difficulty to overcome the low storage capacity imposed by lithium batteries, there is a brake in his confidence in technological innovations. Otherwise there will be a great defense of recent advances in the oil patch. Completing this scenery, there is a discussion relating the cheaper energy cost of American to their main source based which is based in natural gas production, nuclear production and refined oil output. He argues the recent development related to oil shale make possible to EUA soon overcome Saudi Arabia and Russia in crude oil. Clearly at this moment the author’s preferences toward traditional sources of energy become evident and there will be a great defense of this point of view.

In part IV, “Embracing our Smaller Faster Future”, one can notice that the discussion becomes not so optimistic. There is one direct critic against alternative energy sources mainly wind and biofuels. Wind farms have a structural problem that was related to the low average power (0.9 watts per square meter) compared to oil source (27.6 watts per square meter) . The author mentions that in order to offer the energy demanded by United States it will be demanded about the area of Italy. One author’s affirmations can be considered a good example of the Biofuels in his words are “a crime against humanity” because they have a small power density (0.3 watts per square meter); lower than a modern solar photovoltaic panel 6 watts per square meter. He concludes that an average oil well producing 10 barrels per day generates 27 watts per square meter and an average nuclear plant is more than 50 watts per square meter. We must observe that considering the technology without any improvement he was right in his opinion. Nowadays these numbers are considered “*ceteris paribus*” which means that the discussions about progress and the productivity disappear at this discussion.

The author continues to emphasize a discussion against climate change theories and the alternative green energies capacities to substitute carbon-based energy. He maintains his “climate agnostic” resolutions, despite the scientific consensus that climate change can be considered a reality. In some moments there is some attacks to members to the democratic party and their view about ecological problems.

Some interesting and controversial points to be noted reading the book were: first, the defense of the nuclear green energy, according to the author having more possibilities to offer denser and lower cost energy (make atoms for peace a reality). In this sense the author presents one argument that nuclear energy is clean and green and far superior to any other fuel considering the relation power and density. Even when discussing the Fukushima accident the author shows that the radiation exposure was low and no lives were lost to radiation. Second, the strong defense of traditional sources of energy, because they are cheaper and denser than the renewable sources and, third, their idea that

“The best way to protect the environment is to get richer” in the sense that only wealthy countries can protect the environment.

The book’s intended audience and the book’s success probably was associated with some intense defense of most traditional energy sources. In some sense, although the first half of the book was an intense defense of optimism and innovations sense helping humanity to overcome their limits in the second half there is a defense of the most used energy because there are denser and cheaper but in some sense the discussion related to innovations disappear at this point. Although this change in optimistic view that occurs in the book we can consider a good discussion about the innovations and recent trends in energy.

Considering the new ideas presented, we can ask if the author don’t apply one strong emphasis in the actual state of knowledge discussing energy uses and alternatives. As presented in the first two parts of the book, innovations play an important role to overcome the limits of humanity. The author has important ideas to the defense of fossil energy but at this time we are considering just the actual technology without innovations that can change again all the rules as occurred in the past.