

HOW EVOLUTIONARY IS SCHUMPETER'S THEORY OF ECONOMIC DEVELOPMENT?

ULRICH WITT

Despite the enormous prominence of the work of Joseph A. Schumpeter in terms of citations there is nothing like a Schumpeterian school in economics—even though, particularly during his tenure at Harvard University from 1932 until his death in 1950, Schumpeter had extremely talented students in his classes. Many of them—Bergson, Georgescu-Roegen, Goodwin, Hirshleifer, Musgrave, Samuelson, Stolper, and Tobin, to mention just a few—became eminent economists in their own right, and usually recalled Schumpeter's classes with sympathy, if not admiration. In their research, however, they went their own, diverse ways without carrying Schumpeter's thought on the development of modern capitalism much further. The reason, it will be claimed here, is that Schumpeter left no conclusive theoretical system to his students, as did Mill or Marshall before him, and Samuelson after him. What he left rather was an oeuvre dealing with an enormously broad range of topics in a rather eclectic fashion, albeit framed by, and interpreted within, a distinct economic world-view.

It is especially in his two great, and undisputedly most original, works—*The Theory of Economic Development* (1912/1934) and *Capitalism, Socialism and Democracy* (1942)—that Schumpeter most clearly reveals his world-view. It seems to be shaped partly by Schumpeter's own historical experience of the unsteady and unbalanced economic growth process in the period of "promoterism" and rapid industrial expansion in Europe in the late 19th and early 20th centuries, and partly by the impact and the repercussion of the popular Marxist teachings of a crisis-prone capitalist development. While passing through booms and crises, prosperity and depression, capitalist economic development had created previously unknown levels of economic achievement in production, consumption, exchange, and even in the institutional set-up of the economy. Any attempt to theorize that historical record (and, indeed, the continuing development since) can hardly fail to take account of the role of innovations and innovativeness, of entrepreneurship, and of incessant economic change at all levels of the economy. Yet, when the young Schumpeter was writing, all these concepts and the corresponding theoretical conjectures were, at best, discussed loosely at the margins of economic theory. In fact, these concepts stood outside the Newtonian paradigm of an ever-equilibrating economy, a paradigm that, under the influence of writers like Jevons, Walras, Edgeworth, Pareto, Clark, and Marshall had gained increasing adherence by the early years of the 20th century.

Schumpeter was fully aware of all this. In his habilitation thesis (Schumpeter 1908) he had given a survey-like discussion of precisely those recent developments in "pure" economic theory in the non-Germanic world; this was published as his first book, *Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie* [*The Essence and Principal Contents of Economic Theory*]. In the later omitted Chapter 7 of his second

book, *Theorie der wirtschaftlichen Entwicklung* [*The Theory of Economic Development*] (Schumpeter 1912)—the focus of the present issue—he clearly recognized the heuristic analogy to gravitating systems underlying that “pure” theory. He argued that, even though this is rarely explicitly stated, “pure” economic theory, which he equated to “static” (or comparative static) theory, excludes any possibility of development occurring from within the economic system. Schumpeter (1912) therefore felt the need to supplement that theory, and he summed up in Chapter 7 what he called the “developmental” method. The book of 1912 is actually an elaboration of an earlier exposé (Schumpeter 1910) that presented the hypotheses about capitalist development framed within a business cycle theory. Perhaps this theoretical frame may have occurred straightforward to Schumpeter, given the connotations of his economic world-view. Perhaps, he also expected his interpretation to be more easily acceptable in such a form to the adherents of the neo-classical approach.

Yet, the great fame of the book of 1912 notwithstanding, its main concern—to establish a developmental approach—was irreconcilable with, and therefore never integrated within, neo-classical doctrine. Even within business cycle theory, the influence he undoubtedly had (cf. Haberler 1937), has faded. Schumpeter’s endeavour to improve his grasp of the business cycle phenomenon by ever more descriptive and “technical” extensions, culminating in the two monumental volumes of Schumpeter (1939), could not prevent the Keynesian and later neo-classical interpretations from dominating the scene. While of minor importance in Schumpeter (1939), developmental considerations were forcefully reintroduced in new form and quality in Schumpeter (1942). The encompassing reflections on the future of capitalist development in that book are clearly a response to his impressions of American capitalism after his move to Harvard. But the perspective from which the book is written is still that of the Old-World debate in which the repercussions of Marxian projections figure prominently.

In an economic world-view in which the incessant change of the capitalist economy plays the central part, it seems natural to ask what possible historical regularities may exist within, and what driving forces are behind, those changes. It was Schumpeter’s ingenious insight that a theoretical approach conceived to deal with features of gravitating, rather than self-transforming, systems is not well suited to provide answers to these questions. He concluded that it would be his mission to provide a theoretical approach that could account for the features of a self-transforming system, based on its internal dynamics rather than seeking change through external causes or stimuli. But, as can clearly be noted in Chapter 7 of *The Theory of Economic Development* (TED), he was determined to do so entirely on the basis of received economic concepts that involve few, if any, developmental ideas. In particular, Schumpeter avoided the term “evolution” and a more general inquiry into the character of evolutionary change. He consistently denied biological thought any relevance both on the formal and the substantive level.¹ As will be argued in this paper, it may have

1 This is in remarkable contrast to the Darwinian undertones in more recent writings reviving Schumpeterian ideas in evolutionary economics (as in Nelson and Winter 1982). It must be left to biographical inquiries whether and when Schumpeter became familiar in any detail with the Darwinian theory of evolution. At the only place in Chapter 7 of Schumpeter (1912) in which he touched on possible formal or material relationships between his theory and biology, he did not refer to the Darwinian notion of phylogenetic evolution, but to the process of ontogenetic development of the organism—and rejected it.

been precisely because of his reluctance to consider the evolutionary character of change in more abstract terms that Schumpeter failed to reach a level of generality necessary for elaborating a conclusive theoretical system to explain economic change.

Even though in Schumpeter (1912) the general features of an evolutionary theory show up, Hodgson (1993: Chap. 10) is right in his verdict that Schumpeter's wrestling with an economic reasoning that had originated from comparative statics could not produce a coherent alternative to the neo-classical paradigm. Instead, we find a rich set of original and fruitful conjectures and observations which are hampered, from the beginning, by theoretical *ad hoc* constructions induced by the business cycle framework and, later, by the weaknesses of a philosophy of history in a Marxian spirit. To substantiate these claims the present paper proceeds as follows. In order to establish a conceptual frame of reference for assessing Schumpeter's theory of economic development, the first section outlines some abstract characteristics of evolutionary theories. With this as background, the next section discusses the argument in Schumpeter (1912)—which, as mentioned, is cast in terms of a business cycle theory. The paper then turns to Schumpeter (1942) and tries to identify the problems emerging in his historical thought, impressive and inspiring as it undoubtedly is, from the point of view of evolutionary theory. The paper closes with some concluding comments.

WHAT IS AN EVOLUTIONARY THEORY?

The concept of evolution is an offspring of late 18th and early 19th century debates within philosophy and the social sciences (cf. Schumpeter 1954: Part III, Chap. 3; Bowler 1989: Chaps 3 and 4). Modern notions of evolution, by contrast, are usually informed by the more recent and much more successful Darwinian theory of natural selection with all its powerful extensions developed in biology. This also holds true in economics where a characterization of an evolutionary approach is often attempted by referring to Darwinian theory in evolutionary biology—usually by way of analogy (e.g. Boulding 1981; Nelson and Winter 1982; Hodgson 1993). The explanatory power of the (neo-) Darwinian theory in relation to evolutionary phenomena within the biosphere can hardly be denied, but its relevance for the human sphere, where human intelligence and intentionality are of significant importance, is unclear and disputed. In place of debating the suitability of transferring biological analogies to economics, with all the dangers this implies, the discussion of the meaning and form of an evolutionary approach to economics would therefore be better founded on a generalized notion of evolution.

Accordingly, let us start by introducing a general definition of evolution as the self-transformation over time of a system under investigation. Such a system may be a population of living organisms, a collection of interacting individuals as in an economy or some of its parts, or even the set of ideas produced by the human mind (Popper 1972). Self-transformation, it will be argued here, follows regularities, yet these regularities are too weak to allow for reliable prediction of the future results of evolution. Evolution is an “open” process in which the capacity of a system to produce novelty is reflected, but, as the notion of novelty indicates, it is only the way

in which this happens that can be expected to be anticipated as a regularity, not the outcome itself.

In general, evolutionary theories, in whatever discipline they may be moulded, have certain properties which enable them to describe and explain processes of self-transformation (cf. Witt 1993). An evolutionary theory is:

- (i) dynamic—such that the dynamics of the processes, or some of their parts, can be represented;
- (ii) historical—in that it deals with historical processes which are irrevocable and path-dependent;
- (iii) self-transformation explaining—in that it includes hypotheses relating to the source and driving force of the self-transformation of the system.

Concerning property (i) there is little to say, if it is agreed upon that the aim of the theory is to trace the path of evolution. (Dynamic theories are commonly understood to refer to a time-scale such that the events to be described or explained can be explicitly dated.) An immediate consequence is of course that, with regard to economics, the methods of static and comparative static analysis lose the prominence that they have traditionally been accorded. Property (ii) implies additional demands on the kind of dynamics being discussed. The precise meaning to be attached to terms like irrevocability and path-dependency, is open to interpretation. The following is assumed here. Even though in the historical process recurrent patterns may occur, the process does not repeat itself identically and, hence, it is “irrevocable” (Georgescu-Roegen 1971: 196–197). Accordingly, deterministic difference or differential equations may, for example, be used in evolutionary theories as an idealized expression of a recurrent pattern without necessarily violating the irrevocability condition. However, it may be the case that such difference or differential equations do not necessarily satisfy the path-dependency criterion. The latter excludes, for example, all cases of unique equilibria from the domain of evolutionary theories.² In the Newtonian world-view, the dynamic patterns of convergence to unique equilibria have traditionally preoccupied the sciences. Dynamic systems that display strangely converging, irregular or even divergent motions have received little attention. However, if incessant change, i.e. the unending series of transitions, is the crucial feature, then the dynamics of a system cannot completely be captured in terms of convergence properties leading to an equilibrium, that is, a state of rest.

Even if evolutionary processes pass through equilibrium states, the crucial question is how the divergence from equilibrium comes about. In the Newtonian physics of closed systems—and in neo-classical economics—the causes of divergence are considered to be exogenous. Forces outside the system and, hence, outside the explanatory domain of the respective theory, trigger disturbances or “shocks” that

² This is so because, if a globally asymptotically stable equilibrium exists for an autonomous dynamical system, then each solution of the system is bound to converge to the equilibrium independent of the initial condition and, hence, independent of the path which is taken. Path-dependency of a process is compatible, however, with the existence of multiple equilibria for those processes which are either locally asymptotically stable or unstable. This is to say that, if the basic dynamic pattern of convergence to an equilibrium appears at all in the domain of an evolutionary theory, the theory can be expected to be faced with the task of explaining why multiple equilibria exist or emerge and whether the process may be biased towards one or the other solution by the path it is taking.

push the system out of its state of rest.³ But since evolution cannot be conceptualized as a sequence of external disruptions and internal equilibrations alone, there must exist endogenous causes of change. Indeed, it is at this point that property (iii) comes in. While properties (i) and (ii) can be satisfied by theories not usually associated with the notion of evolution as, for instance, neo-classical theories of non-tâtonnement market processes (cf. Fisher 1983), property (iii) is the generic feature that must be exhibited by all evolutionary theories.

To the extent that change is endogenously caused (as the notion of self-transformation suggests), evolutionary theories need to explain the source(s) and regularities of that kind of change. Not surprisingly, sources and regularities vary greatly between the different domains in which evolution occurs. In biological evolution, genetic recombination and mutation follow regularities very different from those involved in the creation of, say, new grammatical habits and the coining of new idioms in the evolution of language. Both these cases differ, in turn, from the invention and adoption of new production techniques or of new consumer goods in the evolving economy. Yet, in all these cases there seems to be a common, abstract causation of evolutionary change: the emergence of novelty within, and its dissemination throughout, the system under consideration. If this is true, endogenous change originates, in the last resort, from *the capacity of the system under investigation to produce novelty*. The novelty is specific to each field of study. Unless it is investigated in its concrete meaning in the respective disciplinary context, novelty becomes a rather amorphous concept which is difficult to deal with. In the following discussion of Schumpeter's theory of economic development in the light of the criteria for evolutionary theories given above, we will therefore focus on the economic context in which novelty emerges and is disseminated.

THE "THEORY OF ECONOMIC DEVELOPMENT"—A CRITICAL ASSESSMENT

As already mentioned, the approach in Schumpeter (1912), published with several revisions—and without the original seventh chapter—in the English edition of 1934, emerged in the context of, and with reference to, contemporaneous equilibrium theories.⁴ As compared with these Schumpeter suggested two crucial changes. First, he wanted to abandon the static method of analysis in favour of a dynamic approach. Accordingly, he re-interpreted the (static) notion of equilibrium in terms of a dynamic approach as a stationary state of an economy. Taken literally, such a state is rarely attained in reality because of disruptions emanating from outside the sphere of economics. Schumpeter therefore used the notion of a "circular flow" to characterize

3 Evolving systems are, of course, not closed systems. None the less, it may even here be useless to try to explain all causes of changes that affect them. Some of them simply reside outside the domain proper of the respective evolutionary theory. In the case of economics, for example, such causes may be changing weather conditions, natural disasters, wars, or political upheavals.

4 To the disapproval of some members of the Austrian school (see Mises 1978: 36; Boehm 1990) Schumpeter had originally started out in his habilitation thesis submitted to the University of Vienna (Schumpeter 1908) with a review of the contemporaneous equilibrium theories of Cournot, Walras, Edgeworth, Pareto, Marshall, and Fisher—in an obvious attempt to distinguish himself from the received teachings in Vienna. Only shortly after, and apparently inspired by ideas of J.B. Clark and W.G. Lanworth Taylor (cf. Schneider 1951), he outlined an alternative interpretation in Schumpeter (1910) which anticipated the core of his book of 1912.

the state of affairs in which ordinary businesses and routines prevail in the behaviour of economic agents, and where nothing significantly new happens even if some data change due to exogenous disturbances. Consistent with this understanding, the second innovation Schumpeter introduced was the idea that there are also changes in the economy that are caused endogenously.⁵ Since actual economic development—according to Schumpeter (1934: 58) consisting of a sequence of historical states where each particular one can only be understood in the light of the preceding ones—is obviously not caught in a circular flow at all times, economic theory is confronted with the question of what makes the development depart from states of circular flow. Schumpeter (*ibid.*) argued that an answer could not be achieved in terms of an equilibrium theory, as such a theory describes a development that “contains nothing, which suggests the possibility of development *intrinsically generated from within itself*”.⁶

With the emphasis on the dynamics, the historical interpretation of the development process, and the endogenous causes of economic change, all the characteristics of an evolutionary theory summarized in criteria (i)–(iii) of the previous section are seen to be already mentioned in Schumpeter’s interpretation of economic development. How are they dealt with in substance in his theory? A key concept is the notion of “new combinations”, that is the innovative reallocation of economic resources and changes in organizational forms.⁷ These innovations cause considerable adjustment problems. They emerge, it is claimed, in coexistence with established activities before beginning to supplant them, often by competing with the preceding forms of economic behaviour in goods and/or factor markets.⁸ To Schumpeter, the carrying out of new combinations is a unique achievement which only “entrepreneurs” are able to accomplish where, contrary to the usual definition, being an “entrepreneur” is not denoting an occupation or a profession (and even less capital ownership), but rather denotes a capacity or function. The characteristic attitudes of such entrepreneurs are claimed to be initiative, authority, imaginative foresight, leadership, best personified by the figure of a “promoter”, a “captain of industry” (as long as he or

5 Despite his frequent admiring acknowledgments of Walras’ achievements in improving “pure” economic theory (cf. Swedberg 1991: Chap. 2), Schumpeter was clearly critical of the limitations of “pure” economic theory—and, hence, Walras’—which he wanted to overcome with this second innovation. The assessment of Schumpeter’s attitude towards Walras given in Hodgson (1993: Chap. 10) is therefore misleading.

6 Schumpeter (1912: 75, my italics and translation, U.W.); the quotation is from the Appendix to Chapter 1, which has been omitted from the English edition of 1934. In Schumpeter (1934: 63) a similar reasoning can be found: “Should it turn out that there are no such changes arising in the economic sphere itself, and that the phenomenon that we call economic development is in practice simply founded upon the fact that the data change and that the economy continuously adapts itself to them, then we should say that there is *no* economic development. By this we should mean that economic development is not a phenomenon to be explained economically, but that the economy, in itself without development, is dragged along by the changes in the surrounding world, that the causes and hence the explanation of the development must be sought outside the group of facts which are described by economic theory.”

7 Schumpeter (*ibid.*: 66) enumerates product innovation and major differentiations in the product quality, process innovation in production or selling techniques, opening up of new outlets at home and abroad, opening up of new input markets and sources at home and abroad, changes in market and/or firm organization, as in cartelization, promotion of mergers, and formation of trusts.

8 As has often been noted (cf., e.g. Streissler 1981), the role of banks assisting innovators in acquiring the necessary resources for new combinations seems to be perceived quite naively by Schumpeter. Banks are prepared, at every ruling interest rate, to satisfy every innovator’s demand for credit through money creation (Schumpeter 1934: 137).

she is innovative) as opposed to the “plain businessman” or manager who only does business as usual (ibid.: 74-94).

Considerable emphasis is given to the explanation of the entrepreneur’s motivation. Typically, it is claimed, an entrepreneur shows little interest in “hedonistic satisfaction” that might result from his or her efforts (ibid.: 92). She works restlessly out of what, in more modern terminology, would be called achievement motivation (McClelland 1961) and a craving for recognition. Dreams and wishes to found a private kingdom are mentioned; the sensation of power, leadership and authority, whose fascination is particularly strong for such people who have no other chance of achieving social distinction; the will to conquer, the impulse to fight, and the satisfaction derived from getting great things going. Only later, in the context of a discussion of the surplus (ibid.: 128-156) is the profit motive mentioned. A successful carrying out of new combinations promises “promoters’ profits”. As the innovation is imitated and eventually becomes routine, these profits will, however, be competed away. (None the less, promoters’ profits are, according to Schumpeter, by far the most important source for making large fortunes.)

In short, referring to criterion (iii) of the previous section, we can summarize the main hypothesis on the source and driving force of self-transformation in Schumpeter’s theory of economic development as follows:

Hypothesis 1: Change that is endogenously generated within the economy is brought about by the innovative activities of entrepreneurs, the only agents who are capable of carrying out new combinations of resources and transforming organizational forms.

It is important to note that information regarding innovation possibilities is considered to be readily available by Schumpeter (1934: 88). He holds that inventiveness and creativity have no great role to play in entrepreneurial capacity. It is not the entrepreneur who figures out new possibilities. These are already present, often in the form of common knowledge, abundantly accumulated by all sorts of people. It is the “doing the thing”; the will to demonstrate that mere possibilities can be turned into reality, that constitutes the specific contribution of Schumpeter’s entrepreneur. Given these exceptional qualities it stands to reason that entrepreneurs are rare—in any case much less numerous than those, who as factory owners, managers, or administrators, personify the “plain businessmen”. This means, however, that the crucial prerequisite for entrepreneurial activity—novelty—is actually treated as exogenously given. Its emergence is left unexplained by Schumpeter’s theory, a delicate point to which we will return below.

If new ideas and new knowledge are always amply available, then one might expect that entrepreneurs would be able to draw on such a supply in a steady manner, so that there would be a continuous flow of innovations in the economy. Yet Schumpeter argues that the innovations disrupting the circular flow of the economy periodically come in waves (ibid.: 214). The explanation he gives for the periodical patterns is based on two rather peculiar hypotheses. First, it is submitted that conditions in the circular flow are such that carrying out the new combinations meets serious obstacles and many forms of resistance. Only the most gifted entrepreneurs, the “pioneers” and the “leaders” are able to overcome these. Once this has been achieved, however,

the way is paved for less and less gifted entrepreneurs. Underlying this view is the assumption that among those businessmen or businesswomen who are able to innovate at all, entrepreneurial capacity is a normally distributed phenomenon. On the one extreme of the distribution of entrepreneurial talent are the pioneering innovators, on the other the least daring imitators. Second, it is claimed that the consequences of carrying out new combinations are not equally intelligible in different states of the economy (Schumpeter 1910: Sect. 6). It is only in the circular flow that the future of the economy appears calculable. Apparently, Schumpeter (1934: 243) considers this a necessary condition for the pioneering entrepreneurs to dare to undertake new ventures.

Taken together, the two arguments imply that entrepreneurs appear “swarm-like” in an order of decreasing innovative capacity. A new swarm enters the scene only after the state of “circular flow” has each time been restored. To put it in the form of another simple hypothesis which reflects the dissemination of novelty in the course of evolution:

Hypothesis 2: A necessary condition for the first, most skilled entrepreneurs in a swarm to introduce a major innovation is a state of circular flow where the economic situation is calculable. The frequency with which ever more imitative entrepreneurs follow, in the course of time, is a monotonous transformation of the density function of a normal distribution of entrepreneurial capability.

The special conditions summarized by Hypothesis 2 turn Schumpeter’s theory of economic development into one of an unsteady growth process passing through “prosperity and depression” (Schumpeter 1910: Sect. IV), that is, into a business cycle theory (as discussed in detail in Schumpeter 1934: 212–255). The example which the pioneering innovators set and the multiplier effects which they trigger off in various industries enable less capable imitative entrepreneurs to implement new combinations on their part. Eventually, the wave of innovations fades out in imitative adjustments where no further entrepreneurial talent is required. At this point what was originally innovation, becomes a matter of routine. Overcapacity has been built up, and prices tend to decline. The promoters’ profits are competed away. The boom comes to an end. Deflation caused by credit repayment induces a demand contraction. Depression results and lasts until all those producers who are not able to cover their costs have been driven out of business and a new, stationary phase of circular flow has been reached—albeit a phase where the economy is operating at a higher level. Thus, the “achievements of the boom” are presumed to be preserved in the form of an increased flow of goods and services, reorganized production, reduced production costs, and promoters’ profits being transformed into real income growth (ibid.: 241–251). The necessary condition for the next innovation-driven business cycle to start is thereby restored.

In assessing Schumpeter’s theory of development there can be no doubt that it deserves the merit of having identified, in an original and independent way (particularly independent of Darwinian analogies), crucial ingredients of an evolutionary theory in economics. This is indeed an ingenious creative achievement. Yet, the particular hypotheses of his developmental theory fail to actually realize the potential

of an evolutionary approach; their relevance may therefore be debated. Consider the problems related to Hypothesis 1 first. Schumpeter draws attention to the crucial role of innovations or the “carrying out of new combinations”. Innovations have ever since been appreciated as a core concept in Schumpeterian economics. In Hypothesis 1 the concept is, however, tied to the figure of the “entrepreneur”; in fact, this is the figure on whom the whole burden of explaining economic evolution has been imposed by Schumpeter. In support of the explanation little more is offered than a psychological characterization of the exceptional entrepreneurial personality resembling a kind of an elite theory.⁹

In terms of understanding the driving forces behind economic evolution, the truly serious constriction implied by Schumpeter’s interpretation of the entrepreneurial role lies in his treatment of novelty. In his methodological considerations Schumpeter emphasizes the endogenous causation of economic change. In his theory of economic development, by contrast, the exclusive focus on innovations—submitting that entrepreneurs do not have to search for, discover, or invent the new combinations—is, in effect an attempt to avoid an explanation of the emergence of novelty. (It corresponds to the somewhat artificial distinction between inventive and innovative activities that Schumpeter makes.) An explanation of how new knowledge is created, and what the feedback relationships between search, discovery, experimentation, and adoption of new possibilities look like, and the respective motivations—all this would be necessary in order to really be able to treat economic change as being endogenously caused.

With the focus on entrepreneurial skills in *promoting* innovations, rather than conceiving them, attention is diverted from general human creativity and inventiveness and the motivations underlying it as crucial elements of evolutionary change. Relatedly, with the exclusive emphasis on innovations carried through by heroic entrepreneurs, the role of all unspectacular innovation-driven forms of economic change is played down in Schumpeter’s approach. His discounting of the idea that gradually ongoing change—and the inventiveness underlying it—could transform the economy, is brought home by his powerful metaphor of stagecoaches being added in any quantity you like, but never adding up to a railroad. “Dime a dozen” innovations which may well be argued to be important carriers of gradual economic change are discarded. But, in a developing market, to give an example, many small-scale innovative activities may sum up to a major breakthrough not carried out, not designed, and possibly not even expected by single (entrepreneurial) individuals. It is not unlikely that “plain businessmen” and even consumers contribute to this kind of innovation in a significant way. Schumpeter (1934: 65), by contrast, explicitly attributes a passive and non-innovative attitude to these agents, treating changes of tastes and behaviour of consumers as “data changes”. This ignores such features as innovative buying and consumption activities, attempts to gain new sources of information, or to improve one’s own situation by setting up a bargaining position. The same can be said for the

9 Interestingly, Schumpeter not only sees entrepreneurs as the single driving force in the continuous reorganization and further development of the capitalist economy. He also holds that, due to their acquisition of financial wealth, they are the recruiting base for the “the upper strata of society” (Schumpeter 1934: 155-156). According to Streissler (1981) this glorification of the entrepreneur is not consistent with the actual social conditions in Imperial Austria of Schumpeter’s time. But there seems to have been an academic tradition behind this idealization—with the very same view of the entrepreneur, and even the same terminology, in the work of Schumpeter’s teacher Friedrich von Wieser (cf. Streissler 1983).

supply side of the factor markets. Thus, because of his rather one-sided interpretation of the source and driving force of self-transformation (as summarized by Hypothesis 1), Schumpeter fails to acknowledge other important facets of economic evolution.

Several questions can also be raised with regard to the dissemination of the fruits of innovation throughout the economy, as portrayed by Hypothesis 2 and the rather arbitrary “ratchet effect” which it postulates. For example, if, for pioneer innovations, an extraordinary personality, motivation, and creativity are necessary attributes, is it convincing then that these same personalities simply accept their promoters’ profits being competed away via imitation in the later stages? A more plausible assumption would have been that these extraordinary entrepreneurs are eager to, and have the means to, counter the dwindling of their leading position by converting more of the supposedly abundant inventions into innovations. This would mean, of course, that there is a feedback from the performance of the pioneering entrepreneurs in the course of the diffusion process to their motivation to trigger further innovative activities. A declining innovative lead would tend to induce individual innovative activities. Clearly such an “individualized” feedback is at odds with the “ratchet effect” hypothesis, as it is with the notion of business cycle patterns.¹⁰ It was only half a century later that, as a result of a reconsideration of the evolutionary concepts in Schumpeter’s work, the implications of an individualized feedback were seriously considered by Winter (1971).¹¹

AMERICAN EXPERIENCES AND THE TURN TO HISTORICISM

Thirty years after the German edition of *The Theory of Economic Development* had appeared, Schumpeter published a book which documents the direction into which his evolutionary thought developed further, namely his *Capitalism, Socialism and Democracy* (1942). In this new publication, the business cycle framework is dropped. The reader is offered instead a long run view of the historical transformation of firms, markets, and capitalism as a whole. In a sense this seems only logical. If the theory discussed in the previous section is stripped of the specific elaborations on cyclical patterns of development, what remains but a scenario of perpetuated economic growth and increase of material welfare due to the incessant innovative efforts of carrying out new combinations? However, Schumpeter (1942) chooses to embed these considerations in the framework of an ambitious edifice of historical speculation, and references at various places point to Marx’s philosophy of history as the source of inspiration. The grand view of the historical fate of capitalism which Schumpeter gives, builds upon one major modification of Hypothesis 1. The entrepreneur is replaced by the impersonal organization—the large corporation, the trust—as the driving force of economic evolution.

Schumpeter develops this modification by advancing two arguments. First, he holds

10 Schumpeter seems to have been well aware of this. He concedes (ibid.: 224): “If the new enterprises in our sense were to appear independently of one another, there would be no boom and no depression as special, distinguishable, striking, regularly recurring phenomena.”

11 Furthermore, one may ask: if the entrepreneurs initiating a new wave, whom Schumpeter considered the most gifted, must be able to calculate the consequences of their carrying out of new combinations, how then does the growing number of follow-up innovators, considered to be less gifted, reach decisions on their ventures? Do the latter not actually face increasingly turbulent conditions? Apparently, Schumpeter assumes that the possibility of imitating renders all calculation needs unnecessary.

that large enterprises have gained a comparative advantage in the process of “industrial mutation . . . that incessantly revolutionizes the economic structure *from within*” (ibid.: 83), that is, in the carrying out of new combinations. As a rule the big industrial units have greater capital resources and obtain credit more easily to finance new methods of production, organization and distribution. Second, the entrepreneurs are divested of the exclusive position as the ones capable of carrying out new combinations—because innovation is being reduced to routine. “Economic progress tends to become depersonalized and automatized. Bureau and committee work tends to replace individual action” (ibid.: 133). Schumpeter goes on not only to surmise a decline in the figure of the promoter, the industrial leader, but an ultimate decline of the bourgeoisie in general, of which the entrepreneur is portrayed as pillar. By their central planning procedures the large trusts are able to efficiently command an increasing share of the resources in the economy. According to Schumpeter this transforms the basis for running the economy, and a transition from capitalism to socialism is eventually apt to come about in a natural way.

With this prognosis Schumpeter (1942) obviously leaves the basis of an empirical evolutionary theory in the direction of a philosophy of history.¹² He extrapolates a stylized historical trend which he seems to have inferred from his observations of the rise of large corporations and trusts in the USA. But an extrapolation like this violates a binding constraint for any theory of evolution. Because of the special epistemological status of novelty created in evolution, the implications of future evolution cannot be positively anticipated. Evolutionary theories can only claim that certain developments or consequences will not occur—an empirically testable conjecture. Indeed, the same objection has been raised by Popper (1960) against historical materialism that also claimed to be able to predict societal evolution.¹³

Leaving Schumpeter's speculations on the fate of capitalism aside there are other ideas in his book of 1942 which point to significant revisions of his earlier views, and these have had a substantial impact on the discipline of economics: the consideration of innovativeness, and the dynamics of competition or, as he puts it, the “perennial gale of creative destruction” (ibid.: 81–106). The obvious result of incessant innovations, which revolutionize the production process, the organization of the economy, and the supply of goods, is a historically unique rise over time in living standard of the masses. Schumpeter holds that incessant innovations are the outcome of a competitive process of its own. In this process many features may bring to mind monopolistic practices, but it would be mistaken to assess the observed forms of competition, the corresponding market performance and market structure, against the measuring rod of static price theory and its notion of perfect competition with given goods, qualities, and production processes. Much as Schumpeter's rejection of the static theory of perfect competition as inappropriate for dealing with the emergence and dissemination of innovations deserves support, the way in which he presents his argument is itself problematic from the point of view of an evolutionary approach. Despite his criticism of static price theory he basically adopts its mode of reasoning. Considerations on profitability and risk take precedence. Information is

12 Cf. the discussion in Stolper (1994: Chap. 8) on Schumpeter's own assessment of this dilemma.

13 Cf., e.g. Marx (1976: Chaps 21–26). There is broad agreement that Marx seems to have been an inspiration for Schumpeter in writing his book of 1942, cf. Swedberg (1991: Chap. 7) and Stolper (1994: Chap. 8).

tacitly presupposed which is typically assumed to be available in static price theory although this information is, in principle, not feasible in the case of innovations which, after all, incorporate yet unknown novelty.

In order to illustrate Schumpeter's argumentation consider the case of a corporation which is just about to introduce an innovation (i.e. a new combination). Apparently, Schumpeter thinks of a decision that will typically involve large capital outlays. As distinct from the entrepreneurial motivation as he viewed it in 1912, the motivation of large corporations is profit seeking: the venture will only be undertaken and the expenses needed to break from routine be made, if the prospective gains appear sufficiently high. In order for this to happen, there must be a way of safeguarding the returns on an innovation from spilling over to competitor firms. Two sorts of competitors must be checked: those who copy, with lower or no expenses, the innovation once it becomes known (i.e. the imitators) and those who introduce a further, superior innovation (i.e. the next generation of innovators). Protection against the former can be provided by patent settlements, by temporary trade or production secrets, and by long-term contracts or other means which bind subcontractors and customers. Protection against the latter sort of competitors is more difficult to obtain. Schumpeter emphasizes, as a general measure, a pricing policy aiming at two targets: a more rapid amortization of innovative investments and an acceleration of investment in order to build up overcapacities which may then serve to attack or defend against potential competition.

Unquestionably, any such measure (and there are many, see Schumpeter 1942: 92–98) amounts to monopolistic practices. But, to attain such a monopolistic position means in the first place to out-compete all rivals working with the old standards. To achieve a monopolistic position is therefore only possible—and this is Schumpeter's crucial point—if the advantage which the innovation entails is shared to some extent with the customers: in order to induce them to substitute the new offer for the old the former must be available at a lower price and/or a higher quality. As the monopolistic practices do not provide permanent protection (unless erected by government intervention, *ibid.*: 99), in particular against competitors who break down the erected barriers by introducing superior innovations, competition through innovation means that the welfare of the customers and thus, in the last resort, of the masses of consumers, will be continuously improved. Indeed, a situation can easily be imagined in which the monopoly price is lower and the monopoly output larger in an innovative industry than prices and output would be under conditions of perfect competition, which discourage innovative activities.

Let us again summarize these arguments put forward in Schumpeter (1942) in two hypotheses:

Hypothesis 3: The prospect of attaining a market position in which monopolistic practices can be used against (potential) competitors positively affects a firm's willingness to innovate; where such prospects prevail the number of innovations per unit of time increases.

Hypothesis 4: Innovations increase welfare in the long run; to the extent that monopolistic practices are an attribute of competition through innovation they have therefore, given the preceding thesis, a welfare increasing rather than decreasing effect in the long run.

The conjecture summarized in Hypothesis 3 is known in the literature as the “Schumpeterian hypothesis”; it poses several problems and has sparked off extensive empirical and theoretical work (cf., e.g. Kamien and Schwartz 1982; Cohen and Levin 1989). A detailed discussion doing justice to the huge literature is beyond what is feasible here. However, it may be argued that much of the motivation behind the long debate on the Schumpeterian hypothesis derives, at least in part, from the companion Hypothesis 4 on which we will therefore concentrate. If its premise is accepted, the standard view in competition policy on monopoly pricing, aggressive capacity policy, and other attempts to impede market entry would indeed have to be dramatically revised—at least to the extent to which they are informed by the ideal of perfect competition. However, there are two problems with Hypothesis 4 preventing such a conclusion to be easily drawn, even when taking Hypothesis 3 for granted.

The first problem is related to the claim that innovative activities increase welfare in the long run. In retrospect it can hardly be denied that innovations, more precisely improvements in technical knowledge and skills, have in the very long run been the major source of an impressive growth of economic production and wealth. The indubitable growth-enhancing effects of innovations do not, of course, necessarily lead to welfare increases in the sense of Pareto-improvements—since the pecuniary external effects induced by innovations may induce net losses for some agents which are not compensated for (cf. Witt 1996 for a more detailed discussion). Schumpeter possibly had in mind that, in the past hundred years, the legion of innovations induced enough economic growth providing indirect compensation by a secular rise of average income to those who suffered from pecuniary externalities so that, at least in the industrialized countries, there have remained few net losers in the longer run. However, even if this assessment were shared in retrospect, an unconditional extrapolation of this historical experience into the future would be fallacious. Schumpeter (1942) seems to have been tempted here once more to extrapolate a trend that he saw prevailing in the past.

The second problem which Hypothesis 4 poses is, from the perspective of an evolutionary theory, more serious. What is being considered by Schumpeter is not the emergence of a welfare increase of indeterminate size. Rather, his argument presupposes that a specific quantitative relation can be determined: welfare gains from innovations have to be compared with welfare losses resulting from the innovator’s use of the monopoly power (s)he achieves. Hypothesis 4 claims, in more precise terms, that the somehow determined value of a stream of welfare gains accruing from innovations in the long run, is strictly greater than the value of a corresponding stream of welfare losses. Since, however, the gains or losses depend on the properties of the particular innovation to come, and since, by the very meaning of novelty, these properties cannot positively be anticipated, a prediction of the size of future gains or losses is not possible.

The problem can be illustrated in a slightly different way. Imagine that the waiting time between the occurrence of two successive innovations becomes almost infinitely long, in other words, the process of creative destruction runs almost infinitely slowly. In this case monopolistic practices would cause an enduring welfare loss to society that could well be avoided, without great sacrifices, by policy action aimed at

intensifying competition. This is to say that even in a naive view Hypothesis 4 cannot claim to make sense, if the process of innovation in the economy is too slow. (How slow it may be in order not to fall under this verdict depends on the non-anticipatable welfare gains it creates.) Schumpeter submits that in the past the process has been sufficiently fast, and it may well continue to be in the future—though this cannot be more than a personal expectation. If we object, in this way, against calculating with quantitative properties of innovations—which are, in principle, not anticipatable—this is tantamount to opposing the very concepts of profitability and risk calculations which underpin neo-classical innovation theory. In contrast, in his attempt to overcome the notion of perfect competition Schumpeter has perhaps inadvertently, paved the way for a kind of reasoning which is not adequate for dealing with the phenomenon of novelty.

Thus, in comparing the 1912 and 1942 versions of Schumpeter's discussion of the process of economic development, from an evolutionary point of view, the latter seems to have created serious additional problems without solving those of the former. Schumpeter (1942) remained reluctant to address the problem of how novelty emerges in the economy and therefore made no progress in broadening the grasp of his evolutionary approach. He abandoned the figure of the entrepreneur as the driving force of evolutionary change together with its psychological underpinnings which are irreconcilable with a neo-classical approach. Later this has turned out to be conducive to the efforts of neo-classical writers of the past decades to recast the Schumpeterian hypothesis in terms of optimal "innovation" race strategies and equilibrium investments into "innovative" activities. No doubt, nothing in Schumpeter's huge oeuvre has been given more attention in neo-classical economics than the conjecture (in a rather isolated form) summarized in Hypothesis 3. At the same time, however, the last traces of evolutionary thought originally created out of the young Schumpeter's concern with the inadequacies of "pure" economics for explaining economic change were eventually eliminated.

CONCLUSIONS

In this paper it has been argued that Schumpeter's work on the theory of economic development proceeded through two quite different stages resulting in his books of 1912 and 1942. Although Schumpeter had obviously a clear understanding of the general character of an evolutionary theory—an understanding which he derived in an original way without borrowing from Darwinian analogies as is fashionable today in evolutionary economics—he did not succeed in formulating a satisfactory, general theory of economic evolution. Rather his approach to economic development is actually a special theory of the unsteady capitalist growth process passing through booms and crises. Throughout his entire oeuvre Schumpeter was therefore occupied with improving his grasp of the business cycle phenomenon. This special heuristic framing implies not only some rather peculiar hypotheses which are difficult to accept within an evolutionary framework, but also some shortcomings in his understanding of (what he refused to call) the economic evolutionary process.

Central to Schumpeter's theory of economic development is the role of a promoter-entrepreneur. The image of the entrepreneur who propels development has become

a popular metaphor for the evolutionary approach, yet as has been argued, it draws a rather one-sided portrait of the source and driving force of the self-transformation process in the economy. Schumpeter later abandoned his entrepreneur-centred theory. In a speculative grand view of the historical trend of capitalism obviously inspired by Marx's historical materialism, Schumpeter argued that the innovative entrepreneur had become obsolete. The entrepreneur's role had been absorbed, as a matter of routine, into the bureaucracies of the large trusts. In order to protect their large-scale innovation ventures these trusts use precautionary measures which result in monopolistic practices. These practices (if successful) allow returns to be earned on innovative activities, yet, at the same time the profits attract further innovation efforts, thereby inducing what Schumpeter calls a "perennial gale of creative destruction" of monopolistic market positions and profits.

Although these conjectures have spawned a vast theoretical and empirical literature their contribution to a more general theory of the evolutionary process in the economy has been a limited one. None of the problems facing Schumpeter's earlier interpretation of economic development could thus be solved. While innovation research, triggered not least by the debate on the "Schumpeterian hypothesis" concerning the relationships between innovativeness and market structure, has made great progress, the proper place of innovations and the motivation to pursue them within an evolutionary theory of the economic process still needs clarification. Neo-classical models of optimal innovation decisions and innovation races, which have emerged in large number in recent years, cannot serve as substitutes. The reason is that they assume—not unlike Schumpeter's theory of economic development—an exogenously given flow of innovation possibilities with largely known properties. They thus presuppose what, in an evolutionary perspective, needs to be explained in the first place.

REFERENCES

- Boehm, S. 1990: The Austrian tradition: Schumpeter and Mises, in K. Hennings and Warren J. Samuels (eds.), *Neoclassical Economic Theory 1870 to 1930*. Boston, MA: Kluwer, pp. 201–241.
- Boulding, K.E. 1981: *Evolutionary Economics*. Beverly Hills, CA: Sage.
- Bowler, P.J. 1989: *Evolution—the History of an Idea*. Berkeley, CA: University of California Press.
- Cohen, M.W. and Levin, R.C. 1989: Empirical studies of innovation and market structure, in R. Schmalensee and R.D. Willig (eds.), *Handbook of Industrial Organization*, Vol. II. Amsterdam: North-Holland.
- Fisher, F.M. 1983: *Disequilibrium Foundations of Equilibrium Economics*. Cambridge: Cambridge University Press.
- Georgescu-Roegen, N. 1971: *The Entropy Law and the Economic Process*. Cambridge, MA: Harvard University Press.
- Haberler, G. 1937: *Prosperity and Depression*. Geneva: League of Nations.
- Hodgson, G. 1993: *Economics and Evolution—Bringing Life Back into Economics*. Ann Arbor, MI: Michigan University Press.
- Kamien, M.I. and Schwartz, N.L. 1982: *Market Structure and Innovation*. Cambridge: Cambridge University Press.

- Marx, K. 1976: *Capital*, Vol. I. Harmondsworth: Penguin.
- McClelland, D.C. 1961: *The Achieving Society*. Princeton, NJ: Van Nostrand.
- Mises, L. von 1978: *Notes and Recollections*. South-Holland: Libertarian Press.
- Nelson, R.R. and Winter, S.G. 1982: *An Evolutionary Theory of Economic Change*. Cambridge, MA: Harvard University Press.
- Popper, K.R. 1960: *The Poverty of Historicism*, 2nd edn. London: Routledge & Kegan Paul.
- Popper, K.R. 1972: *Objective Knowledge—an Evolutionary View*. Oxford: Oxford University Press.
- Schneider, E. 1951: Schumpeter's early German work, 1906–1917, *Review of Economics and Statistics*, 33: 104–108.
- Schumpeter, J.A. 1908: *Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie [The Essence and Principal Contents of Economic Theory]*. Leipzig: Duncker & Humblot.
- Schumpeter, J.A. 1910: Über das Wesen der Wirtschaftskrisen [On the essence of economic crises], *Zeitschrift für Volkswirtschaft, Sozialpolitik und Verwaltung*, 19: 271–325.
- Schumpeter, J.A. 1912/1934: *Theorie der wirtschaftlichen Entwicklung*. Leipzig: Duncker & Humblot. English translation published in 1934 as *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
- Schumpeter, J.A. 1939: *Business Cycles*, 2 vols. New York: McGraw-Hill.
- Schumpeter, J.A. 1942: *Capitalism, Socialism and Democracy*. New York: Harper.
- Schumpeter, J.A. 1954: *History of Economic Analysis*. New York: Oxford University Press.
- Stolper, W.F. 1994: *Joseph Alois Schumpeter—The Public Life of a Private Man*. Princeton, NJ: Princeton University Press.
- Streissler, E. 1981: Schumpeter's Vienna and the role of credit in innovation, in H. Frisch (ed.), *Schumpeterian Economics*. New York: Praeger, pp. 60–83.
- Streissler, E. 1983: Schumpeter and Hayek: on some similarities in their thought, in F. Machlup, G. Fels and H. Müller-Groeling (eds.), *Reflections on a Troubled World Economy*, pp. 356–364. London: Macmillan.
- Swedberg, R. 1991: *Schumpeter: A Biography*. Princeton, NJ: Princeton University Press.
- Winter, S.G. 1971: Satisficing, selection, and the innovating remnant, *Quarterly Journal of Economics*, 86: 237–261.
- Witt, U. 1993: Emergence and dissemination of innovations: some principles in evolutionary economics, in R.H. Day and P. Chen (eds.), *Non-linear Dynamics and Evolutionary Economics*. Oxford: Oxford University Press, pp. 91–100.
- Witt, U. 1996: Innovations, externalities and the problem of economic progress, *Public Choice*, 89: 113–130.