

# The essence of Schumpeter's evolutionary economics: A centennial appraisal of his first book

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**Abstract:** Schumpeter's unique type of evolutionary analysis can hardly be understood unless we recognise that he developed it in relation to a study of the strength and weaknesses of the Walrasian form of neoclassical economics. The paper demonstrates that Schumpeter's major steps were already performed in his first book *Wesen und Hauptinhalt der theoretischen Nationalökonomie*. This German-language book—which in English might have been called 'Essence and Limits of Equilibrium Economics'—was published a century ago (in 1908). It has never been translated into English and no systematic evaluation is available.

The analysis of the 626 pages of *Wesen* provides many clues about the emergence and structure of Schumpeter's research programme. Although this programme included a modernisation of equilibrium economics, he concentrated on the difficult extension of economic analysis to cover economic evolution. Schumpeter thought that his evolutionary economics required a break with basic neoclassical assumptions, but he tried to avoid controversy by—confusingly—presenting it as only requiring the introduction of innovative entrepreneurs into the set-up of the Walrasian system. Actually, he could easily define the function of his type of entrepreneurs in this manner, but the analysis of the overall process of evolution required a radical reinterpretation of the system of general economic equilibrium. He thus made clear that he could not accept the standard interpretation of the quick Walrasian process of adaptation (*tâtonnement*) and the standard uses of what became known as comparative statics. Instead, he saw the innovative transformation of routine behaviour as a relatively slow and conflict-ridden process. This reinterpretation helped him to sketch out his theory of cycles of economic evolution as reflecting the pattern of change under capitalism. It also served to define his life-long research programme and much of the Schumpeterian legacy.

**Keywords:** Joseph A. Schumpeter; Equilibrium economics; Evolutionary economics; Innovative entrepreneur; Evolutionary business cycles; Fields of evolutionary economics

**JEL:** B31, E30, O30

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## 1. Introduction

It is often assumed that Schumpeter made the first formulation of his evolutionary research programme in *The Theory of Economic Development* (*Development*). This assumption is misleading for at least two reasons. First, the English edition of this book is the somewhat modified translation of the second German edition of from 1926 (*Entwicklung II*). In turn, this is the radically revised version of the first German edition from 1912 (or 1911, if we emphasise the time at which it became available). Second, the first edition of *Theorie der wirtschaftlichen Entwicklung* (*Entwicklung I*) is clearly a sequel to Schumpeter's first book in which he—in 1908—announced the research programme that added evolutionary economics to equilibrium economics. This book is called *Das Wesen und Hauptinhalt der theoretischen Nationalökonomie* (*Wesen*)—and his has never been translated into English.

Although Schumpeter's programme for the development of economics can be recognised in most of his writings, it is elaborated most carefully in *Wesen*. Therefore it might appear paradoxical that this book was only printed in 1000 copies and that it was not reprinted until long after Schumpeter died in 1950. The reason is that he wanted to supply an improved edition. Schumpeter (1935, p. xx) thus in the preface to a new German reprint of *Entwicklung II* referred to "a book on the 'Theoretical Apparatus of Economics' that shall serve in place of a second edition of my 'Wesen und Hauptinhalt' ". He not only wanted to include the new developments in the toolbox of economics. He also recognised that he had originally applied an old-fashioned and confusing terminology that became increasingly incomprehensible during his lifetime. However, he did not succeed in producing a replacement of *Wesen*. The incomprehensibility of its terminology largely explains why we are even today missing an English translation of the 626 pages of his first book. However, if we are allowed the editorial freedom of updating the terminology to that of his later works, the powerful argument might come alive at the centennial of the publication of *Wesen*.

Schumpeter had no lack of confidence in his first book. When *Wesen* had been printed, he systematically distributed it to core economists. The most important was Léon Walras, the founder of general equilibrium theory. In a couple of letters to him, Schumpeter pointed out that "this is a book of a disciple" and that he wanted to work under the Walrasian "leadership" (Schumpeter, 2000, 43–4). Later, he found time to pay a visit—his first and only—to Walras in Switzerland. However, the elderly Walras thought in terms of a passively adapting economy and did not accept Schumpeter's vision of economic evolution (Schumpeter, 1989c, 166). Since he met similar reactions from nearly all the other leading economists, he became aware of the hard work in front of him. Nevertheless, Schumpeter always upheld his great respect for Walras and for equilibrium economics. Furthermore, a careful study of the arguments of *Wesen* demonstrates that the presentation of the complex Schumpeter–Walras relationship as one between a disciple and his master is not totally wrong. Schumpeter was, however, the type of disciple who wants to confront new problems by innovating the teaching of his master very radically.

The importance of *Wesen* was recognised by several of Schumpeter's contemporaries. One of them was the Austrian-American Oscar Morgenstern, who is known for his contribution to John von Neumann's development of game theory. Morgenstern (1951, 198)

got a copy of *Wesen* in the 1920s, and he remembered “what sort of revelation it was to me when I first laid hands on it and, like many others of my generation, I resolved to read everything Schumpeter had written and would ever write.” The reasons for the strong effect of *Wesen* were given by Wassily Leontief, who was not only the inventor of input-output economics but also one of Schumpeter's friends. Leontief (1950, 105) started his comment by pointing out that “this remarkable book remains practically unknown in the English-speaking world”. Nevertheless, *Wesen* “contains the statement of his fundamental views which constitute the basis of Schumpeter's whole scientific *weltanschauung*.” Although the original presentation of this “scientific world view” is strongly focussed on equilibrium economics, it nevertheless also serves to delineate his type of evolutionary economics.

Schumpeter's scientific world view is dominated by the dichotomy between equilibrium economics and evolutionary economics. Actually, he claimed that they constitute the two fundamental branches of economics. The first branch of economics is the type of equilibrium economics (initially called “Economic Statics”) that had been developed by neoclassical economics in general and mathematical economics in particular. For a mathematical economist like Leontief (1950, 105), it seemed clear that the understanding of the nature of this type of economics could be improved by “a clear and unequivocal statement of its inherent limitations”, or of “the margins of its effective range”. It was exactly what Schumpeter did in *Wesen*. He did so for the sake of defining the realm of evolutionary economics (initially called “Economic Dynamics”)—the second fundamental branch of economics. Thus Leontief emphasised that Schumpeter in his first book “specifically designated what he called the process of development [evolution] as the particular aspect which could not be encompassed by the conceptual schemes of static general equilibrium theory.” Schumpeter emphasised the need of a strict division of labour of the two fundamental fields of economics:

“Statics [equilibrium economics] and Dynamics [evolutionary economics] are completely different fields, they concern not only different problems but also different methods and different materials. They are not two chapters of one and the same theoretical building but two completely independent buildings. Only Statics has hitherto been somewhat satisfactorily worked up and we essentially only deal with it in this book. Dynamics [evolutionary economics] is still in its beginnings, is a ‘land of the future’.” (*Wesen*, 182–3)

Although Schumpeter's first book focussed on equilibrium economics, its purpose was not only to propose a reform plan for this fundamental branch of economics. On the contrary, the problems, methods, and materials that he reserved for evolutionary economics were those that, from the very beginning, engaged him as a researcher. He actually pointed at this branch throughout *Wesen*. He did so by repeatedly emphasising what problems equilibrium economics cannot solve. This negative definition of evolutionary economics as covering parts of the residual problems left over by equilibrium economics led to a positive definition. This definition was most clearly stated in *Entwicklung I* (464–6):

- Equilibrium economics is “the theory of the circular flow”. It assumes a “certain population with certain abilities and needs in a given geographical environment”.

This population is “organised socially and economically in a given manner” and it is “endowed with certain methods of production and stocks of goods”. Equilibrium economics explains “the quantities and prices of all goods that are produced and exchanged under these conditions”. The “motto” is: “Everyone adapts as good as possible under given conditions”.

- Evolutionary economics is a “theory of the change of the data”, or rather some of the parameters, that are assumed given by equilibrium economics. Schumpeter’s evolutionary economics only treated changes of production functions and consumption functions that are promoted by innovative entrepreneurs. The basic question of this type of evolutionary economics is: “How does an economy carry out the transition from one level—that has [previously] served as a point of arrival and rest—to another level? This is the question of the essence of economic evolution.”

Although the present paper applies this distinction between equilibrium economics and evolutionary economics, two caveats are needed. Schumpeter’s dichotomy seemed inadequate to most economists even while he wrote his two programmatic books before the First World War. There are major problems. First, equilibrium economics was moving toward the study of equilibrated dynamic change of the economic system. However, Schumpeter rejected this dynamic equilibrium as an unrealistic substitute for the real thing: evolutionary economics. Second, his definition of evolutionary economics seems to be dependent on equilibrium economics. This is not a good starting point for the establishment of a solid division of labour between the two fundamental branches of economics.

## 2. Terminology matters: ‘evolution’ and ‘dynamics’

Readers of *Wesen* and *Entwicklung I* not only have to cope with 1,200 pages of German text. They also have to overcome terminological problems that might hinder their understanding of Schumpeter’s two programmatic books. Apart from many minor terminological issues, there are two major ones that have already been hinted at above: the meaning of the terms ‘evolution’ and ‘dynamics’. Let us start with ‘evolution’.

Schumpeter developed his evolutionary economics at a time when theorising about evolutionary mechanisms was facing a general eclipse (after an upswing in the last half of the nineteenth century). The reaction against the inflated application of this type of theorising meant that during “the first few decades of the twentieth century evolution was a dirty word” and that “[e]volutionism as a theoretical approach . . . was practiced or endorsed only at risk to one’s intellectual career” (Sanderson, 1990, 45–6). This reaction was especially strong while Schumpeter used German language as his primary means of presenting his scientific contributions. It is in this context that we should interpret Schumpeter’s remark in the second edition of his *Theorie der wirtschaftlichen Entwicklung* that

“we must be careful in dealing with the phenomenon of evolution [Entwicklungsphänomen] that we observe, still more with the concept in which we comprehend it, and most of all with the word by which we designate the concept . . . [A]ll the over-hasty and insufficiently founded generalisations in which the word [soziale

Entwicklung] plays a part have led many of us to lose patience equally with the word, the concept, and the issue." (*Entwicklung II*, 88–9; cf. *Development*, 57–8)

Schumpeter's troubles with the word 'Entwicklung' and his wish to avoid attachment to the wild speculations of Social Darwinism are probably among of the major reasons why he decided to accept his translator's replacement of it by 'development' in *The Theory of Economic Development*. This unfortunate decision was possible because of two possible translations of a single German word. The commonsensical and the technical meaning of the German word 'Entwicklung' has evolved over time. Its original meaning was 'unwinding' or 'unrolling', and thereby it had the same core meaning as the Latin word 'evolutio'. The book of antiquity was a rolled volume of writing, and 'evolutio' meant unrolling, or reading, such a book. Therefore, the English 'evolution' started in parallel with 'Entwicklung', and their basic meanings referred originally to goal-directed and pre-programmed processes.

Then Darwin published his *Origin of Species* with its radically different account for change. As a result, the word 'evolution' started to obtain a new meaning, and it ended up denoting the unplanned process of irreversible change. Fortunately, English language had another word—'development'—that could take over the original meaning of 'evolution'. This was not the case in German in which the same word for a long time was used for both pre-programmed development and the newly discovered type of evolutionary process. While this ambiguity could be overcome by using in German the foreign word 'Evolution', no general solution had been found when Schumpeter wrote his German works. Even in English we still have problems of terminology. For instance, the study of the change taking place in poor countries was called the theory of economic development at a time when it appeared to concern the goal-directed transition to the economic structures of the rich countries. The term 'economic development' is still used although the concept seems increasingly to have changed toward an evolutionary one. The reason may partly be that it is uncomfortable to speak in terms of 'evolutionary development studies'.

The story of terminological ambiguities and the gradual removal of these ambiguities is to some extent reflected in Schumpeter's major books. The strangest formulations are found in *Wesen* and *Entwicklung I*, where he used "Economic Dynamics" to denote what we today call evolutionary economics. Schumpeter went through an intermediate level of terminological confusion in the 1920s and early 1930s (*Entwicklung II* and *Development*) before he in his later books—*Cycles*, *Capitalism*, and *History*—reached a terminology that is relatively satisfactory from a modern viewpoint. Especially, he in *Cycles* tended to comply with the modern usage of 'evolution' as denoting the open-ended and largely unpredictable process of transformation of, for instance, languages, biological species, and economic routines.

Unfortunately, the earlier unsatisfactory terminology is abundant in the Schumpeter literature because it tends to conserve his early terminology. The present paper applies the alternative strategy of using his mature terminology for the translated extracts of his two first books. It might even be advisable to retranslate their titles rather freely. According to the present interpretation, *Das Wesen und Hauptinhalt der theoretischen Nationalökonomie* should be called "The Essence and Limits of Equilibrium Economics". To emphasise that *Theorie der wirtschaftlichen Entwicklung* is a sequel, it ought to be called

"The Essence of Evolutionary Economics". Since this suggestion seems to radical too be generally accepted, a better alternative is "The Theory of Economic Evolution".

There are other terminological ambiguities in *Wesen* and *Entwicklung I* than those related to the term 'evolution'. The most obvious ones relate to Schumpeter's all-encompassing dichotomy between "Economic Statics" and "Economic Dynamics". Although this dichotomy is crucial for the arguments in *Wesen*, he largely applied the terms in quotation marks and he pointed out that the terminology is "very unfortunate" (*Wesen*, 182). One of the problems was that it was likely to create confusion, and this problem was to an overwhelming extent confirmed by a large literature that in the next decades tried to clarify the Statics–Dynamics dichotomy but instead created more and more confusion. The main problem was that the words 'statics' and 'dynamics' were used to denote a large number of concepts, and that these concepts have often been very loosely defined. Therefore, Fritz Machlup (1959, 109) characterised them as "kaleidoscopic words". Just like children have used the old-fashioned tube with mirrors and coloured glass to produce a huge number of different patterns, economists have used the "kaleidoscope" of the static–dynamic dichotomy to develop a surprisingly large number of meanings. According to Machlup, the problem "is not that the division of economic analysis into Statics and Dynamics makes *no* sense, but that it makes *too many* senses".

Schumpeter's life-long struggle with the terms 'statics' and 'dynamics' is reflected in numerous and ever-changing remarks in *Entwicklung I*, *Entwicklung II*, *Development*, and *Cycles*; and *History*. The 1920s was a time transition, and in 1934 he stated: "I first used the terms 'statics' and 'dynamics' for these two [theoretical] structures, but have now (in deference to Professor Frisch) definitively ceased to use them in this sense" (*Development*, xi). By applying the tradition of mechanics to economics, Ragnar Frisch (1992, 392) pointed out that the difference between static and dynamic propositions (laws) is simply a question of whether the concepts "rate of growth" or "response rate" (with respect to time) are used or not. This means that "the distinction between statics and dynamics refers to the analytical method, not to the nature of the phenomena. We may speak of static or dynamic analysis, but not of a static or dynamic phenomenon" (p. 400). However, "phenomena as such may be *stationary* or *evolutionary*." Furthermore, there is "the distinction between what may be called *analytical* dynamics and *historical* dynamics in economics." Frisch captured many of Schumpeter's ambitions by stating that "[h]istorical dynamics can be said to be an attempt to analyse those phenomena which have not yet been incorporated in, or which it is not possible to incorporate in, rigorously formulated theoretical laws" (p. 400; emphasis removed).

While Frisch's broad use of the term "evolutionary" to cover all non-stationary phenomena gradually disappeared, his use of the terms "statics", "analytical dynamics", and "historical dynamics" convinced both Schumpeter and the rest of the economics profession (partly through Samuelson, 1947, 311–17). This usage decouples method and phenomenon so that, for instance, "evolutionary" phenomena can be studied by both static and dynamic methods; and dynamic analysis can use both abstract time and historical dating of events. However, neither Frisch nor Samuelson was interested in the type of evolutionary processes that engaged Schumpeter throughout his academic life. Actually, Schumpeter (1991, 424–5n) remarked that they and most other economists concentrated on the study of the simple dynamics of the economic variables within an unchanging

Method of Analysis		Phenomenon/Process		
		Stationary	Non-Stationary	
			Growing	Evolutionary
Statics		(1)	(2)	(3)
Dynamics	Analytical	(4)	(5)	(6)
	Historical	(7)	(8)	(9)

Table 1: Schumpeter's later use of the terms 'statics' and 'dynamics' (based on *History*, 963–7). The matrix of possibilities demonstrates that he gave up his early strong coupling between phenomena and methods. He also suggested that the analysis of evolutionary processes can make good use of static methods.

economic framework. This might be called “evolution” in the “wider sense” and it includes “growth”, but he was obviously interested in the “narrower sense” of evolution with abrupt changes of “institutions, tastes, or technological horizons” (*History*, 964).

It was not before the last couple of years of his life that Schumpeter made the necessary clarification on this point and obtained nine cases (see Table 1)—ranging from the static analysis of stationary phenomena (Case 1) to the historical dynamical analysis of mutative evolutionary phenomena (Case 9). This result was obtained in the unfinished section in *History* (963–7) on “Statics, Dynamics; the Stationary State, Evolution”. The terminological discussion in this section indirectly served to emphasise that his work focussed on mutative evolutionary phenomena and that it was performed by means of analyses that applied the methods of statics, analytical dynamics, and historical dynamics. Furthermore, these characteristics distanced him from practically all other practitioners of dynamic analysis. Although he, in 1946, remarked “that during the last twenty years or so an economic dynamics has emerged”, he had to emphasise that “this dynamics has nothing to do with the factors that are incessantly at work to change the structure of economic life” (1991, 424–5n). However, the static and dynamic analysis of stationary and growing economies provided him ways of developing his own work.

### 3. Programmatic for the twentieth century

*Wesen* was the outcome of Schumpeter's careful and independent study of the state of the art of his chosen science. His science was dominated by the results of the neoclassical revolution from the 1870s and onward. As he later emphasised, the maturation of this revolution meant that economics had entered “a classical situation in our sense” (*History*, 754). The “leading works” of this classical situation “exhibited a large expanse of common ground and suggest a feeling of repose, both of which created, in the superficial observer, an impression of finality”. When Schumpeter spoke of “the finality of a Greek temple that spreads its perfect lines against a cloudless sky” he was probably not least referring to the beautiful architecture of Walras's model of an economic system in general equilibrium. However, he recognised that the “classical situation” was better expressed by Alfred Marshall's (1961) *Principles of Economics*. This book is “the classical achievement of the period, that is, the work that embodies, more perfectly than any other, the classical situation that emerged around 1900” (*History*, 834). It obtained this status by de-emphasising general equilibrium analysis and by promoting a pragmatic form of

economic analysis that could relate to the statistical and historical work of the historical school and point towards the analysis of long-term economic evolution. Nevertheless, Schumpeter added that “in the last decade or so before the outbreak of the First World War, even the superficial observer should have been able to discern signs of decay, of new breaks in the offing, of revolutions that had not yet issued into another classical situation” (p. 754).

Schumpeter was no superficial observer and he immediately focussed on the challenges for economic research. The architecture of the theoretical constructs of the leading neoclassical economists had been obtained at serious costs. Especially, the relationship between crucial facts of economic life and the theories of academic economists had become even more troublesome than before. One of the most fundamental reasons for the discrepancy between neoclassical theory and facts of economic life is that the facts are reflecting a rapid historical process. Marshall (1897, 121, 133) emphasised this problem when he prepared for the turn of the century by addressing “the new generation”. He pointed out that social science is “the reasoned history of man” and that “the true analytical study of economics is the search for ideas latent in the facts” that are provided by “the historian and the observer of contemporary life”. He especially focussed on the challenge of analysing the long-term social and economic changes. Since he had not made this task sufficiently clear in the first edition of his *Principles of Economics*, he now pointed out that the crucial step forward was to analyse “evolution”, or “progress”. This is the background for his famous statement that “[t]he Mecca of the economist is economic biology rather than in [mechanical] economic dynamics” (Marshall, 1898, 42, 43). In Schumpeter’s (1941, 106) semi-centennial appraisal of *Principles*, he pointed out that “Marshall held a definite theory of economic evolution, though true to his habit he did not press it upon the reader’s attention”. Actually, this theory “stood in the very center of his thought.”

When the American Thorstein Veblen (1898; 1899–1900) in a series of papers confronted the question “Why is economics not an evolutionary science?”, he chose to ignore the contribution of Marshall and to confront the neoclassical analysis by John B. Clark, a leading American economist. Veblen argued that although the evolutionary theories of Darwinism and Social Darwinism were spreading rapidly in the last decades of the nineteenth century, they had not influenced the core of economics. His explanation was that economic theorists had been engaged in defending the status quo of the capitalist economy by building static models that showed that a perfect market economy gave optimal results. To build such models, economists had applied unrealistic assumptions of pleasure-seeking hedonism, anti-social atomism, and instantaneous calculations. Veblen’s solution was that economic theory should instead apply the assumption of instinctive and habit-based behaviour—since such behaviour explains the emergence and gradual evolution of economic institutions.

For theoretically minded economists, it was Veblen who seemed to be out of touch with the actual scientific development. He suggested to abandon solid non-evolutionary theory in favour of an evolutionary economic sociology that he never specified in a precise way. Furthermore, he ignored the difficulties of evolutionary analysis that several leading neoclassical economists—including Marshall and Carl Menger—had tried to overcome. Finally, he took no notice of the fact that Darwinism was facing a crisis even in biology.

These and other characteristics of Veblen's arguments meant that Schumpeter, although he hardly took explicit notice of the arguments, was one of his critics. When Schumpeter started to write in the first decade of the twentieth century, most biologists had accepted the phenomenon of evolution; but they thought—wrongly—that the Darwinian mechanism of natural selection had been outdated by explanations based on the inner characteristics of organisms (learning, laws of organismic functioning, and genetic mutation). At the same time, it had become clear that Social Darwinism had led the social sciences into a quagmire of largely unfounded speculation. On these backgrounds, a strong reaction set in against the very tendency that Veblen tried to promote. This reaction helps to explain why Schumpeter saw hasty evolutionary theorising as part of the problem rather than as part of the solution. Instead, he saw the theoretical core of economics as a structure that should be developed and complemented instead of being thrown away—as Veblen seemed to suggest.

Schumpeter's special brand of evolutionary economics, as well as his approach to the modernisation of neoclassical economics, can to some extent be seen as a response to the Marshallian challenge. However, he did not try to develop what has later been called "Marshall's evolutionary economics" (Raffaelli, 2003). Instead, his response followed anti-Marshallian lines. Schumpeter rejected not only a loosely defined "economic biology" but also the feasibility of the gradual movement from static analysis to evolutionary analysis. Instead, he thought that the novel field of evolutionary economics should be created in relative isolation. His reasons were that those engaged in core neoclassical economics were essentially dealing with the functioning of *given* economic systems; the maturation of this type of analysis was hampered by the Marshallian strategy of the gradual expansion towards evolutionary issues. Furthermore, Schumpeter seems to have agreed with Veblen that the development of neoclassical economics to modern non-evolutionary economics required behavioural assumptions that hindered the development of evolutionary economics. However, Schumpeter's conclusion in *Wesen* was that a division of labour between two complementary types of economic analysis was necessary. Here he applied the idea by Clark that economics consists of two fundamental branches. Schumpeter initially followed Clark in calling these branches "Economic Statics" (equilibrium economics) and "Economic Dynamics" (evolutionary economics). In the preface to *Wesen*, he emphasised that his

"exposition depends on the fundamental separation between economic 'Statics' and 'Dynamics', a point whose importance cannot be overstated. For the time being, the methods of pure economics are only sufficient for the former area, and our results hold only for this area. 'Dynamics' is something that in any respect is completely different from 'Statics', methodologically as well as regarding contents. . . . We shall see . . . that it [the separation] holds the key to the solution of many controversies and many apparent contradictions" (*Wesen*, xix).

Schumpeter thus not only considered the strict division of labour between equilibrium economics and evolutionary economics from the viewpoint of producing scientific results but also as a means of overcoming scientific conflicts. Since the core conflict that he was facing was the battle of methods between the neoclassical economics of his native Austria and the German historical school, *Wesen* had to add a third branch of economics to the two we have already considered: historical and statistical economics. The importance of

the three branches of economics is summarised in Schumpeter's concluding statement that "it shall always stay our principle to be silent—or . . . to delimit ourselves to summaries of facts—about things on which we have nothing *exact* or sufficiently *interesting* to say" (*Wesen*, 618–19; emphasis in original). His general imperative of being silent about things "on which we have nothing *exact* . . . to say" points at equilibrium economics. The exception that we should deal with things about which we can say something "sufficiently *interesting*"—although we cannot initially make fully formalised propositions—point at evolutionary economics. The exception of making propositions that serve as limited "summaries of facts" points at the main activity of the historical school. Given Schumpeter's main principle of exactness and his two exceptions, *Wesen* can be read as a reform programme for economics that acknowledges the relative independence of three branches of economic analysis:

1. Equilibrium economics. This branch should be promoted by recognising the crucial alliance between mathematics and neoclassical economics and by cleansing it everything that does not concern the interdependent system of economic elements.
2. Evolutionary economics. This novel branch should be given a chance to develop separately instead of being hidden and constrained by its superficial inclusion in neoclassical treatises. Furthermore, equilibrium economics should recognise that some of the topics it would like to cover can only be treated in a fundamental manner within evolutionary economics.
3. Historical and statistical economics. This branch of economics should be allowed at least the same degree of independence as the experimental branches of the natural sciences. It is especially crucial for evolutionary economics since it tends to cover the institutional setting of the evolutionary mechanism as well as the historical change of that mechanism.

#### 4. Equilibrium economics and the historical school

Although neither equilibrium economics nor historical and statistical economics is the main topic of the present paper, they cannot be ignored in an appreciation of Schumpeter's first book. Let us start with equilibrium economics since it is treated extensively through the foreground argument of *Wesen*. This argument ignores the differences between the major contributors to neoclassical economics—from Jevons, Menger and Walras to Pareto and Marshall—by defining the "essence" of equilibrium economics in relation to Walras's model of the economic system. Schumpeter's presents this mathematical model in verbal terms. Therefore, German-speaking students who found themselves handicapped when confronted with the mathematical form, and the level of abstraction, of Walras's *Elements of Pure Economics* could use *Wesen* instead. The book served the same function in the US. Here Wesley Mitchell, an important statistician and institutionalist economist, used it in his lectures at Columbia University in the 1920s. Mitchell (1969, 376) summarised the hard-core contribution of *Wesen* by emphasising that "Schumpeter develops substantially just one important thesis which is the most important result of Walras's speculations." The large size of the book is caused by its "elaborate methodological discussion of what he is going to do, the way in which he is going to do it, the

limitations of what he had done, and finally the importance of the results which he set forth." Although this elaborate discussion serves to point at evolutionary economics, its apparently major function is to demonstrate that "pure economics" concerns the "finding how the essential results can be demonstrated with utmost economy of intellectual means" (p. 377).

Part I of *Wesen* is called "Foundation" and it provides a "criticism . . . that is necessary when asking about the foundations of theoretical economics" (*Wesen*, 26, emphasis removed). This criticism suggests a cleansing of the expositions of economic theory from anything that are not essential. This cleansing is needed because nearly all writers of economic textbooks ignored that they were presenting a formal system that is based on axiomatic assumptions. For instance, we may think of Marshall's *Principles of Economics* that spends the first 270 pages motivating the basic assumptions underlying the theoretical apparatus and continues to include motivating digressions. Such a motivation requires intrusion into the realms of other sciences, like psychology, in which economists are "only dilettantes". Furthermore, this intrusion provides "points of attack for the adversaries" (*Wesen*, 24). Just like the science of mechanics would never have been created if it had continued to be engaged in explaining what "power" and "mass" really is, the science of equilibrium economics cannot be grounded in this way. Instead, economists have to acknowledge that they presuppose a system of interdependent elements. The solution to the problem of economic interdependence is served by focussing on marginal evaluations performed by each economic agent (pp. 71, 105–7). Since these evaluations are reflected in observable behaviour, the "value principle" does not need the psychological reflections of many neoclassical economists.

Part II deals extensively with "The Problem of Static Equilibrium". Since any difference in the evaluations of the marginal contributions to an agent's utility would contradict equilibrium, they have to be equalised according to the "law of the level of marginal utility" (*Wesen*, 129–31). We may also say that the relationship between the marginal utilities of any two goods have to be equal to the reverse relationship between their prices (p. 213). This rule, the "alpha and omega" of pure economics, can also be used for the analysis of the problems of production. He thus explains the Walrasian theory of price: the definition of a system of equations that simultaneously determines all quantities and all prices (pp. 260–2). He also presents the limitations of the solution by rehearsing the poor state of price theory with respect to "limited competition" and by remarking that perfect competition is at best an approximation to reality (pp. 269–72). This approximation, however, is good enough for many purposes. It not least clarifies the theory of money to a surprising degree (pp. 276–7)—while the theory of saving seems to be in a poor state (pp. 304–5).

Part III handles the "Theory of Distribution". This is not only "the most important application of price theory" but also a tool for unwarranted answers to highly controversial socio-economic problems (*Wesen*, 315–16). Economists had normally tried to explain (and justify) the incomes derived from labour, land, and physical capital. In addition to wage, rent, and interest on capital, some economists had added entrepreneurial profit as a fourth basic category of income. *Wesen* points out that much of the confusion on these matters is due to the study of the factors of production instead of their productive services. Given the latter "artifice" (p. 372), the size of wages and rents can easily be determined by including the services of labour and land as elements of the system of eco-

nomical equations (pp. 330–1, 368). In contrast, entrepreneurial profits cannot be treated in this system because they are expressions of disequilibrium. The concrete explanation of interest on capital was a more controversial matter but practically everyone agreed that it should be included as a source of income in an equilibrated economic system (p. 392). Schumpeter disagrees because of the close connection between profit and interest on capital. In any case, he argues that when compared with classical economics, his truncated theory of distribution is a major advance because it explains wage and rent in exactly the same way and because it is a more powerful analytical tool (p. 379).

Part IV moves from what John Stuart Mill had called “the laws of coordination” to what Schumpeter, together with Mill, call “the laws of motion” (*Wesen*, 443). This part of the book has the heading “The Method of Variation”. Schumpeter seems to be the first to describe this method—which today is called comparative statics—systematically. If we take a “snapshot” (*Wesen*, 142) of an equilibrium state and change one element of the system, then we would like to know in advance what the snapshot in the resultant equilibrium looks like. To make this prediction, we need to take something as given: the consumption functions and the production functions of the economic agents. However, these functions cannot be used for the analysis of the response of the economic system to major or discrete changes. Comparisons between equilibria that are separated by long time periods are also problematic since they draw attention away from the major changes of the functional relationships that are likely to occur during such periods. Therefore, the method of variation is, in general, only applicable in the immediate neighbourhood of an equilibrium of the given economic system, measured in time and in the state space of the system. This limitation and the possibilities of overcoming it are illustrated by 40 pages of examples on taxes, import duties, changes of income, and the introduction of machinery (pp. 478–519).

Part V has the long title “Summary of Conclusions on the Essence, Cognitive Value, and Development Possibilities of Theoretical Economics”. This long heading precedes one hundred pages of conclusions! Nevertheless, the conclusions are simple with respect to the above argument. First, the demarcation of the domain of equilibrium economics should be defined by the set of problems for which its basic model and the underlying “schema of exchange” can be applied (*Wesen*, 582). Second, the “methodological and epistemological essence” of pure equilibrium economics demonstrates that it is “a ‘natural science’ and its theorems are ‘natural laws’ ” (p. 536). Third, this science is best served by sticking to its place in the scientific division of labour. Although economic research and the writing of economic textbooks might reflect inspiration from the tools of the natural sciences and the contents of other social sciences, they should be cleansed from the frequent intrusions into the domains of other sciences (pp. 536–53).

Schumpeter’s three conclusions provide a surprisingly accurate description of much of the later development of modern economics. They suggest that equilibrium economics, especially through its Walrasian formulation, forms a “closed and autonomous province within the realm of knowledge” (p. 523). As Schumpeter later said (*History*, 242, 827), Walras had created the “Magna Carta” of this province—both as the first complete map and as the original constitutional document—and this made him “the greatest of all economists”. Even for those unfamiliar with the development of the English constitutional law based on the Magna Carta of the year 1215, the meaning of the underlying

caveat should be clear: Walras, of course, was not perfect. Nevertheless, he had demonstrated that the “subject matter” of economic theory “is a cosmos and not a chaos” (*Cycles*, 41) and he had implicitly determined the borderlines of equilibrium economics.

Schumpeter's emphasis on the narrow limits of equilibrium economics can be interpreted as his contribution to the resolution of the battle of methods the Austrian school of neoclassical economics and the German historical school (see *Doctrine*, 167–74). The foreground argument about the narrow domain reserved for equilibrium economics leaves plenty of room for alternative modes of study—and this point is explicitly made. The first signal is found on the first pages of the preface. Schumpeter stated that “nearly every ‘school’ [‘Richtung’] and every individual author are right in their propositions . . . from the standpoint of the purposes for which they are intended”. Therefore, the task is to “learn, not criticise; analyse and work out the correct in each proposition, not merely accept or reject” (*Wesen*, v–vi; emphasis removed). Although these statements are general, they are especially intended to cover controversies within theoretical economics as well as the battle of methods. However, Schumpeter immediately adds that he considers the controversy “between pure theory and history to be largely overcome” and that he for each scientific problem will “investigate whether the one or the other treatment is most recommendable” (p. vii). In contrast, the “whole history of the battle of methods” can be described by the sentence: “Everyone is convinced of his *exclusive* rights while he only *partially* can demonstrate this, and the beginner does not know which to adhere to” (p. xvi).

Part I continues this story. The battle of methods is hardly surprising since even natural sciences like chemistry and mechanics are characterised by controversies between experimentalists and theorists as well as in the camp of pure theory (*Wesen*, 4–6). This problem was overlooked because the historical school started by attacking classical economics at a time when it had entered a period of deep stagnation that even crippled the creativity of the great Stuart Mill (pp. 9–10). Hence it is understandable that the historical school chose to throw abstract theory overboard and concentrate on facts and practical problems. However, the members of this school never understood the nature of the theorising of the emerging neoclassical economics. Instead, they started “the development of new theories on the basis of historical materials” of which the “most well known example of this is probably the ‘Theory of Modern Capitalism’ by W. Sombart” (p. 18). Schumpeter emphasised that this group seemed to be “in a quick upswing and soon will dispose of a significant literature.” This literature “does not build an abstract system, but makes individual hypotheses on concrete questions . . . [that] relate always to definite historical facts.” Such hypotheses have “similarity with the hypotheses of biology”; and this similarity “is strengthened by their dealing mostly with the problems of evolution [Entwicklung]. They are everything else than ‘static’, . . . [b]ut perhaps the area of ‘Dynamics’ belongs to them! That will have to be seen” (p. 18).

These formulations demonstrate that Schumpeter did not dismiss history-friendly theorising. Actually, he simply considered the “descriptive” method and the theoretical method as two ways of handling facts. Since both methods have inductive and deductive elements, there is no basic difference. The only difference is that the theorist tries to cover whole classes of fact by developing a formal model that is characterised by the utmost economy of thought (*Wesen*, 41–4). This level of formality and simplicity is only

applicable to few areas of social life. Furthermore, the overselling of the descriptive accuracy of abstract theory was quickly recognised by empirically oriented researchers and contributed to the battle of methods (p. 48).

The apparent founding of equilibrium economics in a broadly conceived atomism and individualism was also highly provoking for researchers who emphasised altruism and collectivism (*Wesen*, 82). The problem is that many economic treatises start with a specification of *Homo Economicus* or other theoretical versions of *Homo sapiens*. This is, however, not the strategy of Schumpeter (pp. 85–7). As equilibrium economists, we should *not* consider economic agents—households and firms—from their inside through psychology or from the viewpoint of organisation theory. Instead, agents should be studied from outside, from what we as researchers can observe about their behaviour. This is all we need if we take serious that we are dealing with the properties of a system of quantities of goods and exchange relations between them (prices). The theoretical agents are designed to fit the model of this system. To emphasise this point, Schumpeter coined the phrase “methodological individualism” and dedicated a whole chapter for clarifying the issue (pp. 87–98).

Parts II–IV can be browsed quickly since we know their main contents from the above account. With respect to the battle of methods, we simply need to note that Schumpeter, at each major step of his argument, emphasises the limited scope of theoretical economics and thus the room for alternative treatments. For instance, theorists make “formal assumptions” while others might make “theories on the causes of economic action” (*Wesen*, 129). These theories might concern the interdependent influences of “[r]ace, cultural level, social position, education, personality” well as those of “the natural environment and social organisation” (p. 142). In contrast, the theorist only needs assumptions on the preferences that determine short-term choice in the economic system. Furthermore, production technology and industrial organisation are also represented by parameters by the theorist while they are problems for the studies of the historical school (p. 148). The fact that Marshall treated these topics extensively only serves to create confusion about the real structure of the standard model of the economic system (p. 150). Similarly, the basic model fails to support an extension of economic theorising into the long run and thus to the great phenomena of economic evolution (pp. 177, 186). The impression of a limited contribution of theoretical economics and the need for a complementary effort by the historical school becomes stronger and stronger. It also covers money and finance (p. 297), saving behaviour (p. 308), and long-term issues of rent on land (pp. 375–6).

Part V's narrow programme for theoretical economics obviously leaves a very large domain for the historical school. Actually, the members of this school had already occupied much of this domain while they considered the domain of theoretical economics of very little interest. Therefore, they could hardly oppose Schumpeter's conclusion. This conclusion was that the Walrasian Magna Carta allowed him to “preach a kind of Monroe Doctrine of economics” (*Wesen*, 536), that is, a dual principle of foreign policy: no acceptance of intervention from foreigners, no attempt to intervene against outsiders. If this doctrine was accepted, the transgressions of the battle of methods were overcome. Theoretical economists could concentrate on developing and applying their analytical tools within safe borderlines. At the same time, these borders defined the domains in which the historical school should not fear any attack from the theorists. It was also outside the

borders of equilibrium economics that evolutionary economics could be established.

## 5. From Walras's entrepreneur to Schumpeter's entrepreneur

Although Schumpeter only hinted at his concept of the innovative entrepreneur in *Wesen*, this book might nevertheless be considered the birthplace of this concept. His attempts to develop his evolutionary economics probably started from the Walrasian system. Many years after he wrote his *Wesen*, he emphasised his immediate recognition of the limitations of this system. In the preface to the Japanese edition of *Development* he stated that he discovered that Walras's focus was not made for purely methodological reasons. On the contrary, "Walras would have ... said (and, as a matter of fact, he did say it to me the only time that I had the opportunity to converse with him) that of course economic life is essentially passive" (Schumpeter, 1989c, 166). According to Walras, economic life "merely adapts itself to the natural and social influences which may be acting on it". This implies "that the theory of a stationary process constitutes really the whole of theoretical economics and that as economic theorists we cannot say much about the factors that account for historical change, but must simply register them."

Walras's conception of a passively adapting economy provoked Schumpeter's critical response that was based on his elitist vision of economic change: "I [Schumpeter] felt very strongly that this was wrong, and that there was a source of energy within the economic system which would of itself disrupt any equilibrium that might be attained" (Schumpeter, 1989c, 166). His vision of this disruptive force determined his analytical efforts. He felt confident that "there must be a purely economic theory of economic change which does not merely rely on external factors propelling the economic system from one equilibrium to another." Schumpeter emphasised that "[i]t is such a theory that I have tried to build and I believe now, as I believed then, that it contributes something to the understanding of the struggles and vicissitudes of the capitalist world". The scientific contribution of his theory is that it "explains a number of phenomena, in particular the business cycle, more satisfactory than it is possible to explain them by means of either the Walrasian or the Marshallian apparatus" (p. 166).

Schumpeter thus developed his evolutionary economics in opposition to Walras (and Marshall). However, there is little doubt that his reading of Walras's (1954) *Elements of Pure Economics* directly influenced his evolutionary theory. Since this influence is difficult to detect in *Wesen*, we shall start the study of this issue by the account for the emerging evolutionary economics that we find in Schumpeter's "Dynamic Theory of Interest". The starting point is the theory of interest on capital developed by his teacher Böhm-Bawerk. Schumpeter tried to rescue parts of the Böhm-Bawerkian theory of interest as a permanent source of income by emphasising that it was a contribution to "dynamics" rather than to "statics" (*Wesen*, 428, 408–13). However, his own theory of interest started from the viewpoint of the entrepreneur who created radically new lines of production in a given economic system. Although the presentation of his alternative theory logically should have been postponed to *Entwicklung I*, he considered it so important that he inserted a sketch in *Wesen* (414–30). Here he suggested that his theory might partly be expressed in terms of Böhm-Bawerk's concept of advantageous roundabout methods of production. The main point is that the use of roundabout methods does not generally and

permanently create an ability to pay a premium to the capitalist savers. Instead, it is the investment of entrepreneurs in innovations with higher productivities that provides the profit that can be used to pay interest. They do so by solving an inter-temporal problem. The presently available "world of goods" is governed by a system of prices that has no room for the innovative project. However, if some of these goods are brought into a "new combination", then they can be used to produce a future output that can pay a premium when measured in terms of the present price system. The condition is that—although the present state has no room for it—credit money is created for the innovative project. With these money the entrepreneur detracts some of the present goods for his innovative purpose. His demand for "purchasing power" (p. 427) essentially explains the phenomenon of interest.

Given his emerging evolutionary economics, it is not difficult to detect how Schumpeter developed his criticism of the sketches of a dynamical process that are found in Walras's *Elements*. The driver of this sketchy dynamics of the economic system is an agent that is presently best denoted the Walrasian entrepreneur, or the W-entrepreneur. This W-entrepreneur has a paradoxical role in Walras's essentially static system. On the one hand, the W-entrepreneurs bring the elements of the system together into a coherent whole through an equilibrating process that is motivated by profit opportunities. On the other hand, the holders of the role of W-entrepreneurship have no income when the system has moved to equilibrium. These two characteristics of the Walrasian system become clear as soon as we consider its basic structure. Walras (1954, 222) defined a role list that contains four essential types of agent. The list starts by calling "the holder of land ... a *land-owner*, the holder of personal faculties a *worker* and the holder of capital proper a *capitalist*". Then the list designates "by the term *entrepreneur* a fourth person, entirely distinct from those just mentioned". The role of this fourth type of agent "is to lease land from the land-owner, hire personal faculties from the labourer, and borrow capital from the capitalist, in order to combine the three productive services in agriculture, industry or trade" (p. 222).

From these role descriptions of the "dramatis personae" (*History*, 554), it is obvious that W-entrepreneurs are at the centre of Walras's model world: Their function is to combine the elements and thereby create an integrated economic system. The individual W-entrepreneur hires the necessary factors of production at given conditions of payment, and he initiates a process of production in which one of the employed workers function as a manager. When the goods have been produced, he sells them at the market price that is prevailing at that time. Then the W-entrepreneur makes up his balance sheet. Depending on the costs of the factors of production and the price of the goods, his bottom line shows either gain or loss. Such positive or negative profits, however, only exist as long as the economic system is in disequilibrium. According to Walras, this disequilibrium is removed by perfect competition among W-entrepreneurs. When this competition has brought the system into equilibrium through a process of trial and error (*tâtonnement*), the W-entrepreneurs "make neither gain nor loss" (*Wesen*, 438).

Walras's equilibrium thus has an apparently paradoxical characteristic: his W-entrepreneurs that are driven by the profit motive obtain no profit whatsoever. Hence he must conclude that in equilibrium the W-entrepreneurs model have to obtain their incomes by functioning as landowners, workers, or capitalists. Schumpeter thought "that

this entrepreneur is only a fiction" that is created because of the limitations of Economic Statics (*Wesen*, 438). However, he also recognised the possibilities of inserting an alternative entrepreneur, the S-entrepreneur, into a reinterpreted version of the Walrasian system. The background was that he thought that Walras's account for the *tâtonnement* process gives a false picture of the speed of the market process. While Walras saw the groping toward equilibrium as a speedy process without disequilibrium trading, Schumpeter followed the Austrian school by considering it very slow and erratic. It has thus, somewhat provocatively, been remarked that "Walras's *tâtonnement* takes a minute; Menger's *tâtonnement* takes a century!" (Streissler, 1973, 174; emphasis removed). Carl Menger's Austrian successors, especially Friedrich von Wieser, developed this view on the slow process of "imputing" values to intermediate goods and primary production factors, based on the valuations of consumer's goods. It probably is not least the sluggishness of Wieser's *tâtonnement* process that Schumpeter refers to when he states "that L. Walras and v. Wieser are those authors whom the author [Schumpeter] believes he is closest to" (*Wesen*, ix). It also seems clear that his reinterpreted W-entrepreneur is almost identical to Kirzner's (1973) neo-Austrian version of the entrepreneur.

Schumpeter's interpretation of the Austrian *tâtonnement* gave room for the adding of a Schumpeterian entrepreneur to the W-entrepreneur. What Schumpeter missed in the Walrasian model, he most clearly suggested in his second book: "The men who brought forth modern industry were 'all-of-a-piece people' and not pathetic figures who steadily asked whether each effort that they had to perform really gave a sufficient surplus of utility" (*Entwicklung I*, 137). Instead, "[s]uch men create because they cannot do otherwise" (p. 138). Although Schumpeter wanted to develop a model that places such creative entrepreneurs at the centre of the mechanism of economic evolution, that mechanism also needed non-innovative agents. The solution was ready at hand. The adaptive response to the deeds of the creative entrepreneurs could be modelled by means of a revised version of the Walrasian system with routine-based behaviour of ordinary agents. The most important of these agents was a reinterpreted version of the W-entrepreneur interpreted as a routine-based manager.

Schumpeter's distinction between innovative and non-innovative agents provided him with the elements of his "theory of the change of data" (*Entwicklung I*, 464). The data are the parameters that determine the behaviour of non-innovative agents. In contrast, the innovators take these 'parameters' as the starting point for their innovative projects. They can base the evaluation of the profitability of their projects on the Schumpeterian conjecture that the other agents of the economic system do not adapt quickly. This conjecture, which has some similarity with the conjecture that Cournot ascribes to his oligopolists, cannot be based on the flexible behaviour of Walrasian entrepreneurs. It is, instead, based on a revised version of Walras's concept. We are thus facing three different concepts of entrepreneurs:

- The Walrasian entrepreneur adapts to the changed parameters of the economic system and thereby contributes to the establishment of equilibration of that system. The formal role of this agent in the general equilibrium system means that although time is not included in the concept, we are actually facing instantaneous reaction.
- The Schumpeterian manager is the Schumpeterian version of the Walrasian entrepreneur. The behaviour of the Schumpeterian manager is based on routines.

This means that adaptation takes time and that adaptation to major change is impossible or difficult for this type of agent.

- The Schumpeterian entrepreneur disturbs the equilibrium by buying and using resources to change one of the 'parameters' of the economic system. The financing of the project of making such a change is motivated by an expectation of profit. This expectation is based on the characteristics of the project as well as on the Schumpeterian conjecture of sluggish response from the rest of the economic system.

## 6. From equilibrium economics to evolutionary economics

Schumpeter's interpretation of the Austrian *tâtonnement* seems to have been that the slow emergence of a consistent price system reflects the adaptation of agents with bounded rationality to the living conditions of a nation. Based on the Statics–Dynamics dichotomy, he saw this as a specification to the "first problem of economics", that is, to find the equilibrium state of the economic system from given parameters (*Entwicklung I*, 464–5). The second great problem of economics, however, was not treated. It concerns the development of a "theory of the change of data [parameters]" (*Entwicklung I*, 464–5). The problem of this evolutionary theory is how "an economy accomplish the transition from one level . . . to another level" (p. 466). As already mentioned, Schumpeter (1989c, 165) recognised this problem "when in my beginnings I studied the Walrasian conception and the Walrasian technique". Although he "as an economist owed more to Walras than to any other influence", he wanted "to construct a theoretical model" that answered "the question how the economic system generates the force which incessantly transforms it" (p. 165). The birthplace of Schumpeter's comprehensive evolutionary analysis, probably, can be found in his account for Walrasian comparative statics (*Wesen*, 441–519).

Schumpeter's name for comparative statics is "the method of variation", that is, the study of the response of the endogenous variables to an exogenous change. He emphasised that this study of the variation of the endogenous variables presupposes that the production functions and consumption functions of the economic system do not change. This means that the response to the exogenous change has to be small and take place quickly. An example of the problems created by a major change is described in terms of the marginal value of money (*Wesen*, 471–4). Since the evaluation of money is the outcome of long experience, a major change means that the economic agents have to restart their "learning to count" (p. 473). This learning is hindered by the fact that the value of money is closely related to the "standard of life" required to be member of a certain economic class. For instance, the consumption functions of the land-owning nobility will only respond gropingly and unwillingly to a downward or upward change in the marginal utility of money (p. 474). This and similar processes are excluded from comparative statics. What is missing is a "theory of the change of data". While "the first problem of economics" concerns a given state of the economy, its second problem is: "How does an economy accomplish the transition from one level . . . to another level? This is the question about the essence of economic evolution" (*Entwicklung I*, 465–6).

Although comparative statics is limited to the "first problem of economics", Schumpeter nevertheless considered it a major contribution to the toolbox of economic analysis. The serious application of this tool requires "higher mathematics", that is, ad-

vanced forms of integral and differential calculus. Since the design of *Wesen* excluded the demonstration of the use of these methods, he stated that "I hope soon to have the occasion to add what is missing in this respect" (*Wesen*, 445). This came close to a promise of delivering the book that he later called "The Theoretical Apparatus of Economics, in which I want to improve the quantitative methods of modern economics" (Schumpeter, 2000, 283). *Wesen*, however, concentrates on persuading the reader with only rudimentary mathematical skills that "higher mathematics" is needed. The major example used for this persuasion is the rather equation-dense analysis of the effects of the introduction of a quantity tax on a particular good (*Wesen*, 484–97). Schumpeter applies properties of the functions defined implicitly by the Walrasian system of simultaneous equations to answer the question what happens to the optimal solution because of the imposed tax. The change of the price of the good creates a chain reaction that is decomposed by means of Taylor's formula. The different elements of this decomposition are then studied by integration and differentiation. The conclusion is that the controversy on tax issues emerges because different assumptions are made concerning the form of the functions and because some elements of the decomposition are ignored. A shorter analysis of protective tariffs on imports also reveals that protectionist arguments normally include economic evolution (pp. 503–9).

Since Schumpeter never developed these sketchy arguments into a systematic use of "higher mathematics", one might suspect that this neglect is based on lacking mathematical skills. This is hardly true. The real reason for abandoning the Walrasian form of comparative statics and the related types of mathematics is to be found in the seriously limited range of problems that they cover. Of course, if we are willing to renounce on a high level of precision, we may by means of comparative statics "force our way towards the problems of Dynamics" (*Wesen*, 518). How far we can come in this way towards evolutionary economics, however, is an empirical question. Schumpeter clearly thought that the results of comparative statics with respect to the "problems of Dynamics" would not be satisfactory for him: "We can *never* surge into their core; the great tendencies of evolution [Entwicklungstendenzen] surely go past our systems, plays on other scenes. We perceive their voices only as the rumbling of a distant thunder" (p. 518). His reason was that these "tendencies of evolution" could not be derived from the type of economic agent on which comparative statics is, more or less explicitly, founded: "What a pitiful miserable figure he is, our economic subject who is always looking so anxiously for equilibrium. He has no ambitions and no entrepreneurial spirit; in brief, he is without force and life" (p. 567). It seemed obvious to him that "[e]ven the ordinary process of the economy is full of life and movement and has to be conceptualised in steady evolution [Entwicklung]. However, we stand puzzled towards the phenomenon of evolution and the 'high problems' of economic progress" (*Wesen*, 567).

Schumpeter had begun his analysis of the "phenomenon of evolution" and the "high problems" of "economic progress" *before* he started to design his first book. When he wrote *Wesen*, he already knew how to point at the major problems that he would confront in his evolutionary economics, and he even knew some of the theories that he would apply. Unfortunately, this fact has not been recognised in most of the Schumpeter literature. To promote the study of the close relationship between the two programmatic books of his youth, it seems warranted to emphasise an event that probably influenced

both of them. This event is pointed at in Schumpeter's preface to *Entwicklung I*:

"I took my point of departure in concrete theoretical problems, first, and that was in the year 1905, in the problem of crises. Step by step, I felt driven further into an independent new treatment of still further theoretical problems until it finally became clear for me that I was always engaged in one and the same fundamental idea and that this idea relate to the whole domain of theory and allows moving the boundary stones of theoretical knowledge in the direction of the phenomenon of economic evolution." (*Entwicklung I*, vii)

Schumpeter's dating of the start of his evolutionary research programme to 1905—three years before he finalised *Wesen*—hints at a very concrete background for his specification of the problems of economic evolution: the Böhm-Bawerk Seminar in the summer term of 1905. Böhm-Bawerk was both locally and internationally considered as *the* representative of the Austrian school—and his international fame as an economist was only surpassed by Alfred Marshall. He had obtained this status through his large book on *Capital and Interest* as well as through a very long series of controversies on the topics of this book. He wanted to review of the criticism against his book and wrote a new version of it. These wishes seem to have set the agenda for his research-oriented seminar that under the general theme of value theory discussed Marx's work and his own theory. His reputation attracted very capable students from both wings of Austrian political life (Haberler, 1950, 337–8). While Schumpeter tried to transcend the controversy, the neo-Marxist wing included Otto Bauer, Rudolf Hilferding and Emil Lederer while the conservative-liberalist wing included Ludwig von Mises as well as Böhm-Bawerk himself.

Since Schumpeter was not a Marxist in any ordinary sense, one might have expected that he would side with Böhm-Bawerk and Mises. This was not the case, however. Haberler (1950, 338) found out that "in the heated debates ... Schumpeter attracted general attention through his cool, scientific detachment". Schumpeter's approach to scientific controversies, which we have already considered, explains his detachment with respect to both neoclassical economics and Marxism. He had no ambition of simply defending neoclassical economics in the form that it had taken in the hands of the Austrian school. Instead, his task was to work out the correct kernel of both theoretical structures of economics. The fact that he in *Wesen* concluded that equilibrium economics is unable to treat "the great tendencies of evolution" was obvious. Thus the neo-Marxist Nikolai Bukharin (1972, 57) grasped this part of Schumpeter's account in his otherwise rather superficial attack on the Austrian school. He emphasised that, according to "Schumpeter's admission" in *Wesen*, this school is unable to treat the "speedy accumulation of capital, its concentration and centralisation, the uncommonly rapid progress of technology, and finally, the regular occurrence of industrial crises". However, Schumpeter did not think that the Marxian analyses of these phenomena were satisfactory.

Schumpeter's participation in the Böhm-Bawerk Seminar had directed him strongly towards the study of capitalism as an evolving system driven by the prospects of profit and interest on capital. This was, in the beginning of the twentieth century, the research field of the neo-Marxist school and the younger members of the historical school. At that time, new life was brought to the historical school by the Marx-inspired work of Sombart, Spiethoff, and Max Weber. Furthermore, the neo-Marxist school that wanted to move

from Marx's *Capital* to the theoretical problems raised by modern capitalism. They analysed the emergence of large-scale enterprises, relations between industrial and financial capital, business cycles, imperialist tendencies, nations and multi-culturalism, the stratification of the working class, the sociology of law and public finance, and methodological issues. However, Schumpeter thought that the burst of neo-Marxist creativity was seriously flawed by adherence to the Marxian type of grand synthesis between economics, sociology, history, and policy analysis. In contrast, Schumpeter wanted to cut the Gordic knot of synthesis and try to establish more limited and sober forms of coordination of knowledge (*Capitalism*, Ch. 4). The purpose of this alternative strategy was to promote the scientific understanding of the strange process of economic evolution that he later denoted by the term "the capitalist process" (*Cycles*).

Schumpeter's participation in the Böhm-Bawerk seminar of 1905 provides a new perspective to the argument of *Wesen*. In this perspective, equilibrium economics concerns the short-term functioning—and administration—of a given economic system. However, the concept of capitalism does not refer to this set of scientific problems and it seems appropriate leave out the related concepts of capital (*Wesen*, 164–7). Actually, there is a large number of phenomena that "can only be understood from the standpoint of evolution. Here belongs the problems of the formation of capital and others, especially those of economic progress and the crises" (p. 587). *Wesen* contains multiple hints about these and related problems. Even with respect to the price of the services of labour and land he to some extent suggested the application of evolutionary economics. With respect to the value of land, he thought that "all that is really interesting in it gravitates toward the great problems of evolution" (p. 374) and that he had found "a seed for a new theory" (p. 588n). Finally, he presented an entrepreneur-based theory of interest on capital in a section called "Prolegomena to a Dynamic Theory of Interest" (pp. 414–30). Obviously, such 'introductory remarks' have to be followed by a more extensive treatment. Although this treatment is found in *Entwicklung I*, the development of core aspects of evolutionary economics are present in *Wesen*.

The degree to which Schumpeter was able to do develop his evolutionary economics in a precise manner can be studied in his second book. Thirty year after its publication he stated that "I tried to show that distribution in capitalist society is dominated by the fact that capitalism is an evolutionary process and therefore displays phenomena which we cannot hope to discover in a study of a stationary economy" (Schumpeter, 2000, 333). The explicit problems treated in *Entwicklung I* (p. 463) are "[t]he essence of the capitalist economy, the entrepreneurial profit, the interest, the crises". In *Wesen*, we find only find a single hint about Schumpeter's initial problem of crises and business cycles. He simply stated that equilibrium economics is unable to handle this problem: "The static system and its methods provides us with no means of explaining this phenomenon. Under the assumptions of statics . . . there would be no crises, although some of their *effects* can be demonstrated fairly well" (*Wesen*, 588).

## 7. The evolutionary scheme and cycles of economic evolution

The present paper could stop here. However, we are still missing an understanding of how Schumpeter proceeded with the analysis of his problem of crises and business cycles.

Since his efforts in this respect completes the bridge between *Wesen* and *Entwicklung I*, it is fortunate that he was so happy with his results that he published them separately in 1910. Let us consider how he reached these results.

Assuming that Schumpeter had the problem of crises in mind from 1905 and onward, he must have been provoked by reading Walras's *Elements of Pure Economics*—especially by its Part VII. At that point of his book, Walras had already moved through a series of approximations to economic reality. Thereby, “the system of the economic universe reveals itself, at last, in all its grandeur and complexity: a complexity at once vast and simple, which, for sheer beauty, resembles the astronomic universe” (Walras, 1954, 374). However, he continued by sketching a couple of further approximations to reality under the heading “Conditions and Consequences of Economic Progress”. He first dealt with the reproduction of equilibrium as a stationary process—like the closed input-output system that reproduced year after year in Quesnay's *Tableau Économique* (p. 378). Here Walras has moved from his an abstract study of equilibrium to a stationary equilibrium. This is a routine-based equilibrium into which the Schumpeterian entrepreneur can be introduced. However, Walras does not consider this possibility. Instead, he simply assumed the exogenous change of the “basic data”, i.e. the parameters, of his model of the economic system.

When Walras (1954, 380) turned “from the static to the dynamic state”, he assumed that “the annual production and consumption, which we had hitherto represented as a constant magnitude, change from instant to instant along with the basic data of the problem”. As examples of these data he mentioned “the initial quantities possessed, the utilities of goods and services, the technical coefficients, the excess of income over consumption, the working capital requirements, etc.” The change of these data means that the economic system is “perpetually tending towards equilibrium without ever actually attaining it, because the market has no other way of approaching equilibrium except by groping, and, before the goal is reached, it has to renew its efforts and start over again”. Therefore, “the market is like a lake agitated by the wind, where the water is incessantly seeking its level without ever reaching it” (p. 380).

Schumpeter obviously did not subscribe to this analysis of the emergence of disequilibrium due to exogenous parameter change and the re-establishment of equilibrium by endogenous forces. He hardly found better the improved Walrasian image of an agitated lake that strived towards a gradually increasing level because of exogenous scientific progress and endogenous savings. While this image is implicitly suggested by the extended analysis of the last edition of *Elements*, we shall stick to the earlier version of the analogy of the disequilibrated lake. This analogy was developed when Walras (1954, 381) turned from “wind” to “storm”. He did so in relation to the problem of crises: “just as a lake is, at times, stirred to its very depths by a storm, so also the market is sometimes thrown into violent confusion by *crises*, which are sudden and general disturbances of equilibrium.” Here it is the exogenous “storm” that as an exogenous force created major oscillations around the equilibrium level of the “lake”. Walras specified the economic waves in terms of the movement of a single price. The upswing of the wave implies that “a selling price will remain for long periods of time above cost of production and continue to rise in spite of increases in output”. The crisis implies that “a fall in price, following upon this rise, will suddenly bring the selling price below cost of production

and force entrepreneurs to reverse their production policies.”

Schumpeter clearly was challenged by the Walrasian analogy and wanted to replace it by “the perennial gale of creative destruction” (*Capitalism*, 84). While he largely accepted the Walras's story of the movement from disequilibrium back to equilibrium, he rejected the story of the creation of disequilibrium because of the influence of exogenous forces. This rejection did not imply that he excluded the creation of waves of economic activity by exogenous factors. It instead implied that he found exogenous factors radically insufficient for his explanation of long-term evolution. Instead, Schumpeter's probably used his emerging theory to reinterpret Walras's statements as reflecting the, more or less, endogenous activity of his innovative entrepreneurs. If the reactions to entrepreneurial projects are slow, then their selling prices remain above costs for a relatively long period; and the average prices can increase because of the additional demand for resources created by a group of such projects. However, when this type of demand disappears, the average prices will fall below the costs of at least those following old routines, and their economic responses are either adaptation or bankruptcy. This seems to be “the essence of economic evolution” (*Entwicklung I*, 466).

Schumpeter tried to account for the essence of economic evolution as simply as possible. He did so by means of a dichotomy that has some similarity with his Statics–Dynamics dichotomy. He later summarised the modified dichotomy by stating that the “process of industrial mutation” takes the form of “revolutions” that “occur in discrete rushes which are separated from each other by spans of comparative quiet”; this means that there “always is either revolution or absorption of the results of revolution” (*Capitalism*, 83n). Although this was obviously the Schumpeterian vision of the process of economic evolution, it is probable that his choice of analytical scheme was strongly influenced by analytical convenience. Actually, he had to weaken the generality of his type of evolutionary economics to reach an analytical scheme that he, to some extent, was able to handle. More specifically, the purpose of Schumpeter's assumptions is to allow an untraditional form of equilibrium analysis. His concept of equilibrium implies that the evolutionary process has come to a temporary halt, and this concept allowed him to study evolution in well-defined steps. In the simplest case, the innovative activities emerge from a routine system characterised by this type equilibrium, and after the implementation of the innovations, a new equilibrated routine system emerges:

- Initial equilibrium: We start from an economic system in which evolution has come to a halt so that it is based on solid routine behaviour. This system is assumed to have found an equilibrium that allows the economic agents year after year to operate in their accustomed ways.
- Economic innovation: The initial equilibrium breaks down when a minority of innovators renews some of the routines. Under capitalist conditions, a strong credit system helps these innovators—the Schumpeterian entrepreneurs who establish new firms.
- Creative destruction and renewed equilibrium: After a competitive struggle between agents related to old and new routines, a renewed and well-established routine system emerges.

- Long-term economic evolution: The renewed equilibrium forms the basis for another phase of disturbing innovative activity. The long-term economic evolution of the routine system consists in a series of routinised equilibria and innovative rebellions against these equilibria.

Schumpeter first developed this scheme of evolutionary analysis in relation to his core problem of crises and business cycles. The scheme was not included in *Wesen* but published two years later in his large paper "On the Essence of Economic Crises", of which much was included in Chapter 6 of *Entwicklung I*. Here we recognise that Schumpeter, like Marx and in contrast to most other economists, chose "to look to business cycles for material with which to build a fundamental theory of capitalist reality" (*History*, 1135). What Schumpeter's paper added to the literature on crises and business cycles is largely the demonstration that an evolutionary theory of crises can easily be constructed by means of his general model of economic evolution. Since a treatment of this demonstration is beyond the scope of the present paper, we shall simply jump to his conclusions (see Table 2 on the next page). Schumpeter (2005, 50) concluded by listing nine theses that summarise "the fundamental ideas of our argument", and these theses were not included in *Entwicklung I*. Theses 6–9 concern the application of Schumpeter's basic evolutionary scheme for the study of economic crises while theses 1–5 presents this scheme in a highly abstract way.

The interpretation of Schumpeter's theses is not easy. Thesis 1 seems to provide a summary of *Wesen* by proposing that it is possible to use the Statics–Dynamics dichotomy to decompose economic processes into two classes. However, we should note that both classes are defined for the purposes of evolutionary economics. Thus the movement toward a stationary state is understood in terms of Schumpeter's modification of Walras's equilibrium-seeking dynamics. Thesis 2 emphasises that it is not the exogenous change of the economic structure but only what Schumpeter considered endogenous change that is included in the dynamic part of his evolutionary economics. Thesis 3 adds that the phase of evolution basically has to be considered as the disturbance of a general "static" equilibrium in which evolution has come to a halt. As we have seen, the disturbance may be specified as a challenge to the apparently given parameters of the economic system. Thesis 4 tells that the innovative disturbance provokes the response of "the static masses" in the direction of a new equilibrium. In the original formulation, Schumpeter used the German word "Statisierung" to denote his version of the *tâtonnement* process. Thesis 5 describes the equilibrating process as the adaptation to the new system of marginal value and price. It emphasises that the adaptive response by the "static masses" is not an easy one. Instead, the Schumpeterian *tâtonnement* implies that at least some of the old economic positions lead to bankruptcy rather than becoming adapted to the new parameters of behaviour. Elsewhere in the paper, Schumpeter stated that it is not only the evolution itself but also the "spasms of the collapse" after a crises that create "untenable situations" that can "be transferred only step by step—*par tâtonnement*—into an equilibrium state" (*Entwicklung I*, 454).

Although Schumpeter's first five theses were general, they seem primarily to have been designed for the study of economic crises. The rest of the theses serve to claim a place for Schumpeter's general theory of economic evolution in the literature on the problem of crises and business cycles. Let us start with theses 8–9. They point out that

Label	Thesis
1. Process types	"The economic processes fall into two separate and, in practice, clearly distinguishable categories: static and dynamic."
2. Evolution	"The dynamic category constitutes the pure economic evolution [Entwicklung], that is, those changes in the appearance of the economy that develop out of the economy itself."
3. Disturbance	"Economic evolution [Entwicklung] is essentially a disturbance of the static equilibrium of the economy."
4. Equilibration	"This disturbance causes a reaction in the static masses of the economy; namely, a movement towards a new equilibrium state."
5. Reorganisation	"The process of convergence to the static state [Statisierung] necessarily creates an end to each specific phase of evolution and causes a reorganisation of the value and price system of the economy and a general 'liquidation'."
6. Cycles	"These statements [Theses 1–5] explain the phenomenon, which is popularly characterised as the change between prosperity and depression."
7. Crises	"During the process of convergence to a static state and, especially, during the time of its inception, collapses can easily develop, which we term economic crises $\alpha\tau' \ \epsilon\zeta\omicron\chi\eta\nu$ [ <i>par excellence</i> ] and which render the process 'abnormal'."
8. Coincidences	"The economy—and, indeed, this includes the static economy—is also exposed to coincidental disturbances, which, if they are sufficiently significant, can cause such crises."
9. Unimportance	"But these [exogenously determined] crises present no problem, they can indeed be effortlessly understood."

Table 2: Schumpeter's early theses on economic evolution and crises (Schumpeter, 2005, 50; translation is modified). Theses 1–5 present Schumpeter's general scheme for analysing economic evolution in terms of the routines of the circular flow and their change. Theses 6–9 propose that this general scheme can be used to explain why endogenous economic evolution takes a cyclical form.

economic crises may have exogenous causes (like bad harvests or the ending of war activities). According to Schumpeter, the economic consequences of such phenomena can easily be handled by means of equilibrium economics. However, the basic issue is whether or not the economic system has an intrinsic tendency to produce recurrent crises. With respect to the capitalist economy, the answer is yes; but the argument is not easy to find in theses 6–7. Instead, these theses simply postulate that Schumpeter's scheme can be used for the explanation of business cycles and crises to the extent they are generated from within the economic system by the disturbance of innovative entrepreneurs. The immediate reason for the difficulty of understanding these theses is that the whole paper had dealt with the question, so Schumpeter could summarise his results briefly. Elsewhere he stated that the first entrepreneur paves the way for the next, and so on. Thereby their innovative activity may obtain macroeconomic importance. Furthermore, the step in the overall process of economic evolution is necessarily brought to an end by the forces that promote equilibrium:

"The counter-movements do not merely obstruct evolution [Entwicklung], they put an end to *this* evolution. A great many values are annihilated; the fundamental conditions and presuppositions of the plans of the leading men in the economy are changed. The economic system needs rallying before it can go forward again; its value system needs reorganising. And the evolution that starts again is a new one,

not simply the continuation of the old." (*Entwicklung I*, 415; cf. Schumpeter, 2005, 17)

Thus, Schumpeter seems to emphasise that the complicated process of returning to equilibrium from a highly disequilibrated state puts a brake on further innovation. As a result, the innovative demand that had created the prosperity disappears; and, at that point, the economic system can easily move into a full-fledged depression. However, the economic system will ultimately reach a new equilibrium from which a new round of innovation and adaptation can begin.

It is clear from even a very quick inspection the paper (and Chapter 6 of *Entwicklung I*) that these claims on cycles and crises are *only* based on theoretical deductions from the general evolutionary theory. However, the literature in which this theory wanted a place was heavily empirically oriented. Therefore, Theses 6–7 cannot be considered real conclusions but rather a research programme. The core tasks of this programme are to demonstrate that there is a real tendency toward a stationary economy and that this tendency punctuates any phase of economic development. Schumpeter often ignored these tasks. Even in *Development* (83n), he stated that the "stationary economy is ... an incontrovertible fact, apart from the fact ... that there is a tendency towards a stationary state in every period of depression." Although these statements are hardly incorrect, they do not substantiate the claim of a simple coupling between his theoretical waves of evolution and the facts of business cycles. However, Schumpeter probably thought that the available empirical data supported his claim. He furthermore, in 1914, tried to place conception of capitalist cycles in an empirical context. This was done in a paper called "The Wave Movement of Economic Life" (Schumpeter, 1914). This paper pointed in the direction of Schumpeter's enormously ambitious but largely unsuccessful research report from 1939 on *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. Since he used "the capitalist process" as interchangeable with "the process of economic evolution" (*Cycles*, 106), this was a serious setback for the further development of his evolutionary economics. However, if we are willing to cut the Gordic knot of *Business Cycles*, its elements provides a rich legacy.

## 8. The fundamental fields of evolutionary economics

We are now ready to conclude the present paper, but a part of the conclusion deserves a separate section and the inclusion of additional information. The combined reading of *Wesen* and some of Schumpeter's most related works has provided us with a rough impression of how he worked out evolutionary economics in a way that allowed him to define its "essence". By using this term he was not abandoning what Shionoya (1996, Ch. 5) has described as his methodological instrumentalism. He was simply trying to specify the concepts of his evolutionary economics that cannot be removed even in its most abstract form. Compared with equilibrium economics, the crucial concepts seem to be the innovative entrepreneur and the kind of change of the routines of the economic system that is promoted by this entrepreneur. However, Schumpeter's evolutionary conception of science (which is specified in Part I of *History*), did not allow him to think in terms of fixed definitions of any branch of science. Therefore, the specifications found in *Wesen* and *Entwicklung I* should not be used to exclude an evolutionary economics that

it built of a radically different concept of innovation. Especially, it should not be used to exclude from his evolutionary economics the depiction of innovation as the routine-like activity of large firms in their monopolistic competition. Furthermore, it should not be used to exclude from evolutionary economics statistical and historical studies in the style of the historical school. Such an exclusion would not only hit large parts of Schumpeter's *Cycles*. It would also deprive evolutionary economics from the essential driving force that comes from novel empirical data that do not fit existing theoretical structures.

We arrive at this broader conception of evolutionary economics by combining two aspects of the preceding analysis. First, we have in Sections 3 and 6 how Schumpeter considered equilibrium economics and evolutionary economics as two fundamental branches of economics with their own problems, methods, and materials. He emphasised that this separation "holds the key to the solution of many controversies and many apparent contradictions". Second, we have in Sections 4 and 7 seen how the empirical data are crucial elements of each of the fundamental branches. This aspect of *Wesen* was to clear when Schumpeter used it to obtain his "large doctorate", he had to make a lecture on "The Verification of Abstract Theorems by Means of Statistics"—and this lecture might be seen as a forerunner to his later promotion of the Econometric Society (Schumpeter, 1989a). When we combine these two results, we recognise that Schumpeter thought that it is not only equilibrium economics but also evolutionary economics that need the services of econometricians and historians.

Although Schumpeter confronted the problem of relating to empirical data in *Cycles*, his general formulations on the fields of economic analysis are especially dense in Part I of *History* (and in Schumpeter, 1987). Here he defined the four "fundamental fields" of economic analysis as economic theory, statistics, history, and economic sociology. He used the term 'fundamental' to point out that these fields are relatively independent components of economics *as a science*. The specification of the four fields can be seen as Schumpeter's final attempt to resolve the battle of methods between Menger and Schmoller. It should be noted that while Menger's work related to a single field, Schmoller's historical school had contributed to the development of three fundamental fields. However, considered as a description of equilibrium economics, Schumpeter's list of the four fields of economic analysis seem arbitrary. In contrast, when we are considering the evolutionary research programme suggested from *Wesen* and onwards, his list makes much better sense. Even his one-man project of creating an evolutionary economics needed evolutionary versions of all the fundamental fields—and he made some contributions to all of them.

While the fields of theory, history and economic sociology seems easy to handle, the field of statistics might need a comment. According to Schumpeter's definition, this field covers both the statistical methods and the results produced by means of these methods. However, it seems relevant to emphasise that evolutionary statistics has been a core contributor to the field of evolutionary theory ever since the great statistician and evolutionary theorist R. A. Fisher (1999). Another issue is that it seems relevant to add a fifth field, although it is not fundamental in Schumpeter's sense. However, he was repeatedly dealing with evolutionary economic methodology. Since this methodology primarily emerges from evolutionary research, the field cannot be called fundamental. It shall nevertheless be singled out because evolutionary analysis has to overcome a large number of hard and

unusual methodological difficulties. This leads us to the following list of the core fields of evolutionary economics.

- Evolutionary economic theory. The Schumpeterian version of this field has general characteristics, some of which have been discussed in the present paper. However, it is important to recognise that subfields emerge from a serious study of *Cycles* as well as from post-Schumpeterian contributions. The three major subfields are: (1) microevolution in individual markets, (2) mesoevolution in clusters of markets, and (3) macroevolution in all the interdependent markets of the economy (Dopfer and Potts, 2008). Although Schumpeter emphasised macroevolution, his work has hitherto primarily supported the study of microevolution and mesoevolution.
- Evolutionary economic history. Although evolutionary economic theory focusses on mechanisms, it provides a theory of history. Therefore, it is obvious that its development has to interact closely with the field of evolutionary economic history. There are additional motivations for this field. First, the quantification performed in relation to statistical work leaves an enormous residual of evolutionary processes that still can hardly be analysed without the help of professional historians. Second, it is still largely historians who provide the stylised facts for the institutional analysis of evolutionary economic sociology.
- Evolutionary economic statistics. The tasks of this field are to produce, describe, and derive results from quantitative data on economic evolution. Although Schumpeter tried to promote the field with the help of friends like Ragnar Frisch and Nicolas Georgescu-Roegen, it is only today that we glimpse the emergence of what can be called evolutionary econometrics or “evolometrics” (Cantner and Krüger, 2004). The latter term helps to emphasise that area has presently less similarity with modern non-evolutionary econometrics than with the econometrics of the 1930s—with its “High Theory” and its relationships with the evolutionarily motivated biometrics (Louçã, 2007). Such an evolometrics seems to have a crucial role even in helping to *define* what evolutionary economic theory is about: it provides a statistical approach without which core concepts like ‘evolution’, ‘selection’, and ‘innovation’ can hardly be specified satisfactorily.
- Evolutionary economic sociology. Evolutionary economic theory often works under the assumption that economic evolution takes place within given institutions, and this analysis can be extended to a comparison of evolutionary processes in different institutional settings. However, a kind of sociology is needed *within* evolutionary economics since institutions (firms, markets, macroinstitutions, ...) are themselves undergoing processes of evolutionary change. If evolutionary economics analyses the coevolution between institutions and economic life in the narrow sense, evolutionary economic sociology tends to become part of evolutionary economic theory (or vice versa).
- Evolutionary economic methodology. General evolutionary analysis raises difficult methodological problems that have been explored by biologists and philosophers. Evolutionary economic analysis might be enhanced by a ‘translation’ of these contributions as well as by an exploration of the many additional problems that emerge

when we analyse the interaction of economic agents with myopic experiences and expectations. One way of securing that evolutionary economic methodology does not produce sterile 'battles of methods' is to relate it closely to the study of the troublesome history of evolutionary economics (Hodgson, 1993).

It should be noted that this list of the core fields of evolutionary economics is neither a description of the organisation of Schumpeter's work nor of present-day research. The list is instead describing the core fields of a sustainable evolutionary economics, which has not yet emerged. Schumpeter was, nevertheless, aware of the need for research efforts in the mentioned fields. Actually, since he developed his evolutionary economic analysis as a one-man project, he to a smaller or larger extent had to cover all of them. He did so in a rather disorganised manner. For instance, *Business Cycles* covers all the fields but it is only evolutionary economic theory and, to some extent, evolutionary economic history that are treated systematically. The other fields are covered by scattered comments whose places in the architecture of the book often seem unpredictable. However, the mentioned fields should already have been predictable from a careful reading of *Wesen* and *Entwicklung I*.

## 9. Further conclusions

The present paper can be considered an application of what Shionoya (2005) has called "the currently dominant interpretation of Schumpeter". Although this evolutionary interpretation might be predominant among practically oriented researchers, the alternative—or rather complementary—"institutionalist interpretation" that Shionoya represents has been more active in studying Schumpeter's life and work. However, neither of these approaches have been applied for the systematic appraisal of all Schumpeter's books. Two of these books seem especially neglected—*Cycles* and *Wesen*. Even the full title of the former book—*Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*—suggests that it is crucial to cope with this huge research report on Schumpeter's evolutionary economics and its unhappy marriage with business cycle theory. However, an appreciation of *Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie* is also important for promoting within modern evolutionary economics what the present author has called "a 'dialogue' with older, verbal studies of economic evolution" (Andersen, 1994, 1). Actually, this "dialogue" can hardly be sustainable unless we come to grips with the book that Schumpeter published one hundred years ago.

It was Wassily Leontief's description of *Wesen* that in the introduction motivated the present paper. A major conclusion is that Leontief succeeded in presenting the essence of an important book that might have been called "The Essence and Limits of Equilibrium Economics". This freely invented title can be read in two ways. On the one hand, it introduces equilibrium economics to the beginner in a fascinating way. However, Schumpeter realised that this introduction was getting outdated, and it is even more so today. If we put the emphasis on "Limits", the suggested title for a non-existing translation of Schumpeter's first book is much more interesting for present-day readers. The reason is that by defining the limits of equilibrium economics, he clearly pointed at the realms of both the historical school and his type of evolutionary economics. If we focus on the latter branch of economics, its task is to analyse the mechanisms of the long-term evolution of the

routines underlying the economic system. This evolution can be determined by environmental change, and thereby we recognise an important area for evolutionary economics. However, it was not this area that Schumpeter wanted to explore by means of his type of evolutionary economics. His instead focussed on the type of evolution that is influenced by and influences the distribution of economic income. This type of economic evolution seems a core characteristic of capitalism, and it was the great problems of capitalist economic evolution that motivated his pioneering research. Since this research programme is still underdeveloped, the reading of *Wesen* and the subsequent re-reading of the rest of Schumpeter's work is still an element of present-day research whose value should not be underestimated.

The reconstruction of the arguments of *Wesen* in the present paper has thrown some light on the complex Schumpeter–Walras relationship as one between a radically innovative disciple and a rather conservative master. The interpretation helps to resolve what, probably, is the most difficult of the many paradoxes that emerges from Schumpeter's work. For instance, Morishima and Catephores (1988, 42) represent the idea of the Walrasian Schumpeter: while it is "generally believed that Schumpeter's hallmarks were the terms 'entrepreneurs', 'innovation', and 'new productive combination'", these concepts and the underlying ideas are actually "a direct extension of Walrasian concerns." Schumpeter has also been presented as a "Walrasian Austrian" (Schefold, 1986), while Freeman (1990, 28) has suggested that Schumpeter was a non-Walrasian but bound to Walrasian tools of analysis: "it was Schumpeter's misfortune that he attempted to marry it [the Walrasian equilibrium theory] with his own theory of dynamic destabilizing entrepreneurship". Others see him as an eclectic whose approach involved "brilliant mixture, if not always an internally consistent" blend of "Marxism, Walrasian equilibrium analysis, and German historical scholarship" (Rosenberg, 1986, 209).

All these statements are true—if we do not take them too literally. Schumpeter was inspired by Walras even with respect to his evolutionary economics; his early relationship with Austrian economists of Carl Menger's school had some influence; his Walrasian tools did create problems; and he did include inspiration from Marxism and the historical school. However, Schumpeter created his evolutionary economics through a new combination of all these, and several other, sources. This evolutionary economics not only consisted in an evolutionary economic dynamics. It also required an evolutionary economic statics, i.e. an analysis of the processes and conditions under which economic evolution comes to a halt. Since these conditions are very strict, the evolutionary statics primarily serves as an analytical tool. However, Schumpeter never specified his evolutionary statics in a satisfactory way. Although the main problem seems to have been that this task is difficult, his respect for Walras induced him to write as if this task had largely been solved by his great master. It was, of course, a very difficult problem which has not even been solved today.

When Schumpeter in 1911 wrote his preface to *Entwicklung I* (viii), he stated that he had two wishes. The first wish was that economists took seriously his "facts and arguments". The second wish was that "this work as soon as possible shall be surpassed and forgotten." He later extended these wishes to the whole of his work on economic and social evolution. Even in this broader setting, Schumpeter's first wish seems today to have been fulfilled. In contrast, his wish that other researchers should surpass and forget his

evolutionary vision and analysis has been fulfilled to a much more limited extent. This observation suggests that we are facing a scientific anomaly. While a pattern of cumulative scientific progress achieved by equilibrium economics, evolutionary economics has only recently begun to overcome its position as a glaring exception to the norm of cumulative scientific progress. Its position as the second fundamental branch of economics is still just a logical deduction from Schumpeter's analysis in *Wesen*. Whether it will ever in reality achieve a status similar to that of evolutionary biology is still an open question.

### Schumpeter's books

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