

CARLOTA PÉREZ. *Revoluciones tecnológicas y capital financiero. La dinámica de las grandes burbujas financieras y las épocas de bonanza*.
Mèxic: Siglo XXI Editores, 2004.

Recension by EULÀLIA FURRIOL

For more than twenty-five years, Venezuelan economist Carlota Pérez has been researching the intensive interaction that occurs between technological change, economic change and political change in the dynamics of historical world processes. Her book, published in English by Edward Elgar Limited in 2002 as: "Technological revolutions and financial capital. The dynamics of bubbles and golden ages", is as its author admits, an essay designed to stimulate debate.

The book explains that economic growth since the 18th century has passed through five different stages, associated with five successive technological revolutions: the Industrial

Revolution; the age of steam and the railways; the age of steel, heavy engineering and electricity; the age of petrol, the car and mass production; and the age of IT and telecommunications. (See attached chart, FIVE SUCCESSIVE TECHNOLOGICAL REVOLUTIONS, 1770-2000, extracted from p. 35 of the book).

The Venezuelan author incorporates the study of financial topics into economic processes and brings together economic and financial processes within the framework of an interdisciplinary perspective, beyond the frontiers of economics. This approach distances her from other followers of economist Joseph Schumpeter, who concentrate basically on economics.

Carlota Pérez therefore analyses each of the five stages outlined, and presents the sequence *technological revolution-financial bubble-collapse-golden age-political agitation*, which starts again approximately every half century, and as the author argues, has its origins in mechanisms that lie in the nature of capitalism itself.

This mechanism arises from three factors of the system, which, as she explains, interact and influence each other: the fact that technological changes are grouped into constellations of radical innovations, forming successive and different revolutions, which modernise the entire productive structure; the functional separation between financial capital and productive capital, each of which pursues wealth by different means; and the immense inertia and resistance to change in the socio-institutional framework, in comparison to techno-economic spheres, stimulated by competitive pressures.

The model of cycles developed in the book is not associated with highs and lows of the gross domestic product or any other macroeconomic variable, values which the author considers sometimes camouflage more than they reveal.

As described in the text, the bursting onto the scene of a group of industries with powerful new dynamics, accompanied by facilitating infrastructures, has obvious large-scale consequences both

Five Successive Technological Revolutions, 1770-2000

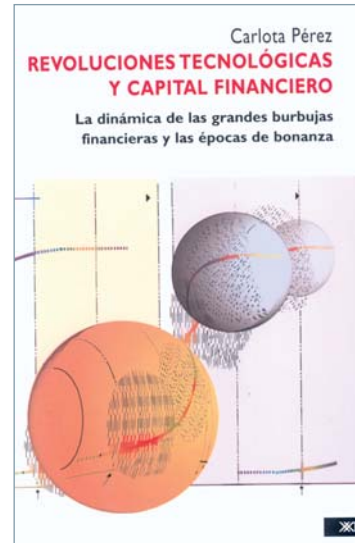
Technological revolution	Popular name of the age	Originating country/ies	Big-bang initiator of the revolution	Year
FIRST	Industrial	Britain	Opening of Arkwright's revolution cotton spinning mills in Cromford	1771
SECOND	Age of steam and the railways	Britain (spreading to Europe and the US)	Trial of the steam engine <i>Rocket</i> for the Liverpool-Manchester railway	1829
THIRD	Age of steel, electricity and heavy engineering	US and Germany overtaking Britain	Inauguration of Carnegie's Bessemer steelworks in Pittsburgh Pennsylvania	1873
FOURTH	Age of petrol, the car and mass production	US and Germany (early rivalry for world leadership) Spread to Europe	First Model-T leaves the Ford car plant in Detroit, Michigan	1908
FIFTH	Age of IT and telecommunications	US (spreading to Europe and Asia)	Announcement of the Intel micro-processor in Santa Clara, California	1971

on the industrial structure and the preferential directions of investment during this period.

In this context, each technological revolution inevitably leads to a change of paradigm: the old organisational models cannot deal with all the advantages of this potential, and the new options and needs lead to a profound transformation in how things are done throughout the economy and beyond.

The book makes it clear that the traditional vision of progress as a linear and cumulative development is as inadequate as the idea that technological change is continuous and random. She develops a model to explain how, in spite of the special features of each historical period, the same sequence repeats itself every half century. It also describes the turbulent and long process of dissemination of each technological revolution, and how the different stages do not have a definite and abrupt beginning and end, but are progressive, involving intensive interaction between the economy and the social institutions, as well as profound changes in both.

Many interesting observations and conclusions are put forward in the pages of the book. For example, that each revolution combines totally new products and industries and other pre-existing elements, and it is often the articulation of the two that generates the revolutionary potential. Or the geographical origins and global dis-



semination of technologies as their maturity increases.

The orderly layout, accompanied by examples, charts and figures, is clearly aimed at facilitating comprehension. This makes for a book of interest not only to economists, but also to everyone with an interest in reading an analysis of evolution and the processes of change.

In fact, the Venezuelan researcher explains her wish for the book to contribute to awareness and reflection that will help society towards an inclusive system of globalisation and growing well-being for all.

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Independent journalist. Collaboration in daily *La Vanguardia* for over twenty years, and in many other media, among them the daily *The Guardian*. Has worked in the press offices of several international events, including the 1992 Olympic Games and in several international conferences organised by the Department of Culture of the Catalan Government. Also collaborates in corporate journals.

