Introduction
A century ago this year Joseph Schumpeter’s second book on economics *Theorie der Wirtschaftlichen Entwicklung* [The Theory of Economic Development] was published in German,¹ but not available in English until 1934 in a translation of the shortened 1926 version. This book re-introduced the entrepreneur into economic analysis after it faded from the economist’s field of view as the static equilibrium neoclassical model became dominant in the second half of the 19th Century. The reason for this re-introduction was to examine the dynamics of capitalist economic development and the entrepreneur’s role in this process. To mark the centenary of the publication of *Theory*, this paper aims to re-assess Schumpeter’s “entrepreneur” in the context of the significant material by Schumpeter that has emerged in English in the recent past.

While it is not the purpose of this paper to trace how Schumpeter’s thinking about entrepreneurship changed over time, it is argued there is a break point in his writing that occurs with the unpublished paper *Entwicklung* [Development] which was apparently written in 1932 just before his permanent departure for the USA, but was only discovered in 1993 and published in English in 2005.² The analysis draws primarily on material from: the first (1912) and second (1926) editions of *Theorie der Wirtschaftlichen Entwicklung* (including Chapter 7 which was omitted from the second and subsequent editions) and the first English edition of *The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest and the Business Cycle* (1934); the paper *Unternehmer* (Entrepreneur) (2003 [1927]); and the unpublished paper *Entwicklung* (2005 [1932]).³

Swedberg (2007) has argued that Schumpter’s theory of the entrepreneur remains best we have, but considerably better knowledge of Schumpeter’s ideas on entrepreneurship is needed before they can be used as a point of departure for the construction of extended theories of entrepreneurship.

The perspective of this paper is to view the entrepreneur and associated concepts of innovation and economic development through the lens of critical realist social ontology to determine if this offers a suitable framework for building upon Schumpeter’s theory of economic development. The next section sets the entrepreneur, his innovation activity, and economic development within Schumpeter’s framework of the economic process as it has emerged in his writings in English. Then the paper provides a brief outline of critical realism before introducing an initial, exploratory critical realist ontology of development, innovation and the entrepreneur.

**Economic development, innovation and the entrepreneur**
The entrepreneur for Schumpeter must be seen as the human agency, via innovation, to economic development. However, this activity needs to be placed within Schumpeter’s framework of the economic process. This is required so as to position these concepts clearly inside Schumpeter’s overall theory of the economy, particularly his concepts of statics and dynamics.

¹ This first edition was published in Leipzig by Duncker & Humblot and the title page bears the date 1912. There is evidence that the book, in fact, first appeared earlier in 1911 (Augello 1990 p.117; Swedberg 2007 [1991] p.32). All citations in this paper refer to the work as published in 1912.
² For a full account of the discovery of this paper, refer to the introduction by Becker et al. in Schumpeter 2005 [1932].
³ All quotations are attributable to Schumpeter and all citations are his authorship except where indicated.


**Statics and dynamics**

In trying to understand the totality of the economy, Schumpeter divides economic processes into three categories or classes: "...into those processes of the circular flow; into those of development; and into those which impede the latter's undisturbed course." (1934 [1912] p.218). Throughout his body of work he refers to the processes of the circular flows as "statics" and those of development as "dynamics". These concepts, and the idea of dynamic processes causing a disturbance in the static equilibrium, are drawn from the work of John Bates Clark (1934 [1912] p.60n) and the distinction is fundamental to Schumpeter's entire economic theory. It is mentioned in his first published book, *Das Wesen und Hauptinhalt der theoretischen Nationalökonomie* (*The Nature and Essence of Theoretical Economics*) and this foreshadows his thinking on economic development:

This distinction is crucial. Statics and dynamics are two totally different areas. Not only do they deal with different problems, but they use different methods and they work with different materials. They are not two chapters in the same theoretical construction – they are two totally different buildings. Only statics has been worked on sufficiently, and this book mainly addresses this kind of problem. The analysis of dynamics is still in its beginnings; it is a 'land of the future'. (1908 p.626, translation cited in Swedberg 2007 [1991] p.30).

Schumpeter's thinking on that "land of the future" would emerge four years later in *The Theory of Economic Development*.

By "circular flow" or statics, Schumpeter means that part of the overall economy that can be conceptualised as operating as a general equilibrium system under stationary conditions as proposed by the neoclassical economists. Within this system, commodity and product prices settle at levels that cause supply and demand in each market to be matched and *homo economicus* is rational and narrowly self-interested as he seeks to maximise his economic gain. Incremental quantitative growth is achieved through stimuli such as changing consumer tastes in conditions of gradually increasing population, saving and capital accumulation. Importantly, there is no endogenous development that results in qualitatively new phenomena.

In Chapter 1 of *Theory*, Schumpeter traces the origins of statics and dynamics to members of the Austrian school, including his own teacher, Eugen von Ritter Böhm-Bawerk, to John Bates Clark and to the analysis techniques of his great idol, Léon Walras. Although an admirer of Walras, Schumpeter developed doubts about his approach to economic analysis in *Walras* (1874), which he relates in the preface to the Japanese edition of *Theory*, which he wrote in 1937. He describes how he began to suspect that Walras's theoretical apparatus was not only "rigorously static in character...but also...applicable only to a stationary process." Schumpeter claims Walras was aware of this and confirmed to him personally his view that the theory of a stationary process constituted the entire domain of theoretical economics, that any forces causing economic change were exogenous and to be merely recognised by economists, not analysed. He continues:

> I felt very strongly that this was wrong, and that there was a source of energy within the economic system which would of itself disrupt any equilibrium that might be attained. This is so, then there must be a purely economic theory of economic change which does not merely rely on external factors propelling the economic system from one equilibrium to another. It is such a theory I have tried to build… (1989 [1937] pp.165-6)
Schumpeter’s first concern here is an ontological one: that there are not two parts of an economic system – a static part and a dynamic part – that can be analysed separately, but in his view there is one economic system whose overall behaviour at any point in time is a result of a combination of static and dynamic forces, both of which are endogenous. He also has an epistemological concern about Walras’ confirmation to him, which has two possible interpretations. Either neoclassical theory accepts that its statics is only a partial analysis of a more complex real system, and cannot, therefore, make valid knowledge claims about the entire system; or it is claiming that the entire real economic system behaves as a self-reinforcing system in static equilibrium that maintains itself. The former interpretation can be seen as a realist view on the static approach that qualifies any knowledge claims deriving from it. The latter interpretation is fundamentalist and susceptible to knowledge claims derived from static analysis techniques.

The date of these comments on Walras’s analysis by Schumpeter is important to this paper’s argument: they were written after, and are consistent with, the major reassessment of Schumpeter’s own thinking on economic development in the unpublished 1932 paper Development. Also of importance is that these comments are indicative of a realist philosophical position that differentiates between the phenomena of the real world and human produced knowledge about them.

Development
Chapter 2 of Theory constitutes the first comprehensive account of Schumpeter’s concept of economic development and in several places its language indicates that he is not totally confident in what he is proposing. He is feeling his way. He is, after all, dealing with an entirely new conception of economic development and one that, perhaps, he already realises is going to challenge much of the accepted wisdom of the neoclassical orthodoxy of his time and that established concepts and methods of analysis for systems in static equilibrium are inappropriate for understanding dynamics. Indeed the chapter begins with a warning that the increasing use of empirical methods has “…led us away from the metaphysical treatment of social development…but it has done its work so imperfectly that we must be careful in dealing with the phenomenon itself, still more with the concept in which we comprehend it.” (1934 [1912] p.57) Here, already, are the same concerns with ontology and epistemology of development to which he refers later in the preface to the Japanese edition.

Schumpeter is most concerned about the use of Entwicklung (development) as “…the word by which we designate the concept and whose associations might lead us astray in all manner of undesirable directions." (1934 [1912] p.57) Here he makes clear that his theory of economic development has been derived from a concrete problem in economics and not arrived at by analogy from other domains of science, such as Darwinian evolution. He stresses this point again in Chapter 7 of the first edition of Theory: “…development, as far as I can see, has neither formal nor material connections with the biological development of any organic body.” (2003 [1912] p.63) and while in the same chapter he himself draws analogies between processes of development in other fields, he is clear that his theory was not derived from these sources.

Schumpeter is also concerned about the possible confusion of development with progress. This is expressed clearly in Development: “Faith in progress,” he says, “…implies a positive valuation of changes. Precisely because it implies valuation, it has no place in science.” (2005 [1932] p.119) This view had not changed since he wrote in 1912:
Whether development leads to social welfare or to social misery, to the prospering or to the decline of national life, depends on its concrete content, on what concretely occurs in those forms which we describe. But what is most important is that our principle does not already contain a value judgment. (2003 [1912] pp.78-79)

Reflecting in *Development* (in 1932) he admits:

…that I produced a mess when I first termed this notion "development" because the exact form of definition had not yet been found. A similar mess was produced with the term "dynamics," which I originally used as a synonym. This was a completely misplaced term that has inspired misleading associations. (2005 [1932] p.115)

At this point, then, an ontological question exists – what is the type of change to the economy that Schumpeter is trying to understand and which he, perhaps injudiciously, termed development? He provides a succinct answer in a footnote to the second edition of *Theory*:

In the first edition of this book, I called it "dynamics." But it is preferable to avoid this expression here, since it so easily leads us astray because of the associations which attach themselves to its various meanings. Better, then, to say simply what we mean: economic life changes, it changes partly because of changes in the data, to which it tends to adapt itself. But this is not the only kind of economic change; there is another which is not accounted for by influence on the data from without, but which arises from within the system, and this kind of change is the cause of so many important economic phenomena that it seems worth while to build a theory for it, and, in order to do so, to isolate it from all the other factors of change. The author begs to add another more exact definition, which he is in the habit of using: what we are about to consider is that kind of change arising from within the system which so displaces its equilibrium point that the new one cannot be reached from the old one by infinitesimal steps. Add successively as many mail coaches as you please, you will never get a railway thereby. (1934 [1912] p.64n, emphasis in original)

The change in which he is interested is a revolutionary, not evolutionary, shift in “one of the channels of the circular flow” and it represents a sharp discontinuity from its previous form. It is a change in structure of part of the economy.

There are a couple of important consequences of this for research methods. First, development cannot be analysed by methods that assume change takes place in infinitesimal steps, such as those based on differential or integral calculus. Such methods may only be valid for analysing a real economy when it is in a stable equilibrium state. In reality, this never exists. The closest one might find is the ‘so-called’ “Goldilocks economy” when a state of economic activity is in a position of temporary suspension between boom and bust (“not too hot, not too cold”).

The second methods consequence follows: it is impossible to extrapolate trends using methods that assume infinitesimal change or that after a disturbance the economy returns to the same equilibrium point as before. Similarly, forecasting is only likely to be possible when an economy approximates to a virtually non-existent stable equilibrium.
Schumpeter’s example of railways and mail coaches, whilst superficially simple, with deeper analysis provides great insight to his concept and the role of innovation. His concern is not with the nature of any underlying technology per se, but with changes in its economic use. Mail coaches and railways in the 19th Century were the temporal stages of development in two distinct means of transporting goods and people. The former were wheeled and freely steerable on any surface hard enough for the wheels to turn without a resistance greater than the power of their locomotive force, typically a team of two, four or six horses. Mail coaches were an incremental technological development of a transport tradition that can be traced back through Roman chariots to the earliest and simplest of flatbed wagons that must have quickly followed the invention of the wheel.

The steam driven locomotives with which the Liverpool to Manchester passenger and freight services began in 1830, were also an incremental technological development, this time of wheeled vehicles running on a prepared track that bears their weight and guides the vehicles and acts as a limit to their range and direction. The origins of this form of railed transportation can be traced back to at least the Greeks and Romans (Lewis 2001).

Even the steam engine was not new technology in 1830. The earliest engines were novelties invented by Hero of Alexandria in the 1st Century AD and practical stationary engines had been undergoing incremental development since Thomas Savery’s invention for pumping water in 1698. But none of these incrementally developing technologies had resulted in the type of discontinuous economic change with which Schumpeter is concerned until the performance of George Stephenson’s Rocket at the Rainhill Trials in 1829 demonstrated that a mobile version of a steam engine on rails could be used to transport large numbers of people safely over long distances at speed. (Encyclopedia Britannica. 15th ed. 1984)

Success of the steam locomotive resulted in an economic discontinuity caused by a change in the way in which people and goods moved around Britain. Before 1830 the primary means of land transportation was by horse drawn mail coach, and steam locomotives progressively displaced the coaches after that date. It was not new technology per se that had produced the change, but a new combination of existing technologies. Schumpeter describes the economic impact of innovation this way:

To produce means to combine materials and forces within our reach. To produce other things, or the same things by a different method, means to combine these materials and forces differently. In so far as the “new combination” may in time grow out of the old by continuous adjustment in small steps, there is certainly change, possibly growth, but neither a new phenomenon nor development in our sense. In so far as is not the case, and the new combinations appear discontinuously, then the phenomenon characterising development emerges. For reasons of expository convenience, henceforth, we shall only mean the latter case when we speak of new combinations of productive means. Development in our sense is then defined by the carrying out of new combinations.

This concept covers the following five cases: (1) The introduction of a new good - that is one with which consumers are not yet familiar - or of a new quality of a good. (2) The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned, which need by no means be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially. (3)
The opening of a new market, that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before. (4) The conquest of a new source of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created. (5) The carrying out of the new organisation of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position. (1934 [1912] p.66)

In *Entrepreneur* Schumpeter stresses: “All these are cases of *carrying out a different use of national productive forces from the previous one, of taking them away from their previous uses and putting them into the service of new combinations.*” (2003 [1928] p.250, emphasis in the original) It is only economic innovation that is relevant; therefore he is not concerned with new ideas or inventions, which are economically neutral unless they are implemented (1939 p.84). Since innovation is not an absolute concept – something can only be innovative compared to something else that is not – one can infer that Schumpeter’s concept of innovation is relative and not absolute. Is this product or method of production new to the regional or national economy under consideration? The fact that it may already have been implemented in another economy will not prevent it in principle from having the same stimulatory effect in another economy.

In *Development*, Schumpeter introduces the term “novelty” as a synonym for innovation. It involves a break from the past; it is a “…jerky change of the norm that erupts spontaneously from the system itself…” As such, the results of it are indeterminate and unpredictable. Unlike the greater determinacy of incremental changes to the circular flow, there is great uncertainty about the outcomes. In a variation on his 1932 statement Schumpeter now defines development as: “…transition from one norm of the economic system to another in such a way that this transition cannot be decomposed into infinitesimal steps.” Predictability is only possible if the changed norm is a variation on the existing norm, but Schumpeter’s development involves a revolutionary not evolutionary change of norm. “For this reason follows the fundamental impossibility of extrapolating trends…” (2005 [1932] p.115-6, all quotes above)

Schumpeter notes another difference between innovation and the incremental improvement of the circular flow system. The latter is usually driven by changing customer needs and wants for improvements and new features to existing products and businesses are therefore responding to customer demand. In the case of innovative new products and services, customers usually do not know they want them until they appear. “It is…the producer who as a rule initiates economic change, and consumers are educated by him if necessary; they are, as it were, taught to want new things or things that differ in some respect or other from those which they have been in the habit of using.” (1934 [1912] p.65)

Schumpeter also recognises the multi-faceted impact of introducing new combinations. Typically the introducers of the innovative new product are not the same as the suppliers of the existing product – the owners of the mail coaches were not the builders of railways. There is therefore a whole series of mostly negative impacts on existing businesses, their suppliers and customers that follows the introduction of a new innovation. “Especially in a competitive economy, in which new combinations mean the competitive elimination of the old, it explains on the one hand the process by which individuals and families rise and fall economically and socially…as well as a whole series of other phenomena of the business cycle, of the mechanism of the formation of private fortunes and so on.” (1934 [1912] p.67) Here
he is foreshadowing the concept of creative destruction on which he expanded 31 years later in "Capitalism, Socialism and Democracy," describing it as "...the essential fact about capitalism." (1994 [1942] p.83)

The Role of the Entrepreneur

The role of the entrepreneur is central to Schumpeter's realisation of development through innovation. It is this role that makes the development process non-deterministic: "The economy does not grow into higher forms by itself," he says. "The history of every industry leads us back to men and to energetic will and activity. This is the strongest and most prominent reality of economic life." (2003 [1912] p.75) In other words, human agency via the entrepreneur is involved in effecting the innovations required for economic development.

In Chapter 2 of the second edition of "Theory" Schumpeter describes the individuals who carry out new combinations as entrepreneurs. He immediately qualifies this, saying the concept is broader than a single individual:

...we call entrepreneurs not only those "independent" businessmen in an exchange economy who are usually so designated, but all those who actually fulfil the function by which we define the concept, even if they are, as is becoming the rule, "dependent" employees of a company, like managers, members of boards of directors, and so forth... (1934 [1912] pp.74-5).

The reason for this formulation is explained in a note to the second edition (also subsequently carried through to the third German and first English editions) he challenges "...one of the most annoying misunderstandings that arose out of the first edition." This was the suggestion that, in a variation of the "great man theory", he had identified the individual entrepreneur as the prime cause of innovation and hence economic change. "If my representation were intended to be as this objection assumes, it would obviously be nonsense," he says and points out that his concern is not with "...the concrete factors of change, but the method by which these work..." An individual is "...merely the bearer of the mechanism of change" (1934 [1912] p.61n, emphasis in the original).

In other words, Schumpeter's interest was always in the function of entrepreneurship, not its concrete personification in any individual described as an entrepreneur. This is further confirmed when he says that a person managing an innovating business is not necessarily acting entrepreneurially all of the time (1934 [1912] p.98). There are many functions of the most innovative business that are routine, for example, the payroll system. The method by which employees get paid will differ little between the most innovative start-up and the most established large corporation. When the person managing the innovative business is dealing with matters to do with management, like the payroll, he is acting in as routine manner as any manager in a large corporation in the circular flow.

Schumpeter does not deny that anyone, in principle, can act as an entrepreneur in the same way that anyone, in principle, can sing. What he does say is that not everyone will be successful in his or her ambition; just as not everyone can become a Caruso (1934 [1912] p.81-2n). He thus conceptualises the entrepreneur as a special case of social leadership and comments extensively on the skills and attributes required to fulfil the entrepreneurial function. It is clear that the entrepreneur is not the same as the capitalist and does not therefore bear the risk of an investment failing. "Risk obviously always falls on the owner of the means of production or of the money capital which was paid for them, hence never on the entrepreneur as such." (1934 [1912] p.75n) Neither is he the inventor of new
technology, but he is its implementer and in any case, as we have seen with the mail coach example, many innovations are not dependent on a new invention (1934 [1912] p.88). This conception of the entrepreneur does not eliminate the possibility that the entrepreneur may also be the capitalist investor in the venture, but these are not part of the entrepreneurial function.

In a similar manner, if the entrepreneur has acquired the relevant knowledge and skills, he (she or they) may also be his own “technical expert” or “…his own buying and selling agent, the head of his office, his own personnel manager…” and so on, or he may obtain the services of others through hiring or outsourcing. (1934 [1912] p.77) The critical difference between the manager of routine processes found in the circular flow of the economy and the entrepreneurial type is on the psyche of the individual. The attributes required for leadership of an established business are different from those required to lead an innovative start-up. “It is not only objectively more difficult to do something new than that what is familiar and tested by experience, but the individual feels reluctance to it and would do so even if the objective difficulties did not exist.” (1934 [1912] p.86)

The entrepreneur also needs to contend with the reaction of the social environment in which he (she or they) conducts business. Introducing something new requires behaviour that deviates from the expected norm of the social group. Such behaviour is frequently condemned by the majority and the entrepreneur needs to be resilient to these pressures. He needs to be able to overcome opposition, persuade others to his point of view and win over doubters (1934 [1912] pp.86-7). Practical initiative and strength of will are of primary importance – the ability to decide what needs to be done and then carrying it out (1990 [1928] p.248)

As we have noted, Schumpeter argues there will always be significant uncertainty involved in the introduction of new combinations due to the indeterminate nature of novelty. The depth of analysis typically required for decision-making within the circular flow, may not be available due to the lack of relevant data. The entrepreneur must, therefore, be comfortable operating with that uncertainty and making decisions by “instinct” or “gut feel”.

When it comes to motivation, Schumpeter rejects narrowly defined hedonistic motives. Hedonism requires one to ignore uncertainty in the search for rewarding financial risks (e.g. trading on the stock market), whereas the entrepreneur needs to engage with uncertainty that requires much intellectual activity. In this context, entrepreneurs tend to be workaholics and “…activity of the entrepreneurial type is obviously an obstacle to hedonist enjoyment….usually acquired by incomes beyond a certain size, because their ‘consumption’ presupposes leisure.” (1934 [1912] p.92)

At several points, Schumpeter draws comparisons between the characteristics of entrepreneurs and “mere managers” in the circular flow. He considers that such a director or owner of a business is constrained in his decision-making by the market and by the previous state of his business. He learns to read the signs, such as changes in demand from his customers from training and experience, and adjusts his productive resources accordingly. Neither directing nor directed labour therefore exercise any real leadership over the business: the managers respond to consumers and workers respond to their managers. Day to day management of the business, in so far as it consists of adapting to normal fluctuations in supply of goods and services and the demands of customers, involves no creative input whatsoever and does not require handling uncertainty (1934 [1912] p.20-22) In striving for the optimal methods of operation, the manager’s tendency will be to seek the best method of those that are familiar and have been tried and tested in practice. This is different
from the entrepreneur in a world of uncertainty in which he (she or they) elect the best method possible, which, by definition, may be untried and tested and unfamiliar to the managers in question. (1934 [1912] p.83) This is satisficing behaviour under procedural (or bounded) rationality as explained by Herbert Simon (1976) and not optimising rationality under homo economicus.

We can see, therefore, that the skills and characteristics Schumpeter ascribes to the entrepreneur are required only when development in the sense of a transition from one norm to another is not reachable through a series of incremental steps i.e. when the change is discontinuous and disruptive. Conversely, he considers that “mere managers” in the circular flow have the ability to implement incremental change i.e. that which can be decomposed into a series of infinitesimal steps. Since this, by definition, includes all incremental innovation intended to optimise processes or offer slightly improved versions of existing products and services we can conclude there is no role for the entrepreneur in such continuous innovation.

This interpretation is supported by concrete examples of how businesses organise for the two different types of change. For example, to bring a new product to market teams are typically formed outside the normal hierarchical management structure and only exist temporarily while engaged in this activity, which is one of Schumpeter’s five types of discontinuous development. After the product launch, support and maintenance, including the release of new versions is the typically responsibility of a permanent unit within the normal hierarchy of the firm. A similar situation prevails in software development, where a specially formed project team will carry out the development of new application software, while a separate support department will handle the subsequent maintenance and new releases. More generally, organisations implementing small process improvements to production or administration systems will normally entrust these to existing line management. It is only when attempting more complex and revolutionary process re-engineering that the task will be allocated to a specialist project team outside the day-to-day management structure.

Of course nothing in this interpretation suggests that people who possess the ability to fulfil an entrepreneurial role may not be engaged on continuous innovation activities within the firm. However, they are not acting as an entrepreneur when they do so and their entrepreneurial skills and capabilities are therefore latent but dormant. Neither does it mean that innovative entrepreneurial activity cannot take place within a firm; simply that it has to be disruptive discontinuous change for it to involve entrepreneurship.

When introducing the concept of novelty in Development, Schumpeter expands on his view that there are analogous processes to economic development in other fields of human activity, such as politics, the arts and science that he first expressed in Theory (2003 [1912] p.105). In all of these fields, development takes place by a process of discontinuous leaps from one norm to another and these changes are the result of human agency by individuals with similar psychological characteristics as the economic entrepreneur. In Development he uses an example from the art world to illustrate his point. A 17th Century painting by the Italian artist Andrea Mantegna, The Dead Christ, is considered a major development in the history of painting because it was the first time perspective was used to create an image that appears to follow the viewer around the room. The paints and canvas used by the artist were the same as those used by others, yet he has assembled them in a new combination to produce a novel and revolutionary effect. (2005 [1932] p.115n) How does this novelty come about, Schumpeter asks: “why do some people happen to paint in a different way that they learned and how is this new way of painting transferred to
other painters and the public?" (2005 [1932] p.113) He does not attempt to answer these questions, but says similar ones can be asked:

...for each intellectual domain, sciences, religion, etc.. We note the fundamental importance of novel phenomena. Such phenomena are essentially similar in all of the social sciences. We find novel phenomena in the economy as in any other social domain, and there is no difference between novelty in the economy and elsewhere. (2005 [1932] pp.113-14).

From this, and Schumpeter’s view of the entrepreneur, there is no equivalent in the natural world to the discontinuous changes produced in social world by endogenous novelty and we can infer that “development”, in his sense, is the result of human intervention in social systems that would otherwise remain in an equilibrium state.

In *Entrepreneur* Schumpeter makes it clear that in all the five tasks of innovation specified above, entrepreneurs are “…carrying out a different use of national productive forces from the previous one, of taking them away from their previous uses and putting them into the service of new combinations.” (2003 [1928] p.250) this quotation is significant in three ways. First, is the concept of productive forces. This echoes Baumol (2010) in identifying productive entrepreneurs as welfare enhancing, adding to productive wealth. This is in contrast to what Baumol calls unproductive entrepreneurs who are active in rent-seeking activities like identifying previously unused speculative or illegal activities. The second is to clearly identify novelty through new combinations as much broader than just technology-based (Hagedoorn 1990). The third aspect follows from the translators of the 1928 handbook entry, Becker and Knudsen (2003), noting a depersonalisation of the entrepreneur. This allows the focus to shift from the gifts of a few individuals at the fringes of the economy, to entrepreneurs executing new combinations of productive means that situate them ‘at the heart of the market economy’ (Becker and Knudsen 2003, p. 213). Despite centrality of the entrepreneur to the capitalist economy emerging from all three aspects, its formal incorporation into the mainstream economics discipline has not materialised.

The role of the entrepreneur for Schumpeter has been explicated as based on his theory of development and his concept of innovation. Although writing within the economic sphere, Schumpeter sees this role as a special case of more general theories of social change. It is in the context of social change that a critical realist framework is applied to Schumpeter’s entrepreneur. A general or metaphysical social ontology based on critical realism is set out in the next section. This will provide the framework for mapping the specific case of economic development and how that exposes the break point in Schumpeter on the role of the entrepreneur in this development.

**Critical realism**

*Introduction*

Contemporary critical realism has emerged from work on a realist philosophy of science in the 1970s by Rom Harré (1970) and Roy Bhaskar (2008 [1975], 1998 [1979]). The principles of critical realism were first applied to the natural sciences and involve a shift in philosophical emphasis from epistemology (study of the way knowledge is obtained) to ontology (the study of being or existence), and a focus on the mechanisms that cause events rather than the events themselves. Indeed, one of

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4 This summary of the key features of critical realism is derived from the overview in Courvisanos and Mackenzie (2011).
the key features of critical realism has been that no part of the social world can be analysed and explained prior to identifying its ontological structure (Archer 1995; Bhaskar 1998; Lawson 1997, 2003). In The Possibility of Naturalism, Bhaskar (1998 [1979]) extended these principles to the realm of the social sciences.

Since Bhaskar’s underlying philosophical work, arguments for the use of critical realist approaches have been advanced in a variety of fields, including: economics (Lawson 1997, 2003); economic geography (Morgan & Sayer 1985); management studies (Fleetwood 2007; Fleetwood & Ackroyd 2004); sociology (Sayer 2000; Archer 1995); historical sociology (Steinmetz 2004); as well entrepreneurship studies (Blundel 2007).

In common with other forms of realism, critical realism contends the world around us exists independently of our knowledge of it. The objects of our study – whether natural objects, physical processes or social phenomena – are the intransitive dimension, while the theories and ideas of reality that make up our knowledge of these objects are the transitive dimension. (Bhaskar 2008 [1975] p.21) The objects in the intransitive dimension are generally unchanging; while transitive knowledge is socially produced, is fallible, and evolves over time. If this were not so, it would not be possible to have rival theories about the same objects of study. Neither would it be possible for theories about the unchanging real world to evolve; no-one would claim that the shape of the Earth changed when our flat earth theory changed to a round earth theory.

Bhaskar argues that objects possess inherent structures and emergent causal powers or generative mechanisms. These emergent powers are properties of an object as a whole that are not possessed by its constituent parts. It is the exercise of these powers that cause observable events to occur or an object to behave in a given manner. These powers still exist even if not exercised and may also produce no observable events even if exercised, for example, if a counteracting power is exercised at the same time. The identification of these inherent mechanisms that have the potential to cause events is the fundamental purpose of scientific study, in the social as well as the natural sciences. Since these mechanisms may or may not be activated, and if activated may or may not produce an observable event, they need to be analysed for tendency, necessity, sufficiency and potential – not only what was necessary for an event to happen, but whether it was sufficient on its own to cause the event and what might happen if it is activated again (Bhaskar 2008 [1975] pp.229-38).

**Causation in Critical Realism**

Critical realism takes a distinctive view of causation, particularly in its rejection of positivist explanatory models and event regularity. The key objections are: (i) that they start from a false assumption in empiricist ontology that reality is limited to events and sense-experience observations; (ii) they account for causality as regularity in observed events, which does not explain anything; and (iii) they do not identify any causal mechanisms (Danermark et al., 2002 p.108). Event regularities are, in fact, only likely to occur under the special conditions of closed systems, when the underlying generative mechanisms can operate in isolation from other influences including the activation of other mechanisms (Danermark et al., 2002 p.199; Sayer, 2000 pp.14-15).

Figure 1 illustrates a critical realist model of structures, mechanisms and events, as they exist in the real world of complex, open systems, such as economic activity. When the real objects or structures activate their causal mechanisms, observable events are produced. The nature of the event, and what humans observe, is
determined by the interaction of the underlying causal mechanisms and, because events depend on contingent conditions, they are not reliably predictable. "A particular mechanism can produce completely different [results] at different times, and inversely the same event can have completely different causes." (Danermark et al., 2002 p.58) For example, in Figure 1 observable event E7 occurs when object S4 activates its generative mechanism M5. However, the activation of that same mechanism (M5) may produce a different observable event (E6) when a modifying mechanism (M4) is activated by another object or structure (S3).

It is because different results can be produced by the same causal mechanism that generalisations based on the frequency of observable events can be misleading. Critical realists argue that the cause of an event is not related to the number of times it can be observed, but explanation depends on understanding how the underlying causal mechanisms operate, the conditions under which they do so, and whether they have been exercised in the case under investigation (Sayer 2000 p.14).

Social ontology
As natural objects, human beings possess emergent causal powers. Some of these powers are physical, such as the ability to walk, and some are mental or psychological, such as the ability to imagine. Explaining the operation of these powers involves understanding the physiology of the human body and, in the case of mental powers, an understanding of the human psyche. Discussion of their precise generative mechanisms is beyond the scope of this paper, as the focus in this paper is on the social results of exercising entrepreneurial power.

Social structures, both formal, such as a business corporation, and informal, such as networks, are also considered to possess emergent causal powers. In The Possibility of Naturalism, Bhaskar (1998 [1979]) argues against both the individualist and collectivist models of society and for a dualism that recognises both social structures and human agency that he calls the Transformational Model of Social Activity (TMSA). The intentional actions of a human agent in society may produce different results depending on the countervailing or amplifying mechanisms of societal institutions within which he or she is operating. Conversely, the results produced by societal structures may be modified by the actions of human agents and the actual events generated are affected by the prevailing spatio-temporal conditions. Depending on their nature, human actions can reproduce, reinforce the social structures in which they operate, or they can change and transform. (2011 [1989] pp.92-95)

Bhaskar’s TMSA is extended by Archer (1979, 1995) to incorporate the concepts of morphostasis and morphogenesis. These terms have their origins in Walter Buckley’s work on the use of modern systems theory, developed during the Second World War, to understand society. This theory argues that the behaviour of complex, adaptive systems is not a simple and direct consequence from an external stimulus. As system become more complex they develop endogenous autonomous processes that determine their behaviour, such as adjusting the system to better deal with external influences. They are often referred to as self-directing or self-organising systems. The term morphostasis refers to processes within complex, open systems that tend to maintain a system’s particular form, organisation or state, while morphogenesis refers to processes that tend to change its form, organisation or state (Buckley 1967).
The form of a particular object is a result of a specific arrangement of its constituent parts. If the arrangements of those parts changes, the object ceases to exist in that form. Since the objects emergent powers were irreducible to its constituent parts, any change of form will lead to a loss of those causal powers. For example, the reduction of water to its constituent gaseous elements of hydrogen and oxygen means it loses its power to extinguish fire. Critical realism argues the same is true of social objects and morphostatic processes are the means by which particular social structures are maintained and morphogenetic processes are those that enable them to develop or change (Elder-Vass 2010).

So far, discussion has been at a fairly high-level or abstract conception of ontology, but to be useful domain or regional specific ontologies are required that describe the field of interest. Examples include social ontology as a domain specific ontology for the social sciences, and pleas by Tony Lawson (1997, 2003) that an ontology specific to economics would help resolve many of the epistemological and methodological inconsistencies in that field. Elder-Vass (2010 p.69) has proposed a method for constructing a domain ontology, and he notes that such a process is dependent on taking into account the theories of the discipline concerned: “Social ontology and social theory are inextricably interwoven”.

The method is based around mapping the concepts of the discipline onto a “structural vocabulary” by identifying the following (Elder-Vass 2010 p.69):

- the particular types of entities that constitute the objects of the discipline;
- the parts of each type of entity and the sets of relations between them that are required to constitute them into this type of entity;
- the emergent properties or causal powers of each type of entity;
- the mechanisms through which their parts, and the characteristic relations between them, produce the emergent properties of the wholes;
• the morphogenetic causes that bring each type of entity into existence and cause it to change and develop;
• the morphostatic causes that sustain their existence;
• and the ways that these sorts of entities, with these properties, interact to cause the events we seek to explain in the discipline.

Elder-Vass (2010 pp.69-71) contends that while this might appear straightforward in a well-developed natural science, for the social sciences it is “…often far from trivial.” He argues that: “The complex inter-relations between human beings, non-human physical objects, social structures and cultural or conceptual systems in the social world make it extremely challenging to disentangle the entities and properties involved…” The advice he offers to those attempting to apply it in practice “…can be summed up in a single word: iterate!”

While Elder-Vass describes several methods of iterative investigation, the focus is on the one that is particular apposite to critical realism, which is iterating between the domain ontology and the domain theory, identifying underlying causal mechanisms means or retroduction, a variant of inference to the best explanation (Hartwig 2007 p.257). Retroduction in this sense is a means of reasoning to from the appearance of an observable phenomenon to the underlying causal mechanism that have produced it. Lawson provides the following comparison with deduction and induction:

If deduction is illustrated by the move from the general claim that ‘all ravens are black’ to the particular inference that the next one seen will be black; and induction by the move from the particular observation of numerous black ravens to the general claim that ‘all ravens are black’, retroductive reasoning is indicated by a move from the observation of numerous black ravens to a theory of a mechanism intrinsic (and perhaps also extrinsic) to ravens which disposes them to be black. (Lawson 1997 p.24, emphasis in original)

In the next section, Schumpeter’s role of the entrepreneur in the social context of his theory of development and concept of innovation is mapped onto a domain specific ontology of an economy using critical realism.

Mapping Schumpeter’s theories of development, innovation and entrepreneurship to a domain specific ontology

The domain with which Schumpeter is concerned is the economy. The phenomena of endogenous change and development in the economy, which attracted his lifelong interest is characteristic of open, complex adaptive systems (Buckley 1967). The domain for which is envisaged constructing a specific ontology is therefore open, complex and adaptive and it is expected to be composed of interconnected entities possessing emergent properties that cause the economy to exhibit the phenomena and behave in the way it does.

Development

The first point to remark upon is the striking similarity between Schumpeter’s concepts of statics and dynamics and the respective morphostatic and morphogenetic processes that critical realists ascribe to all objects, both natural and social.5 We have seen how many of the processes of Schumpeter’s circular flow

5 It might be noted that Buckley (1967) argues that there are behavioural differences between the mechanical equilibrium models used in static economic analysis and the complex adaptive process models of the type that critical realists adopt for the social world. If Schumpeter’s theories do appear to map better to an ontology based on the latter, this would not only support his view that many of the
have the effect of sustaining the economic system and its social structures in its current form and how his concept of discontinuous change, or development, changes the form of channels within the economy.

Mapping the entire economy as the highest-level object of a domain specific ontology allows Schumpeter’s circular flow to be mapped as a next level object with emergent powers that contribute to the morphostatic processes of the economy. Similarly, his concept of development can be mapped as an object at this level with morphogenetic causal powers. Objects such as innovations and entrepreneurs can then be mapped at levels below the development object as they are identified and classified. A more extensive and precise mapping of Schumpeter’s circular flow and development theories should confirm, or otherwise, their apparently high degree of correlation with the concepts of morphostatic and morphogenetic processes.

**Innovation**

A retroductive approach starts with the question: what must this phenomenon be like for it to be an innovation? Since a critical realist ontology attributes causal powers to social or natural objects, one of the initial tests we can apply in investigating the nature of a phenomenon is does it have any causal powers? This paper argues that an innovation as defined by Schumpeter does have such powers – it is the causal power that produces discontinuous change. An innovation object is more than the device that might constitute a new product, since the same may or may not be an innovation under different temporal and spatial conditions. Other characteristics that need to be mapped are an innovation’s superiority over to its competitors. This market superiority will need to be maintained if the product is not to lose its innovative status and therefore optimisation and enhancement activities will form one of an innovation’s morphostatic processes. This conclusion tends to support this paper’s earlier argument that incremental innovation is part of Schumpeter’s circular flow of the economy i.e. one of the economy’s morphostatic processes.

One point to note is that it is not possible to say whether a new combination is innovative or not until well after it is introduced. As noted above, innovation is a relative concept and, as such, the degree of its “innovativeness” has to be judged against alternatives, such as the status quo. There is also a temporal and spatial contingency about this in the sense that competing offerings may themselves change before the impact of the new combination is felt, and the indeterminacy of discontinuous change noted by Schumpeter frustrates any attempts to reliably predict the outcome.

It was not possible, for example, in 1830 to predict that the success of Stephenson’s Rocket at the Rainhill Trials would result in a major economic discontinuity over the ensuing decades. Stephenson and his associates may have had some vague ideas about the potential of the development, but not a clear idea about the eventual path it would take. The earlier invention of a lightweight internal combustion engine and the arrival of commercial petroleum production may have accelerated the development of the motor car and motor coach and the shift from road to rail transport brought about by the steam locomotive may never have eventuated.

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analysis methods of the neoclassical and marginalist schools are inappropriate for examining the economy as a whole, but also suggest they are inappropriate even for examining morphostatic economic processes within a complex social system such as the economy. This would also give support to Tony Lawson’s claim (1997, 2003) that mainstream economics has been guilty of using the wrong analysis tools for the objects of their interest.
Clearly, much further work is required to map Schumpeter’s concept of innovation to this ontology, but at this stage there appears to be nothing that would prevent this being possible.

**Entrepreneurs**

It is clear that there was considerable confusion, disagreement and misunderstanding between Schumpeter and his critics about the personification of the entrepreneurial function, a debate that continues to this day. In order to resolve this dilemma it is proposed that the concept of an “entrepreneurial structure” which comprises all of the resources or objects that are required to produce entrepreneurial activity, except the economic objects which are to be combined in new ways, remain external to the structure and are subject to the emergent powers of the structure.

Then, even in the simplest case of an individual business owner exploiting the economic potential of a new invention during the Industrial Revolution, that individual cannot implement his innovation on his own. Schumpeter explicitly recognises this in *Theory* when he discusses the entrepreneur’s relationship with his banker and other people whose services he needs to employ or otherwise contract in (1934 [1912] p.89). In other words, the business owner has to create a social structure comprising all the resources, people and capital, he (she or they) needs to bring his new product to market. The precise nature of the relationships between him and these other objects will vary depending on the legal structure he has selected for his enterprise – sole trader, partnership, limited liability company, etc. – and whether he bought or rented equipment, whether he has employed or subcontracted to acquire some required skills.

The same concept can be applied to innovation teams within an organisation or corporation. In this case, an entrepreneurial structure is formed internally within the organisation and the internal relationships between its parts will be different from those in the first example. Additionally, the relationships of this entrepreneurial structure with its external environment will be different since it has to deal with other people and structures within the same legal entity as well as those external to the organisation.

The conceptualisation of the entrepreneurial function in this flexible manner allows us to conceive of entrepreneurship as only being possible through a combination of causal powers emerging from a structure that is irreducible to its individual members, even though different technical capabilities may be manifested in specific individuals within the structure. For example, some of the psychological characteristics of an entrepreneur, such as initiative, vision and strength of will, are possessed by, in the first case, the business owner, and in the second case, a team leader. The argument is that if these capabilities exist in an individual outside an entrepreneurial structure they will forever remain contingent and they can only be successfully activated by “the entrepreneur” within such a structure.

Mapping Schumpeter’s concept of entrepreneurship within the entrepreneurial structure should provide an ontological framework to address some of the questions he proposed in *Development*, such as what, exactly, are those emergent entrepreneurial powers and how do human beings, whether acting individually or in a team, come to possess them? How do they emerge from the physiological structure of a human being? What are the biological or psychological mechanisms that produce these powers? What difference does the role of entrepreneur play in continuous and discontinuous innovation? The answers to these questions may well indicate that further research in the human sciences is a productive way of furthering our understanding of the entrepreneur.
Conclusions
This paper reassesses Schumpeter’s entrepreneur using elements of his thinking about the structure of the economy, particularly his conception of economic development and the role of innovation and the entrepreneur. Critical realism is used as an exploratory framework to understand more clearly the ontology of Schumpeter’s concepts of a static circular flow and dynamic development and provide a basis for more robust theoretical and empirical investigation. In doing so, some of the deeper concepts that are typically omitted or distorted in much of the economic development and entrepreneurship literatures around Schumpeter are exposed.

Schumpeter’s conceptualisation of development as transitioning from one equilibrium point to another in a manner that cannot be decomposed into infinitesimal steps, has implications for the choice of research tools for any empirical analysis of an economy displaying the effects of development, including attempts at forecasting by extrapolation from past trends.

It emerges that entrepreneurship, as conceptualised by Schumpeter, is only associated with discontinuous innovation outside the circular flow as described by his five cases. Continuous, incremental innovation, including new versions of existing products, is executed entirely within the circular flow and does not require the specific attributes that Schumpeter ascribes to an entrepreneur, but is within the capabilities of line management within that circular flow. It is arguable that this has implications both for existing theories of entrepreneurship that, implicitly or explicitly, assume an alternative understanding of Schumpeter’s concept and for any new theoretical work such as that called for by Swedberg.

Swedberg’s call for “considerably better knowledge of Schumpeter’s theory of entrepreneurship” before it can be used as a point of departure for further theoretical work is appropriate. The use of a critical realist ontology as outlined in this paper offers an approach to building a framework for this work that should help avoid a repetition of the diversions that have arisen in the past from misconceptions of what Schumpeter is actually telling us about economic development processes, innovation and entrepreneurship.
References


