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Article in *Journal of Evolutionary Economics* · August 2009

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Schumpeter's 'conduct model of the dynamic entrepreneur': scope and distinctiveness

Anthony M. Endres · Christine R. Woods

Published online: 22 July 2009
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Abstract Schumpeter formulated a 'conduct model' of entrepreneurial behaviour. Received wisdom has emphasised the economic functions of Schumpeter's entrepreneur, neglecting behavioural aspects. Schumpeter's model is examined; it posits a continuum of behaviours which are 'entrepreneurial', that rely on socially situated, tacit knowledge and are expressions of conscious, subjective rationality. Schumpeter's model excluded unconscious optimisation and decision rules derived from bounded rationality. Comparisons are drawn with modern neoclassical, Austrian, and the older behavioural characterisations of entrepreneurial behaviour. The newer 'effectuation' model of entrepreneurial behaviour is also contrasted with Schumpeter's approach. We find, among other things, that modern Schumpeterian economics associated with Nelson and Winter is not a natural continuation of Schumpeter's model. However, some developments in neo-Schumpeterian economics, including the effectuation model deriving from the older behavioural tradition, are congruent with both the original 'conduct model' and Schumpeter's directions for further research.

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Keywords Entrepreneurial behaviour · Optimisation · Cognitive limitations · Tacit knowledge · Schumpeter · Schumpeterian economics

JEL Classification B25 · D83 · L26

1 Introduction

Recently more light has been shed on Schumpeter's theory of economic development as a result of the discovery of a previously unpublished manuscript produced by Schumpeter in 1932 (Schumpeter 2005; Becker et al. 2005). Conventional treatments in the Schumpeterian tradition have always tended to cast the entrepreneur in a functional role in the economic development process. That the entrepreneur has a special functional place in Schumpeter's theory has overshadowed his analysis of specific behavioural elements. We demonstrate in this paper that, by contrast with the functional status of the entrepreneur canvassed in the vast literature on Schumpeter and in modern Schumpeter-inspired research, studies of the nature, scope and distinctiveness of Schumpeterian entrepreneurial behaviour have only lately begun to appear.¹ Yet even in those avowedly Schumpeterian contributions there are scarcely any linkages made to Schumpeter's original work on the subject.

We define entrepreneurial behaviour as the motives and acts enabling entrepreneurs to reach decisions in their roles as creators of profitable opportunities and as exploiters of those opportunities. The first purpose of this paper is to investigate how entrepreneurs differ, in behavioural terms, from other economic agents in Schumpeter's theory and in later Schumpeter-inspired ("Schumpeterian") research. Secondly, we compare Schumpeter's theory of entrepreneurial behaviour with other branches of twentieth century economic theory on this subject. Thirdly, we consider in what ways the theory originally formulated by Schumpeter is either ignored or further expanded or modified in later Schumpeterian literature.

It has been claimed that, in the second half of the twentieth century, economic theory "has not made any progress in the area of entrepreneurial behaviour" (Gilad 1986, p. 189). This view was earlier expounded by Demsetz (1983, p. 275) who opined: 'the entrepreneur is neither an object of analysis nor of research, but is rather a *deus ex machina* of economic development'. *Per contra*, we will demonstrate that progress had been made, initially by Schumpeter who contributed a seminal theory described by Fritz Machlup (1951, p. 97) as a "conduct model of the dynamic entrepreneur". This model has inspired certain modern developments in Schumpeterian economics. Later developments in the Schumpeterian tradition have failed to offer clear

¹For substantial surveys of the vast literature on the Schumpeterian entrepreneur as a functional agent in the development process see Frank (1998) and Ebner (2006).

characterisations of entrepreneurial behaviour; they often provide tantalising suggestions about entrepreneurial behaviour and decisionmaking such as passing mention of entrepreneurs' computational capabilities. However, these behavioural elements are usually buried in the assumptions of self-proclaimed 'Schumpeterian' theorising. We argue that the Schumpeterian behavioural postulates should be made explicit.

This paper proceeds as follows. Section 2 offers an exposition of Schumpeter's "conduct model" concentrating on the decisionmaking behaviour of the entrepreneur which has not, hitherto, been accorded much scholarly attention. The neglect of motivational factors and sequences of behaviour implied by Schumpeter's model is scarcely surprising given the plethora of articles and books on Schumpeter's 'innovating' entrepreneur which focus on the entrepreneur's economic function rather than on the process by which entrepreneurs make decisions or on Schumpeter's assumptions concerning entrepreneurial behaviour.² Section 3 will contrast Schumpeter's original "conduct model" with other identifiable strands of modern post-Schumpeter economic theory which attempt to incorporate entrepreneurial behaviour in different ways, specifically in neoclassical economics, Austrian economics and various branches of behavioural economics. We then turn in Section 4 to consider Schumpeter's research directives on the subject and some representative examples of modern, avowedly 'Schumpeterian' contributions in order to distil the approach taken to entrepreneurial behaviour. Here we assess complementarities and inconsistencies between these contributions and Schumpeter's original model. Section 5 provides a synopsis.

2 Schumpeter's conduct model: some textual exegesis

Fritz Machlup's attribution of a "conduct model of the dynamic entrepreneur" to Schumpeter refers to the earliest treatment of this subject in the first edition of *The Theorie der Wirtschaftlichen Entwicklung* (Schumpeter 1911). In that first German edition Schumpeter expressly claimed that he was contributing a "psychological explanation" of the entrepreneur's activity (p. 134). Now this explanation was an important pillar in his analysis of economic development. Later in a *Handwörterbuch der Staatswissenschaften* (1928) entry Schumpeter offers some more general statements on behavioural aspects of the entrepreneur which are consistent with a more comprehensive treatment in the third (English) edition of *Theory of Economic Development* (1934) [hereafter *TED*].

²Blaug (2000, p.83), paraphrasing Schumpeter (1949, p. 260), identifies the orientation of this literature: "the entrepreneur is a functional role which is not necessarily embodied in a single person".

Our textual exegesis begins with the 1928 *Handbook* entry on the entrepreneur.³ In reviewing all the literature up to 1928, Schumpeter (2003, pp. 247–8) included reflections on the essential differences between entrepreneurs and other economic agents; these turn ultimately on “differences in individual competencies”. Such competencies include “breadth of horizon”, “alertness”, and “strength of will”. The latter is accorded primacy insofar as it marks out commercial leaders who first generate “new ideas” and thereafter exercise “practical initiative” in creating something novel. Entrepreneurship as a form of leadership is to be distinguished sharply from routine and rule-following so characteristic of non entrepreneurs whose behaviour is driven by long experience. In this view, willingness to recognise and then exploit newly perceived opportunities is the hallmark of entrepreneurial behaviour. Schumpeter provides an exhaustive list of the typical opportunities entrepreneurs recognise and then exploit:

1. the production and carrying out of new products or new qualities of products
2. the introduction of new production methods
3. the creation of new forms of industrial organisation ...
4. the opening up of new markets ... ,
5. the opening up of new sources of supply (p. 250).

For each situation listed, the entrepreneur has to overcome “mental and behavioural habits” and become liberated “from the dictation of routine” in order successfully to exploit opportunities. In eschewing routine, Schumpeter’s entrepreneur also avoids the need to reduce all behavioural responses to “what is strictly calculable” in acting on opportunities of the type listed above. To be sure, Schumpeter admitted that some of what is “entrepreneurial” (for example, innovatory acts classed under point 1 above) may ultimately be reduced to deliberate calculation and objectively stated decision rules. Be that as it may, there is much that is still opaque in Schumpeter’s treatment of this matter. For example, in conflating opportunity recognition with opportunity exploitation, he implies that both these dimensions of the entrepreneurial act (*viz.* the creative process of recognition and the more deliberative act of exploitation) can eventually be appropriated by a calculating central planner applying the correct algorithms.

In a market economy one thing is certain: only a “small percentage” of individuals have the required “characteristics” necessary to exploit market opportunities successfully. To some extent alertness to new opportunities—that requiring an “eye” to perceive them—“can be learned” (p. 255) but that would ultimately lead to the extinction of the distinctive entrepreneurial type. Schumpeter was not sure, however, how far such learning could progress in the capitalist system he was observing.

³We shall refer to Schumpeter ([1928] 2003), the recent translation by Markus Becker and Thorbjørn Knudsen.

If the various types of opportunities created and exploited by entrepreneurs emerge in a discontinuous fashion, as Schumpeter surmises in *TED*, then an ongoing economic development process is set in train. *TED* provides a list of entrepreneurial opportunities almost identical to that appearing in the 1928 *Handbook* entry (Schumpeter 1934, p. 66). In the *TED* it is argued that new resource supplies need not be obtained to give rise to some opportunities (p. 68). It is only a critical defining aspect of the entrepreneurial act that it puts economic "means at the services of new ends" (p. 70). Indeed *all* acts with an entrepreneurial dimension must involve a process of conceiving new relationships ("combinations") between resources (means) either given or changing, and ends either given or created anew by producers or consumers.

Instantaneous rational optimizing behaviour matching means and ends does *not* depict the conduct of Schumpeter's entrepreneur. Optimising for entrepreneurs is generally a "fiction"; it only "proves to be sufficiently near reality if things have time to hammer logic into men" (p. 80). And those "men" possess idealised computational capacities. There is, in short, no prospect of building a theory of entrepreneurial behaviour on routine optimisation. Furthermore, there is no room for economists to become "self-appointed judges" (Schumpeter 1940, p. 317) and insist that entrepreneurs behave according to some normative decision rule such as profit maximisation. In its very purest form economic analysis postulates "an imaginary individual" who, with idealised computational skills "clearly perceives and aims at" profit maximisation (Schumpeter 1940, p. 318, 321–22). For Schumpeter this behaviour was only one possible method of acting rationally; there were other conceivable modes of rationality and he illustrates one of these in describing entrepreneurial behaviour in *TED*.

Entrepreneurial conduct is a special type of human action for several reasons. First, it is distinguishable from general economic behaviour and from allocative decisionmaking founded upon adaptive, marginalist principles. Standard marginalist models focusing on maximisation of returns do not apply:

Experience teaches ... that typical entrepreneurs retire from the arena [of action] only when and because their strength is spent and they feel no longer equal to their task. This does not seem to verify the picture of the economic man, balancing probable results against disutility of effort and reaching in due course a point of equilibrium beyond which he is not willing to go (*TED*, p. 92).

With the necessary changes to this passage, Schumpeter would surely have concluded similarly if 'revenue' and 'costs' were substituted for 'results' and 'disutility' respectively. The entrepreneur is not therefore to be considered "irrational" simply by dint of the high likelihood that entrepreneurial conduct is not underwritten by "hedonistic" desires such as the pleasure derived from accumulating profits, ultimately consuming those profits and enjoying leisure (p. 92).

Secondly, entrepreneurial conduct is different because it is directed toward something completely unique and novel. There is no previous basis for routine

calculation in this case. Thirdly, an entrepreneurial act “presupposes aptitudes differing *in kind* and not only in degree from those of mere rational economic behaviour” (p. 81 n2, emphasis in original). In Schumpeter’s depiction the entrepreneur is likened to a singer, specifically “the Carusos”, where the observer or listener is struck by “singing ability” such that it becomes the “characterising mark of the person”. While practically all individuals can sing, only special “super normal” persons will have distinguishing qualities making them a genuine Carusos (p. 82n); likewise with entrepreneurs as compared with normal economic agents. The latter are wedded to routine adaptation on the margin in response to changes in market conditions. By contrast, entrepreneurs are creative change agents.

In *TED* Schumpeter established a fundamental set of differences between entrepreneurs and nonentrepreneurs. The story does not end there. Within the class of entrepreneurs he perceives of a continuum of behaviours corresponding to different hybrids or “varieties”. Here we are required to consider entrepreneurial behaviour as a matter of degree. Once an entrepreneur has been identified the issue is to consider the degree of “intensity” in the initiative exercised (p. 82n). Within the entrepreneur class or “type”,

[m]any a one [entrepreneur] can steer a safe course, where no one has yet been; others follow where first another went before; still others only in the crowd, but in this among the first. So also the great political leader of every kind and time is a type, yet not a thing unique, but only the apex of a pyramid from which there is continuous variation down to the average (p. 82n).

The leader-type entrepreneur acting with a very high level of awareness and exercising the most initiative and energy, is a prime agent of change; this type often stimulates a cluster of innovating, novelty-creating and/or imitating activity by other (following) entrepreneurs. Whether acting as leader-type or hybrid followers, entrepreneurs are mostly purveyors of novelty. From the position of observing social scientists entrepreneurs seem to create novelty from out of the air, from what at the outset is only a “figment ... of imagination” (*TED*, p. 85). The entrepreneurs’ “projecting” and “imagining” is difficult to grasp analytically. Certainly Schumpeter is convinced that entrepreneurial conduct is not to be identified with the behaviour of the technically knowledgeable inventor and it cannot be based on unbounded rationality given the “impossibility of surveying all the effects and counter-effects of the projected enterprise”. Indeed, the *failure* of entrepreneurship is directly linked to over-preparation, special technical knowledge, “breadth of intellectual understanding, [and] talent for logical analysis” (p. 85). Fundamentally, the basis for originative entrepreneurial conduct is tacit, inarticulable, subjective knowledge. The *success* of an entrepreneurial act

depends upon intuition, the capability for seeing things in a way which afterwards proves to be true, even though it cannot be established at the moment and of grasping the essential fact, discarding the unessential even

though one can give no account of the principles by which this is done (p. 85).

Schumpeter's description of the essence of entrepreneurial conduct in no way denies its 'rational' basis. In a 1940 address on "Rationality in the Social Sciences", Schumpeter promotes what might now be labelled a 'pluralist' methodology for modelling rational behaviour.

dissatisfaction with rational schemata in economics seems to me mainly due to the difficulty of picking appropriate rational models ... [T]he rationality of the model must be supplemented by the rationality of its application ... Many types of behaviour are looked upon as irrational (not conforming to a schema of rational action) and the range of rationality in action is in consequence often underestimated because the tests of rationality have been made by means of models that failed to fit (1940, p. 324).

For Schumpeter there were different methods available to social scientists wishing to theorise about rational behaviour. Since there were different types of rationality, pluralist methods or 'schema' were required, depending on the case.

On Schumpeter's terminology, to ordinary economic agents is attributed "subconscious objective rationality". The result is generally mechanical, adaptive behaviour. Microstatic theorems are subsequently formulated to explain such behaviour and the standard tools of marginalist reasoning are applied (1940, p. 323; *TED*, p. 86). Schumpeter's concept of objective rationality describes "models of rational action [that] do not necessarily imply conscious rationality on the part of the actors" (1940, p. 326). It does not matter if the decision algorithm used cannot be articulated by the observed actor; it could be imputed by the observer. This concept fully anticipated Friedman's (1953, p. 21–2) celebrated methodology of "as if" theorising. Standard economic behaviour, specifically the conduct of non entrepreneurs, is based on routine, fixed habits of thinking and follows subconscious decision rules (such as optimisation) that can be given no objective basis by observers. Nonetheless, when such behaviour is conceived in terms of 'as if', its consequences may be predicted with some degree of confidence by an observer.

By contrast with 'as if' theorising about standard types of economic behaviour, entrepreneurial behaviour must be modelled differently. It is more fruitful if a notion of "conscious subjective rationality" is applied to entrepreneurs (*TED*, p. 85; 1940, p. 323). Consequently there is room for applications to cases of behaviour that are engendering change or economic development. When recognising entrepreneurs either as leading economic change agents or closely following change agents it is neither necessary nor sufficient to apply a common decision algorithm to those agents. That Schumpeter's entrepreneurs possess skill in making either successful decisions or error-ridden decisions is *not* tantamount to claiming that those decisions must be rational or rule-following, for example in the sense of optimizing.

Schumpeter favoured any psychological attribution to the “entrepreneurial type” which did not have a “hedonistic character” (*TED*, p. 92). He claims that entrepreneurs do not seek pleasure or utility as an end itself; and do not systematically shun disutility in the single-minded pursuit of maximum utility; they prefer to “seek out difficulties” rather than avoid them and “delight” in ventures which have uncertain outcomes. Furthermore, while pecuniary rewards are an expression of the success of any entrepreneurial behaviour relative to other behaviours, these were not the overriding motivating force of entrepreneurial conduct. Four aspects of the entrepreneur’s conscious, rational conduct are delineated, none of which turn directly on maximising pecuniary returns:

1. the “dream and will” to establish a private enterprise;
2. the “sensation of power and independence” associated with commercial activity based on individual action;
3. the element of competitive “sport” involved in attempting to demonstrate social distinctiveness and “prove oneself superior to others, to succeed for the sake ... of success itself”;
4. the psychic benefits accruing from the “joy of creating, of getting things done” or from “exercising one’s energy and ingenuity” (*TED*, p. 93).

It would be to trivialize Schumpeter’s discussion of these entrepreneurial motives simply to reduce them all to special arguments in an entrepreneurial utility function. Schumpeter would strongly have rejected such an approach. In observing real entrepreneurial acts “countless nuances” are evident. The four broad motives listed above will be operable but shade into one another. There is no substitute for the analyst-observer being engaged “by detailed observation of the psychology of entrepreneurial activity” (p. 94) and in this the presupposition of an “interpretative schema” emphasising conscious subjective rationality is indispensable (Schumpeter 1940, p. 326).

As for the kind of rationality that we may, in retrospect, apply to Schumpeter’s entrepreneur there is now available an apposite concept which captures the substantive behavioural aspects intended by Schumpeter. Derek Parfit (1984) formulated the “present aim” standard of rationality and contrasted this notion with the “self interest” standard of rationality. The latter is familiar to orthodox economists because it subsumes marginalist calculation and optimisation. The present aim standard evaluates human action in terms of the extent to which individuals pursue aims held at the time of taking a decision; it encompasses all the motives Schumpeter attributes to his “entrepreneur type”. Entrepreneurs following the present aim rule do not give weight to desires requiring careful weighing up of decisions in a long process of calculation. The desires or motives postulated in Schumpeter’s schema for entrepreneurial conduct do not accord directly with marginalist calculation over profit. In his 1928 *Handbook* entry he asserts: “the striving for maximal personal monetary profit ... for some types more than others—is substituted by objectives of a different kind” (2003, p. 254). Schumpeter emphasizes more intense, current motives which make redundant the inclusion of universal,

analytically tractable decision rules. The outcome from Schumpeter's schema would be more descriptively accurate accounts of entrepreneurial behaviour rather than formal models. Schumpeter tries to make sense of entrepreneurial objectives. The question—'are they consistent with present aims?' is entirely different from 'are they consistent with an 'as if' optimization rule?' imposed by the analyst. Schumpeter asks the former question, referring to the desires for "power and independence" (motive no.2 in his schema), and from his point of view believes these were "in fact both largely illusions" (*TED*, p. 93). However, he recognised that these were crucial 'present aims' of entrepreneurs and therefore had explanatory status even if they appeared illusory to the observer. By contrast, the self interest standard of rationality eliminates recognition of all those motives concerning drive for power, independence, proving oneself to others, the dream and will to create novelty and so forth.

3 Schumpeter's model vs. neoclassical, Austrian and behavioural approaches

We shall now proceed assertively, taking for granted textual evidence and support provided in the foregoing section. As well, we shall be highly selective in considering only major representative works as points of contrast with Schumpeter's model.

3.1 The neoclassical entrepreneur

One identifiable strand of research characterising the behaviour of entrepreneurs contemporaneous with Schumpeter's contribution, and advanced in a more analytical manner from the mid-twentieth century, is the neoclassical approach. In this approach microstatic theorems of entrepreneurial optimising behaviour have abounded (Endres and Woods 2006, p. 190–92); here the entrepreneur functions in an equilibrium system incorporating firm formation and assists in determining the size distribution of firms in that system (Lucas 1978). As Baumol (1968, p. 68) observed, it is only possible to fit entrepreneurs in to such a system if they are conceived as "automaton maximisers". While there have been subtle changes in the neoclassicalists' analytical representation of entrepreneurs—in respect of economic functions—there have been no fundamental changes in the depiction of entrepreneurial behaviour. To be sure, in modern work the entrepreneur is, in principle, made to obey standard von Neumann–Morgenstern axioms of decision making under uncertainty but this has not altered the fact that neoclassical theory places entrepreneurs in a homogeneous class of idealised agents who:

1. are a factor of production;
2. offer special talent in managing resource coordination that can be rationally allocated on the margin;
3. maximise subjective expected returns in uncertain conditions;

4. are Knightian risk-bearers holding a risk-tolerant (or at least risk-neutral attitude) by comparison with other risk averse individuals (labourers, firm administrators) and
5. act without significant influence from history or institutional context (Lucas 1978; Khilstrom and Laffont 1979; Bianchi and Henrekson 2005, p. 356–63).

Our textual exegesis in Section 2 indicates that on every factor listed above, Schumpeter's entrepreneurial type is quite different. In general we concur with Langlois (2003, p. 292) that entrepreneurial behaviour (in Schumpeter), in "introducing the qualitatively new—is an activity inherently different ... from the kind of rational calculation portrayed in the imagery of neoclassical modelling". Moreover, risk bearing behaviour is excluded as a function of the entrepreneur in Schumpeter's work.⁴ Taken together, the five factors listed above are utterly inconsistent with the conduct model; Schumpeter would have rejected each one on the grounds that they were integral to a theoretical construction requiring a mode of behaviour he described as 'static–hedonistic'. The entrepreneur cannot meaningfully be understood as an idealised agent who maximises anything in particular, whether it be profit or some other maximand. Universal, constrained maximisation (or optimisation) is rejected by Schumpeter because it is completely rule-bound. So much then for the neoclassical entrepreneur.

3.2 The Austrian (Kirznerian) entrepreneur

To what extent is Schumpeter's entrepreneur similar to Israel Kirzner's "alert" entrepreneur as elaborated in modern Austrian economics? In the most comprehensive survey to date of the most influential 'Austrian' perspective on entrepreneurship, entrepreneurial functions and behaviour, Kirzner (1997) makes no mention of Schumpeter. What are we to make of this neglect of Schumpeter's 'entrepreneur type' in the modern Austrian (Kirznerian) 'market process' tradition?⁵

In Kirzner's approach emphasis is placed on the tendency for entrepreneurs' acts to equilibrate markets in the face of correctible entrepreneurial error rather than on entrepreneurs' systematic disruption of markets. In a subsequent, specialised article, following the more general survey, Kirzner (1999) reconsidered differences between Schumpeter's entrepreneur and his

⁴Capitalists carry the responsibility for risk bearing (*TED*, p. 75,137). Furthermore, unlike the "risk-neutral" entrepreneur in Khilstrom and Laffont (1979), Schumpeter's entrepreneur was always cast in a position of "precariousness" (*TED*, p. 89) and did not enter into careful calculation to minimise precariousness.

⁵In selecting Kirzner's work as representative of the Austrian approach to entrepreneurial behaviour in particular, we are mindful of the fact that the Austrian tradition is not monolithic in this regard. More radically subjectivist, dynamic approaches than Kirzner's are also available in Austrian economics. See for example O'Driscoll and Rizzo (1986) and the more general survey of Austrian approaches in Endres and Woods (2007).

own. While concentrating mostly on the functions of entrepreneurs in the market process, Kirzner also offers clear guidance on the main behavioural differences between Schumpeter's entrepreneur and his construct, the "alert" entrepreneur. Three main claims are established:

1. Schumpeter addresses the "psychological profile" of the typical, change-initiating, "real world entrepreneur" whereas Kirzner's construction of the alert entrepreneur makes no such pretensions.
2. Schumpeter's creation of a more empirically oriented entrepreneur has policy implications (e.g. how to stimulate, in practice, the advent of more individual entrepreneurial acts which exhibit the requisite Schumpeterian personal qualities or "psychological profile"). By comparison, Kirzner's construct has no direct policy implications (Kirzner 1999, p. 5).
3. Kirzner's alert entrepreneur is constructed for pure analytical purposes, that is, to capture "*the analytical essence* of the entrepreneurial role" (p. 12 emphasis in the original).

The pure, essential entrepreneurial role is independent of the day-to-day qualities manifested in the actions of Schumpeter's entrepreneur; it is also conceivable without any need to elaborate on the historical, socio-cultural, organisational or larger institutional context in which entrepreneurs act.

Kirzner's analytical referent is the equilibrating market process in which the alert entrepreneur plays a key role. Equilibrium is brought about by alert individuals perceiving previously unnoticed profit opportunities created by *exogenous* changes, and correcting errors made by other market decisionmakers. Kirzner (1999, p. 12–13) extends his analysis from single period to multi-period equilibration. Like Schumpeter's entrepreneur, Kirzner's entrepreneur is purportedly "routine-resisting" (Kirzner 1997, p. 71), though for Kirzner routine is eschewed *only* at the stage of perceiving profit opportunities. Here profit is an end in itself whereas for Schumpeter profit is a proximate objective—it is a means toward entrepreneurs' personal goals.

In practice, as Kirzner (1999, p. 13–14) concedes, alert 'Austrian' entrepreneurial behaviour does not deny the need for exercising "aggressive, bold, creative leadership qualities" which constitute aspects of Schumpeter's entrepreneur but the precise ways these are expressed in any real case are not relevant for Kirzner's analytical objectives (to explain equilibration). Therefore Kirzner claims that his alert entrepreneur and Schumpeter's entrepreneur are generally complementary (p. 16). However, this claim is not sustainable as far as entrepreneurial behaviour is concerned. In activating their "attitude of receptiveness" alert Kirznerian entrepreneurs become deliberate coordinators of resources in markets exhibiting disequilibria (Kirzner 1997, p. 12). While discovering previously unnoticed opportunities, subsequent behaviour in exploiting those opportunities must have an optimising character (Kirzner 1995, p. 107). Otherwise, no systematic tendency in resource allocation and coordination toward equilibrium could occur. In exploiting opportunities Schumpeter's entrepreneur behaves quite differently: there are no points of

complementarity with Kirzner's entrepreneur here. Schumpeter's entrepreneur is more suitable to exploring both the endogenous creation of opportunities, and immediate recognition and creative exploitation of exogenous market changes. Kirzner's alert entrepreneur merely reacts to the latter; alertness is activated to take advantage, on the margin, of exogenously generated changes. It might be more appropriate to describe Kirzner's entrepreneur as a 'follower' in Schumpeter's sense, of the leading, originating innovators and novelty creators. In any case Schumpeter's entrepreneur is more relevant to explaining the motivations behind opportunity exploitation which, as we have noticed, do not turn fundamentally on profit pursued as a primary end.

There is also a divergence in the focus of analytical attention between Schumpeter and Kirzner. According to Kirzner (1999, p. 16), "[w]hat Schumpeter's use of language ... obscured, is that the activity with which he is dealing is, at a deep level, *responding* to the conditions of the market" (his emphasis). This statement is objectionable in the light of our exposition of Schumpeter's 'entrepreneurial type'; that type was constructed to suit any particular historical configuration of the capitalist market economy. Schumpeter's entrepreneur creates, as much as responds, to market data and is a change agent more than an arbitrageur. Accordingly, Schumpeter created a 'type' that behaved differently from the Kirznerian agent gifted with alertness. Indeed, alertness is evoked by "pure profit incentive" (Kirzner 1999, p. 16) in a self-contained institutional vacuum, save that entrepreneurial behaviour takes place in a generic 'market'. That alertness is activated originally by market price signals indicating profit potential at the microlevel without reference to specific, real temporal situations and business-organisational forms is necessary but by no means sufficient to encompass the sociological and historical richness Schumpeter demands for modelling entrepreneurial behaviour.

Altogether, Schumpeter's principal, sometimes implicit postulates about entrepreneurial behaviour are decidedly more empirical than they are logically pure. Kirzner's Austrian perspective is more abstract and logical given its single-minded concentration on the essential neoclassical analytical problem—the asserted "equilibrative tendency of the market" (Kirzner 1999, p. 16) in which entrepreneurs are seen to act and function. So much then for the Austrian approach to entrepreneurial behaviour.

3.3 The behavioural entrepreneur I

Langlois (1985, 2003, p. 292–3) has been influenced by a passage in *TED* (which alludes to entrepreneurs' inability to make global calculations) as an instance of an implicit acceptance by Schumpeter of 'bounded rationality' as later propounded by Herbert Simon. Schumpeter's entrepreneur is said to act as a satisficer, making decisions using "heuristic approximations" (Langlois 2003, p. 292). However, Schumpeter's rejection of unbounded rationality is not evidence of his acceptance of the equivalent conceptual content of 'bounded rationality'. Certainly, our textual evidence illustrated Schumpeter's denial that entrepreneurs possess requisite computational capacities to process

all relevant information. In fact as we found in Section 2, if Schumpeter's entrepreneur computes (or indeed learns and therefore plans) too much they are likely to *fail* in their innovating and novelty-creating activities.

Herbert Simon's (1987) notion of boundedness describes a pre-programmed decisionmaker mechanically applying simple rules-of-thumb; those rules determine decisionmaking behaviour in a subconscious manner. Simon's boundedly rational agents possess limited competence relative to the complex situations in which they act. Thus a Simon-type entrepreneur would be boundedly rational both when perceiving new opportunities and in exploiting them. In later contributions Simon (1976, p. 130,131) expands on two concepts of rationality in economics.

1. "Substantive rationality", viz. rational behaviour in the sense of optimal behaviour "appropriate to the achievement of given goals".
2. "Procedural rationality", viz. rational behaviour that is concerned with decision processes and behaviour which is "the outcome of appropriate deliberation".

Procedural rationality is obviously closer to Schumpeter's 'entrepreneurial type'; there is a *conscious* element in all entrepreneurial actions but the degree of deliberation is questionable. Schumpeter's entrepreneur shuns deliberation costs, instead acting with effortless intuition. For Herbert Simon the study of cognitive processes and cognitive limitations is central to investigating procedurally rational decisions. Schumpeter did not favour further research in this 'psychological' direction. Instead he insisted on broader sociological investigations.⁶ Entrepreneurs must be studied in the context of various "social arrangements" (*TED*, p. 94). In this, we might venture that it is socially situated cognition which is critical for understanding Schumpeter's 'entrepreneur type'.⁷ Schumpeter (1954, p. 21) actively promoted the study of "economic sociology". In relation to entrepreneurial behaviour, economic sociology would be interested in how entrepreneurs 'came to behave as they do' rather than cognitive causes or the pure economic effects their behaviour produced.

In Schumpeter's theory of entrepreneurial behaviour, decision competence is not at issue; the 'entrepreneur type' possesses business acumen in the sense of having above average ability to discern (and act on) innovations and possibilities for creating novelty. The conscious, subjective rationality of the entrepreneur obviates the necessity for economic theorists to posit sequences of behaviour driven by automatic rules. To investigate the precise nature of rules guiding behaviour and the decision biases of entrepreneurs that might include various cognitive heuristics, decision 'biases', overoptimism and so

⁶Schumpeter in fact argued stridently for restricting psychological research to "the frontiers of observable behaviour" rather than to exploring *internal* mental processes (*TED*, p. 90).

⁷Description of the social situation in which individuals perceive, decide and act can be a necessary adjunct of Simon-type procedural studies (Laville 2000).

forth, is the hallmark of modern behavioural economics in the tradition of Herbert Simon. By contrast, the non-rule following, often intuitive behaviour of the ‘entrepreneur type’ in Schumpeter’s work cannot be elucidated by such studies. So much then for behavioural economics and behavioural research on the entrepreneur.

3.4 The behavioural entrepreneur II: the ‘effectual’ model

In a recent attempt to rehabilitate the original behavioural approach that acknowledges strong intellectual linkages to Herbert Simon, a new ‘effectual’ entrepreneur (and an associated, distinctive behavioural style) has been distinguished.⁸ In this relatively new perspective developed mostly in the management sciences rather than economics per se, some clear microbehavioural foundations are established. Entrepreneurial behaviour is the outcome of a special kind of decision framing; it presents as a regular and ordered phenomenon among expert entrepreneurs rather than mere novices. Expert entrepreneurs employ ‘effectual logic’. Instead of discovering and exploiting existing opportunities in the market within given problem bounds using associated algorithms (a ‘causal’ process yielding given effects), entrepreneurs actively redesign existing market conditions and create new effects or, alternatively stated, new opportunities (in what is described as an ‘effectuation’ process). Choices are made by individuals with bounded cognition *à la* H. Simon, in a world of uncertainty. There is no presumption that the entrepreneur will wish to acquire and analyse all possible information relating to a decision space. From the outset it is assumed that, given the entrepreneur’s knowledge of a situation, controlling the future effects of presently contemplated decisions constitutes the basis of all genuinely entrepreneurial behaviour.

Entrepreneurial choices are made between various possible *effects* that may be *created* with *given means* at the entrepreneur’s disposal. Those means are specific to the individual entrepreneur. The choice of ‘effects’ is the outcome of the entrepreneur’s characteristics, human capital, special knowledge and abilities in discovering and exploiting opportunities. According to Sarasvathy (2001, p. 251), the effectual entrepreneur aims to control aspects of an inherently unpredictable future. Choice algorithms that involve the logic of prediction are not therefore widely applicable to entrepreneurial behaviour. In respect of controlling the unpredictable, entrepreneurs will for example, use affordable loss rules, leverage contingencies of choice by undertaking joint ventures, operating alliances and by using other cooperative strategies (Sarasvathy and Dew 2005).

The effectual entrepreneur constructs market opportunities and does not merely react to the ‘given’ external context of a decision. Whether or not the

⁸Research on the ‘effectual’ entrepreneur is expanding rapidly. The seminal article in this field, admitting some influence from H. Simon, is Sarasvathy (2001). In the following paragraphs we shall draw liberally on this key article as well as Sarasvathy and Dew (2005), Dew et al. (2009) and Sarasvathy (2008).

organisational context is a fully-fledged firm or based on purely individual action, the entrepreneur is seen as acting both within and upon their given market situation. In this they actively transform their existing market contexts. Finally the social aspects of entrepreneurship come to the fore in this perspective because markets are very often created by entrepreneurs in partnership or in multifarious relationships with others in an interactive process (Dew et al. 2009).

Apart from the obvious behavioural elements in the effectual approach there is also an overlap here with a part of the Austrian tradition (noticed in the first instance by Sarasvathy 2001, p. 257). Our previous discussion of the 'Austrian' view used the behaviour of the popular and widely cited Kirznerian entrepreneur as the Austrian archetype. Buchanan and Vanberg (1991), also writing in the Austrian tradition, make a tripartite distinction between three market processes: the allocative process, discovery process and creative process. Now the neoclassical entrepreneur behaves mechanically in the allocative process; the Kirznerian entrepreneur operates in the market conceived as a discovery process only. What is required, if we follow the distinctions made by Buchanan and Vanberg, is an understanding of entrepreneurial action in the creative realm. Schumpeter's conduct model captures the creative behaviour of the entrepreneur. The desire to create becomes a personal goal in its own right and ranks above pecuniary profit as an end in itself. The effectuation model traverses the same ground and comes to the same conclusions. However, the effectuation literature makes no direct reference to Schumpeter's original conduct model. To be sure, Sarasvathy (2008) asserts that her work contributes to establishing behavioural foundations for broader Schumpeterian studies of innovation, competition and growth. Effectuation theory, like the older behavioural approach to entrepreneurial behaviour, has a strong empirical bias. Effectuation research is largely intent on elaborating various heuristics common to expert entrepreneurs variously through surveys and relatively short-dated case studies rather than long-run case histories (Sarasvathy 2008; Dew et al. 2009).

The points of complementarity between Schumpeter's conduct model and the new effectuation model are as follows: they both

1. incorporate the creative element in entrepreneurial action;
2. develop a deep appreciation of entrepreneurial leadership (Schumpeter) or correspondingly, entrepreneurial expertise (effectuation) and
3. appreciate the importance of tacit knowledge or socially situated, bounded cognition in the entrepreneurial decision process.

What is missing from the effectuation approach from the vantage point of Schumpeter's conduct model? First, Schumpeter did not readily embrace the idea of investigating cognitive frameworks common to entrepreneurs that supposedly differentiate their modes of decision from non entrepreneurs. Secondly, Schumpeter's entrepreneurs are embedded in a rich, socio-cultural and macro institutional context most appropriately accounted for in long run case histories and personal biographies. Thirdly, Schumpeter's charismatic 'leader'

entrepreneurs were a rare type indeed whereas the ‘expert’ entrepreneurial decisionmakers populating effectual models are individuals who are regularly successful (Dew et al. 2009). In Schumpeter’s model these experts could just as well be good followers or imitators rather than leaders. So much then for the modern effectuation branch of the behavioural tradition.

3.5 Overview

The distinctiveness of Schumpeter’s entrepreneur by comparison with standard neoclassical, Austrian, behavioural and effectuation perspectives has now been demonstrated. Table 1 at the end of this section summarises the differences we have discussed across various dimensions. As we stated at the outset, Machlup (1951) was the first to refer to Schumpeter’s treatment of entrepreneurial behaviour in terms of a “conduct model” concerned with “dynamic” phenomena. Commentaries on Schumpeter’s general economics have since elaborated on the background to his ‘dynamic’ approach. Certainly, a dynamic outlook led Schumpeter to proceed beyond a mere listing of economic functions and make extensive reference to behavioural patterns, what for him amounted to “the psychology of entrepreneurial activity” (1929 and also *TED*, p. 94). The Schumpeterian ‘psychology’ incorporated a distinctive leadership style, energy, dreams to prevail over rivals, will, creativity, ingenuity, prescience and so forth. However general, these phenomena render Schumpeter’s entrepreneur distinctive from other theoretical constructions of entrepreneurial behaviour. Schumpeter’s entrepreneur possesses what we labelled ‘socially situated cognition’ (or alternatively, tacit knowledge) and is constituted by a bundle of motives some of which may be more prevalent than others depending on the case and context. None of this should connote supreme decisionmaking intelligence of the kind attributed to the neoclassical, risk-bearing optimiser or to the alert Austrian entrepreneur who optimises at the opportunity exploitation stage. The boundedly rational, satisficing entrepreneur who often follows well-established routines is also not descriptive of Schumpeter’s entrepreneur. The effectual entrepreneur on the other hand, comes closest to describing what Schumpeter had in mind. Be that as it may, central to investigations on Schumpeter’s entrepreneur were institutional preconditions for entrepreneurial acts, such as access to bank credit, relationships to the capitalist class and supporting legal foundations in particular epochs (Santarelli and Pesciarelli 1990, p. 683–85). Later twentieth century sociology has certainly made significant progress in this direction; it has turned to studying entrepreneurship as a relationally and spatially embedded phenomenon (Thornton 1999, pp. 30–34).

The human factor in entrepreneurial motivation is underscored rather than diminished in Schumpeter’s *TED* which distinguishes behaviours in a continuum from swashbuckling leaders at one extreme, through to shrewd followers generating varying shades of novelty and finally specialist imitators at the other extreme. Entrepreneurial behaviours of various kinds were observable in any capitalistic organisational form whether it was personalised competitive

Table 1 Theories of entrepreneurial behaviour: key dimensions

| | Neoclassical | Austrian | Behavioural | Effectual | Schumpeter's conduct model |
|-----------------------------------|---|---|---|--|--|
| Postulates on cognitive ability | <i>Strong</i> : uniform across class of entrepreneurs | <i>Strong</i> : for all individuals activating their alertness | <i>Weak</i> : compensated by heuristics and rules varying among entrepreneurs | <i>Weak, yet socially situated</i> : historically and socially contingent heuristics | <i>Socially situated</i> : historically contingent; facilitated by tacit knowledge |
| Attitude to risk | Risk neutral or tolerant | Risk favourable | Risk favourable | Irrelevant | Irrelevant |
| Recourse to cognitive psychology? | No | No | Yes | Yes | No—sociology yes |
| Ultimate objective | Economic profit | Economic profit | Economic profit | Personal goals | Personal goals |
| Decision algorithm? | Routine optimisation | Activate alertness to perceive exogenous opportunities; routine optimisation thereafter | Serial rule-following and satisficing | Heterogeneous tacit knowledge applied to dynamic and interactive processes | Tacit knowledge applied in heterogeneous processes |
| Research directives | Contribute to equilibrium theory of firm formation and firm size distribution | Concentrate on equilibrating function of alertness in disequilibrium market process | Search for heuristics common to entrepreneurs | Search for heuristics common to expert entrepreneurs and validate through case studies and histories | Develop case profiles, histories and biographies of entrepreneurs in social and historical context |

capitalism with small owner-managed firms, some form of corporate capitalism, or monopoly capitalism. Whatever the capitalist form, Schumpeter (1950, p. 77) advised, “capitalist reality is first and last a process of change”. Entrepreneurial behaviour is a conduit of change, will take on different forms depending the epoch yet will always involve some enduring features. In analysing partial modifications in successive editions of *TED* up to the final edition in 1934, Santarelli and Pesciarelli (1990, p. 624) concur: for Schumpeter the entrepreneur was always an “individual” who dismissed routine decisionmaking and is stimulated by the operation of specific psychological drives or motives to be creative in *any* epoch of capitalism. These were the principal elements of his “strong version of entrepreneurial behaviour”. All the key elements of this ‘strong version’ are contrasted with other approaches in Table 1.

4 Schumpeter’s research directives and ‘Neo-Schumpeterian’ economics

In diffuse remarks on entrepreneurship following the last edition of *TED*, Schumpeter gave research directives for those interested in advancing our understanding of entrepreneurs’ conduct (see the summary of ‘Research Directives’ in the last row of Table 1 above). Reinforcing an earlier empirical orientation he recommended studies which investigated particulars, specifically the life cycle (“rise and decline”) of entrepreneurial actions (Schumpeter 1949a, p. 265). Extensive business histories were important in this connection (Schumpeter 1949b, p. 314). Such histories must capture the personal biographies of entrepreneurs together with the historical and institutional contingencies which conditioned entrepreneurial behaviour in any form of capitalistic organisation (Schumpeter 1949a, p. 263).

It should not be surprising that Schumpeter (1947, p. 151 n3) accorded high praise to the “new vistas” opened by Arthur Cole in the 1940s. The centre piece of Cole’s many programmatic research directives was to combine economic sociology and business history in the study of entrepreneurial behaviour. Thus for Cole (1946, p. 12), the

entrepreneur ... does not ‘decide’ in the abstract ... Always such actions are taken relative to concrete living institutions, and therefore they can best be examined in concrete historical settings.

In recommending research along the lines suggested by Cole, Schumpeter aimed to deflect social scientists away from investigating entrepreneurs’ internal mental processes. Instead he favoured study of the forms of decision capability in various contexts, their development and eventual atrophication into managerial routines. Decision capabilities and responses may vary in form and content “under certain conditions” depending on whether entrepreneurial acts consisted for example, in active trading activity, transporting, manufacturing, or financing (Schumpeter 1949a, p. 259). In endeavouring to capture the essence of these capabilities researchers should “examine the already

available secondary literature for data upon entrepreneurial characteristics and phenomena. A miscellany of such writings—from general histories to biographies ... and from local histories to studies of technological change—all hold information" (Schumpeter 1949a, p. 266). The kind of information Schumpeter refers to here is, he maintains, completely ignored by economic theorists. Modern researchers have continued to bemoan the fact that "an individual real-world entrepreneur ... cannot at present be modelled in mainstream economics since he or she *does* elude analytical tractability (Bianchi and Henrekson 2005, p. 373, emphasis in original). This passage largely refers to the economic functions of entrepreneurs. As far as entrepreneurial behaviour is concerned it is an understatement. Have self-styled neo-Schumpeterian treatments of the entrepreneur responded to glaring gaps in mainstream economics? We turn next to expositing some representative examples of Schumpeter-inspired research which bear directly on the study of entrepreneurial behaviour.

Richard Nelson's and Sidney Winter's *An Evolutionary Theory of Economic Change* (1982) was a seminal work inspired by Schumpeter (among others) and is widely recognised as having given rise to modern neo-Schumpeterian economics and a particular 'evolutionary' approach to economics. Indeed Nelson and Winter (1982, p. 39) describe their approach as "neo-Schumpeterian". They neither make mention of the entrepreneur nor individual entrepreneurial behaviour in the book's subject index. Their focus of attention is the firm as a decisionmaking and change-generating unit. A fundamental distinction in their work is between processes by which decision capabilities are developed and the processes by which present decisions are made. As for the latter, that is decision rules employed "at any moment of time", these are described as "historically given routines governing the actions of a business firm" (p. 16). Of course, as we have found in Schumpeter's work, routines have a pathological effect on entrepreneurial behaviour. Nelson and Winter take the matter further away from Schumpeter when they reflect on the development of business decision capabilities over time. Here they stress "the observed role of simple decision rules as immediate determinants of behaviour and operation of the satisficing principle in the search process for new rules" (p. 42). The term "search" is used to summarise a deliberative mechanism: "routine-guided, routine-changing process" (p. 18). The concept of routine-based, boundedly rational decisionmakers in an organisational context in which a firm is continually fitting routines to the surrounding environment pervades Nelson and Winter (1982). For the behavioural foundations of 'routines' they implicitly draw on Cyert and March (1963) *A Behavioural Theory of the Firm*.⁹ Subsequent advances in this strand of neo-Schumpeterian economics have formulated models which take bounded rationality as a behavioural premise (Fagerberg 2003).

⁹The reliance is later confirmed by Winter (2006) and Nelson and Winter (2002, p. 42).

What is especially limiting about Nelson and Winter (1982) from the vantage point of Schumpeter's work on entrepreneurial behaviour is an inability to account for endogenous novelty generation. The chosen behavioural assumption of routine-bound and routine-changing satisficers is not adequate to the task. Consistent with behavioural economics, Nelson and Winter discuss routines, routine diffusion, changes in routines (innovation), and the use of heuristics in the search for routines as a serial process involving considerable deliberation (p. 28). They note how Schumpeter identified innovation (or "routine-changing") to "a substantial extent [with] a recombination of conceptual and physical material that were previously in existence"; and they maintain that "innovation may involve nothing more than the establishing of new patterns of information and material flows among existing subroutines" (p. 130 emphasis added). In fact Schumpeter's conduct model of entrepreneurial behaviour offers considerably more. Incremental innovating activity, including imitation, represents only a small part of the entrepreneur's brief. Compared with the tradition of research instigated by Nelson and Winter, to a substantial extent Schumpeter's decisionmaker—the entrepreneur—innovates by mostly eschewing routine and does not predominantly enter into a deliberate search for better routines in order to effect economic change. The extent to which the 'Schumpeterian' approach of Nelson and Winter and their successors has departed from Schumpeter's original behavioural foundation is evident in Giovanni Dosi's (1990, p. 335–70) survey. Nelson's and Winter's followers have exclusively adopted bounded rationality as a behavioural premise.¹⁰ Genuinely creative, change and novelty generating activity by entrepreneurs cannot be explained by relying exclusively on Herbert Simons's concepts of bounded rationality and satisficing. In their latest stocktaking Nelson and Winter (2002, p. 31) refer to "the plausibility of our behavioural foundations" merely reiterating a long held reliance on the basic premises of behavioural decision theory without acknowledging that these premises were utterly inconsistent with Schumpeter's.

Parallel to the theme we have developed in previous sections of this paper, Kurt Dopfer (1994) has observed the significant extent to which neo-Schumpeterians have diverged from the behavioural orientation in Schumpeter's *TED*; he also outlines some important consequences of this divergence. Schumpeter's entrepreneur searches for opportunities that may already exist and also creates them. Accordingly, Dopfer (1994, p. 137) recognises a serious flaw in the behavioural approach to decisionmaking adopted by many neo-Schumpeterians following Nelson and Winter: the search for new routines favourable to innovation is implicitly a "learning by doing" process whereas Schumpeter's entrepreneur possesses a "behavioural attribute that represents

¹⁰See also Grebel, Pyka and Hanusch (2003, p. 499) for confirmation that neo-Schumpeterians rely uncritically on Herbert Simons's concept of boundedness. Hanusch and Pyka (2006) inexplicably avoid the question of behavioural foundations in their otherwise comprehensive study of the "Principles of neo-Schumpeterian Economics".

something like *unlearning* by doing" (his emphasis). Precisely. As we demonstrated in our textual exposition in Section 2, Schumpeter's 'entrepreneur type' is continually projecting and imagining and these propensities disappear once routines have been learned. Schumpeter equates entrepreneurial failure and nonentrepreneurial behaviour with too much learning.¹¹

A more promising Schumpeter-inspired branch of modern economics showing strong theoretical points of complementarity with Schumpeter's conceptualisation of entrepreneurial conduct is to be found in the effectuation models described in Section 4 part iii) above. These models take Simons' notion of boundedness as a point of departure but they proceed well beyond it; they concentrate on elaborating how entrepreneurs design possible effects with particular sets of means such as tacit knowledge in an open ended environment. There are also important additional sources of theoretical complementarity that make up for gaps in the effectual approach—especially in the work of Foster (2000) and Metcalfe (2004). While these contributions do not directly address the required behavioural assumptions as do the microbehavioural effectuation models, Foster (2000) for example, emphasises the macroeconomic, macroorganisational impacts of Schumpeter's purported "self-organisation" approach, which in microbehavioural terms parallels our attribution of socially situated cognition to Schumpeter's entrepreneur. The self-organisation approach is founded on the idea that business organisations, entrepreneurially driven enterprises and the like are embedded in larger systems, that is, complex sets of institutional arrangements. Entrepreneurial acts develop in a spontaneous process; they are channelled within and through these wider institutions in a process which Schumpeter was moved to call 'creative destruction'. The institutional systems within which entrepreneurial behaviour takes place are not independent of individual decisions; moreover, they are fundamentally complex, so much so that entrepreneurs acting as prime change agents cannot determine their long term configurations. Instead, those configurations emerge unpredictably from the endogenous novelty-creating, self-organising acts of entrepreneurs. Analytically, it is difficult to deal with behaviour which is the outcome of tacit knowledge (situated cognition) and which is responsible for the spontaneous generation of change at the microlevel, though consequences of that behaviour are observable.

How are these 'self-organising' activities to be appreciated? The hallmark of Schumpeter's empirical research directive as Foster acknowledges, was "extensive and detailed study of economic history" (p. 319). Historical studies of entrepreneurial acts will reveal the capitalist development process as "non-linear and discontinuous" precisely because the self-organising nature of entrepreneurial behaviour makes it so. The macro-significance of Schumpeter's characterisation of entrepreneurial behaviour is that the sum total of entrepreneurial acts is inherently unpredictable. Therefore, even observed

¹¹That continuous, deliberate entrepreneurial learning is neglected by Schumpeter has led to criticism of his conduct model by modern 'evolutionary' thinkers e.g., Fagerberg (2003, p. 135).

“historical stationary states, attained after phases of economic development, are structurally unstable and ... lack stable equilibrating tendencies” (p. 321). In short, Schumpeter’s portrayal of the entrepreneur must be viewed in a distinctly different light from his pro-Walrasian, equilibrium outlook on suitable advancements in pure economic theory.

5 Conclusion

It is not generally understood that Schumpeter’s study of “the most colourful figure in the capitalist process” (Schumpeter 1954, p. 554) went well beyond analysis of entrepreneurial functions. Machlup gave royal tribute to Schumpeter’s attempt at developing a “conduct model of the dynamic entrepreneur” consistent with changing economic conditions. The textual evidence presented in this paper demonstrates that Schumpeter’s behavioural model was distinctive; it was a general theory of entrepreneurial behaviour. The hallmark of Schumpeter’s ‘conduct model’ was the delineation of a continuum of behaviours, all entrepreneurial in spirit, which both react to exogenous factors in the existing economy (to innovate) and generate novelty endogenously by use of creative imagination. Entrepreneurial behaviour for Schumpeter is the outcome of tacit knowledge situated historically and socially in a particular capitalistic organisational form. On Schumpeter’s terms, entrepreneurial rationality is conscious and subjective. Historical and biographical studies, in being descriptively accurate accounts of entrepreneurial success and failure, are more fruitful than formal models in explaining the nature, scope and effects of entrepreneurial behaviour.

We have shown that the elements constitutive of entrepreneurial behaviour and decisionmaking differ markedly between Schumpeter’s ‘entrepreneurial type’ and later twentieth century characterisations of entrepreneurs in neo-classical, behavioural and Austrian (Kirznerian) economics. Schumpeter held a deep appreciation of the pre-1950 neoclassical methodological penchant to assume universal optimisation but he rejected that premise in his entrepreneurial conduct model. Later attempts to saddle Schumpeter’s entrepreneur with a boundedly rational mode of behaviour (following Herbert Simon) were unconvincing. Israel Kirzner’s attempt to syncretise his doctrine of the ‘alert’ entrepreneur with Schumpeter’s conduct model, while having some validity, was not consistent with all dimensions of Schumpeter’s model. Schumpeter did not entertain strict optimising behaviour at any point in the entrepreneurial decision process, so the Kirznerian analytical referent of the equilibrating market process assisted by the finely calibrated decisions of entrepreneurs is not applicable. Lately, developments in the behavioural tradition utilising the idea of effectuation have come close to capturing many, though not all, the key elements of Schumpeter’s original conduct model.

We noticed how the major neo-Schumpeterian initiative in later twentieth century economics due to Nelson and Winter came at a high price; it jettisoned important spontaneously creative, behavioural aspects of Schumpeter’s

conduct model in order to graft a rule-bound, adaptive decisionmaker on to the theory of innovation and economic change. Fortunately there are some developments in post-Schumpeterian economics which have promise and potential if only because they do not gainsay the power of the individual entrepreneur in creating novelty; they appreciate the self-organising, economic change generating capacity of entrepreneurial behaviour as originally established by Schumpeter, and they hold simultaneously to a view of the entrepreneur, consistently with Schumpeter's research directives, as an historically and socially conditioned change agent.

Acknowledgements We acknowledge the suggestions of two referees, the advice of Elias Khalil and helpful comments from participants at the History of Economic Thought Society of Australia conference, Sydney, June 2008.

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