Abstract  Schumpeterian ‘development from within’ requires imagination, skill and motivation; so does Cattaneo’s ‘psychology of wealth’. Neither can be encompassed by models that rely on deductive rationality, but are twin products of Knightian uncertainty, where the absence of demonstrably correct procedures allows individuals to create domain-limited mental structures. The human mind (as studied by Smith, Marshall and Hayek), is a product of biological evolution which supports the evolution of knowledge and of economic systems. These are non-biological processes; both require (fallible) bounds to uncertainty, which are provided by (evolving) formal and informal organisation, including institutions.

Keywords  Intelligence · Uncertainty · Imagination · Domain-limitation · Organisation

JEL Classification  B52 · D83 · O12 · O31

1 Foreword

The objective of this paper is to relate entrepreneurship to a theory of the human mind, setting both within an evolutionary perspective. The first requirement, therefore, is to indicate what this perspective implies. As a generic concept, I take evolution to be the self-transformation of a system through the internal production and diffusion of novelty (Witt 2003, 280). The production of novelty may be a response to external events, but this response, and indeed the perception of the external events, is internally generated; this distinction is made explicit in Schumpeter’s account of ‘development from within’ (Schumpeter 1934, 63). Changes in technology and consumer preferences are treated as changes in the data to which the economy adapts (Schumpeter 1934, 65); such adaptations are to be explained
by co-ordination theory, and are contrasted with entrepreneurial action to induce changes in preferences and (especially when entrepreneurship is located in large firms) changes in technology.

This evolutionary self-transformation requires a combination of three processes: the emergence of variety, selection among this variety according to some reasonably systematic criteria, and retention of the selected variants, at least over a time-scale that is significant for the particular phenomena being studied. Neo-Darwinian biology relies on a particular subset of these criteria, which prescribes, for example, absolute separation between the selection environment and the kinds of variation that are produced; it therefore excludes anything corresponding to Schumpeterian entrepreneurship, or indeed any kind of intentionality. Penrose (1952) rejected attempts to justify reliance on economic models that assumed perfectly-informed rationality by invoking biological analogies which excluded human purpose along with any traces of rationality; however there can, conceptually, be many evolutionary processes, operating at different levels and in a variety of ways. Some of these may be connected; and in the fourth section of this paper I shall suggest that the biologically-evolved characteristics of the human brain (the neo-Darwinian explanation of which is not here at issue) have created the conditions for the significantly different processes of economic evolution. There may also be interdependence, or co-evolution, between similar processes, for example between the evolution of capabilities and of the firms which combine them; this particular relationship will not be explored here, but should be an important topic in evolutionary economics.

Though evolution provides the perspective and not the theme, it is important to recognise that this notion of evolution necessarily excludes the possibility that all the phenomena being studied – such as economic outcomes – are to be explained as rational choice equilibria, because these equilibria result from correct ex-ante deduction, whereas evolution operates through ex-post selection among alternatives that are based on conjectures. There is a methodological sub-theme to this paper, and it is explicitly Schumpeterian. Schumpeter was interested in ideas – for many reasons, but above all because ideas influence events. In particular, ideas about the economic system could change the way that the system worked, through their effects on individual actions and economic policy. This was the message of *Capitalism, Socialism and Democracy*. The criteria by which economic theories (and especially the models which purport to represent them) are appraised may have major impacts on the admissibility of ideas: the appraisal criteria of standard economics, such as internal coherence, tractability, and consistency with particular conceptions of rationality and equilibrium, make many topics undiscussable, and may force practitioners into perverse interpretations and lead to policy conclusions that are inappropriate or even disastrous. In *Capitalism, Socialism and Democracy* Schumpeter (1943) denounced the errors of both Marx and neoclassical economists. Much earlier he had set out the basis of his own ideas.

2 Schumpeter in Milan

Joseph Schumpeter took care to distinguish his theory of economic development from the theory of a fully co-ordinated economy. Development ‘from within’ was the result of human initiative; by contrast, and despite his admiration for Walras’s