Epilogue

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Throughout this book, we have maintained that economics is about the real evolution of complex societies. Assuming a realistic stance, we argued that a coherent research programme must be defined in our science by the historical nature of its subject matter, and this is why a synthetic view has been presented, discussed, and explored. We further accepted that complexity could be understood in its cognitive, organizational, and societal dimensions. But, again, our strategy has been to privilege the latter, since the problem of cognition is not our theme here, and the organizational complexity suggests too narrow an approach at the level of the economic system. Instead, we wanted to discuss the nature of its dynamics, and that was why we dealt with the co-evolution of technology and the economy, including the organizational forms it imposes.

The micro perspective suggests a limited dynamics, eventually unable to cope with the real complexity of the societies we are studying. Paul Romer (1992) gives the example of a textile factory using fifty-two different operations, all totally interchangeable. In order to establish the optimal sequence, i.e. to adapt its technology, the director of production is therefore faced with a decision problem: he has $52! \sim 10^{68}$ alternatives. This is a gigantic although innumerable dimension, which surpasses the number of seconds that eventually followed the Big Bang until the present day ($10^{17}$). Furthermore, combinatorics does not indicate any algorithm with which to find the optimal path—this is the very same halting problem of the Turing machines. We presume that many real-life decisions are of this nature, and that is why in this regard we follow authors such as Hayek, Simon, and Arthur who suggested that the problem of the chess player is a convenient allegory for the cognitive and decision process of the economic agents: although there are many possibilities during the game (even more than in the problem of our factory director or the number of seconds after the Big Bang), we pick a bounded area and apply our heuristics to that space of possible solutions.

But if this is so, what interests us in economics is mostly the selection of the heuristics and of the social rules for the determination of this path. This leads directly to the institutional forms of each productive order that dominated in the history of modern capitalism. In particular, we discussed the different modes of capital accumulation and technology,
the culture, and the modes of social control prevailing in each epoch. We referred, although very briefly, to the international division of labour from the point of view of evolution of the frontier and leading countries in each period.

(p.372) As time went by, these modes of organization of the institutionalized productive order, or modes of development, evolved and passed through dramatic changes. In order to reconcile the analysis of evolution, the cumulative and irrepeatable process of creating diversity, with a scrutiny of the social structure, which is often based on institutional continuity, we used the concept of long waves of capitalist development. This was applied to successive major examples of structural crises that marked the transition from one order to the following one. Consequently, the second part of this book discussed and identified recurrent phenomena as well as unique traits in these processes.

Institutional change, technological change, transition, and crisis: this is what real-life economics is all about. As a social science, economics is an evolutionary science, and our intended contribution in this book was to argue that technological and social innovation is the key factor for the understanding of the dynamics of long periods in leading economies. Indeed, this is the crucial problem in historical analysis: how do those economies, whose mode of development is being exhausted, recover after some time?

In the same sense, Richard Nelson argued that evolutionary theory is based on the concepts of selection and creation of variety, or novelty:

The general concept of evolutionary theory that I propose . . . involves the following elements. The focus of attention is on a variable or set of them that is changing over time and the theoretical quest is for an understanding of the dynamic process behind the observed change; a special case would be a quest for understanding the current state of a variable or a system in terms of how it got there. The theory proposes that the variable or system in question is subject to somewhat random variation or perturbation, and also that there are mechanisms that systematically winnow that variation. Much of the predictive or explanatory power of that theory rests with its specification of the systematic
selection forces. It is presumed that there are strong inertial tendencies preserving what has survived the selection process. However, in many cases there are also forces that continue to introduce new variety, which is further grist for the selection mill. (Nelson 1995: 54)

With this we agree, simply adding that evolutionary economics is consequently about choice and social responsibility. The vindicated historical dimension of economic analysis only emphasizes this dimension. Unable to predict the future, economics is about our apprenticeship with the past, which matters primarily because this understanding helps us to act in the present and in the future.

Charles Dickens, in his *Tale of Two Cities* (1867), opened the book with what was to become a very often quoted passage for eras of transition such as the one we are experiencing: ‘It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us . . .’

The fundamental thing is to choose.