An evolutionary theory of the economy as a whole:

Reflections on Schumpeter’s “lost” seventh chapter to
The Theory of Economic Development

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Abstract

It is well known that Schumpeter outlined his basic theory of entrepreneurship and evolutionary economic dynamics in his 1912 masterpiece, *The Theory of Economic Development* (TED) written in his mid-20s as a young professor at Graz. This work appeared in English translation, based on a second German edition of 1926, only in 1934. What is less well known is that the first German edition contained a concluding seventh chapter, entitled “The economy as a whole” (*Das Gesamtbild der Volkswirtschaft*), which Schumpeter himself dropped in the second German edition, and which never appeared in the English translation. Its existence is barely known even in the German-speaking world, and hardly at all in the English-speaking world. One might be forgiven for thinking that the chapter is of little interest, given its repudiation by the author himself. This is far from the case. The seventh chapter actually outlines an impressive theory of the internal development of the economy as a whole, complemented by a sketch of a wider account of development of social processes, through the linking concept of entrepreneurial action. Within the economy proper, the tendency towards equilibrium is constantly displaced by entrepreneurial initiative that drives the economy along new pathways. The details of this process are spelt out in chapter 2 of TED, and the implications for interest and credit issues, and business cycles, are then drawn out in the body of the text, in chapters 3 to 6. But in chapter 7 the process is set in a grand synthesis that sets the static framework of classical microeconomics within its dynamic context, and sets the economic process itself within wider processes that span politics, the arts, science and technology. These fields too are held to be driven by entrepreneurial initiative, with the results in each setting the terms for action in the others, so that the social system as a whole is depicted in terms of dynamic interplay between relatively autonomous subsystems. In view of recent developments within complex adaptive systems theory, this is a strikingly modern presentation on the part of the young Schumpeter.

The paper explores these issues, demonstrating that Schumpeter’s presentation in TED, and particularly in Chapter 7, is actually a fully-worked out evolutionary view of economic development, encompassing variation, selection and retention, in terms that anticipate much later developments in complexity and systems theory, as well as “bottom up” agent-based computational economics, and evolutionary approaches to the social sciences. Thus the analysis of the seventh chapter gives rise to a more nuanced picture of the “young” Schumpeter and his concerns with entrepreneurial action, in a way that provides a more comprehensible bridge to his later views on corporate initiative. The paper is based on the new translation of the seventh chapter, by Jürgen and Ursula Backhaus, that appeared in the journal *Industry and Innovation* in April 2002.
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1. Introduction

Joseph Alois Schumpeter burst onto the world economic stage in the early years of the 20th century, creating a lasting challenge to the orthodoxy of his peers. Born in 1883, the year of the death of Karl Marx, he died in 1950, leaving behind an astonishing body of work with which the world of economics is still seeking to come to terms. As a young man, before he turned 30, he had published three major texts that made him world famous. “What is more unheard of” – asked his contemporary, Arthur Spiethoff – “a 25 year-old and a 27 year-old who stirs at the foundations of the discipline, or a 30 year-old who writes its history?”

Schumpeter’s first book, based on his Habilitation thesis completed by the young student at the University of Vienna, was a bold attempt to bring the new concepts of marginal and equilibrium analysis into German-speaking economics, where the emphasis was on historical and institutional analysis. This work, Das Wesen und der Hauptinhalt der theoretischen Nationalökonomie [The Essence and Principal Contents of Economic Theory] published in 1908 when Schumpeter was not yet 25, remains untranslated into English. In the next book, published in 1912 but whose theses were sketched in an article published in 1910, Schumpeter outlined an even bolder framework for a dynamic, evolutionary approach to economic theory. This work, entitled Theorie der wirtschaftlichen Entwicklung [The Theory of Economic Development], departed radically from the conventional economic framework, dubbed the static, “circular flow” and instead proposed a source of developmental novelty internal to the economic process, and carried through in the form of entrepreneurial initiative. This was turned into the core of a comprehensive theory of the workings of the capitalist economy, encompassing profits, interest, credit, cyclical fluctuations and the rise and fall of industries. This book was capped by a third, on the history of economic doctrines, entitled Epochen der Dogmen- und Methodengeschichte [Economic Doctrine and Method: An Historical Sketch]. This work traced the various lines of development of economic reasoning, and looked ahead to a future where economic issues would be analyzed as much from a dynamic as from a static perspective. All this had been accomplished by the time he turned 30. By the eve of the First World War, the world of economics lay at Schumpeter’s feet.

Then, as is well known, he turned away from academic achievement, to seek his fortune first in politics (rising to be short-lived Minister of Finance in the socialist post-war government of Austria in 1919) and then in business, as chairman of a Viennese bank. Both careers ended ignominiously: he was dismissed from his position in the government, and was wiped out financially by the crash of 1924, which saw him forced to resign from his position of chairman at the bank, and burdened with many personal debts. By 1925 he was back in academic life, now with a professorship of public finance at the University of Bonn – an appointment that created a sensation in the German-speaking world of economics. But Schumpeter was by now a much

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2 These details are elaborated in the admirable biography of Schumpeter published by Professor Richard Swedberg (1991) – a work which combines the personal, political and intellectual strands in the story of J.A.S.
more cautious man, and in the second German edition of his 1912 book, which he published in 1926, he made a very significant change: he dropped the far-reaching seventh chapter.

It is this seventh chapter, lost to the world after Schumpeter’s decision to drop it from his second edition (which then formed the basis of the English translation published only in 1934) that provides the focus of this paper. The chapter, entitled *Das Gesamtbild der volkswirtschaft* [The economy as a whole] provides a fascinating missing “chapter” in Schumpeter’s thought, previously inaccessible to the English-speaking world. The chapter, clearly written in haste late in 1911 to catch a printing deadline, sketches a highly original summation of his model of economic development, where transformation is generated from internal dynamics represented by entrepreneurial initiative – in contrast with the prevailing doctrines, which saw change in economic circumstances, and growth, as responding to external stimuli, such as population growth, or technological innovation, or the opening up of new geographic markets. In this broad framework, which he dubbed “dynamic” in contrast with the “static” mainstream and classical doctrine, he made the first clear distinction between static and dynamic analysis, and demonstrated how the static analysis is accurate at any point in time, but completely misleading if applied over a period of time. He went further, and stretched his framework to encompass the socio-economic totality, arguing that the same principle of entrepreneurial initiative could account for evolutionary change in all sectors of the social system, from politics, to the arts, to science itself. He saw this, quite explicitly, as laying down a sketch of a unified approach to the development of the social sciences. Little wonder that Schumpeter’s book had created something of a sensation.

Hence the great interest in this first English translation of Schumpeter’s “lost” seventh chapter: it allows us to see his life work as in a sense a working out of the lines first sketched in this youthful masterpiece. As he accommodated to the world of English-speaking economics, Schumpeter apparently felt it prudent to keep this chapter locked away in a “bottom drawer” – drawing on it extensively in his later writings, in a way that remained unsuspected by scholars with access only to his English language works, or to the second and third German editions of his 1912 book (which had quickly become a rarity). The second German edition of *The Theory of Economic Development* contained an extensively reworked chapter 2, which reflected the content of the dropped chapter 7. But this was not available in English until 1934. The first intimations to the English-speaking world of Schumpeter’s revolutionary approach, were his 1927 and 1928 articles, ‘The explanation of the business cycle’ (published in *Economica*, Dec 1927) and ‘The instability of capitalism’ (published in the *Economic Journal*, Sep 1928). April from a couple of earlier pieces, these were the major articles that established Schumpeter’s reputation in English – paving the way to a chair at Harvard in 1932. These articles are widely viewed as early intimations of his later works, namely *Business Cycles* (1939) and *Capitalism, Socialism and Democracy* (1942). With the benefit of the translation of chapter 7, we can now see these instead as reworkings of chapters 6 and 7 of his 1912 book, elaborated and extended and brought to an English-speaking audience.

This paper provides reflections on Schumpeter’s overall schema and in particular his 1912 vision as outlined in TED and its seventh chapter. The paper seeks

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3 The chapter, “The economy as a whole” [*Das Gesamtbild der volkswirtschaft*], is translated into English and published for the first time in a special issue of the journal *Industry and Innovation*, 9 (1/2), 2002. See Backhaus (2002) and Schumpeter (1912/2002).

4 Both articles are republished in Schumpeter’s collected essays, Clemence (1951/1989).
to identify the major theoretical innovations introduced by Schumpeter in his 1912 work, and how these came to form a body of hypotheses that can be called the “Schumpeterian schema.” The critical reception of this schema, and its continuing relevance to industrial analysis, is developed. The main contribution of the paper is a defence of the evolutionary character of the Schumpeterian schema (despite his own disavowals and much criticism by others) and analysis of his framework from the perspective of modern Darwinian analysis, complexity theory, and “bottom up” intelligent agent simulation. The paper closes with a review of Schumpeter’s 1912 vision of a unified social science, and its relevance to modern evolutionary social science perspectives.

2. Schumpeter’s 1912 book and the “lost” seventh chapter

Schumpeter had published his first book (not yet translated into English) as a way of announcing his arrival as a serious economist. It did not offer any new framework or model, but was a discursive treatment of current trends in economic theory. In particular, his aim was to shock German political economy with its traditional focus on institutional and historical treatment, at the expense of abstract economic reasoning, with his fresh focus on the new, mathematical reasoning, using equilibrium and marginalist principles. It is perhaps because these principles became so completely accepted in the wider world of economics that Schumpeter never felt the need to have his youthful exposition translated into English; perhaps it would have been a source of embarrassment to see his early gushings revealed to a wider English-speaking world.

His second book was a quite different affair. This was a mature and breathtakingly ambitious sketch of a dynamic economic framework that could create “development” (we would now say “evolutionary dynamics”) through its own internal workings – rather than waiting for outside shocks or stimuli to move it onto new trajectories. In retrospect I would argue that we can see at least five major theoretical innovations in Schumpeter’s second book, that had no counterparts in the contemporary work in economics, and which resonate still as challenges to the discipline. These were innovations that he would spend the rest of his life elaborating and pursuing.

1. Statics vs. dynamics

The title “The theory of economic development” announced a new departure in economic theorizing. Schumpeter paid his dues to the classic expression of political economy (whether in its classical or neoclassical, Marshallian format), arguing that in terms of static adjustment to a new situation, the economic framework left out nothing of importance. Economic subjects would take stock of a new arrangement of capital, for example, or new distribution of consumer wants, and make changes accordingly, through the mediation of prices and adjustments to production functions. But his point was that this mechanism did not account for secular change, which needed to operate according to different, open-ended, evolutionary principles. (He avoided the use of the term “evolutionary” for fear of being branded a holistic, German reactionary – but this is what he meant.) Even when the classics discussed long-run developments, as Malthus, Ricardo or Mill did in relation to the falling rate of profit, for example, Schumpeter demonstrated that they were operating a static framework merely extended in time; it was not a framework that contained fresh sources of dynamic adjustment within it. It was his central goal in the 1912 book to erect a dynamic
framework that would stand alongside the static framework, complementing it but not displacing it. This vision of economic analysis, as a fusion of dynamic analysis over time but static analysis at any point in time, was absolutely unique to Schumpeter, and stands as one his greatest accomplishments. He termed the static framework the “circular flow” (Kreislauf) and devoted the first chapter of TED to its exposition, again returning to the point in the abandoned 7th chapter.\(^5\)

2. **Internal development vs. external shock**
   Where then was the source of dynamic change to come from? Schumpeter closely followed the newest trends in economic theorizing, and in particular followed the work of the leading American political economists, including John Bates Clark, Frank Fetter and Irving Fisher. Clark in particular had published pathbreaking books in 1899 and 1907, which exercised great influence on the young Schumpeter. In the 1907 work, Clark treated economic dynamics, and traced economic change to any one of five external forces: an increase in population; an increase in capital; new techniques, or progress in methods of production; progress in economic organization of society; and emergence of new consumer wants. This was Schumpeter’s starting point.\(^6\) He felt that it was incomplete for economic science to be so dependent on external forces, and so he posited instead an internal source of variation, and insisted that it was only economic change that was grounded in this internal source, that could properly be called “economic development.” Again, it is clear that he is talking in open-ended evolutionary terms here, and is making a fundamental Darwinian point that an evolutionary system has to have within it the seeds for its own change (variation) or it cannot evolve. This was a fundamental departure, found only in Schumpeter and not in any of the classics, apart from Marx. For Marx, the seeds of change were to be found in the proletariat. But Schumpeter focused on the real engine of change, namely the investment behavior of capitalists and the innovative activity of entrepreneurs, and located the source of change in the entrepreneurial function. This was a momentous breakthrough.

3. **Entrepreneurship and the role of credit**
   The entrepreneur, or more widely the economic function of entrepreneurship, was the centrepiece of Schumpeter’s 1912 book. Certainly he was not the first to talk about entrepreneurs. Discussion went all the way back to Richard Cantillon, who in the 18th century provided a strikingly modern definition of entrepreneurship, and in Schumpeter’s time, theorists such as Clark in the U.S.A. had developed sophisticated accounts of entrepreneurial profit, capital, wages, and interest. Schumpeter’s own Austrian predecessor, Albert Schäffle, discussed entrepreneurship in a way that is clearly anticipatory of Schumpeter’s formulation.\(^7\) But it was Schumpeter who took over this terminology, and made it the centrepiece of a new conception of “economic development” or open-ended evolutionary change. And he linked entrepreneurship to a fundamental institutional feature of capitalism, namely the provision of credit. This is where he offered original formulations. First, he insisted that the entrepreneur

\(^{5}\) Note that his fellow Austrian and contemporary, and lifelong rival, Ludwig von Mises, used the same duality of static vs. dynamic aspects in his system, as elaborated much later in *Human Action* (written in the 1930s and published in 1940). Von Mises, and the wider Austrian school, uses the terminology “evenly rotating economy” for what Schumpeter had described as a “circular flow.”


\(^{7}\) Balabkins 2000 discusses Schäffle’s contribution, and its possible source for Schumpeter’s 1912 formulation.
should be distinguished from the capitalist who advanced credit; the capitalist would
take his reward in the form of interest, and in this sense would bear the financial risk
of the enterprise failing. Second, the entrepreneur would not be required to have a
source of savings as his departure point; Schumpeter thereby banished “savings” as a
major factor involved in economic dynamics, and with it other “funds” such as the
classical doctrine of the wages fund (to which he devotes an inordinately long
discussion in the 7th chapter, designed to bury the wages fund doctrine forever). Third,
the existence of sources of credit – such as bank loans, or equity contributions, or, in
the 1990s, venture capital – enables the entrepreneur to enter the markets for capital
goods and factor services like any other firm, thereby disturbing whatever equilibrium
might exist within the “circular flow;” this was Schumpeter’s critical insight, that
brought the entrepreneur onto a par with all the existing economic actors, but acting as
a source of disturbance to equilibrium. Fourth, the entrepreneur does not have to be an
inventor, but simply a source of “recombinations” of existing production services, e.g.
new techniques of production, or new approaches to marketing, or new ways of
organizing. Fifth, and for good measure, Schumpeter made the entrepreneur and his
borrowing of funds as the source of interest, denying that interest could be earned in
the static “circular flow” where all activities are matched to existing demands. (This
was the comment that infuriated his Austrian contemporaries, such as his teacher E.
Böhm-Bawerk, and his lifelong rival, Ludwig von Mises.) Sixth, although
Schumpeter was much attracted to the figure of the entrepreneur as a leader, who
breaks the mold and sets new directions, he was always aware that it is basically an
economic function that is being carried out, by an individual, or by a firm, or – in later
writings – by a giant firm occupying an industry monopoly position. Schumpeter was
always clear that it was the function that took precedence over the person of the
entrepreneur. Finally, and this was surely the most brilliant coup of all, Schumpeter
made entrepreneurial action the source of business cycles, thereby “closing” his
system in the most profound and satisfying way.

8 The foremost U.S. economist of the period, J.B. Clark, in his 1899 work The Distribution of
Wealth (in which he developed a marginal productivity theory of distribution), spelt out many of the
positions on entrepreneurial profit, and how it forms the source from which interest and wages are paid,
that were taken up by Schumpeter:

“It is clear, on the face of the facts, that the two static incomes—those, namely, of the
laborer and of the capitalist—are paid to them by the entrepreneur, who receives and sells the
product of their joint industry. In the cotton mill, it is the hirer of capital and of labor who puts
the goods on the market and from the proceeds pays the workmen and the owners of capital. If
he pays first to the capitalists what the final productivity law, as applied to capital, calls for, he
has a remainder out of which he must pay wages; and now it is the final productivity law that
decides what he must pay as wages. If there is anything left on his hands after the two
payments are made, it is a profit; and the terms profit and residual income are thus
synonymous.” (Clark 1899; Chapter XIII: 30)

Schumpeter added his own, definitive twist by placing these notions in a dynamic framework,
denying the possibility of entrepreneurial profit in the static economy, or circular flow.

9 See von Mises’ comment on Schumpeter’s suggestion, that obviously still rankles, in his 1940
text Human Action, p. 530: “It has been asserted that in the imaginary construction of the evenly
rotating economy no interest would appear. [Ref to Schumpeter 1912] However, it can be shown that
this assertion is incompatible with the assumptions on which the construction of the evenly rotating
economy is based.” Of course, it all depends on how profits are defined.
4. Business cycles created by internal development and entrepreneurship

As against the prevailing Austrian doctrine that viewed the business cycle as a monetary phenomenon, whereby credit expands in excess of the demand by investment, and contracts just when demand is accelerating, Schumpeter rested cycles of business fluctuation on activities in the real economy, through the agency of entrepreneurial action. This was another major innovation in economic theory. Against the widespread view that saw business cycles as phenomena triggered by external disturbance (such as variations in crop supplies, or weather patterns etc) or by monetary phenomena (not linked to actual production) Schumpeter instead grounded them in his theory of economic development. He argued, in effect, that economic development is internally generated, by entrepreneurial action, and as such it has to be cyclical in character. In the 1912 book the cycle traced out is what he later referred to as the “first approximation” – namely a wave process that goes through four phases, of upswing, recession, depression (overshoot) and recovery. In modern parlance, Schumpeter made business cycles the principal “emergent phenomena” of his dynamic system, in a way that anticipates much later developments in the theory of complex adaptive systems.

5. The economy as part of a complex social order

Schumpeter went to great lengths in the 1912 book, and especially in the 7th chapter, to establish the economic domain in its widest scope – the “economy as a whole” – in an even wider social context. Like his German contemporary, Max Weber, Schumpeter was really an early exponent of “economic sociology” and saw the future development of the discipline very much along these lines. Whereas Weber treated economic phenomena at some length in his treatises, such as Economy and Society, he could never be said to have added anything particularly novel in the exposition – which is perhaps one reason why Weber’s economic sociology never really caught on in a big way. But with Schumpeter the matter is entirely different. Vividly, in bold brush strokes, in the 7th chapter he outlined the framework of a dynamic economic sociology, where again the driving force is entrepreneurship. In just a few sentences, he sketched what such an approach would look like. This too was a fundamentally novel way of viewing “the economy as a whole” in its wider social setting.

The abandonment of the seventh chapter

Why then, did Schumpeter drop this innovative chapter from the second edition, and never refer to it again in his own published work? There is no clear or easy answer to this question. Perhaps he saw it as too precocious, too bold, and not appropriate for a more mature man of the world who by now aspired to a professorship at Harvard (which he secured in 1932). Perhaps he was bemused by the fact that it attracted most attention in the early reviews, and was praised in particular by reviewers who used his broader framework to argue against the analytical approach to economics that Schumpeter had espoused in his first book. Perhaps he felt that it held him as hostage to a too bold and demanding program of research that he could never realistically hope to substantiate.

One possibility that ought to be seriously considered is that Schumpeter came to disagree with the framework outlined in the seventh chapter – as he came to disagree with his own first book (which perhaps explains why it was never translated). But this seems most definitely not to be the case. If there is one thread that connects the life work of Schumpeter, it is the strenuous contention that economic change is
driven by internal dynamics arising from entrepreneurial initiative. Certainly he changed his mind concerning the character of entrepreneurship as such – moving to see it as being embodied in large firms rather than in heroic individuals, in his later 1942 exposition, *Capitalism, Socialism and Democracy*. He fleshed out the cyclical fluctuations aspect of the framework at great length in his 1939 work, *Business Cycles* – but this did not depart from the 1912 work in fundamentals. Thus there is a thread that connects the work of Schumpeter from 1912 to 1942 and beyond; let us call this the Schumpeterian “schema.”

**Schumpeter: An “Austrian” or a “German”**

Erik Reinert (2002) makes the striking point that Schumpeter, when viewed against the backdrop of German political economy, is less original than he otherwise appears to be. His work is saturated with then-current debates in the German and Austrian traditions. There is much to reflect on in this observation. Schumpeter, although an Austrian by birth, and a Viennese in his intellectual formation, never sought to identify himself as an “Austrian” economist alongside contemporaries like Ludwig von Mises, Friedrich Hayek and others.\(^\text{10}\) On the contrary, he sought to identify himself with a wider world of German and European scholarship, and as noted above, with the best current trends in English-speaking economics and social science, particularly those emanating from the United States. But through all this, Schumpeter was immersed in German scholarship and intellectual traditions, drawing intensively from Kant, Nietzsche, Weber and Sombart – so much so, that he rarely felt the need to refer to them explicitly.\(^\text{11}\) Schumpeter was more a “German” than an “Austrian” – but through his schema of the economy as a whole, he became a truly cosmopolitan theorist.

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\(^\text{10}\) Although they refer seldom to each other, there is a palpable and intense rivalry between the work of Schumpeter and that of his Austrian contemporary, Ludwig von Mises. Although von Mises was two years senior to Schumpeter (born 1881) they both reached their intellectual maturity in pre-War Vienna, when it was arguably the intellectual capital of Europe, and hence of the world. Whereas Schumpeter developed his system as a break with German historicism, but reaching back into its traditions, focusing on innovation and the role of the entrepreneur, Von Mises focused instead on money and credit, publishing his first treatise on the subject in 1912. (Is this one reason why Schumpeter always made such a fuss about insisting that his *Theorie der wirtschaftliche Entwicklung* was published in 1911, in spite of the titlepage bearing the date 1912 – was it to beat von Mises to the public unveiling of his treatise?) Von Mises went on to found a school of analysis of the business and trade cycle as a monetary phenomenon, enrolling illustrious scholars such as Hayek in this project – in stark opposition to Schumpeter, who propounded for his entire life that economic development is cyclical because of the role of technological innovation and of entrepreneurship in carrying through the new innovations. Despite their common origins in Vienna, it is Von Mises, Hayek et al who are known as “Austrians” while Schumpeter stands alone and apart as the theorist of technology-led economic fluctuations.

\(^\text{11}\) It can be demonstrated that Schumpeter drew important ingredients of his work from these authors. From Kant, I argue that Schumpeter drew an important parallel with his own concept of entrepreneurship. In his *Critique of Pure Reason*, Kant had laid out a stunning intellectual structure that sought to account for the knowability of the world, and to preserve space for human action and its moral foundations. He argued that science could trace all phenomena to their causes – but that humans could initiate new chains of causality through their own moral autonomy and free will. The parallels with the autonomy of the entrepreneur are striking. From Nietzsche, Schumpeter drew on the notions of “leader” and “superman” as ideal of his heroic entrepreneur. From Weber he drew his notions of economic sociology, while from Sombart he drew extensively on the institutional and historical discussion of capitalism, and indeed drew his notion of “creative destruction” directly from Sombart (Reinert 2002). But it was Schumpeter’s genius that knitted these various strands together.
3. “The economy as a whole” – the Schumpeterian schema

Schumpeter laid out in 1912 a conceptual framework, or “schema” to which he remained faithful for the rest of his life. It was at once a vantage point from which to view history, giving it an empirical bias; and a theoretical “model” or generalization of experience, from which economic principles could be drawn. It could even have become, had he chosen to take it in this direction, a source of policy prescriptions – but this was something to which he maintained a distinct aversion for the whole of his professional life.

Consider an economy, or economic system, characterized in the following terms. There is, as a first approximation, a system characterized by mutually interacting agents – firms, consumers, factor providers – who are continually adjusting their activities in response to changes in conditions. Producers respond to shortages by raising prices, according to some specified supply-price schedule; consumers respond by reducing purchases, according to some specified demand schedule. The economy so described is extremely “active” with people adjusting their behavior continuously in order to adapt to external or internal change – but it is static in the sense that it does not have a source of open-ended dynamic change that could place it on a new trajectory. This is what Schumpeter refers to as the “circular flow” economy. Throughout the 1912 book he refers to this as the benchmark against which a dynamic economy needs to be contrasted. In the 7th chapter in particular he makes it abundantly clear that he is not “attacking” the notion of the circular flow. On the contrary he insists that for the purposes of description of the economy “at any point in time” this is the complete and adequate description, as developed in the static, neoclassical marginalist framework and expounded by Marshall et al.

Now Schumpeter introduces his primary source of dynamic, internally generated change. Consider an economic system that is repeatedly disturbed (shocked, destabilized) by new lines of business, initiated by entrepreneurial activity, that develop through intense competitive dynamics with existing lines of business, extinguishing the existing lines, or being extinguished. The promotion of entrepreneurship (in its widest sense) is the foundation of economic vitality in such an economy. As a supplementary assumption, consider that the new lines of business (usually embodied in new firms, sometimes by existing firms) draw their substance (capital, labor, resources) from the existing lines of business, in a process of recombination (rather than innovation de novo), usually by new applications of existing processes or business models to new areas of application. Thus the mobility of resources is the foundation of economic adaptation and innovation. In evolutionary terms, Schumpeter has here introduced the fundamental source of variation in the economy, making the point that it is recombinations of factors, rather than their innovation ab initio, that drives the process. This is strikingly consistent with current views of biological evolution.

To ensure that entrepreneurial activity is not marginalized relative to existing activities within the circular flow, consider the existence of a credit system that complements the activities/production system of the economy. Consider that the new lines of business can be initiated is due to the fact that credit can be created or drawn, by the banking system, or the equities system (more recently, the VC system), enabling the entrepreneurial process to draw resources away from their existing applications to new ones. This credit creation disturbs the monetary system, while the entrepreneurial demand for resources disturbs the price system as well as prices for capital (interest) and labor (wages). Thus the existence of a healthy credit system (or
VC) is the foundation of innovation and entrepreneurial initiative, and it is entrepreneurial demand for credit that drives fluctuations in the monetary system.

The object of interest in such an economic system is the way that inter-firm competition drives open-ended (or evolutionary) development. Schumpeter introduces the assumption that the most fundamental form of competition is that between lines of business – as between canals, railways and stage coaches in the 19th century; or between oil-based, coal, nuclear, or solar driven energy systems in the 20th century; or between cable, satellite and telephone for delivery of internet services in the 21st century – rather than between firms producing similar products. The strategic orientations of incumbents and challengers are therefore quite different. A supplementary result is that temporary monopolies achieved through innovation will, in the process of fair competition, always be undermined by imitation and improvement, in a process of clustering of activity in the wake of the success of a new line of business. Thus public concern over market power is misplaced, provided there is healthy innovation and fair competition (e.g. restraint of cartels). More fundamentally, the action of innovators will generate a swarming, or clustering effect, as imitators introduce replicas or variants of the new combinations.

The most fundamental insight generated is that this swarming, or clustering in the wake of successful creation of new lines of business, leads inevitably to cyclical phenomena, or business cycles. These consist in an upswing as capital and resources are drawn into the new line of business, driving up prices and factor prices – until a position of saturation is reached, and the peak passes. (This might involve the bursting of a speculative bubble.) This is inevitably followed by a downswing as entrepreneurs redeem credit instruments (i.e. debts are repaid out of current earnings) and competition reduces profits or induces losses, thus squeezing all the activities dependent on them. Thus public concern over the “waste” involved in business cycles is misplaced, for this is the mechanism through which economic renewal takes place.

In the 1912 book, this is the set of dynamic interactions that Schumpeter refers to as “the economy as a whole” – meaning that the dynamics are to be sought, not in the behavior of individual firms or consumers, but in their mutual interaction and the “emergent” cyclical behavior generated. In this sense, the 1912 masterpiece can be seen as a remarkable anticipation of the recent work on complexity, and complex adaptive systems in which inter-agent activity generates “emergent” phenomena. It is economic cycles that are seen by Schumpeter as the fundamental “emergent” properties of the system. Indeed this may be taken as defining what constitutes a “Schumpeterian” from a “non-Schumpeterian” approach: to be Schumpeterian, a framework, schema or model must generate business cycles in the economy as a whole as emergent (not pre-programmed) phenomena.

Subsequently, in his further development of this work, expounded in a 1935 article and the 1939 book Business Cycles, Schumpeter adds further features to this cyclical emergent behavior. He introduces equilibrium considerations, arguing that innovations are made during such periods when calculation can be made; this helps to account for clustering. To the primary business cycle he adds the secondary and tertiary cyclical phenomena, of no definite period, due to secondary repercussions and adaptations to the changing levels of economic aggregates and prices. These are experienced as Juglar waves, Kuznets waves, and other such phenomena. Most

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fundamentally of all, every 50 years or so enabling technologies are initiated as new lines of business, which turn out to have unexpected and widespread ramifications, in one sector after another. These initiate long waves, or Kondratieff waves – the first, involving the application of steam power in manufactories (handwork assemblies) in the late 18th century; the second, associated with railways; the third, with electrical systems; the fourth, with the spread of mass production; and the fifth, associated with the spread of ICTs. The course of this “fifth wave” has been greatly complicated, particularly in the U.S.A. by regulatory protection of incumbents (e.g. in the telecommunications industry) and judicious pumping of the money supply leading to the emergence of a new phenomenon of the “wealth effect.” This is discussed further below.

Subsequently as well, Schumpeter discusses entrepreneurship in many different forms. His early emphasis on the heroic individual is tempered by experience (including personal experience) and by observation of innovation in largely oligopolistic industries, and so in his 1942 masterpiece, written 30 years later, Capitalism, Socialism and Democracy, there is much more emphasis on the function of entrepreneurship, rather than on the specific form that it takes. This is entirely consistent with his 1912 exposition; the idea that there are two quite distinct versions of Schumpeter, “Mark I” and “Mark II” really has no foundation in reality.

Consider now the originality of this vision of “the economy as a whole.” It starts from the assumption that the proper description of the economic system is not as a mechanical clockwork, perpetually moving around a position of rest, or equilibrium, peopled by uniform entities with uniform motivations, but as a dynamic, evolving system creating novelty through the emergence of unexpected phenomena from the strategic actions of very large numbers of independent agents mutually engaging with each other and creating a collective reality. The key insight is that the evolutionary dynamics of such a system are generated from its internal processes, of entrepreneurial discovery and new business line creation, rather than from external shocks such as shifts in population, or wars and revolutions. These obviously are a source of disturbance, but do not on their own account for the intensity and ubiquity of variation and selection processes within the economy. Thus protection from external shocks is not a plausible way of “smoothing” the paths of development of the economy. The key insight is that the mutual interaction between agents, and their technological competition, generates cyclical behavior patterns that cannot be predicted in advance. It is this cyclicity that is the hallmark of economies seen as complex adaptive systems, seen from a Schumpeterian perspective.

This collection of propositions (or hypotheses) is what I propose to call the Schumpeterian schema or framework – rather than a system, on one hand, or model on the other. It is a schema in that it is more specific than a generalized system, but not as specific as a “model” which should have variables specified and means of quantification available. Certainly the Schumpeterian schema as outlined can be specified in the form of one or more models. But the remarkable thing is that the schema outlined is so consistent with current path-breaking work in the areas of evolutionary dynamics, complexity, and agent-based modelling. This is what makes Schumpeter so exciting, and guarantees him his place as the pre-eminent economist of the modern era. We start the analysis by asking how evolutionary is this Schumpeterian schema.

4. Evolutionary dimensions to the Schumpeterian schema
On the face of it, the 1912 book is not a promising place to start with a description of Schumpeter’s schema as “evolutionary.” His own words are quite emphatic and definitive. He states, after asking whether his framework could be described as “evolutionary”:

“…the evolutionary idea is now discredited in our field, especially with historians and ethnologists … To the reproach of unscientific and extra-scientific mysticism that now surrounds the ‘evolutionary’ ideas, is added that of dilettantism. With all the hasty generalizations in which the word ‘evolution’ plays a part, many of us have lost patience” (1912/1983: 57-58).

This attitude is understandable when we consider the state of evolutionary thinking in the early years of the 20th century, when Schumpeter was writing. The neo-Darwinian synthesis had not yet been effected, awaiting the rediscovery of Mendel’s laws of genetics; there were rampant appeals to “vitalism” and “organicism” that were somehow irreducible to other principles; and there was the looming presence of social Darwinism, eugenics and strong beliefs in a capitalistic “natural” order. Schumpeter clearly wanted none of this. So he saw it as expedient to discard any label of “evolutionary” and concentrate instead on what he called “development.”

But his schema is saturated with what we would today call open-ended, evolutionary dynamics. The state of play regarding evolutionary dynamics is very different in 2002 from what it was in 1912 when Schumpeter’s book appeared. Today there is an understanding of the breadth and scope of evolutionary dynamics, and there is a general, conceptual framework of Darwinian processes that has application in biological systems, but also in many others, including social and economic systems. Darwinian processes of variation followed by selection and retention are now recognized in a vast array of domains, from individual development, to the acquisition of behavioral routines, and from the evolution of languages, through evolution of conceptual thinking, to evolution of technologies, organizations, institutions and laws. For example in the development of the individual person, it is now suggested that the nervous system and brain develops along Darwinian lines (or through the operation of what Calvin calls a neural “Darwin machine”). Experiments in cat brain and ocular development have found for example that there is no set template of neural connections between the eye and the visual cortex, but instead there is a proliferation of potential connections followed by their selection by the weight or preponderance of visual stimuli actually experienced by the growing cat. Thus it is the visual environment that “selects” the pattern of visual neural-cortical connections that is best “adapted” to it.

Likewise the mammalian immune system is now thought to develop along Darwinian lines. Instead of being born with a set of templates describing “self” and “non-self” – or in more recent terms, “danger” and non-danger -- it is now seriously entertained that the immune system of each individual develops a great variety of antibodies and that only a few are “selected” by antigens (foreign bodies or “danger” stimuli). Iterative variation and selection result in antibodies that are “tuned” to the antigens the immune system is likely to meet, and clones of such cells maintain a “memory” of such encounters, and thereby give the body the chance to respond swiftly to further invasions. In this way, the immune system of each individual is tuned differently, depending on the individual’s early experiences.

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13 On Darwinian processes in general, see recent reviews such as those by Cziko (1995), Plotkin (1993) and Dawkins (1983).
14 See Calvin (1996) for an overview of this perspective.
Even in the case of acquisition of language by the child, it is now thought that
the child has a capacity to experiment with a wide variety of sentence and word forms
and “selects” those forms as “correct” that secure a sympathetic response. Again there
is no need to postulate any kind of template or innate universal grammar to explain
the acquisition of speech.

The striking thing is that these phenomena all refer to the operation of
Darwinian processes within the lifetime of an individual. The application of
Darwinian processes thus clearly extends well beyond its traditional domain in
geological time. The other striking thing is that several such processes could be
operating simultaneously, e.g. in the development of the brain and of the immune
system, separately and independently. Thus we should be looking at evolutionary
dynamics within the economy not necessarily as a single set of phenomena, but as
several operating simultaneously.

Closer to the case of business and the economic system, there is by now
substantial scholarship that views the changes in technological systems as
evolutionary and adaptive. Oddly enough, in view of his later interest in
technological change, Schumpeter left out any mention of technological
“development” in his 1912 exposition. Likewise, a persuasive argument can be
mounted that science and technological knowledge similarly “evolves” through
processes of variation and selection of hypotheses, with selection being mediated
through a highly developed system of controlled experimentation and social peer
review. This is the field of “evolutionary epistemology.” In all cases, we see the
power of a process that generates variety in order to have adaptive “options” available
as environmental circumstances change, so that some forms are selected and others
disappear.

Perhaps most interestingly of all, Darwinian processes have been harnessed
technologically as a means of producing well-adapted products when “fitness”
conditions have been sufficiently well specified. The best known example would be
the production of software in the form of “genetic algorithms” – which would be
better labeled as “Darwinian programming” since it uses iterated production of
software strings with randomly introduced variation and cross-recombination, to
produce over thousands of iterations extremely well constructed programs. The full
power of the process is revealed in such an example. A software program is clearly a
human artifact whose writing usually requires great skill and experience – and yet a
machine can be programmed to simulate a Darwinian process over thousands of
iterations to come up with a program as good as or better than one produced by a
human programmer, provided the purpose of the program is sufficiently clearly
specified to act as a means of selection in each iteration. Experience with genetic
programming has also thrown up fascinating discoveries, such as the appearance of
“parasite” programs which compete with legitimate programs for space in the
computer memory, and force the artificially selected programs to improve themselves
in defence against parasitic attack. Darwinian processes are harnessed in the
pharmaceutical industry for the production of new drugs: the complexity of molecular
design has thrown up a radical alternative in the form of programmed iterations where
starting with a basic design and a clear specification of molecular action, a drug

15 On the evolution of technology, see for example Basalla (1988), Mokyr (1990) and the
collection of papers gathered in Ziman (2000), and for the case of the aeronautical industry, Vincenti
16 See Campbell (1974) for an original exposition of this “evolutionary epistemology”
viewpoint, and Hull (1988b) for a systematic discussion of science as an evolving system.
design can be produced through a sequence of variation and selection. Likewise Darwinian approaches are now utilized in the design of electronic circuits, in a process referred to as production of “evolvable hardware” – now widely discussed in the scientific literature.\textsuperscript{17} Again it is the clear “fitness criterion” in this case that provides the starting point for the application of Darwinian mechanisms.

Of course not all processes of biological and behavioral development are thought to be Darwinian. Most actually develop according to some kind of template or formula, such as our biochemical pathways. It would indeed be costly in terms of human life if every fetus had to experiment with a wide variety of metabolic pathways in order to find the most appropriate, within its own lifetime. Many behavioral patterns are likewise acquired through learning, which is not the same as evolutionary development. Thus enthusiasm for “Darwin machines” needs to be tempered by a sense of their appropriateness.

In this context, of evolutionary thought becoming the benchmark across the entire social and biological domain, including in new areas such as artificial life and artificial economies, Schumpeter’s schema is admirably evolutionary in spirit. There has long been controversy over whether Schumpeter can be considered an “evolutionary” theorist. The belated publication of the seventh chapter, in my view, puts the matter beyond doubt. Schumpeter was an evolutionary thinker, through and through.

Witt (2002) approaches this same question, and answers it firmly in the affirmative. By sketching an abstract outline of what an “evolutionary” approach looks like, and then demonstrating how Schumpeter’s schema fits in with this outline, he resolves the vexed question of whether Schumpeter is an “evolutionary” theorist or no.\textsuperscript{18} I am in unreserved agreement with Witt on this point.

As in any evolutionary system, there needs to be a source of variation, a source of selection (possibly utilizing different vehicles) and a source or mechanism of retention. Schumpeter provided all of these in his 1912 book.

\textit{Variation}: Entrepreneurial recombinations provide the source of variation; it is the existence of the credit system that guarantees that entrepreneurs are able to effect the new combinations when they see an opportunity.\textsuperscript{19}

\textit{Selection}: Market-based competition provides the selection mechanism; there are more variations than needed, and so there has to be some whittling down, accomplished through the selective pressures of price, differentiation and innovation.\textsuperscript{20}

\textit{Retention}: New variations selected by the market are retained through entrepreneurs building firms around these new combinations, and growing the firms, or replicating them through national and international expansion. It is the continuity of

\textsuperscript{17} See Gordon and Bentley 2002 for a recent overview.

\textsuperscript{18} There is a considerable literature on this question; see for example Hodgson 1993.

\textsuperscript{19} The parallel with genetic recombination, and in particular the exchange of genetic material between microorganisms, is striking.

\textsuperscript{20} It is well known that market processes, as described in English political economy of the early 19th century (Malthus, Ricardo) provided a key analog of competitive selection for Darwin; yet market processes have resisted an evolutionary treatment themselves – with important exceptions such as Alchian (1950) and Nelson and Winter (1982).
firms, and their capacity to sustain innovation, that is the fundamental retention mechanism in the capitalist economy.21

Now Schumpeter did not himself use these terms, but they are clearly what he had in mind. They are the appropriate terms to use in the present context, where there is widespread appeal to, and concordance with, the evolutionary framework. Nelson and Winter (1982) introduced their pioneering analysis of evolutionary economic processes by making the argument that selective pressures operate on firms in terms of variations in their underlying capabilities and routines (and by extension, resources). This was a completely novel way of viewing interfirm dynamics. It dispensed with neoclassical fantasies such as that firms adjust instantaneously to changes in commercial conditions, e.g. changes in prices, by adjusting their production functions. Instead Nelson and Winter argued that firms respond to changes in conditions through the medium of their routines, which can be varied only slowly and with difficulty. They modeled evolutionary dynamics in terms of random variations in firms’ routines, tracing out the selective pressures subsequently felt over hundreds of repeated iterations. Thus the ingredients of an evolutionary approach in economics are now reasonably well-defined.22 The Schumpeterian schema is entirely consistent with this, and indeed provides the appropriate framework for its further development.

The essence of the evolutionary perspective is not captured simply by a sense of change. Things change in the economic sphere, as in many other areas of human activity. But the changes might be entirely in terms of stimulus and response. They might entail learning. Or they might be simply random. What distinguishes evolutionary processes from all these is its character of blind variation (i.e. variation with unforeseen consequences) followed by selection combined with retention (or inheritance).23 This is an entirely general and abstract formulation of an evolutionary process, which can be applied in the social, cultural and economic spheres as much as in the biological sphere. It just happens that the process was first identified in all its power by Darwin in the sphere of biological adaptation and new species formation.

The modern view then is to see evolutionary processes in general terms with applications in the world of biology, of behavior, of individual development and development of such systems as the immune or nervous systems, and in the world of ideas, laws, institutions and business processes. Thus it is no longer a case of describing a biological process and then using biological “analogies” in the business world. It is the evolutionary process itself which can be seen as primary, as an abstraction, and then applied in different settings, be they biological, developmental, human social or economic. The characteristic feature of this view is to see the

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21 Retention is captured in such notions as the “stickiness” of routines and the resources utilized by firms, a point emphasized in the pathbreaking text on evolutionary economics produced by Nelson and Winter (1982).

22 For excellent introductions, see Dosi and Nelson (1994) or Metcalfe (1998a; 1998b); Langlois and Everett (1994) provide an illuminating discussion informed by a reading of the current evolutionary debates in the biological sciences. Andersen (1994), Hodgson (1993) or Witt (1992) provide expositions of the evolutionary approach to economics from different perspectives, while Vromen (1995) provides an extended comparison of evolutionary schools of thought. The modern field was essentially started by Nelson and Winter (1982).

23 See Metcalfe (1998) for a comprehensive discussion of the issues. By “blind” variation is meant a process where actors are not in a position to anticipate or predict the consequences of their actions, since these depend on the actions of so many others in the complex system. Blind variation certainly does not imply purposeless behavior.
evolutionary dynamics in terms of “replicator-interactor” dynamics – terms popularized by Dawkins. This is all admirably reflected in Schumpeter’s 1912 book and his schema.

5. The Schumpeterian schema in the light of modern agent-based modelling

One of the problems with Schumpeter’s schema has been the difficulty of “incorporating” it within the corpus of the neoclassical mathematical economic system, with general equilibrium at its core. Indeed it never fitted, and because Schumpeter himself did not supply the needed mathematical apparatus, no-one else did, and the Schumpeterian alternative languished in favor of its more rigorous, static rival. The Schumpeterian schema was slowly whittled down to a few key “Schumpeterian” assumptions that fitted in within the neoclassical framework – such as the “Schumpeterian hypothesis” that innovation can be facilitated better by large monopolies than by smaller competitors. Even if these hypotheses did fit with the spirit of the Schumpeterian system, they in no way captured its breadth. Occasional efforts to develop an economic dynamics (see Day 1994) have generally focused on the macro economy rather than on micro-behavior at the level of individual economic agents, where Schumpeter’s insights really have to be located. So such efforts have been sporadic and yielded little.

The great impetus to Schumpeterian thinking came from Nelson & Winter, whose great book in 1982 unleashed a wave of new modelling and generated new insights into the construction of firms, and their routines, and their satisficing behavior. But even here there have been limits to the Schumpeterian insights, and the modelling has been very abstract; in the 20 years since publication of the Nelson and Winter book, one can hardly say that there are strong schools of “NW” modelling underway.

But at last the situation might be changing strongly in Schumpeter’s favor. I refer to the rise of intelligent agent-based systems modelling, or what has been fortuitously called “bottom up” social science. The critical breakthrough has of course been the increase in computing power, and the impact on social science thinking of the breakthroughs in complexity and artificial life. Now there are several examples of “agent-based computational economics” (ACE) or simulation of artificial economies, where Schumpeterian insights can be embodied in agents’ behavioural rules, and Schumpeterian emergent behavior can be captured. Arthur (1995) is an early example of the application of agent-based modelling to economic phenomena, but the decisive breakthrough came with Epstein and Axtell (1996) and their book, _Growing Artificial Societies: Social Science from the Bottom Up_. This is a first demonstration of the power of simple agent-based models, in this case a Swarm-model called _Sugarscape_, to both generate emergent behavior (such as flocking) and to cross disciplinary boundaries in a fresh approach to a “unified” social science. Gone are the appeals to “holism” or social “gestalts” and in their place is the demonstration that population dynamics, for example, are intimately connected to

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24 See Dawkins 1976/1989; 1982; and 1986 for his fundamental contributions to the elaboration of replicator-interactor dynamics at the genetic level. These have been discussed at the cultural level in terms of “mimetic” processes, involving _memes_ instead of genes; see Blackmore (1999) for a comprehensive discussion. In this context, economic evolution operates at another level of replicator-interactor dynamics again, one that proceeds much faster than either genetic or mimetic evolution, and independently of both.

25 The phrase comes from Epstein and Axtell (1996).
economic dynamics, depending on the simple rules imputed to simple, interacting agents. Epstein and Axtell even demonstrate cyclical behavior that is generated in a non-determined way from the interaction of several “behavioural rules” operating simultaneously – just as Schumpeter surmised would be the case in the complex system of real capitalism.\textsuperscript{26}

A taste of what is to come is the recent paper by Bruun and Luna (2001) that actually constructs a mini-version of a Schumpeterian world, with production and credit, and entrepreneurs creating new firms by having access to credit, where some firms grow and others fall into bankruptcy depending on their ability to satisfy consumer demand. The interesting thing about this model is that it generates non-predetermined cyclical behavior. This, in my submission, is what makes the model Schumpeterian. This is just a first step, utilizing the now considerable library of software routines called Swarm, and which promises to become a bedrock discipline of social scientific investigation in the future. It offers a “third way” between mathematical equations (always insufficient to capture the real complexity and reflexivity of the social world) and verbal descriptions (like those of Schumpeter) which contain insights but cannot subject them to testing in any rigorous way. Computer-based simulations, over thousands of iterations, of complex worlds of mutually-interacting intelligent agents, or “artificial economies”, which generate emergent behavior in the form of cyclical phenomena, do promise to capture both the reflexivity and “bottom up” character of agent-based reasoning, as well as the emergent phenomena predicted by verbal descriptions, all in a rigorous and reproducible fashion in the context of a particular system. Of course much debate will ensue as to the adequacy of the representational system employed, and the techniques employed. But this promises to provide a fascinating way forward, and the ultimate field of application of the Schumpeterian schema. It is yet another reason why the Schumpeterian schema is today seen with such excitement; it resonates with the tools of investigation now available.

6. Current business cycles: The continuing relevance of the Schumpeterian schema

There is another most important reason why the Schumpeterian schema maintains its relevance – its power to offer insight into current technological trends in global industries like telecommunications and pharmaceuticals. The most recent innovation-led economic transformation is the IT- and communications-led upswing of the 1990s, followed by the bursting of the “internet bubble” in 1999 and the widespread deflation that followed, and is still underway. How do Schumpeterian insights shed light on this experience?

Firstly, as many have remarked, the communications “revolution” was only partly carried through, because of the reluctance of American regulatory authorities to allow the descendants of AT&T (the “baby bells”) to bear the full costs of technological competition in telecommunications services. After the U.S. Telecom Act of 1996 had opened the way to dozens of new competitors, utilizing different communications technologies, and setting the stage for a classic Schumpeterian “innovation-led” upswing, the incumbent firms slowed things down. They were allowed to slow down the introduction of new kinds of services based on their copper wires (such as ISDN) and to block access by alternative carriers to homes. The

\textsuperscript{26} See Terna (2002) for a recent discussion of these issues.
alternative carriers then had to invest in their own totally new systems of
transmission, ranging from cable TV, to satellite, to (most recently) cellular
“wireless” microwave-driven systems for telephony and data services, sometimes
plunging into massive debt levels to do so. There was no government-inspired
investment in infrastructure for any of these alternatives, again because of the
continuing political influence of the baby bells and continuing regulatory support for
their incumbent position. On the contrary, there was continued pressure by the baby
bells to have their own investments in network infrastructure underpinned by public
subsidy, in the form of “regulated” pricing structures – at the expense of the
investment plans of technological competitors.

The damage is being felt across the spectrum of U.S. business. Consider the
plight of Microsoft, which planned the introduction of its Xbox video game console in
1999 when broadband connections by U.S. households were doubling each year.
Based on these trends, Microsoft made the critical decision to equip each device only
with a broadband Ethernet connection, rather than the conventional dial-up modem.
Three years later, in 2002, Microsoft finds that it drastically overestimated the rate of
household broadband connections (only 8 percent had them in early 2002) and that the
market for its Xbox is much smaller than anticipated. For the same reason, the
company has held back on its launch of Xbox Online, which also calls for broadband
access. Other companies have likewise bet on broadband access and are failing to
realize their potential. Are these companies the victims of over-optimism, or is it the
case that regulatory overhang in the U.S.A. has drastically slowed down the
introduction of new communications technologies? The point is that this provides a
vantage point for judging the relative competitiveness of firms originating from the
USA vs. those originating in Europe or Japan, where investment in infrastructure has
been much more “Schumpeterian” in its thoroughness.

So in this sense, the US regulatory system for telecommunications (led by the
Federal Communications Commission) failed the Schumpeterian test in the 1990s,
and turned a potential economy-wide innovation-driven stimulus into a short-lived
“dot.com” speculative bubble. This was further propped up and accentuated by the
US Federal Reserve maintaining consumer stimulus and monetary expansion
throughout the 1990s, which provided credit not to alternative suppliers of
telecommunications systems, but to consumers and investors – creating what has been
dubbed as the “wealth effect.”

Schumpeter would no doubt have applauded the intentions of the Telecom Act
of 1996, but derided the regulatory oversight of the Federal Communications
Commission and its “market power” tests of regulatory compliance. All this flies in
the face of Schumpeter’s insights concerning the ways in which the capitalist system
renews itself through the vigor of innovation-led competition and “creative
destruction” of the old – in this case, the warranted destruction of the old copper
landlines of the baby bells. That they survive in the Internet age is a tribute not to their
technological resilience but to the “regulatory overhang” of the US Federal
Communications Commission.

The point of this story is that the Schumpeterian schema is not a fossilized
relic of earlier economic debates, but actually a living and breathing, powerful
analytical framework that generates penetrating insights into current issues. Indeed,

27 On the situation as of 2002, see Copeland and Malik (2002).
28 See for example Bauer (1997) for a general discussion in the context of Schumpeter’s
arguments, based on sector-specific studies such as those by Miller (1996) or Cuilenberg and Slaa
what other framework is there for making sense of the dynamics of technological competition in a fast-changing field like telecommunications?

7. Schumpeter’s schema and a unified social science

Finally we turn to Schumpeter’s most radical – but sketchy – contribution in the “lost” seventh chapter of TED. The concluding pages of the seventh chapter of the 1912 book outline a bold research program for a unified social science. For reasons best known to himself, Schumpeter kept these musings secret from the English-speaking world, and never referred to them again in German, either. The only scholar who has examined them from the perspective of a wider social science, is Professor Shionoya.29 His study provides the benchmark for analyses of Schumpeter’s wider aims.

Let us outline Schumpeter’s argument in his own words, deleting much of the extraneous commentary that adds length but not incisiveness to his exposition. He starts by introducing the notion that there are several areas of social life each of which has its own autonomy and its own social actors; these may or may not overlap, but in each case, there is a concreteness to their social activities.

[2002: 135] “For the process of development described above, there are … noticeable analogies to other areas of social life … Take as examples the areas of politics, of art, of science, of social life, of moral considerations, etc. … Here one has to observe that in the distinction between those areas of social life lies not simply in a mere abstraction. … On the one hand, we find in each of those areas people whose main activity lies in this area. In the area of the economy we find those people who belong to the economic professions … -- workers, industrialists, merchants, farmers etc. … In the area of art, one also meets well-defined individuals, in whose activity the development and any given state of the arts consists. [Schumpeter is speaking as a Viennese, the capital of the arts in Europe.] … The same is true in the area of politics. … [T]o those areas we distinguished from one another, real groups of people correspond who are in general different from each other. …[He captures the relative autonomy of these activities in a nice pair of metaphors.] No machine is built according to political principles, and no picture is painted according to the law of marginal utility. … Thus, this separation is … not simply an abstraction; one and the same individual can be active in different areas. … [Thus Schumpeter establishes the concrete reality of people being located within different social spheres, and their relative autonomy. He now wants to demonstrate how similar principles to those found in static economics can account for adjustments within each of these autonomous areas.]

“At any particular point of time each of these areas of social life comes under the shaping influence of data which are analogous to those which determine an economy, at any point of time, in accordance with the formulations of the static theory. … The problem to be solved is only to show again, in each single case, how this relationship works in its context, and then to present the essence of it in a precise general treatment. [This is, incidentally, an excellent one-line summary of Schumpeter’s vision of method in the social

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29 See the article on the 7th chapter, by Shionoya (1990) and the later book-length exposition of Schumpeter’s quest for a unified social science: Shionoya (1995). These texts are fundamental to the appreciation of the Schumpeterian opus.
sciences.] The first problem is a historical one, the second a theoretical one. Up to the present it has only satisfyingly been solved for the field of economics. [This is grossly unfair to Schumpeter’s sociological contemporaries, particularly Weber.] … To select an example: the art of a time is a child of the time. The geographic environment, the circumstances which one can describe as the character of a people or similarly, the social structure, the economic situation, the ruling ideas concerning what is grand and desirable, and what is low and despicable – those aspects form art at any particular point in time. The modern historian attempts to show this in some detail. [So much for statics; Schumpeter now wishes to demonstrate that dynamic behavior cannot be based on responses to external factors alone. He does so by continuing with the analogy of art.]

“… [I]t strikes one as obvious that there are particular forces at work in the area of artistic creation, that it conforms in the course of its development not only passively to outer influences but that there is more to it than simply being dragged along by the changes in the environment. [He goes on to describe how the field of artistic expression develops its own rules, each to its time and place, and how these can be linked more or less directly – with greater or lesser determinacy – to the circumstances of each. He now moves to consider how the relative autonomy of each field governs their necessary interdependence.]

“The conception of each area [of social life] as a result of the other fields is replaced by the conception of the whole state of social life … But with this the theory of development loses foundations. For the transition from one state to the other can only follow according to the static rules. [Thus he sets up the basic contradiction, which can only be resolved by entrepreneurial intervention – as done already at length for the case of the economy.]

“Thus our conception is unsatisfying in this respect as well. So now we come to the last step on our explanatory journey. There is a further analogy between what we presented first for the field of economics, and the processes in the other areas of social life. It is concerned with the mechanism of development, with that relatively autonomous development which is characteristic of every single field of social life. [Thus he subjects the entire scope of social processes to an open-ended, evolutionary treatment.] … Now, these groups [of concrete persons] in each area may be divided into two clearly distinguished groups – just as in the case of economically active persons. … In each field there are statically disposed individuals and there are leaders. The former are characterized by doing in essence what they have learnt to do … The latter by contrast are characterized by their perception of what is new; they change the outmoded frame of their activity, as well as the given data of their area. … We observe these differences in art, in science, in politics. … Everywhere these two types are very clearly demarcated, letting those spirits stand out who create new directions of art, new “schools”, new parties. [Schumpeter now sums up.] We always find this analogy between the behavior of the majority in these areas including the economy. This behavior consists, on the one hand, in the copying, recognition of, and adaptation to, a given state of affairs of materialistic and idealistic nature; and, on the other hand, the behavior of a [new direction-setting] minority in these areas such as that of the economy. The characteristic of this behavior lies herein, that it is oneself who changes the given state of affairs.” [The italics are added here to
emphasize the driving point, that by “development” Schumpeter means self-actuated change, in the economy as within every other field of social life, each one influencing the others through the “given data” that each regards as autonomous, but which are in reality inter-determined. Finally, Schumpeter makes a point that social entrepreneurs, whatever the field of activity, are not necessarily inventors or creators of the new, but more importantly they are the carriers of the new, those who put the new into effect.

“Our analogy emerges also in the manner in which the new gets pushed through. The mere thought is not sufficient and is never pushed through “on its own” … The history of science shows this in a drastic way. In this process, … the new thought will be picked up by a forceful personality and, because of the influence that personality possesses, be pushed through. This personality does not have to be the creator of the thought, just as little as the entrepreneur for instance does not have to be the inventor of the new method of production which he introduces. Here, as everywhere else, the leader is characterized by the energy of the act and not that of the thought.  

A new thought would virtually never be experienced as a new reality without the activity of a leader, with whom one has to reckon, whom one has to recognize, to whom one has to adjust. [Thus entrepreneurship is generalized across to all fields of social life, as the vehicle of “development” or, as we would say, of evolutionary dynamics. Finally Schumpeter emphasizes that the leader’s work is not driven by adaptation to the given, but by creation of the new – to which the system then adapts.]

“[The new idea] never happens as a response to present or revealed needs. The issue is always to obtrude the new … Its acceptance is always a case of compulsion being exercised on a reluctant mass … Any area of social life has doubtlessly its own means and levers for pushing through the new. One need not exaggerate the analogy. But the basic line is the same. [This completes the exposition of social entrepreneurship. The final point is to establish the inter-connections of all the areas of social life.]

“There is only one question left. How is it possible that despite this relative autonomy of each single field there is only one underlying and large truth … [namely] that every element of every area is at any point of time in a relationship with every element of every other area – that all states of all areas mutually determine each other and belong to each other. Let us call the totality of these areas the social culture of a nation and the basic underlying idea of all its developments the social development of culture. Then we can pose the question as to how it can be explained – according to our conception – that the social culture of a nation is at any point in time a unity and that the social development of culture of any nation always shows a uniform tendency?”

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30 Note the tantalizing anticipation here of later social accounts of scientific change, particularly that of Kuhn (1960) and his notion of “paradigm shifts” as driving scientific development. To my knowledge, Kuhn was never aware of Schumpeter’s prior discussion of this issue.

31 This final passage is rendered by Shionoya (1997: 40) as follows: “In spite of the relative independence of all areas, why is there such an important truth – indeed the truth which we cannot so much prove exactly as perceive – that every element in every area, at any time, is connected with every element in every other area, that all situations in all areas determine each other and depend on each other? If we call the aggregate of these areas the social culture of a nation and the totality of its development sociocultural development, we can ask: how does our approach explain that the social culture of a nation at any given time is a unity and that the sociocultural development of a nation always has a unifying tendency?”
At this point, Schumpeter is more or less exhausted, and rapidly rounds off his exposition, and the 1912 book as a whole. He does so, no doubt brimming with plans as to how to execute this dazzling vision of a unified social science. But as noted above, his ambitions took him in other directions, towards politics and business, and it was only when these ambitions had been frustrated that he returned to scholarship, in a German university. By then he had lost most of his earlier brie, and was much more cautious in developing and expounding research programs.

The point I wish to make is simple and straightforward. In this brief passage, of no more than ten pages in the German original (with considerable padding that I have eliminated in the above extracts), Schumpeter anticipated the entire program of Darwinian or evolutionary approaches to the social sciences. What is today called evolutionary linguistics, evolutionary psychology, evolutionary anthropology, evolutionary culture (and mimetics), evolutionary epistemology – all these areas of current social scientific activity, that are the leading edge, the avant-garde of our time, all were anticipated by Schumpeter, as a dazzling 28-year old, in 1912.

To summarize Schumpeter’s vision in 1912, he saw each area of social life as having its relative autonomy – autonomous actors, autonomous processes of adjustment, autonomous instigators of change – and its own internal dynamics, or what we would now call its own open-ended evolutionary dynamics. But each of these areas also created the “external” conditions for the other areas, in a complex system of mutual dependence. They would thus co-evolve in a vast process of mutual interdependence.

My point is that the evolutionary approaches to the social sciences provide the best possible fulfilment of Schumpeter’s vision of a unified social science. The evolutionary approaches dispense with the idea that there is a fixed pattern to social structures and processes, laid down either by functional necessity or by innateness, and that instead there is a more or less constant process of variation, selection and retention going on, that accounts for creative adaptation. But as far as I am aware, no evolutionary theorist has sought to go as far as Schumpeter in insisting on the interdependence, and mutual conditioning, of the different areas of social life – including that of the business world and economics. So in this sense, Schumpeter’s vision remains still the most radical vision of what the social sciences can achieve.

But to bring such a vision to fruition would require the most awesome of scientific undertakings! If the Schumpeterian approach is acknowledged as the best available account of capitalist dynamics, then it should be made the foundation of all studies in microeconomics, macroeconomics, evolutionary economics, developmental economics, and above all in practical, business-oriented economics and competitive strategy – as well as providing a framework for all the social sciences, from anthropology, through sociology, to evolutionary psychology. Just to enunciate such a program is to identify how great is the resistance to it, in terms of intellectual inertia, and how far we are from a unified approach to the social sciences. But if ever there were a candidate for such a unifying mission, it is surely the Schumpeterian schema.

8. Concluding remarks

The most important reason for studying Schumpeter’s seventh chapter today, is that it is so fresh and challenging. It grows in significance with the passage of time. Schumpeter’s emphasis on the internal dynamics of transformation of the economic system, remains the first and most brilliant sketch of a comprehensive theory of economic dynamics, startlingly in line with today’s conceptions of self-organized
complexity and emergence within dynamic systems. His emphasis on the power of entrepreneurial initiative grows in stature, as interest worldwide becomes focused on the dynamics of the “New Economy” with its fresh appreciation of the power of knowledge-rich entrepreneurial startups. Schumpeter’s emphasis on “creative destruction” – a concept he took over from Werner Sombart, but made his own – also has an intensely modern ring to it, as entrepreneurial startups in one sector after another, from infotech to biotechnology, constantly challenge the status quo and incumbent competitive advantage. His emphasis on situating economics within a wider social science, where the disciplinary areas have their relative autonomy but interconnect with each other, remains a fresh source of inspiration, and again of increasing interest in the light of the evolutionary approach to the social sciences.32 Above all, his emphasis on developing economic theory out of painstakingly gathered data, but approaching this task with bold “models” of the process of change, remains the single most important challenge to the dullness and tedium of today’s economic orthodoxy. Schumpeter launched a devastating attack on conventional economics – an attack that has never adequately been answered. This is the most important reason why the translation of his youthful “lost” seventh chapter is an event of such intellectual importance. If Schumpeter lost to Keynes the distinction of being the most important macro-economist of the 20th century, and to von Mises the distinction of being the most important “Austrian” of the 20th century, he might well be compensated by seeing his fame eclipse that of his rivals in the 21st century.

References


32 This is the theme of the fascinating book by Professor Yuichi Shionoya (1995) – which incidentally carried English translations of a few passages from Schumpeter’s seventh chapter, thus bringing them to the attention of the English-speaking world for the first time.


