

# Introduction: An Interpretation

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The last quarter of the twentieth century witnessed the apparently boundless rise of two forces: the information revolution and financial markets. Many have chanted the virtues of the one for increasing productivity and of the other for unleashing the drive for wealth that moves the economy forward. In fact, the twenty-first century was inaugurated with claims about the advent of a ‘new economy’ characterized by the flourishing of both those forces and capable of relentless growth.

The collapse of the Internet bubble and the ensuing recession have shaken these beliefs and led to doubt and confusion.

This book will argue that similar productivity explosions and bursts of financial excitement leading to economic euphoria and subsequent collapses of confidence have occurred together before. They are interrelated and interdependent phenomena; they share the same root cause and are in the nature of the system and its workings. They originate in the way technologies evolve by revolutions, in the peculiar manner in which these great upsurges of wealth-creating potential are assimilated by the economic and social system and in the functional separation of financial and production capital.

The main contention is that the full fruits of the technological revolutions that occur about every half century are only widely reaped with a time-lag. Two or three decades of turbulent adaptation and assimilation elapse, from the moment when the set of new technologies, products, industries and infrastructures make their first impact to the beginning of a ‘golden age’ or ‘era of good feeling’ based on them.

For each technological revolution, that time-lag is characterized by strong divergence in the rates of growth of industries, countries and regions as well as a worsening of the trends in income distribution that had previously prevailed. Historically, those decades have brought the greatest excitement in financial markets, where brilliant successes and innovations share the stage with great manias and outrageous swindles. They have also ended with the most virulent crashes, recessions and depressions, later to give way, through the establishment of appropriate institutions, to a period of widespread prosperity, based on the potential of that particular set of technologies.

This book will develop a model to explain why this is so and why, in spite of the unquestionable uniqueness of each historical period, there is a certain sequence of events that recurs about every half century.

It will be held that the full deployment of the enormous wealth-creating potential brought forth by each technological revolution requires, each time, the establishment of an adequate socio-institutional framework. The existing framework, created to handle growth based on the previous set of technologies, is unsuited to the new one. Thus, in the first decades of installation of the new industries and infrastructures, there is an increasing mismatch between the techno-economic and the socio-institutional spheres, as well as an internal decoupling of the economic system, between the new and the old technologies. The process of re-establishing a good match and creating conditions both for recoupling and full deployment of the new potential is complex, protracted and socially painful.

Financial capital plays a crucial role all along. It first supports the development of the technological revolution, it then contributes to deepen the mismatch leading to a possible crash, it later becomes a contributing agent in the deployment process once the match is achieved and, when that revolution is spent, it helps give birth to the next.

In this respect there is a surprising lack of connection between economists studying finance on the one hand and technical change on the other. The followers of the Schumpeterian lead have neglected the financial aspects of the economic process, although they would be the first to acknowledge that the diffusion of radical innovations is inevitably a question of investment and that the role of such new technologies as engines of the economy cannot be played without the financial fuel. Yet the relationship has been consistently ignored. And this has been so, though Schumpeter himself was very clear about the two roles, that of the entrepreneur and that of the financier as the interdependent wheels turning innovation forward.<sup>1</sup>

On the other hand, those who have studied finance – and in particular financial crises – have seldom given attention to the real economy of the production of goods and services (or what Schumpeter called ‘*Güterwelt*’), nor have they dealt much with technology and its relation with investment opportunities. Using the framework to be presented here, one could suggest that this neglect stems from the fact that the biggest bubbles tend to occur when financial capital has practically decoupled from the real economy and taken off on its own. Nevertheless, an economist like Hyman Minsky, who does put innovation in financial services at the core of his explanation of crises, does not make any links between the types of financial innovation made and the specific technologies of the period in question.<sup>2</sup>

This book attempts to weave these two issues together within a wider interdisciplinary perspective, beyond the boundaries of economics.

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1. Schumpeter (1939) p. 104.
  2. Minsky (1975 and 1982).

The argument will be developed in two main parts. Part I is devoted to the discussion of great surges of technology and technological revolutions, their nature, the social process involved in their assimilation and the recurrent sequence of events which describes their diffusion, including the role of finance. This then becomes the frame of reference for examining – in Part II – the changing and also recurrent behavior of financial capital in its relation to technological revolutions. The sections in this part present a narrative of this behavior for each of the phases, illustrated with examples from the present information revolution and from the four previous ones. Part III briefly discusses the internal forces that produce the recurring sequence, summarizes the model and explores some of the implications for theory and policy.

This book is a ‘think-piece,’ the spelling out of an interpretation, with enough illustrations to strengthen the case and stimulate discussion. In most cases the stylized narrative is the chosen manner of presentation. This, apart from being an efficient way of transmitting a thought model, seems particularly suited to the type of explanation proposed, where a recurrent historical sequence has unique manifestations each time around.

