



# SCIENCE AND LONG-TERM THINKING<sup>1</sup>

## THE CLUB OF ROME, A CLUB OF LONG-TERM THINKERS

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The Club of Rome, founded a few months before the European Physical Society, first addressed “the predicament of mankind”. The founders, among them the Italian industrialist Aurelio Peccei and Alexander King, then the head of science at the OECD, were looking for methods of mathematically based forecasts for the future of humankind and of the life supporting systems on this planet.

<sup>1</sup> The article is based on an oral presentation using power-point pictures during the Festakt on 28 September celebrating the 50<sup>th</sup> Anniversary of the European Physical Society

◀ P.30:  
Cover picture of  
Nature, Vol.527,  
25 November,  
2015. Paris Climate  
negotiations as  
an international  
puzzle. Picture by  
David Parkins.

The first – spectacular – result was the book *The Limits to Growth*<sup>1</sup>. The book became a world bestseller (ca 30 million copies sold in dozens of languages), and served as a shock. Figure 1 shows the pivotal picture, the “standard run” covering two centuries and depicting the assumed dwindling of natural resources, the peaking of industrial output, population, food (per capita), and pollution.

Fortunately for the world, there were two major mistakes in the model: “Resources” represented commercially available resources assuming that no progress would be achieved in exploration and exploitation. In reality, exploration and exploitation soared after the “oil crisis” of the 1970s causing a dramatic increase of resource prices, and hence of the profitability of exploitation. The second mistake was the assumption that pollution was strictly coupled with industrial output. Before 1972 that assumption was empirically reasonable, but soon came strict environmental laws in all industrialized countries, leading to much cleaner industrial production.

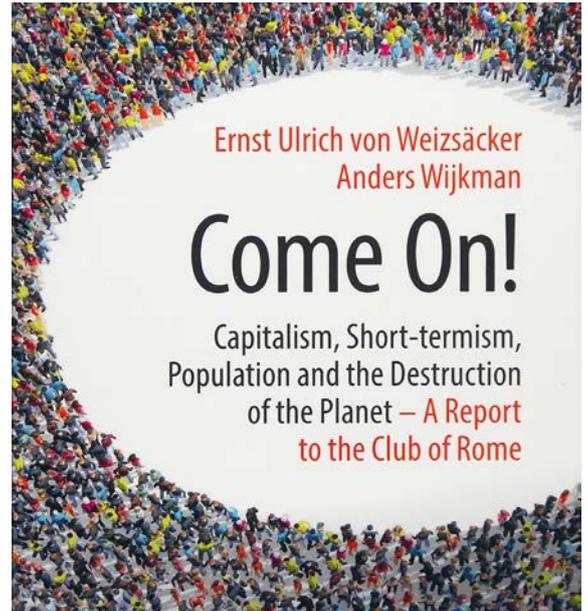
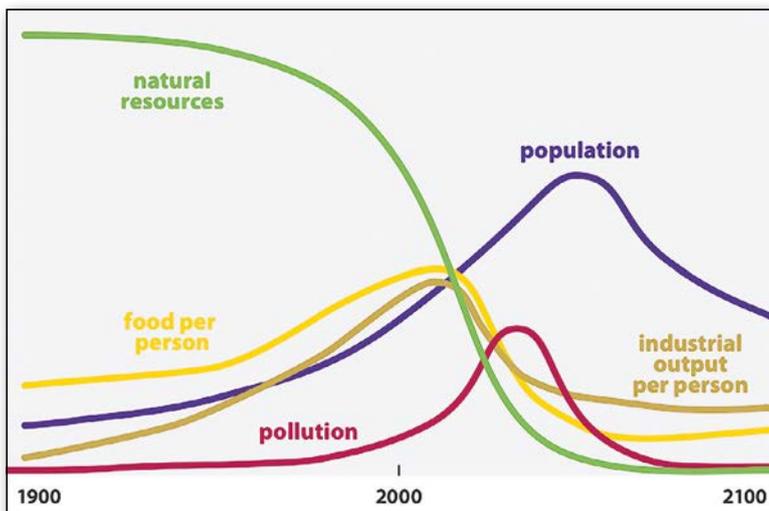
On the other hand, the 1972 study was far too optimistic regarding the two alarming world trends which entered the environmental agenda some fifteen years later: global warming and the rapid disappearance of animal and plant species. In the end, the basic message of *The Limits to Growth* remained correct and must be considered in our days.

▼ FIG. 1:

The “standard run” of five parameters, according to *The Limits to Growth* (footnote 2). It assumes a collapse shortly after the year 2000 of food per person (yellow line), and ensuing population shrinking (blue line). The most conspicuous curve is the green line, assuming dwindling natural resources within less than a century.

### A new Club of Rome Report, called “Come On!”

Some 45 years after the publication of *Limits*, the Club of Rome undertook the writing of a new report addressing today’s challenges and offering solutions. The new book is called “Come On!”<sup>3</sup> and contains three chapters differentiating the two diametrically differing meanings of Come On: (1) C’mon! Don’t tell me the current trends are sustainable! (2) C’mon! Don’t stick to outdated philosophies! (3) Come On! Join us on an exciting journey towards a sustainable world!



The intellectual challenge is the evident but embarrassing distinction between the “empty world” and the “full world”, according to Herman Daly<sup>4</sup>. Figure 2 offers a caricature picture of the difference.

Herman Daly, once chief economist of the World Bank, clearly says that an economy for the full world has to significantly differ from the economy of the empty world. Mining the environment was tolerable in the empty world but is dangerously unsustainable in the full world.

The full world is nowadays called the Anthropocene, the geological age in which one single living species, *Homo sapiens*, is dominating (and in many cases destroying) the rest of the world.

Talking about geological ages clearly signifies the need for thinking long term. What can be the future of humankind and of the natural base for humans and all the other living species? Addressing such questions cannot be done within the time frame of the quarterly reports of commercial companies, let alone of the daily needs and talks of families.

The Club of Rome provided 35 co-authors for *Come On!* – plus a few eminent non-Club members. The Executive Committee of the Club took ownership of the new report by writing a strategic Preface declaring the need for a bold new beginning “*The time has come, we believe, for a new Enlightenment or for otherwise overturning current habits of thought and action that only consider the short term*”<sup>5</sup>. This is a quote from the Preface.

### New Enlightenment

Thinking long term, then, appears to lead directly to the quest for a New Enlightenment. The book shows in detail that some of the heroes of modern economics were perfectly right for their situation of the empty world but would be miserably misinterpreted for the situation of the globalized full world.

For Adam Smith, it was perfectly clear that the geographical reach of the market (of the “invisible hand”) was identical with the geographical reach of the Law. Under such conditions, individual selfishness is indeed helpful for the augmentation of the Wealth of Nations. But today, financial markets are global, and the Law remains mostly nation if not provincial. Financial markets, in search for maximized returns on investments, have begun to blackmail national parliaments and governments to change rules for the benefit of capital and the disbenefit of the poor and of nature.

For David Ricardo, capital remained geographically fixed and was not travelling over the borders. Today, capital is by far the most mobile production factor, ignoring comparative advantages according to Ricardo, and creating absolute advantages destroying the losers and boosting the wealth of the winners.

Modern Darwinism acknowledges that the “weak” genes typically survive being “invisible” in the phenotype and are thus enriched in the genepools of a species, and serving as options to master new challenges that can always occur. Modern economics, on the other hand, finds the extermination of weak options a virtue, not a loss. Social Darwinism according to Herbert Spencer should be seen as a huge misunderstanding from the perspective of modern Darwinism.<sup>6</sup>

The new Club of Rome report then takes up the challenge of the Preface of outlining a new Enlightenment that goes far beyond the simplistic rationalism and reductionism of materialistic analytical philosophy. We postulate the virtue of balance and of complementarity according to Niels Bohr and Werner Heisenberg. If you hear of a quarrel between two persons or camps, our typical reaction is that one side is right and the other wrong, and the search for truth means that the one who is right will beat or even eliminate the one who is right.

In Asian cultures, the same quarrel tends to trigger the reaction “Well, both are right in a sense, but you have to find a reasonable balance.” This is the basic structure of the Yin and Yang philosophy.

We postulate that our civilization in the full world has to find suitable balances between

- Short term and long term;
- The Law and the markets;
- Humanity and Nature;
- Speed and stability;
- Women and men;
- Equity and awards for achievement;
- State (and Constitutions) and religion.

These are seven examples out of perhaps a hundred. But they have one thing in common: In each pair it appears evident that the total victory of one side not only means the defeat of the loser but also means the deterioration if not destruction of the entire system.

The Club of Rome is perfectly aware that the transition to a new Enlightenment will take decades. But nature and humanity cannot wait for decades until restoration and at least deceleration of destructive trends occur. Part Three of *Come On!* representing some 50% of the volume, is therefore devoted to options that can be built up right now and help the world onto a trajectory of sustainable development.

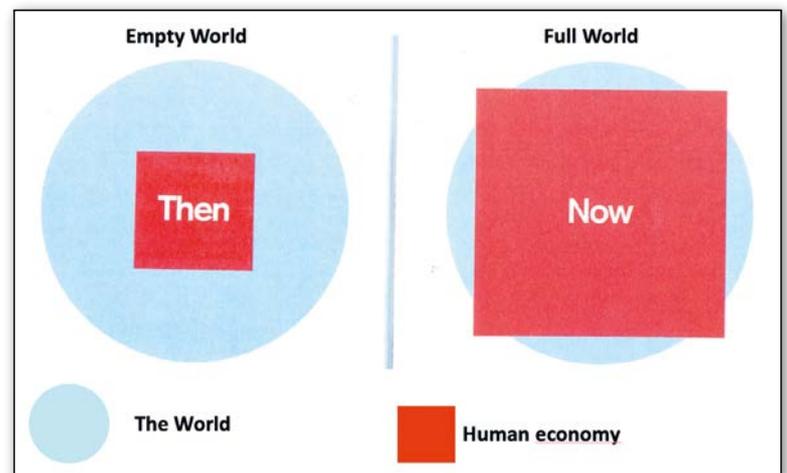
Part Three addresses regenerative agriculture, circular economy, climate-saving energy policies, re-regulation of the financial markets, options for international cooperation (instead of just rivalry). But summarizing all that would require a completely new article. ■

## About the Author



**Ernst Ulrich von Weizsäcker**, Honorary President, The Club of Rome. Born 1939, 1972 professor of biology, 1975 university president, 1994 Director, Institute for European Environmental Policy, 1991 Founding President, Wuppertal Institute for Climate, Environment, Energy. 1998 – 2005 Member of Parliament, Germany, and Chair of the Environment Committee. 2006-2008 Dean, Bren School of Environmental Science and Management, U.C. Santa Barbara, California. Books: 1994 *Earth Politics*. 1997 *Factor Four* (w/ A & H Lovins). 2009, *Factor Five* (w/ Charlie Hargroves *et al.*), 2018 *Come On!* (w/ Anders Wijkman). Homepage [www.ernst.weizsaecker.de](http://www.ernst.weizsaecker.de)

▼ **FIG. 2:**  
In earlier times (actually until about 1950), humanity was small, and nature large and rich: the “empty world”. But then began a steep rise into the “full world”, with exploded population and human consumption and hardly any wild space left.



<sup>2</sup> Donella Meadows, Dennis Meadows, Jørgen Randers, and William Behrens III. 1972. *New York: Universe Books.*

<sup>3</sup> Ernst Ulrich von Weizsäcker and Anders Wijkman. 2018. *Come On! Capitalism, Short-termism, Population and the Destruction of the Planet.* New York: SpringerNature

<sup>4</sup> Herman Daly. 2015. *Economics for a Full World*, Great Transition Initiative [www.greattransition.org/publication/economics-for-a-full-world](http://www.greattransition.org/publication/economics-for-a-full-world).

<sup>5</sup> Quote from the Preface of *Come On!*, page vi.

<sup>6</sup> *Come On!* quotes Andras Wagner (2015, *Arrival of the Fittest*, New York, Penguin) as the most up-to-date summary of evolution according to Darwin, with his mantra being the build-up over millions of years of immense genetic “libraries”.