



A conceptual framework for entrepreneurship education policy: Meeting government and economic purposes



Allan O'Connor*

Entrepreneurship, Commercialisation and Innovation Centre, The University of Adelaide, Level 1, Engineering South Building, North Terrace Campus, Adelaide, SA, 5063, Australia

ARTICLE INFO

Article history:

Received 31 December 2010
Received in revised 17 July 2012
Accepted 24 July 2012
Available online 3 September 2012

Field Editor: D. Jennings

Keywords:

Entrepreneurship education
Enterprise
Government policy
Economic theory
Economic purpose

ABSTRACT

There is an increasing tendency for government policy to promote entrepreneurship for its apparent economic benefit. Accordingly, governments seek to employ entrepreneurship education as a means to stimulate increased levels of economic activity. However, the economic benefit of entrepreneurship education has proven difficult to substantiate. It is perceived that the problem is partly due to the multi-definitional perspectives of entrepreneurship. What stems from this is a lack of a theoretically sound conceptual grounding that will assist policy-makers and educators to locate a program within specific objectives. This article sets out an argument, extending from economic theory, to provide purpose for entrepreneurship education and proposes a policy framework supported by analysis of the Australian government policy context.

© 2012 Elsevier Inc. All rights reserved.

1. Executive summary

There is an increasing tendency for government policy to promote entrepreneurship for its apparent economic benefit. Accordingly, governments seek to employ entrepreneurship education as a means to stimulate increased levels of economic activity. However, the economic benefit of entrepreneurship education has proven difficult to substantiate. It is perceived that the problem is partly due to the multi-definitional perspectives of entrepreneurship. What stems from this is a lack of a theoretically sound conceptual grounding that will assist policy-makers and educators to locate a program within specific objectives.

This article sets out an argument, extending from economic theory, to provide purpose for entrepreneurship education and proposes a policy framework supported by an analysis of the Australian government policy context. The author adopts, as a starting point, a definition of entrepreneurship that describes it as a social process involving the efforts of individuals in enterprise activity. The theoretical inquiry is driven by the primary research question: how can policy-makers direct specific forms of entrepreneurship education to deliver upon specific economic purposes? A major contribution arising from the analysis framed by this question is development of a policy framework that provides a focus for entrepreneurship education with respect to economic purpose. The paper outlines how distinctions in economic and social concepts can differentiate purposes for entrepreneurship education that fit within an economic and government policy frame of reference.

2. Introduction

It can be observed globally that there is an increasing trend for government policy to advocate entrepreneurship. For instance researchers claim that many governments have openly accepted the functional economic theory of entrepreneurship (Jennings et

* Tel.: +61 8 8303 0188; fax: +61 8 8303 7512.

E-mail address: allan.oconnor@adelaide.edu.au.

al., 2005; Perren and Jennings, 2005; Pittaway, 2005). Others have reported a number of studies that 'reflect the increasing attention paid to entrepreneurship by governments at all levels all across the world' (Minniti and Lévesque, 2008, p. 605). Hannon (2006) specifically argues that entrepreneurship development is now central to many government policies. It has also been observed that policy-makers frequently consider the possibility of entrepreneurship education and training as 'an efficient mechanism for increasing entrepreneurial activity...' (Martinez et al., 2010, p. 43).

This generally supportive policy environment has to some extent contributed to a plethora of entrepreneurial courses, programs and awards being offered in various forms all around the world (see for instance Atherton, 2004; Caird, 1990; Fayolle, 2004; Gibb, 1996; Hytti and O'Gorman, 2004; Jack and Anderson, 1999; Katz, 2003; Klapper, 2004; Leffler and Svedberg, 2005; Plaschka and Welsch, 1990; Solomon et al., 2002). Some researchers have claimed that everybody within the dynamics of the contemporary economy could be an entrepreneur (Casson, 2000) and others argue that everyone should be exposed to entrepreneurship training and development (Gibb, 2002). However, entrepreneurship education's contribution to a community and its economy has proven to be difficult to isolate and substantiate.

Some research has suggested that generally entrepreneurship as a theory is failing to provide continued economic growth in developed communities (Bögenhold and Staber, 1991; Greene, 2002; Meager et al., 2003). Shane (2008) quite pointedly highlights a number of myths associated with entrepreneurship which misdirects entrepreneurs, investors and policy-makers into believing that entrepreneurship is a panacea for revitalizing and stimulating economies. Broadly speaking, the evidence that entrepreneurship delivers economic value has at best been patchy (van Praag and Versloot, 2007). More specifically, others claim that the impact of entrepreneurship education is unclear (Pittaway and Cope, 2007) or does little or nothing to enhance entrepreneurship skills and motivation (Oosterbeek et al., 2010). Martinez et al. (2010) have argued that entrepreneurship education, at worst, evidences diminishing returns for certain economies and in others, at best, only reveals limited increasing returns before reversing.

In light of these arguments, this research revisited the theory of entrepreneurship, launching from an economic perspective, in order to establish different specific understandings of its potential influence within an economy. The author adopts, as a starting point, a definition of entrepreneurship that describes it as a social process involving the efforts of individuals in enterprise activity. Enterprise is defined in the Schumpeterian view as the *introduction* of new products, services, processes, materials, etc. that result in market disruption. The article develops this position to argue that entrepreneurship education is related to market level outcomes and sets out a theory about how public policy and educators alike might better position entrepreneurship education to achieve specific economic outcomes that may lead to increased social returns.

The theoretical inquiry was driven by the primary research question: how can policy-makers direct specific forms of entrepreneurship education to deliver upon specific economic purposes? A major contribution arising from the analysis framed by this question is the development of a policy framework that responds to calls for more definition of purpose for entrepreneurship education (Falk and Alberti, 2000; Gordon et al., 2010; Greene et al., 2004; Harrison and Leitch, 2005; Henry et al., 2005). The paper outlines how distinctions in economic and social concepts can differentiate purposes for entrepreneurship education that fit within an economic and government policy frame of reference.

However, in drawing distinctions, there is an inevitable difficulty for theorists in maintaining them. As Schumpeter (1961 [1934], p. 77) argued 'the entrepreneur's essential function must always appear mixed up with other kinds of activity, which as a rule must be much more conspicuous than the essential one'. Being difficult though is no justification for abandoning an approach that may be valuable for increasing our understanding of a phenomenon that is broadly recognized as having significance for advancing and modernizing economies.

The paper proceeds to develop the policy framework in the following manner. First, a literature review on entrepreneurship education is provided to highlight the complex range of arguments and purposes ascribed to it which leads to a summary of the four world views that underpin the delivery of entrepreneurship education as proposed by Neck and Greene (2011). Next, a review of the different economic conceptions of entrepreneurship is presented to locate it within the practical domain of interest to policy-makers. Third, the application of entrepreneurship education within the context of, and developments in, Australian government policy is discussed to show how an economic policy agenda can influence government positions on entrepreneurship education. This empirical grounding reveals a short-coming in basing the argument upon purely economic grounds and introduces another complexity when entrepreneurship is used to achieve social outcomes. Fourth, a synthesis provides the basis for propositions to validate and extend the policy framework. Next a section is dedicated to discussing the implications of the framework before finally drawing to a conclusion and highlighting the limitations of this study.

3. Entrepreneurship education complexity and diversity

Some studies raise doubts regarding the efficacy of entrepreneurship education for either economic or individual outcomes (Martinez et al., 2010; Oosterbeek et al., 2010; Pittaway and Cope, 2007; van Praag and Versloot, 2007). It is also argued that entrepreneurship education needs further conceptual and theoretical development (Greene et al., 2004; Harrison and Leitch, 2005; Matlay, 2006). The aim of this section is to outline the complexity and diversity of arguments on entrepreneurship education and focus attention on the unanswered question of 'what specific purpose is entrepreneurship education meant to serve'?

Peterman and Kennedy (2003) drew attention to the wide variety of entrepreneurship programs on offer in the market place and suggested that while positive results may be found from a study of one program it could not be assumed that all programs would have similar results due to variations in content, pedagogy and learning styles. In similar terms, Béchard and Grégoire

(2005) conducted a thorough review of the entrepreneurship education research literature to report the volume of research under seven areas of focus. From a simpler viewpoint, entrepreneurship education has been categorized into three different types; education 'for', 'through' and 'about' enterprise (Caird, 1990; Scott et al., 1998). In all, it is apparent that there is little uniformity in content and approach among programs and courses (Falk and Alberti, 2000).

Verheul et al. (2001, p. 34) distinguished entrepreneurship education from general education claiming that entrepreneurship education focused specifically on 'the promotion of entrepreneurship and stimulating entrepreneurial skills and knowledge'. However, with respect to macroeconomic performance, the relationship with entrepreneurship education is not necessarily clear. Instead, higher levels of general education attainment are more common among entrepreneurs (Bennett and Dann, 2000) than entrepreneurship education specifically. For instance, it is consistently found that (generally) entrepreneurs in developed countries exhibit higher rates of success when they have higher levels of education (Foley and Griffith, 1998; Lee, 1997; Leffler and Svedberg, 2005; Van der Sluis et al., 2003) and even more so when this education is combined with experience (Scott et al., 1998). Further, Minniti et al. (2006) reported a relationship between higher levels of education attainment and start-up business activities generally among the nations contributing to the Global Entrepreneurship Monitor study. In particular, it has also been found that higher education levels reduce capital constraints for a new venture which in turn influences a firm's performance (Parker and van Praag, 2006). In these cases entrepreneurship education does not factor into entrepreneurial success and economic performances.

Others have argued that entrepreneurship education influences entrepreneurial behavior (Kolvereid and Moen, 1997) and entrepreneurial tendency (Henderson and Robertson, 1999; Lüthje and Franke, 2002; Sexton and Bowman, 1983). However, a tendency or inclination toward entrepreneurship does not appear to be isolated to a solitary cause. For instance Cassar (2007) found that the financial incentive (wealth accumulation) is an important motivator but not a good predictor of entrepreneurial behavior. Further studies have revealed coupled or multiple links between entrepreneurship, education and individual personality characteristics (Lüthje and Franke, 2002) while others report a link to personal cognitive infrastructure (Krueger, 2000; Mitchell et al., 2002). Entrepreneurial cognition also seems to be supported by factors other than education such as social context and cultural values (Mitchell et al., 2002). Wang et al. (1999) found support for a complex three-stage model that took into account key demographic, educational, motivational attitude, perceived interest and feasibility factors. This range of studies tends to undermine the primary value of entrepreneurship education as a means to promote and encourage the emergence of more entrepreneurs when, beyond education, there are a diverse range of factors that influence an individual's decision to become an entrepreneur.

Researchers have also argued that investment in the development of entrepreneurship education within the higher education sector is most likely to deliver long-term returns (Galloway and Brown, 2002; Hegarty and Jones, 2008). Other longitudinal studies support this view (Matlay, 2008) which suggests that some entrepreneurship education may have a positive impact on entrepreneurial outcomes only after extended periods of industry or commercial experience. Therefore, those who are engaged in this form of education may only start high-quality and high-growth ventures after spending time gaining industry experience, maturity and developed networks. Despite the use of longitudinal studies, this makes it difficult to isolate the extent to which entrepreneurship education is in anyway causal or even beneficial to the practice of entrepreneurship.

Enterprise education has also been on the increase since the 1980s (Gibb, 1996). Using the term enterprise in the context of education refers to developing social and human attributes and moves away from referring to business start-up specifically. This approach also diverts attention away from any specific economic interests or outcomes. Cromie (2000) asserts that an enterprising individual and an entrepreneur have similar attributes, however an enterprising person may not necessarily be an entrepreneur and their skills and characteristics may be exercised in different contexts. Hytti and O'Gorman (2004) found that enterprise education was commonly interpreted to mean developing entrepreneurs; however the objectives of specific programs varied dramatically and that in practice it meant much more.

Education and enterprise has also been addressed as a human capital issue in community growth and development (Taylor and Plummer, 2003). This view suggests that education in the entrepreneurship field 'is about equipping people to work within a global sphere of economic activity' and 'providing individuals with an understanding of facets of the economy and society they live in, and the processes of change that run through them' (Taylor and Plummer, 2003, p. 559). By contrast, Souitaris et al. (2007) claim that a major purpose of entrepreneurship education is to inspire students to opt to commence a business.

Research has also found that the 'entrepreneur' in entrepreneurship was more likely to be plural than singular (Ensley et al., 2000; Gartner et al., 1994). From this perspective entrepreneurship encompasses a variety of disciplines and professions (Block and Stumpf, 1992; Gartner et al., 1994; Politis and Landström, 2002). Berglund et al. (2006) also draw attention to the range of co-producers, co-creators and co-operators at the individual and institutional levels involved in entrepreneurial endeavor. The implication of these conceptions of entrepreneurship for entrepreneurship education shifts the emphasis away from business start-up and ownership and highlights a range of associated careers and professions that contribute to and are intrinsically linked to the economic outcomes associated with entrepreneurship.

A further complication arises when one considers the dynamism of entrepreneurship whereby the entrepreneurial needs vary across different stages of firm formation and growth. Penrose (1995, 1959) alludes to the transitional state of the entrepreneur as he or she moves into the more traditional business managerial role. Casson (2003) suggests that the theory offered by Penrose is not of entrepreneurship per se but rather of the supplementary skills that must accompany entrepreneurship in the transition to the world of business. Churchill and Lewis (1983) describe a progression of firm growth from early existence to resource maturity through a five stage model and both Lichtenstein and Lyons (2008) and Poropat (2003) review many more of these stage theories. Notably, Watson (2000) suggests that much of this work leads to an unnecessary and unhealthy distinction between entrepreneurial

and professional management and argues that clearly both forms of management are required in different proportions at different times. I argue quite the contrary, and that given an overarching interest in different economic outcomes distinguishing the entrepreneurial from the management functions is not only necessary, it is essential to contribute to the health of economic systems and the impact of decisions on the sustainability of a firm. However, what is also critical is to understand the different roles that entrepreneurs and managers perform in an economy and how entrepreneurs and managers transition and move between these two roles within the context of firm formation, growth and renewal.

In summary, the purpose behind entrepreneurship education generally follows the 'for', 'through' and 'about' approaches varying across the spectrum of preparing an individual to start, own and manage a business, providing generic life and work skills and introducing students to the world of commerce and industry. However, research suggests that higher levels of general education are more important than specific entrepreneurship education with respect to business start-up and performance. In any case, it would seem that entrepreneurship education is inconsistent in its content, pedagogy and general approach and notably it seems to avoid or neglect dealing directly with preparing individuals for any specific contribution to economic outcomes. However, some are drawing attention to the significance of entrepreneurship for community growth and development, implying a broader relevance while others point out that there are a number of contributors to entrepreneurship when economic objectives are considered.

These various views collectively portray a lack of clarity about the specific work that an entrepreneur might do within an economy, which, in turn, makes the purpose of entrepreneurship education vague and lacking a specific career focus perhaps except that of the commonly perceived general case of a start-up business founder or business owner. Perhaps this is best summed up by Neck and Greene (2011) who argue that four different worlds of entrepreneurship education dominate the approaches to its delivery. These four worlds are summarized in Table 1 and are related to the 'for', 'through' and 'about' perspectives and objectives of entrepreneurship education in the bottom two rows.

Neck and Greene (2011) describe the various types of entrepreneurship education through the lens of each world view. The 'entrepreneur' world view of education treats the entrepreneur as a hero figure. Entrepreneurship education from this perspective tends to take the form of contrasting the student with ideal types of entrepreneurs and prompting behaviors from students to cast themselves in the mold of entrepreneur role models. The use of self-assessment tests are common, underpinned by an assumption that the entrepreneur is born of nature. An intensive experience with this education involves descriptive narratives about entrepreneurs and can tend to be excluding to those who don't measure up and conform to the set of idealized behaviors.

The 'process' world view of entrepreneurship education adopts a more analytical approach and moves away from attempting to embed specific entrepreneurial traits. In this form of education the firm becomes a focal point and curricula favors the processes of opportunity recognition and evaluation, new venture formation and business planning. The pedagogical model assumes that by undertaking specific process tasks entrepreneurial outcomes become more predictable. Students are being prepared for entrepreneurship by learning the processes they should replicate.

The third world view adopts the entrepreneurial 'cognition' stance and places emphasis on the entrepreneur, the entrepreneurial team and the thinking and decision making that underpins successful entrepreneur outcomes. The class room approach may use case studies and simulations but not as models of entrepreneurial behavior but instead as tools that allow students to delve into the psyche of the entrepreneur and discover the entrepreneurial mental models that are the foundations of the decisions that lead one into being an entrepreneur. In this way students are learning for entrepreneurship and to be entrepreneurial decision makers.

The entrepreneurial 'method' approach to entrepreneurship education is somewhat more inclusive of the entrepreneur, the team and the firm as it places the student into the roles of being an entrepreneur to learn through the experience of being entrepreneurial and enterprising. Teaching in this fashion involves several different techniques outlined by Neck and Greene (2011) including actually starting a business, learning design principles for new venture practice, engaging in serious games and simulations and encouraging reflective practice. In essence there is a portfolio approach to learning and the emphasis is on the student taking action and adopting a set of entrepreneurial behaviors styled on their own entrepreneurial set of experiences.

Note, that in this portrayal of different world views the level of influence and focus of learning does not exceed beyond the range of individual, team and/or firm and that social or economic objectives are absent from this consideration of entrepreneurship education world views. This implies and supports the thesis of this article that the objectives of entrepreneurship education are limited to focusing on individuals becoming an entrepreneur and/or preparing individuals to start a venture. Perhaps more telling is the claim by Neck and Greene (2011) that the 'vast majority of our student's plans are not based on a truly innovative product or service. Even

Table 1
Entrepreneurship education world-views.

The world of...	The entrepreneur	Entrepreneurial process	Entrepreneurial cognition	Entrepreneurial method
Level of analysis	Entrepreneur	Firm	Entrepreneur and team	Entrepreneur, team and firm
Focus	Traits; nature versus nurture	New venture creation	Decision making to engage in entrepreneurial activity	Portfolio of techniques to practice entrepreneurship
Pedagogical implications	Descriptive	Prediction	Decision	Action
Education purpose	To learn 'About' entrepreneurship	To learn 'For' entrepreneurship	To learn 'For' entrepreneurship	To learn 'Through' entrepreneurship
Objective outcome for student	Emulate role models	Replicate entrepreneurial process	Decide whether to become an entrepreneur	Adopt entrepreneurial behaviors

more absent is the innovation in business models. This leaves us in the position of largely replicating existing forms of businesses and therefore, even existing kinds of economies' (p. 61).

If this is the case then entrepreneurship education is doing little more than providing an alternative approach to business education and at least one researcher argues that entrepreneurship education belongs anywhere except the business school (Hindle, 2007). Further, if the focus of entrepreneurship education is just naively adding more entrepreneurs (as business owners) to an economy it ignores the fact that the financial reward for most entrepreneurs (those who start a business) is generally poorer than for those who seek employment (Shane, 2008, p. 110). Therefore it is little wonder that when socioeconomic justifications for entrepreneurship education are sought it fails to deliver.

The implication of these arguments for entrepreneurship education is that there is a need for explicit distinctions in purpose at higher units of analysis. Henry et al. (2005) and Gordon et al. (2010) provide support for the case that entrepreneurship programs need to clearly define the purpose in order to achieve specific regional economic development outcomes.

A further consideration of this article is whether government policy is in a position to provide a platform for change upon which distinctive entrepreneurship career pathways can be offered. The potential for government policy may be to influence the education sector toward providing career development pathways for those whose career will impact market and economic dynamics through entrepreneurship activity. This contrasts with the dominant and current entrepreneurship education practices that are either restrictively directed toward those with a business start-up ambition or broadly directed toward attitudinal and behavioral education. Both have a place but both tend to be aimless with respect to economic outcomes if the question of purpose is not addressed, and there is no clear career objective specified.

However, recent theory by Sarasvathy (2005) provides the means by which to understand the relationship between the economic objective and the individual entrepreneurial behavior which is fundamental to providing a theoretical underpinning for entrepreneurship education with respect to economic objectives. This will be explored further as the next section is developed.

4. The disputed economic conceptions of entrepreneurship

The complexity of entrepreneurship is evident when considering the number of disciplines that have contributed and at times converged in attempts to explain it (Hart, 2003). Similarly, Audretsch (2004, p. 167) claims that 'entrepreneurship does not correspond nicely with any established academic discipline...' and Pittaway (2005, p. 201) observes that 'the concept of the 'entrepreneur' and the function of entrepreneurship in society have ranged extensively within theories'. Minniti and Lévesque (2008) have argued that it is important for scholars of entrepreneurship to understand its origins and how it fits generally within the context of economics. After all, entrepreneurship came to prominence through the work of economists. However, since Cantillon's (1680–1734) posthumous publication of *Essai sur la nature du commerce en général* in 1751, that argued for the entrepreneur as arbitrageur, there still remains little agreement on the work that an entrepreneur performs in an economy (Endres and Woods, 2006). The following sections discuss the different economic concepts of the entrepreneur from macro, organizational and individual level perspectives.

4.1. Macroeconomic level conceptions of entrepreneurship

From the perspective of macroeconomics, Kirzner (1973, p. 128) describes two forms of entrepreneurial influence on a market; competition and innovation. The first influence, competition, provides a market equilibrating force whereby established firms, operating in competitive markets, appropriate rents through arbitrage (Alvarez and Barney, 2004). In effect, this view stems originally from Cantillon and considers an entrepreneur to be one who starts a business based on an opportunity to meet established market demand serviced by existing competitors with either a cheaper or better product/service that resolves customer needs/wants more efficiently. Ray Kroc of McDonald's fame is such an entrepreneur. By its very nature, competition within a market means that goods and services under this scenario *cannot* embody newness or novelty in such a way that it would immunize a business to competition for any significant period of time. Thus, competition is an antithesis of innovation. Kirzner (1973) suggests that this form of entrepreneurship manifests in short-run movements exercised by followers and imitators in a market who squeeze out profit opportunities and beat down the market price toward equilibrium.

By contrast, the economic function of innovation is to disrupt a market by introducing new combinations of products and services that create new markets, while delivering a monopolistic position for a firm for some period of time (Schumpeter, 1954, p. 897). In this case an entrepreneur is one who creates a business that destabilizes the existing market by introducing a product/service that has no peer and therefore faces no head to head competition. Graeme Clark, inventor of the cochlear ear implant and founder of the Cochlear business is such an entrepreneur. Innovation is a disequilibrating force performing one of two possible effects at the market level. It either makes redundant some supplies to a market by providing more desirable products or services, displacing the demand for older goods, or it adds new offerings 'never before seen' into the market, industry or society therefore expanding the choices for spending provided within an economy. Either way, the market cycle of existing product/service markets described by Schumpeter (1961 [1934]) are pressured by shifting spending patterns, demand, and potentially supply of other goods and services. Kirzner (1973, p. 127) claims that this form of entrepreneurship 'manifests... in long-run economic development of the capitalist system'.

Kirzner (1973, p. 73) argued that Schumpeter's economic treatments invoked 'entrepreneurship as an exogenous force lifting the economy from one state of equilibrium [to another]'. Pittaway (2005) interprets the function of the entrepreneur in Schumpeter's writings slightly differently and argues that the entrepreneur acts as the source of revolutionary equilibrium.

Pittaway points out that market behavior is cyclical, oscillating between static and dynamic states. Cheah (1990) also portrays the equilibrating and disequilibrating effects of entrepreneurship as a yin and yang. Cheah suggests that one form of entrepreneurship gradually rises to a peak but also 'gives way' to its opposing form of entrepreneurship.

While certain writers (see also for example, Peneder, 2005, p. 204), rightly or wrongly, characterize Schumpeterian development as involving simultaneous processes of both stability and qualitative transformations in the economy, the distinction between these two dynamic extremes has been consistent, although, at times, blurred. This has resulted in some confusion as to whether entrepreneurship occurs inside (endogenous) or outside (exogenous) of the market interactions of an economy.

The assumption that entrepreneurship occurs outside of market forces (exogenous) corresponds with entrepreneurship that is directly associated with economic development (a disequilibrating force). An example of entrepreneurship exogenous to the market is the development and commercialization of research from universities or other research focused organizations. Assuming new to the world technology is the focus of such research (some refer to this as radical innovation), then development, prototyping, proof of concept and market validation all occur prior to trade or sale of the new product or technology. In other words the commercialization process is outside of the market-based economy for the goods or services being developed and is potentially poised to deliver a shock to traders within the market system.

Entrepreneurship considered inside the market dynamic (endogenous) deals with economic productivity through increased market efficiency (an equilibrating force). This conception of entrepreneurship assumes that existing technologies, products or services are being conceived or reconceived for trade to compete with existing market players (this may be conceived by some as incremental innovation) and therefore is grounded by observations of gaps or opportunities that exist inside an established market dynamic to compete with cheaper or differentiated products/services by either new or existing firms.

Beside the two opposite conceptions of entrepreneurship (being for economic development or increased economic productivity) is a third, that of economic growth. In the context of regional development, issues of growth are of primary importance. By way of example, growth becomes a dominant focus when matters of regional development are concerned as exhibited in a special edition of *Regional Studies* focusing on Entrepreneurship and Regional Development (Kitson et al., 2004). In this edition there are seven articles (aside from two editorials); three focus on firm creation (Fritsch and Mueller, 2004; Lee et al., 2004; Van Stel and Storey, 2004); two deal with job and employment growth—one of which linked both firm creation and job growth (Acs and Armington, 2004; Van Stel and Storey, 2004); a further two investigate regional and macroeconomic growth (Hjelm and Borgman, 2004; Varga and Schalk, 2004) and the last examines economic performance (Audretsch and Keilbach, 2004). For a dedicated issue on matters of regional development, growth actually appears extensively as a dominant point of discussion.

Significantly, economic growth primarily results from the economic expansionary effects of entrepreneurship within the development and productivity spheres of economic activity. It can be observed that economic growth can occur as a consequence of activity in the economic development context from influences exogenous to a market or from changes within the existing market dynamics that alter market productivity. This underscores potential confusion, as economic growth can be difficult to conceptualize as an isolated function without being underpinned by economic development or improved productivity or it may also arise from sources other than development or productivity gains. In effect, the expansion of new businesses and markets that arise from entrepreneurship in development or productivity is what delivers the objective economic growth outcomes expected from entrepreneurship.

It is not intended to defend or propose superiority of one view of entrepreneurship over another. Instead, the aim of this section is to draw out the distinctions that may assist to define and position the purpose of entrepreneurship for the areas of policy and education. In Fig. 1 the relationship between these three perspectives is shown. Economic development objectives are related to exogenous entrepreneurship or Schumpeterian conceptions of activities outside of an existing market. Economic productivity objectives are concerned with endogenous entrepreneurship and/or the entrepreneurial behavior of existing firms within existing market dynamics. Associated with these two is economic growth which occurs as a consequence of market expansion by the entrepreneurial activities of either new firms or existing firms that deliver such things as regional employment and greater wealth.

4.2. Organizational conceptions of entrepreneurship

Schumpeter (1961 [1934], p. 74) argued that entrepreneurs are individuals whose function is to create new combinations of ideas, products and markets for an economy and this activity he termed enterprise. Enterprise in this context is not bounded by

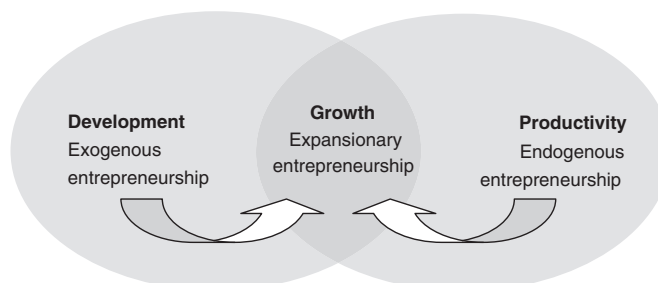


Fig. 1. Three economic objectives for entrepreneurship.

formal organizational form. Again, commercialization of university research is an example of enterprise which occurs prior to forming the business entity entering the trading cycle. The Schumpeterian enterprise continues until such time as the various relationships, development funding, collaborative arrangements and the new product or technology is ready for market offering and at which time enterprise gives way to a formalized business entity. Schumpeter himself expressed limited interest in new firm creation and only to the extent that 'new combinations are, as a rule, embodied, as it were, in new firms, which generally do not arise out of the old ones but start producing beside them' (Schumpeter, 1961, 1934, p. 66).

A close reading of Schumpeter's early work¹ suggests a distinction between *enterprise* – the source of innovation and disruption to markets, and *business* – the means of production within existing markets carried out by the firm. However, at the level of the firm and the individual, the academic debate has replicated the sort of confusion that characterizes macroeconomic and market level treatments of entrepreneurship. Views about the activity of the entrepreneur vary considerably, framed as both formal business activities and informal enterprise activities, and sometimes as a confused combination of both.

This confusion has been sustained for an extended period of time spanning a number of decades. For instance, Knight (1940, p. 268) claimed that the entrepreneur was responsible for both the forecasting and technological direction, which may be considered part of the disruptive enterprise activities, along with the activities of production, which align with market expansion and growth embraced by business activity. Similarly, Kilby (1971, p. 37) later blurs distinctions when he states that, '[a] basic managerial function in any productive enterprise is to synchronize the work of various individuals or groups...'. He also argues that 'in late modernizing economies, the critical entrepreneurial inputs are related to achieving and maintaining efficient production, in *contra-distinction* to innovation or marketing activities' (Kilby, 1971, p. 40, *emphasis added*). It is plain that Kilby denies scope for the entrepreneur to be engaged with market disruptive innovation as earlier proposed by Schumpeter and places the entrepreneur and enterprise in the context of growing and maintaining organized productivity functions.

More recently, Casson (2003, p. 21) too observes that '[i]n practice, though, entrepreneurship is closely identified with private enterprise in a market economy' and 'it is assumed that entrepreneurs operate their business purely with a view to maximizing the profit they obtain from a given amount of effort'. I argue that this type of representation sidesteps the complexity of entrepreneurship by blending different economic functions and this position has significant implications for macroeconomic policy and education interventions.

Studying entrepreneurship simply through the lens of business makes distinctions in economic function difficult as the array of activities within a firm may contribute to more than one economic outcome. A firm throughout its lifecycle may introduce new products and services into a market; grow the market size by increasingly diffusing goods and services into and throughout the market; it may improve efficiencies by decreasing the costs of production and broadening the provision of goods and services; and it may also affect employment growth and decline throughout all of these market interactions. In macroeconomic terms the firm would contribute to economic development, growth and productivity to varying degrees. It is therefore important to draw distinctions between these activities if one wishes to analyze specific forms of contribution to an economy. Fig. 2 provides such a distinction by leveraging Schumpeter's views of enterprise and business and describes the kinds of activities that might fall within the scope of each.

4.3. Individual level conceptions of entrepreneurship

As the unit of analysis in entrepreneurship theory becomes refined toward the individual level, the type of economic analysis also shifts. This shift has been reflected in disputes over the appropriateness of various economic theories for entrepreneurship that results in such demarcations as expressed by Endres and Woods (2006) between the neoclassical, Austrian and behavioral economists. I argue that these differences are paradoxical in the sense that none in isolation can be explained without reference to the other. What is necessary then is to carry through the logical connections, keeping objectives consistent between the macroeconomic levels of analysis and the actions of individuals at the microeconomic level.

A group of Austrian economists² distinguished themselves by proclaiming that entrepreneurship centered on human action influenced by the conditions of a market economy (Gunning, 1997). In line with the discussion above, the Austrian school of thought argued that the entrepreneur served to restore the balance between supply and demand as opposed to disrupting the market through the intrusion of innovation. However, the emphasis by this group on the human element laid the path for alternate explanations of the economic model including evolutionary and behavioral economics.

Evolutionary economics attempts to link macro and micro economic explanations. McKelvey (1998) suggests that this field of economics is well positioned to account for the actions of individuals or individual firms while acknowledging that general patterns of behavior emerge from within groups. However, evolutionary economics also positions itself as endogenous to the market, assuming economic behavior is governed by existing market forces. For instance Buenstorf (2007) locates his evolutionary economic analysis of opportunities within the market process and avoids pre-existing exogenous factors. This assumes that human action deals within the boundaries defined by existing firm and market interactions. However, in line with an economic growth perspective some researchers have started to use evolutionary economics as a means to model the survival

¹ Despite a shift in focus during Schumpeter's later years which resulted in a demarcation between his early thinking, referred to as Schumpeter I, and his later approach, known as Schumpeter II (Granstrand and Alänge, 1995), Schumpeter did remain true to his early theoretical ideas and continued to argue distinctions that isolated the entrepreneur and enterprise to economic development and introducing market disruption (Schumpeter, 1954).

² Cheah characterized and grouped the three economists, Ludwig von Mises (1881–1972), Friedrich von Hayek (1899–1992) and Israel Kirzner (1930–) to represent the Austrian school of thought.

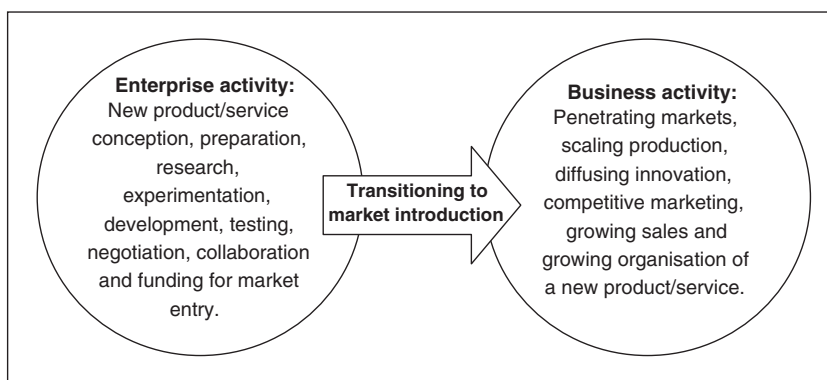


Fig. 2. The enterprise and business market relationship.

and exit of firms working within the dynamics between the opposing equilibrating and disequilibrating forces to determine growth rates (Grebel et al., 2004).

Behavioral economics performs a different function within economic analysis as it attempts to account for the psychophysical elements of human decision making and judgment (Camerer and Malmendier, 2007). It also attempts to explain how the micro level influences macroeconomic outcomes and is also generally applied within the confines of maximizing agents and equilibrium concepts (Minniti and Lévesque, 2008). Notably, Schumpeter's theory of economic development stands in stark contrast to both evolutionary and behavioral economics by avoiding enclosure within the boundaries of the neoclassical economic market model. His entrepreneur is not endogenous or contained within the market process but operates outside of the market as an exogenous influence by introducing new dynamics into the market dynamics.

Recently, Sarasvathy (2008) proposed effectuation as a theory to explain the entrepreneurial process and introduces effectual economics as a way to study entrepreneurship as a science of the artificial. This theory, when considered in the context of the economic distinctions proposed in this article helps to complete the behavioral distinctions at the individual level and draws a link to entrepreneurship learning and education.

Sarasvathy argues for a fundamental difference between entrepreneurial and managerial thinking where the former is based upon effectual reasoning and the latter on causal. Sarasvathy (2005) also included strategic thinking as a third dimension arguing that creative causal reasoning is its underpinning. This proposition by Sarasvathy conforms neatly to the activities of individuals and teams contributing to different economic performances and provides the grounding for connecting three different forms of individual entrepreneurial activity (effectual, causal and creative causal or strategic) to economic performances.

Building from this position, I argue that an entrepreneur (and their team) who is driven by effectual reasoning will tend to be comfortable in the economic development function seeking innovation, working with uncertain outcomes in uncertain contexts and will comfortably work with the variety of means at hand. In essence effectual entrepreneurship is focused on the application development of new technologies and approaches to market problems creating market ready solutions and innovations for new venture opportunities. The effectual entrepreneur is less concerned with the constraints of existing market and industry dynamics which later requires strategic approaches to develop the business model. Such entrepreneurial types are deeply intrigued by innovation, are relatively fewer in number and through their activities they create the foundations for new businesses and industries performing a development function in an economy.

The entrepreneurial team led by causal reasoning will instead seek arbitrage types of opportunities and tend to coordinate known means to meet defined market objectives with semi-certainty (market and competitor behavior is not entirely predictable but both means and objectives are certain) to contribute to economic productivity functions. The causal entrepreneur may be characterized as fiercely competitive, seeking to outdo, outmaneuver and outperform the established market players with new market entries that re-position the market dynamics, leveraging arbitrage opportunities and improving the market productivity.

The creative causal entrepreneur is the strategist who will be at home with a team in the expansionary economic growth role where survivalist behaviors are required when working with identifiable and available means to produce several strategic alternative means and the methods to meet specific market objectives. The strategic entrepreneur will re-think, re-position, re-design and re-deploy resources and capabilities to establish business models that disrupt or re-orientate existing markets and industries. This entrepreneurial type rapidly deploys the new market entry into the existing market dynamics, expanding and exploiting market opportunities to contribute to growth in an economy. The working context is semi-uncertain, as how the ends will be achieved remains unclear, but the objective of market entry and position is fixed and clear. Table 2 summarizes the propositions by Sarasvathy and places them into context of economic objectives.

5. Grounding the theoretical position in policy practice

To elaborate the argument of this article, the Australian government education policy environment can provide a useful example. Policy in Australia is recognized as being strongly influenced by a culture of economic thinking (Marginson, 1993;

Table 2

Individual behavior and economic objective context.

Form of reasoning	Entrepreneurial distinctions		
	Effectual	Creative causal	Causal
Behavior	Innovation seeking	Survival seeking	Arbitrage seeking
Target outcomes	Creating an opportunity for market entry	Securing market position	Superior market performance
Working context	Uncertainty, developing means for unknown ends	Semi-uncertainty, managing variety of means for identified ends	Semi-certainty, managing known means to achieve known ends
Proposed economic objective	Development	Growth	Productivity

Meredy, 1998; Perren and Jennings, 2005). Australian policy-making and implementation is achieved with the aid of designated departments. These departments liaise with parliamentary members, invite expert reviews and reports and consult with varied stakeholders to support government objectives with formal policy construction, planning and implementation. The departments also form part of the public channel of communication of the Government's policy initiatives. Therefore the departments mediate between the cultural rationality of government, expressed by Foucault (1990), and the formal actions to deliver upon that rationality. The context of changing Australian governments, their different education policies and the shifting associations between departments and the stakeholder relationships are instructive for this research.

The conservative Australian federal government, led by John Howard, during the period 2001 to 2006 made explicit links between innovation and economic development through its 'Backing Australia's Ability' policy (Commonwealth of Australia, 2001). This overarching policy statement claimed that the Government believed 'that innovation—developing skills, generating new ideas through research, and turning them into commercial success' was the key to Australia's prosperity. In 2004, the Howard government reconfirmed its ten year commitment to this policy by both extending and enhancing the programs, initiatives and funding (Commonwealth of Australia, 2004).

By contrast, in 2007, the Australian population elected an alternate government into office, led by Kevin Rudd, replaced later by Julia Gillard. The principal policy position of this new government re-focused innovation from one of an economic development agenda – centered on new skills and ideas and turning them into commercial success – to one which emphasized productivity (Commonwealth of Australia, 2009). The impact this can have on an entrepreneurship education policy becomes apparent when one learns that the department charged with leadership in education in the former government was re-named by the new government from the Department of Education, Science and Training (DEST) to the Department of Education, Employment and Workplace Relations (DEEWR). Innovation, science, technology and commercialization issues were effectively shifted away from the education portfolio and placed instead with the Department for Industry, Innovation, Science and Research (DIISR). This change does not at all suggest that innovation became more or less important but it did place a wholly different emphasis on the innovation agenda from one integrated with the education sector to one intertwined with the contemporary business sector and existing market productive systems.

To exhibit the influence of this change, research conducted during September 2006 explored the DEST website of the Howard conservative government to determine the extent that education policy engaged with issues of enterprise and entrepreneurship. At that time it was readily apparent that policy for entrepreneurship education featured in both the science and technology sectors of higher education while enterprise education was directed toward the secondary school system (O'Connor, 2009). Furthermore, these concepts were linked either explicitly or tacitly to factors of economic development.

A similar search conducted in October 2011 of the DEEWR site³ reveals that the website for the once prominent Enterprise Education for secondary schools now only contained a definition of enterprise education. Most other found references were connected to either social or indigenous enterprise initiatives. If one further searched the website of the responsible department for innovation, DIISR, for enterprise or entrepreneurship education, as one may expect, no results were returned. This shift in government policy focus had a significant and negative influence on entrepreneurship and enterprise education policy with respect to targeting economic development outcomes. The innovation agenda shifted focus to: increasing university research outcomes and participation, doubling the level of collaboration between universities and industry, growing the number of students undertaking higher degrees by research and increasing industry participation in innovation and research (Department of Innovation, Industry, Science and Research, 2011). In this mix the education policy in the Schumpeterian sense of economic development, exogenous to market dynamics, is gone and is replaced instead with an education policy for new knowledge production (rather than the enterprise of commercializing new knowledge), social inclusion and welfare objectives. Furthermore, entrepreneurship education is left out of the innovation policy and replaced with the market productivity initiatives that engage existing industry and business sectors in innovation.⁴

³ The 2007 government was re-elected in 2010 as a minority government holding power only with the support of independent members but no wholesale changes have been made to the education policy environment.

⁴ As this article was being finalized a new initiative by the government still led by Julia Gillard re-joined education with the innovation portfolio in a reorganization of departments.

The framing of the current Australian policy agenda may assist to locate social entrepreneurship in an economic agenda and aid in refining the definition and understanding of its role in an economy. According to the DEEWR website '[s]ocial enterprises deliver targeted social or community benefits using traditional business principles. Market-based, social enterprise activity is increasingly identified as an innovative and effective model for achieving social change, including social inclusion' (Department of Education, Employment and Workplace Relations, 2009). This view reflects the social innovation perspectives proposed by Nicholls (2010) and exposes an aspect of the government's economic agenda not covered in the development, growth and productivity set of objectives outlined above. Therefore in the following section the issue of a social entrepreneurship policy agenda is discussed with respect to economic purpose.

5.1. The role of social entrepreneurship in an economic policy agenda

The observed part shift in enterprise and entrepreneurship education to a social agenda in the Australian policy setting raises the question of where social entrepreneurship may fit into the economic spectrum. Social entrepreneurship is claimed to have an important role (Christie and Honig, 2006) in an economy, in particular for wealth creation (Thompson et al., 2000) and local development and poverty reduction (Peredo and Chrisman, 2006). Social entrepreneurship has also become an established concept in the area of business (Peredo and McLean, 2006), and with its meaning not completely understood (Thompson, 2002), it still remains in early development (Mair and Marti, 2006; Teague, 2006). In all, it is argued that there is a lack of construct legitimacy and social entrepreneurship's theoretical content and boundaries are still undefined (Short et al., 2009) which makes it difficult to legitimately integrate social entrepreneurship into an economic agenda.

The discourse of social entrepreneurship research has largely been grounded by first, studies of the social entrepreneur, and second, the community and cooperative social organizations that emulate enterprise and commercial business (Nicholls, 2010). A third approach adopts a social innovation perspective that proposes 'social entrepreneurship as being a process of change in the delivery of public goods and social/environmental services' (Nicholls, 2010 p. 626). This third perspective moves into a systems approach and 'argues that market failures in public and environmental goods can only be addressed by systems change rather than a socialization of business' (Nicholls, 2010, p. 626).

By adopting a social entrepreneurship policy agenda the aim is to increase the utility of economic and market driven solutions to social issues. Utility in economics is generally referred to as the ability of a good or service to satisfy a user (Bannock et al., 2003). I propose that by adapting this view to the social entrepreneurship context economic utility can be defined as the ability of an economic model to extend to the provision of goods and/or services that ultimately satisfy social needs. For instance, in the Australian case, establishing trading businesses in Indigenous communities as a means to relieving welfare dependence and creating financial independence, dignity and self-sustaining Indigenous communities is utilizing an economic model to solve a social problem. In this way the application of an economic model will increase the utility of economics to solve a pressing social issue. The activity in this case assumes the lack of a market and is therefore exogenous to the existing market dynamics, requires work to develop a formal business activity and is therefore an enterprise that requires an entrepreneur working toward an unknown end with a variety of means which is therefore in need of effectual reasoning until the business objective is clear at which time the work becomes strategic.

This double bottom line accounting (using economic and social metrics) reflects the objectives of social entrepreneurship and an increased utility of economic models. However regrettably, matters of economic utility are often avoided with respect to explaining or understanding entrepreneurship as this perspective tends to complicate the analysis of economic actor behavior (Alvarez and Barney, 2004). As social entrepreneurship emerges as a particular and discreet research area, the analysis provided in this paper suggests that scholars will no longer be able to avoid examining the issues of economic utility when confronting the social entrepreneurship context.

As a result of first, the theoretical enquiry of the literature and then the empirical grounding of these ideas in a policy case study, four distinct objectives in terms of economic policy can be identified which impact upon the formulation and delivery of entrepreneurship education. Table 3 draws together the behavioral distinctions within the context of the different economic objectives and provides the conceptual grounding for the remaining sections of the paper.

In Table 3 the four distinguishing economic objectives are connected to individual entrepreneurial characteristics in terms of the reasoning necessary for an entrepreneur to potentially contribute to the specific economic objectives. The table is further divided into three levels to indicate the different levels of analysis. The top two rows place the analysis in macroeconomic terms with respect to objective and market context; either endogenous (within) or exogenous (outside of) the existing market dynamics. The shaded three middle rows indicate the organizational level of either enterprise, transitional or business activity and the objectives of these organizational types; social change, innovation, survival or arbitrage. The teams within these different forms of organization are also oriented toward a different task; to explore market opportunities within uncertain contexts, experiment with business models to create sustainable value in semi-uncertain new market contexts or to exploit and coordinate arbitrage opportunities in semi-certain existing market contexts.

6. Joining the dots between entrepreneurship education and economic policy

Acs (2008) points out that raising entrepreneurial competence is a main policy issue for governments seeking growth outcomes. The OECD (2011) report on skills for innovation and research suggests that government policy needs to pay more attention to the skill development and the flexibility of those in academic careers. Furthermore it claims that a broad range of skills, including 'soft skills', will become an increasingly important contribution to innovation in a nation. The OECD report also

Table 3

Units of analysis and behavioral relationships.

Unit of analysis	Behavioral distinctions			
Economic objective	Utility	Development	Growth	Productivity
Market context	Exogenous	Exogenous	Expansionary	Endogenous
Firm level objective	Seeking social change	Innovation seeking	Survival seeking	Arbitrage seeking
Organisational form	Enterprise	Enterprise	Transitional (enterprise to business establishment)	Business
Team or group task	Exploration and uncertainty bearing	Exploration and uncertainty bearing	Experimentation and value creation	Exploitation and coordination
Individual form of reasoning	Effectual	Effectual	Creative causal	Causal

argues that entrepreneurial skills and capabilities are an essential element for an innovation system but acknowledges that there is no strong evidence that correlates entrepreneurship education with any subsequent performance. [Shane \(2008\)](#) also emphasizes that education for would-be entrepreneurs needs to be aimed at making them more successful in their activity rather than just be encouraging of their decision to start a business. The thrust of this present article is to argue that, in order to establish an evidence base, the relationship between entrepreneurship education and policy objectives requires greater and closer attention. [Fig. 3](#) summarizes the four policy objectives and demonstrates the relationship between each that may account for variations in entrepreneurial behavior and provides a basis upon which to focus entrepreneurship education drawing upon the different sites for entrepreneurship education:

- Economic development drawing upon innovation through the knowledge sector (universities and other research intensive organizations) to create new market and new industry platforms. Entrepreneurship education in this field would be designed to facilitate effectual and strategic entrepreneurs and the curricula would emphasize radical innovation and the models of entrepreneurial process that deliver innovation, new ventures and disruptive business models.
- Economic productivity focusing on innovation through existing firms and existing markets to improve market efficiency. The form of entrepreneurship education in this context would be adapted to causal and strategic entrepreneurs focusing on competitive market places, strategic positioning and incremental innovation as a means to re-position, re-deploy and develop new resources and capabilities. Existing firms and entrepreneurs within existing firms (often referred to as 'intrapreneurs'—see [Pinchot and Pellman, 1999](#)) would be primarily targeted and strategic change objectives with a view to improving the market productivity would assume a higher priority than new venture outcomes.
- Economic utility that targets innovation through the social sector to transition social welfare activity to market driven models. The models of entrepreneurship in focus for education in this sector will elaborate a mission driven perspective of social change and positive social outcomes drawing heavily upon hybrid models of economic and social business. Effectual and strategic entrepreneurs would be expected among the student population and emphasis would be placed on new ventures that disrupt and replace social welfare and government support programs.
- Economic growth whereby the informal activities from any of the three economic areas give way to formalization and being transformed into active contributors to the dynamics of an economy (represented by the arrows leading back out to the sectors and the different arrow sizes suggesting varying return to the sectors). It should be noted however that economic growth occurs as a consequence of activity in the other three areas. Nevertheless, at the human actor level, the skills, knowledge and experience of growing a business that is actively contributing to economic growth are categorically different to the challenges and objectives of working with enterprise for economic development, or utility, or with business for achieving greater productivity. This form of entrepreneurship education would be almost entirely strategic in its nature with a focus on how new firms or firms re-inventing their market position survive and thrive in hostile market and industry dynamics.

The odd shape of the figure represents the proposition of different sizes of relative contribution to overall economic performance from each sector. In economic terms, the corporate sector, which includes all small, medium and large formalized businesses, is the sector that can easily attract the most policy attention from government and service provision from education institutions. However, by superimposing the various economic objectives with the relevant types of entrepreneurship, targeting policy and education outcomes to these different segments of activity makes evaluative research and policy decisions more readily transparent.

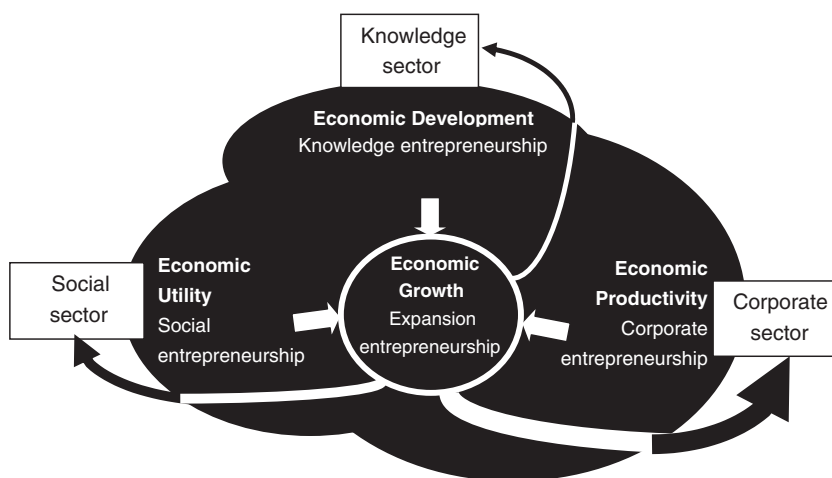


Fig. 3. Relating sectors to the economic objectives.

7. Moving toward a research agenda

The above discussion makes apparent the diversity of thinking about entrepreneurship as a phenomenon. Some economists, (as well as psychologists and sociologists) argue that entrepreneurship is associated with the behaviors of individuals at the micro-level. Many more affix entrepreneurship to the operations of firms. The policy concern however relates to the impact of entrepreneurship at the macro-levels of national and/or regional economies. Davidsson (2005, p. 6) supports this view when he argues that the entrepreneurship phenomenon is a micro-level behavior that has 'hugely important macro-level implications'.

The inquiry conducted by this research suggests four propositions for policy that may prove useful for directing entrepreneurship education toward more defined practices at the micro level to contribute to macroeconomic purposes. The theoretical nature of the research implies the need for further testing of these ideas and, therefore, provides the foundation for a specific research agenda.

The first proposition stems from the problematic definition of purpose for entrepreneurship education. Stevenson and Lundström (2002) outlined two schools of thought with respect to government policy on entrepreneurship education. The first links entrepreneurship and enterprise to a 'human attribute' and this was found to be the dominant thinking of the Australian conservative government's education policy (O'Connor, 2009) during the Howard years. This represented a divergence of thinking from other governments who instead favored an 'economic school' of thought (Stevenson and Lundström, 2002) when conceiving entrepreneurship education policy.

The 'human attribute' concept of entrepreneurship education has tended to manifest as enterprise education which generally has a preoccupation with developing the enterprising 'actor' (Hytti and O'Gorman, 2004). However, Hytti and O'Gorman (2004) also note that the objectives of specific programs may vary dramatically and in practice it may mean much more; a point that seems to resonate with Neck and Greene's (2011) distinctions between four primary world views on entrepreneurship education.

In Australia, during the conservative Howard government years, enterprise education was targeted toward the secondary school system with an Enterprise Education program. According to a report on the program the 'enterprise education [was] about broadening career possibilities and options, rather than focusing students on a specific job pathway' (Erebus Consulting Partners, 2004, p. 87). This approach would seem to adopt the world view of method to entrepreneurship education being about teaching 'through' entrepreneurship.

If enterprise education is not considered as an education directed toward a specific career or economic work it instead tends to identify with a general form of education with no defined career roles or pathways. By recognizing that enterprise is a distinct activity in an economy, exogenous to market dynamics, characterized by informal organization, innovation seeking and an actor with effectual reasoning that contributes in various ways to economic development and utility, education can be framed for the legitimate activity involving a specific set of social processes that advance the economic well-being of a community in defined ways. Therefore, the first proposition suggests that government policy needs to maintain the notion of the entrepreneur and their enterprise to describe its economic concern and consider enterprise as a work construct, in informal settings that has a specific goal of creating ventures that may affect either economic development or utility.

Proposition 1. Policy makers should differentiate the economic development and utility functions of the entrepreneur and enterprise from the business owner/manager and business with its productivity function.

By first differentiating the entrepreneur and their enterprise from the business owner/manager and the productive activity of business, the question of where enterprise is sited within an economy comes into focus. As a policy instrument, entrepreneurship education can be co-located in different sectors of the economy which in turn may lead to more strident entrepreneurial activity being directed toward its associated economic outcome. For instance during the Australian Howard government years emphasis

on entrepreneurship education was not only directed toward secondary schools but also to the university science and technology sector (O'Connor, 2009). The objective was to create economic development outcomes from new knowledge. By contrast the Rudd/Gillard government located the entrepreneurship concept to emphasize economic utility objectives by focusing on social enterprise to address indigenous and social needs of the economy (Department of Education, Employment and Workplace Relations, 2009).

This leads to the second proposition which suggests that in order to achieve specific economic outcomes entrepreneurship education needs to be co-located with the requisite sector that will drive that particular economic objective. Therefore, government policy will need to direct programs and initiatives toward the appropriate sectors to achieve the relevant economic outcome.

Proposition 2. *Policy-makers should design entrepreneurship education policy that fosters the introduction of programs for entrepreneurship in the knowledge, corporate or social sectors to achieve economic development, productivity or utility respectively.*

In order for entrepreneurship education to contribute to economic outcomes, there must be some connection between it and the formal activity that provides potential to achieve contributions to economic growth. This places entrepreneurship education, in some sense, within the realms of vocational education and, as discussed in a previous section, the education sector acknowledges that the formation of a business (particularly education 'for' entrepreneurship) is one focus of entrepreneurship education. Notwithstanding that other forms of entrepreneurship education have a place and function (education 'about' and 'through' entrepreneurship for instance) that is useful for those who wish to assist and contribute to the creation of new ventures without necessarily being the entrepreneur. The potential is for policy to explicitly position entrepreneurship education with formal business formations derived from enterprise in the knowledge, social or commercial sectors.

In the Australian case, the value of connecting business activity to learning that benefits the national economic system can be readily observed at the policy formation and application levels. For instance during the formation of the Rudd/Gillard government's innovation policy platforms, the preparatory report for government policy, *Venturous Australia*, stated that: 'Innovation is not just about initial discovery; it is also about learning—learning by doing, learning by applying technology and equipment and learning by interacting with others' (Cutler and Company Pty Ltd., 2008 p. 33). The follow-on policy document of the Rudd/Gillard government picked up this idea and claimed: 'With [the importance of business innovation] in mind, the Australian Government will... [i]mprove innovation skills and workplace capabilities, including management and leadership skills' (Commonwealth of Australia, 2009, p. 6). Regrettably though the policy document does not address specifically issues of entrepreneurship education; instead, under the government's commitment to skills development, increasing opportunities for research qualifications and career pathways for researchers is emphasized that effectively disconnects it from business formation, applications and subsequent growth. Propositions 3a and 3b therefore addresses the need for policy to make explicit connections between entrepreneurship education and formalized business activity and is offered in two parts. The first part emphasizes the need for entrepreneurship education to meet the transitional skills between the market introduction of ideas and the survival and subsequent growth of the venture that will yield an expansionary effect on the economy. The second part makes clear the need for entrepreneurship education for co-contributors to entrepreneurship from those sectors of the economy that contribute to economic growth outcomes such as commercialization officers, new venture and innovation consultants, funders of new ventures, legal and other advisors to new ventures and indeed policy-makers and government regional development agencies.

Proposition 3a. *To influence economic growth, policy-makers should support and encourage the provision of entrepreneurship education as a means to connect new ideas, technologies and new applications of knowledge to business formation and expansion.*

Proposition 3b. *To influence economic growth, policy-makers should support and encourage the provision of entrepreneurship education to entrepreneurship co-contributors who assist and facilitate the connection of new ideas, technologies and new applications of knowledge to business formation and expansion in relevant sectors of the economy.*

In order to connect new ideas, technologies and new applications of knowledge to business formation and expansion, I argue that the type of education needs to adapt to the specific intent of the distinct activities in each entrepreneurship education site. In terms suggested by Sarasvathy (2005), the focus of entrepreneurship education will need to alter depending upon the targeted stage of development between generating and creating ideas, formalizing and creating a business venture, expanding and growing market penetration and the role an individual may play in entrepreneurship. At the informal end of the spectrum (creating and developing ideas for economic development) the major task is to imagine and define new ends given the range of means at the entrepreneur's disposal (innovation seeking) within the specific knowledge, social or commercial site for entrepreneurship education. At the transitional stage (establishing and/or expanding a business venture for economic growth), informal activity becomes formalized and therefore the nature of entrepreneurship education becomes more objective and the task becomes a manipulation of means to achieve a more specific end; the survival and prosperity of a new formal business entity. With the formal business entity established both the objective and the means are fixed and causal logics take over with an efficiency improvement focus for the entity (market penetration with increased productivity). To ensure sustained advancement of each formal entity, the firm must then re-engage to some extent with the informal and transitional entrepreneurship activities meaning that effectual and creative causal reasoning needs to re-surface.

In teaching entrepreneurship, *Sarasvathy (2008, p. 231)* refers to 'two toolboxes – causal and effectual – and how to use them effectively in the creation of new ventures'. I argue, in accordance with *Sarasvathy (2005)*, that in fact there are three tool boxes used by entrepreneurial actors with strategic reasoning being the transitional toolbox needed to bridge between the creation of a market idea and managing the business and efficient delivery of the marketed product/service. However, the management of a business for optimal efficiency is not the purpose of entrepreneurship education and therefore causal logic will only be explicit to the extent that it is necessary for a student to understand the strategic objective in creating a new venture. As *Sarasvathy (2005)* explains, in creating a new venture a number of problems are encountered which require causal reasoning and decision making; however as designers of a new venture an entrepreneur has a range of means available to them and therefore an emphasis should be placed on effectual and creative causal reasoning to arrive at strategic decisions for market entry and not just managerial decisions. Once these strategic decisions are in place it then becomes the task of management to work within the means made available by the strategic decisions to optimize the productivity of the venture. This position is the foundation for Proposition 4.

Proposition 4. *Policy-makers should ensure that entrepreneurship education emphasizes effectual and strategic reasoning that optimizes sustainable business creation and survival over causal reasoning that optimizes business productivity.*

8. The implications for entrepreneurship education: refining the objectives

The importance of entrepreneurship to a nation is a long-held viewpoint. Perhaps for this reason entrepreneurship has attracted a broad range of interests and at least one perspective considers that it is a societal phenomenon (*Davidsson, 2003*). If this is the case, entrepreneurship education may also be held accountable for a diverse range of ambitions that dilute any one intended effect. In turn, public policy that holds intent to make substantial improvement in a nation's economic well-being, through say innovation, may find that entrepreneurship education (if it is employed) fails to achieve its economic objectives because the education programs and initiatives are enacted in the wrong place by those with misaligned assumptions or a diversity of opinion about what entrepreneurship is and does. While many alternate aims may each be worthwhile and appealing, it is essential that the ambitions for any particular entrepreneurship education are clear and distinct for reasons that include not only the need to construct an appropriate evaluation framework, but also the need to maintain an integrity that will sustain entrepreneurship as a legitimate field that has genuine purpose (*Matlay, 2006*).

In this article an alternate concept is offered that references entrepreneurship education to economic and market level outcomes rather than simply business start-up or developing entrepreneurial attitudes and intentions. This suggests a definition for entrepreneurship that describes it as a social process involving the efforts of individuals in activities that ultimately have economic implications at a regional and/or national level. The primary economic foci are fourfold; economic development, productivity, utility and growth. Entrepreneurship careers, when considered in this way, take on new meaning and raise the issue of career education pathways for those who wish to play a role within the activity of building new economic contributions. This includes all those who contribute to the creation, development and introduction of market disruptive goods and services (*Schumpeter, 1961 [1934]*) but who are not necessarily attracted or predisposed to the idea of starting and/or owning their own business.

The perspective outlined in this article and represented by *Table 3* suggests that the sectoral site of entrepreneurship education, the focused content with respect to organizational form and team objectives and the imparting of different forms of reasoning at the individual level are all critical to establishing inputs into achieving specific economic outcomes. For instance, in the Australian case, the Howard conservative government attempted to use entrepreneurship education as an explicit instrument. This involved first developing Enterprise Education for secondary schools as a broad-base, platform knowledge for economic contribution. Second, research students in the higher education 'knowledge' sector were targeted as a means to stimulate economic development. However, to achieve specific outcomes from this approach it would mean that specific world views for entrepreneurship education should be dominant in each form of delivery. In the Australian case, adopting an entrepreneurship education based upon entrepreneurial method would be highly suitable for enterprise education in secondary schools to impart a fundamental knowledge about the skills through entrepreneurship. In the higher education sector employing the process and cognitive world views for entrepreneurship education would be more appropriate to prepare individuals for entrepreneurship if these world views were framed in a way to assist would-be entrepreneurs to be more successful.

By contrast, the later alternate Rudd/Gillard government targeted entrepreneurship education toward the social and disadvantaged sectors of the community to achieve economic utility outcomes which would suggest again the adoption of process and cognitive world view practices for entrepreneurship education. At the same time, espousing an economic productivity agenda, the Rudd/Gillard government directed innovation policies toward the corporate sector (small, medium and large businesses). The focus on this sector though omits any use of entrepreneurship education and instead relies on other devices in an attempt to link new knowledge to the productivity agenda of existing businesses. By doing so, I argue that, while entrepreneurship education for economic development has been all but lost, there is also an opportunity to utilize entrepreneurship education to discover new ways and market mechanisms that will impact the productivity policy agenda through delivery of a combination of process, cognitive and method entrepreneurship education practices.

Block and Stumpf (1992) proposed long ago that entrepreneurship encompasses a variety of disciplines and professions. This position embraces, for instance, the idea of the entrepreneurship career as prospected by *Politis and Landström (2002)* that suggests that an informal investor occupies an entrepreneurial career. The limitations of this article prevents the full exploration

of different forms and theories of entrepreneurship education although a future research activity could fully explore the theories and anchors provided by Béchard and Grégoire (2005) and/or the world views of Neck and Greene (2011) to examine the relevance and applicability to different student audiences from different sectors and the application of different practices of entrepreneurship education world views.

Extending this thinking further, entrepreneurship as a team activity (Ensley et al., 2000), rather than the sole responsibility of an individual entrepreneur, becomes much more into focus. Although the entrepreneur may play the role of leader, the social dynamics enveloping the entrepreneur are also likely to be significant in bringing entrepreneurship to life. Following this line of thinking, in order for entrepreneurship education to play a specific role in socioeconomic outcomes it is also argued that it must be explicitly linked and integral to the entrepreneurship dynamics of the area or region within which the program is embedded.

The emphasis of this article has been given to equipping would-be entrepreneurs to implement their trade for the purpose of achieving economic objectives. This vocational view of entrepreneurship ignores the knowledge domain perspective whereby the subject matter of entrepreneurship becomes the purpose of education to equip new scholars, researchers, policy-makers, corporate or community leaders with an in-depth understanding of the social and economic dynamics within which entrepreneurship emerges and how it influences and delivers change to socioeconomic systems. In common with other career pursuits there is a place for learning both the practice and theory of entrepreneurship and different education providers may have different objective purposes. From curricula and pedagogical perspectives simply adopting any one world view of entrepreneurship education or adopting a practice or theory stance is likely to provide a narrow conception of entrepreneurship. In practice, entrepreneurship education will include elements of different world views and different degrees of practice and theory depending upon the specific education intent.

Arguably, the complexities of entrepreneurship and entrepreneurship education outlined in this article play out in the framing of public policy and education programs. Without a context of theoretical clarity and with differing conceptions about the specific unit of analysis, the crafting of entrepreneurship support through policy and education could reasonably be expected to be very complex and contested. The aim of this research is to build a policy framework that can anchor entrepreneurship policy and education with design concepts that will deliver macro-level socioeconomic outcomes. Other future research challenges will be to apply this framework to longitudinal studies to gather evidence of the effectiveness of entrepreneurship education offered in different forms and located in different sites and explore the influence of government rationality and discourse on shaping entrepreneurship education policy and positioning it within different economies.

9. Conclusion

Government interests in entrepreneurship education based upon economic conceptions seem to be increasing. However, finding evidence that entrepreneurship education successfully achieves specific economic outcomes has proven difficult and it is argued here that this is at least partly because of a lack of consistency in understanding of entrepreneurship with respect to its economic purpose. In addressing this problem, governments have a role to play in giving entrepreneurship education a consistent objective and influencing its purpose and orientation.

If distinctions can be made at the level of markets and macroeconomics it is worthwhile considering whether these distinctions can flow through to lower order units of analysis. It is clear that there is lack of agreement in the theoretical framing of entrepreneurship and furthermore, both conceptually and in practice, the relationships between entrepreneurship and the broad concept of business are also often blurred. In order to examine the stability of these concepts within the broader literature, this study returned to Schumpeter's differentiation of the activities of an enterprise (organization that is responsible for economic development through innovation and the creation of new markets and new market dynamics) from that of the activities of a business (organization that is responsible for economic growth and the efficient production and distribution of goods and services for existing market dynamics).

To arrive at a policy framework it required an exposition of the economic theories and confronting the diversity of thinking portrayed by different economic theorists. Largely, economists have argued the differences but little has been done to reconcile the paradox that the differences expose. Indeed Endres and Woods (2006) declared that through the behavioral lens there was no all-encompassing single theory that could account for the different conceptions of entrepreneurship. Rather than attempt to elaborate a single theory, this research has taken a different approach by acknowledging the differences and placing them into context relative to the variances across each unit of analysis. The result is a conception of entrepreneurship that directs attention toward different economic outcomes and challenges the dominant association of entrepreneurship with business start-up by superimposing specific economic purposes.

This approach has implications for entrepreneurship education in the sense that it broadens the focus beyond that of the entrepreneur and places an emphasis on the types of ventures that influence specific economic outcomes and the range of individuals that contribute to achieving those outcomes. It also provides purpose and context for the different forms of entrepreneurship education across the spectrum of four world views (Neck and Greene, 2011) and focuses on the different forms of reasoning (Sarasvathy, 2005, 2008) that are adopted at different stages of a new venture development. Each of these conceptions of entrepreneurship education can be positioned within the sphere of activity that contributes to specific economic outcomes.

A major contribution of this article is articulating specific economic purposes for entrepreneurship education and making explicit associations between multiple levels of analysis. It does not attempt to narrowly define entrepreneurship to fit into any one economic framework but instead it accepts the diversity of explanations found within economics that embrace the entrepreneur. The advantage of this approach is that it provides a frame of reference through which policy-makers, educators and

researchers can appreciate the interactions from micro to macro-level outcomes. However, it also acknowledges that maintaining these distinctions in theory and in practice can be problematic.

The theoretical conception of this article and its analysis through the frame of Australian policy also imposes some obvious limitations. First, there is a need to empirically test the propositions raised. This will require careful research design and cooperation between governments, education providers and researchers to establish experimental designs and the means to measure the contribution of the different forms of education to economic outcomes; a task that may be complex and complicated by stakeholder diversity. Further, the economic context within which these theoretical conceptions might be applied may limit the applicability of the theory. In a relatively socially and economically stable nation such as Australia the distinctions drawn here may be to varying degrees apparent but in countries that suffer political, social and economic disturbance defining the sites for entrepreneurship education that may foster increased utility, development, productivity and growth objectives may be at best difficult and at worst nigh impossible. Structural limitations may also be encountered within any particular national jurisdiction meaning that the responsibilities for policy, education or sectors may not be easily divided or the provision of education in the forms suggested here may not be viable given the relative size of the target sectors or level of development of the business, social or knowledge sector infrastructure.

These points aside, if the theory and practice of entrepreneurship is to advance, rigorous methods will be required to capture and account for entrepreneurship's socioeconomic contribution. It is also becoming increasingly important and urgent for educators within this field to become far more explicit about what they teach, why they teach it and how it can be taught if entrepreneurship is to survive as a viable and valid knowledge domain. This framework for entrepreneurship education is a tentative step in that direction.

Acknowledgment

I gratefully acknowledge and thank the anonymous reviewers and Prof. Devereaux Jennings for their exacting standards and insightful reviews. Their comments and feedback have been most helpful in assisting to provide clarity and refine the argument set out in this paper.

References

- Acs, Z.J., 2008. What is the value of entrepreneurial start-ups to an economy? In: Acs, Z.J. (Ed.), *Entrepreneurship, Growth and Public Policy*. Edward Elgar, Cheltenham, UK, pp. 447–472.
- Acs, Z.J., Armington, C., 2004. Employment growth and entrepreneurial activity in cities. *Regional Studies* 38 (8), 911–927.
- Alvarez, S.A., Barney, J.B., 2004. Organizing rent generation and appropriation: toward a theory of the entrepreneurial firm. *Journal of Business Venturing* 19, 621–635.
- Atherton, A., 2004. Unbundling enterprise and entrepreneurship. *Entrepreneurship and Innovation* 121–127 (May).
- Audretsch, D.B., 2004. Sustaining innovation and growth: public policy support for entrepreneurship. *Industry and Innovation* 11 (3), 167–191.
- Audretsch, D.B., Keilbach, M., 2004. Entrepreneurship capital and economic performance. *Regional Studies* 38 (8), 949–959.
- Bannock, G., Baxter, R., Davis, E. (Eds.), 2003. *Dictionary of Economics*, 7th ed. Penguin Books Ltd., London England.
- Béchar, J.-P., Grégoire, D., 2005. Entrepreneurship education research revisited: the case of higher education. *The Academy of Management Learning and Education* 4 (1), 22–43.
- Bennett, R., Dann, S., 2000. The changing experience of Australian female entrepreneurs. *Gender, Work and Organization* 7 (2), 75–83.
- Berglund, K., Dahlin, M., Johansson, A.W., 2006. Walking a tightrope between artistry and entrepreneurship. The stories of the Hotel Woodpecker, Otter Inn and Luna Resort. AGSE Regional Research Exchange. Swinburne University of Technology, Melbourne, Australia.
- Block, Z., Stumpf, S.A., 1992. Entrepreneurship education research: experience and challenge. In: Sexton, D.L., Kasarda, J.D. (Eds.), *The State of the Art of Entrepreneurship*. PWS-Kent Publishing Company, Boston, MA.
- Bögenhold, D., Staber, U., 1991. The decline and rise of self-employment. *Work, Employment and Society* 5 (2), 223–239.
- Buenstorf, G., 2007. Creation and pursuit of entrepreneurial opportunities: an evolutionary economics perspective. *Small Business Economics* 28, 323–337.
- Caird, S., 1990. What does it mean to be enterprising? *British Journal of Management* 1 (3), 137–145.
- Camerer, C.F., Malmendier, U., 2007. Behavioral economics of organizations. In: Diamond, P.A., Vartianen, H. (Eds.), *Behavioral Economics and Its Applications*. Princeton University Press, New Jersey, USA, pp. 235–290.
- Cassar, G., 2007. Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth. *Entrepreneurship and Regional Development* 19 (1), 89–107.
- Casson, M., 2000. *Enterprise and Leadership*. Edward Elgar Publishing Ltd., Cheltenham, UK.
- Casson, M., 2003. *The Entrepreneur an Economic Theory*, 2nd edn. Edward Elgar Publishing Ltd., Cheltenham, UK. (1982).
- Cheah, H.-B., 1990. Schumpeterian and Austrian entrepreneurship: unity within duality. *Journal of Business Venturing* 5 (6), 341–347.
- Christie, M.J., Honig, B., 2006. Social entrepreneurship: new research findings. *Journal of World Business* 41, 1–5.
- Churchill, N.C., Lewis, V.L., 1983. The five stages of small business growth. *Harvard Business Review* 61 (3), 30–50.
- Commonwealth of Australia, 2001. *Backing Australia's Ability – An Innovation Action Plan for the Future*. Available at http://backingaus.innovation.gov.au/docs/statement/strategy_doc2001.htm accessed 5 June 2005.
- Commonwealth of Australia, 2004. *Backing Australia's Ability: Building Our Future Through Science and Innovation*. Available at http://backingaus.innovation.gov.au/info_booklet/booklet.pdf accessed viewed 1 May 2006.
- Commonwealth of Australia, 2009. *Powering Ideas*. Available at <http://www.innovation.gov.au/innovation/policy/pages/PoweringIdeas.aspx> accessed 16 October 2011.
- Cromie, S., 2000. Assessing entrepreneurial inclinations: some approaches and empirical evidence. *European Journal of Work and Organizational Psychology* 9 (1), 7–30.
- Cutler and Company Pty Ltd., 2008. *Venturous Australia*. Cutler and Company Pty Ltd., North Melbourne, Victoria, Australia.
- Davidsson, P., 2003. The domain of entrepreneurship: some suggestions. In: Katz, J., Shepherd, D.E. (Eds.), *Advances in Entrepreneurship, Firm Emergence and Growth*. Elsevier/JAI Press, Oxford, UK, pp. 315–372.
- Davidsson, P., 2005. *Researching Entrepreneurship*. Springer Science + Business Media, Inc., New York, USA.
- Department of Education, Employment and Workplace Relations, 2009. *Social Innovation Overview*. Available at <http://www.deewr.gov.au/employment/programs/socialInnovation/Pages/default.aspx> accessed 18 October 2010.

- Department of Innovation Industry Science and Research, 2011. Powering Ideas. viewed 18 October 2010, <http://www.innovation.gov.au/innovation/policy/pages/PoweringIdeas.aspx>.
- Endres, A.M., Woods, C.R., 2006. Modern Theories of Entrepreneurial Behavior: A Comparison and Appraisal. *Small Business Economics* 26, 189–202.
- Enslay, M.D., Carland, J.W., Carland, J.C., 2000. Investigating the existence of the lead entrepreneur. *Journal of Small Business Management* 38 (4), 59–77.
- Erebus Consulting Partners, 2004. Enterprise Education, Department of Education, Science and Training, Commonwealth of Australia. Commonwealth of Australia, Canberra, Australia.
- Falk, J., Alberti, F., 2000. The assessment of entrepreneurship education. *Industry and Higher Education* 14 (2), 101–108.
- Fayolle, A., 2004. Value Creation in Changing Student State of Mind and Behavior: New Research Approaches to Measure the Effects of Entrepreneurship Education. Available at http://www.kmu.unisg.ch/rencontres/RENC2004/Topics/Fayolle_Renc_2004_Topic_D.pdf accessed 10th Jan. 2005.
- Foley, A., Griffith, B., 1998. Education, training and the promotion of high quality entrepreneurs in the Republic of Ireland. In: Scott, M.G., Rosa, P., Klandt, H. (Eds.), *Educating Entrepreneurs for Wealth Creation*. Ashgate Publishing Ltd., Aldershot, England, pp. 80–93.
- Foucault, M., 1990. Politics and reason. In: Kritzman, L.D. (Ed.), *Michel Foucault: Politics, Philosophy, Culture*. Routledge, London.
- Fritsch, M., Mueller, P., 2004. Effects of new business formation on regional development over time. *Regional Studies* 38 (8), 961–975.
- Galloway, L., Brown, W., 2002. Entrepreneurship education at university: a driver in the creation of high growth firms? *Education and Training* 44 (8/9), 398–405.
- Gartner, W.B., Shaver, K.G., Gatewood, E., Katz, J.A., 1994. Finding the entrepreneur in entrepreneurship. *Entrepreneurship: Theory and Practice* 18 (3), 5–9.
- Gibb, A.A., 1996. Entrepreneurship and small business management: can we afford to neglect them in the twenty-first century business school? *British Journal of Management* 7 (4), 309–321.
- Gibb, A., 2002. In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge. *International Journal of Management Reviews* 4 (3), 233–269.
- Gordon, I., Hamilton, E., Jack, S., 2010. A study of the regional economic development impact of a university led entrepreneurship education programme for small business owners. Lancaster University Management School Working Paper Series 2010/002. Available at: <http://eprints.lancs.ac.uk/31762/>, accessed 1st Nov 2010.
- Granstrand, O., Alänge, S., 1995. The evolution of corporate entrepreneurship in Swedish industry—was Schumpeter wrong? *Journal of Evolutionary Economics* 5 (2), 133.
- Grebel, T., Pyka, A., Hanusch, H., 2004. An evolutionary approach to the theory of entrepreneurship. In: Foster, J., H Izi, W. (Eds.), *Applied Evolutionary Economics and Complex Systems*. Edward Elgar, Cheltenham, UK, pp. 155–180.
- Greene, F.J., 2002. An investigation into enterprise support for younger people 1975–2000. *International Small Business Journal* 20 (3), 315–336.
- Greene, P.G., Katz, J.A., Johansson, B., 2004. Entrepreneurship education (editorial). *The Academy of Management Learning and Education* 3 (3), 238–241.
- Gunning, J.P., 1997. The theory of entrepreneurship in Austrian economics. In: Keizer, W., Tieben, B., van Zijp, R. (Eds.), *Austrian Economics in Debate*. Routledge, London, UK, pp. 172–191.
- Hannon, P.D., 2006. Teaching pigeons to dance: sense and meaning in entrepreneurship education. *Education and Training* 48 (5), 296–308.
- Harrison, R.T., Leitch, C.M., 2005. Entrepreneurial learning: researching the interface between learning and the entrepreneurial context. *Entrepreneurship: Theory and Practice* 29 (4), 351–371.
- Hart, D.M., 2003. *The Emergence of Entrepreneurship Policy*. Cambridge University Press, Cambridge, UK.
- Hegarty, C., Jones, C., 2008. Graduate entrepreneurship: more than child's play. *Education and Training* 7, 626–637.
- Henderson, R., Robertson, M., 1999. Who wants to be an entrepreneur? Young adult attitudes to entrepreneurship as a career. *Education and Training* 41 (5), 236–245.
- Henry, C., Hill, F., Leitch, C., 2005. Entrepreneurship education and training: can entrepreneurship be taught? Part II. *Education and Training* 47 (3), 158–169.
- Hindle, K., 2007. Teaching entrepreneurship at university: from the wrong building to the right philosophy. In: Fayolle, A. (Ed.), *Handbook of Research in Entrepreneurship Education*. Edward Elgar, Cheltenham, UK.
- Hjelm, P.B., Borgman, B., 2004. Geographical concentration, entrepreneurship and regional growth: evidence from regional data in Sweden, 1975–99. *Regional Studies* 38 (8), 929–947.
- Hytti, U., O'Gorman, C., 2004. What is 'enterprise education'? An analysis of the objectives and methods of enterprise education programmes in four countries. *Education and Training* 46 (1), 11–23.
- Jack, S.L., Anderson, A.R., 1999. Entrepreneurship education within the enterprise culture: producing reflective practitioners. *International Journal of Entrepreneurial Behaviour and Research* 5 (3), 110–125.
- Jennings, P.L., Perren, L., Carter, S., 2005. Guest editor's introduction: alternative perspectives on entrepreneurship research. *Entrepreneurship: Theory and Practice* 29 (2), 145–152.
- Katz, J.A., 2003. The chronology and intellectual trajectory of American entrepreneurship education 1876–1999. *Journal of Business Venturing* 18, 283–300.
- Kilby, P., 1971. Hunting the Heffalump. In: Kilby, P. (Ed.), *Entrepreneurship and Economic Development*. The Free Press, New York, pp. 1–40.
- Kirzner, I., 1973. *Competition and Entrepreneurship*. Chicago University Press, Chicago.
- Kitson, M., Martin, R., Tyler, P., 2004. Editorial in honour of David Keeble: pioneer in the study of regional enterprise and entrepreneurship. *Regional Studies* 38 (8), 867–869.
- Klapper, R., 2004. Government goals and entrepreneurship education — an investigation at a Grande Ecole in France. *Education and Training* 46 (3), 127–137.
- Knight, F.H., 1940. *Risk, Uncertainty and Profit*. Boston, Houghton Mifflin Co., London 1921.
- Kolvereid, L., Moen, Ø., 1997. Entrepreneurship among business graduates: does a major in entrepreneurship make a difference? *Journal of European Industrial Training* 21 (4), 154–160.
- Krueger, N., 2000. The cognitive infrastructure of opportunity emergence. *Entrepreneurship Theory and Practice* 24 (3), 5.
- Lee, J., 1997. The motivation of women entrepreneurs in Singapore. *International Journal of Entrepreneurial Behaviour and Research* 3 (2), 93–110.
- Lee, S.Y., Florida, R., Acs, Z.J., 2004. Creativity and entrepreneurship: a regional analysis of new firm formation. *Regional Studies* 38 (8), 879–891.
- Leffler, E., Svedberg, G., 2005. Enterprise learning: a challenge to education? *European Educational Research Journal* 4 (3), 219–227.
- Lichtenstein, G.A., Lyons, T.S., 2008. Revisiting the business life-cycle: proposing an actionable model for assessing and fostering entrepreneurship. *The International Journal of Entrepreneurship and Innovation* 9 (4), 241–250.
- Lüthje, C., Franke, N., 2002. Fostering entrepreneurship through university education and training: lessons from Massachusetts Institute of Technology. EURAM Stockholm 2nd Annual Conference, Stockholm, Sweden.
- Mair, J., Marti, I., 2006. Social entrepreneurship research: a source of explanation, prediction and delight. *Journal of World Business* 41, 36–41.
- Marginson, S., 1993. *Education and Public Policy in Australia*. Cambridge University Press, Cambridge, UK.
- Martinez, A.C., Levie, J., Kelley, D.J., Semundsson, R.J., Schott, T., 2010. Global Entrepreneurship Monitor Special Report: A Global Perspective on Entrepreneurship Education and Training. Available at: <http://www.gemconsortium.org/download/1271392126157/GEM%20Special%20Report%20on%20Ed%20and%20Training.pdf> accessed 14th April 2010.
- Matlay, H., 2006. Researching entrepreneurship and education. *Education and Training* 48 (8/9), 704–718.
- Matlay, H., 2008. The impact of entrepreneurship education on entrepreneurial outcomes. *Journal of Small Business and Enterprise Development* 15 (2), 382–396.
- McKelvey, M., 1998. Evolutionary innovations: learning, entrepreneurship and the dynamics of the firm. *Journal of Evolutionary Economics* 8, 157–175.
- Meager, N., Bates, P., Cowling, M., 2003. An evaluation of business start-up support for young people. *National Institute Economic Review* 186 (October), 59–72.
- Meredith, D., 1998. Corporatising education. In: Dean, M., Hindess, B. (Eds.), *Governing Australia: Studies in Contemporary Rationalities of Government*. Cambridge University Press, Cambridge, UK, pp. 20–46.
- Minniti, M., Lévesque, M., 2008. Recent developments in the economics of entrepreneurship. *Journal of Business Venturing* 23, 603–612.
- Minniti, M., Bygrave, W., Autio, E., 2006. Global Entrepreneurship Monitor 2005 Executive Report. Available at: http://www.gemconsortium.org/download/1157607424015/GEM_2005_Report.pdf accessed 8th July 2006.
- Mitchell, R.K., Busenitz, L., Lant, T., McDougall, P.P., Morse, E.A., Smith, J.B., 2002. Toward a theory of entrepreneurial cognition: rethinking the people side of entrepreneurship research. *Entrepreneurship Theory and Practice* 26 (4), 93–104.

- Neck, H.M., Greene, P.G., 2011. Known worlds and new frontiers. *Journal of Small Business Management* 49 (1), 55–70.
- Nicholls, A., 2010. The legitimacy of social entrepreneurship: reflexive isomorphism in a pre-paradigmatic field. *Entrepreneurship Theory and Practice* 34 (4), 611–633.
- O'Connor, A., 2009. Enterprise, education and economic development: an exploration of entrepreneurship's economic function in the Australian government's education policy, dissertation submission for the completion of the Doctor of Philosophy degree at The Australian Graduate School of Entrepreneurship, Swinburne University of Technology, Melbourne, Australia, June 2007.
- OECD, 2011. Skills for Innovation and Research, Organisation for Economic Co-operation and Development Publishing. available at <http://dx.doi.org/10.1787/9789264097490-en> accessed, 21/04/2011.
- Oosterbeek, H., van Praag, M., Jsselstein, A., 2010. The impact of entrepreneurship education on entrepreneurship skills and motivation. *European Economic Review* 54, 442–454.
- Parker, S.C., van Praag, C.M., 2006. *Journal of Business and Economic Statistics* 24 (4), 416–431.
- Peneder, M., 2005. Tracing empirical trails of Schumpeterian development. In: Canter, U., Dinopoulos, E., Lanzilotti, R.F. (Eds.), *Entrepreneurship, the New Economy and Public Policy*. Springer, Berlin, Germany, pp. 203–221.
- Penrose, E., 1959. *The Theory of the Growth of the Firm*. Oxford University Press, New York, USA.
- Peredo, A.M., Chrisman, J.J., 2006. Toward a theory of community-based enterprise. *Academy of Management Review* 31, 309–328.
- Peredo, A.M., McLean, M., 2006. Social entrepreneurship: a critical review of the concept. *Journal of World Business* 41, 56–65.
- Perren, L., Jennings, P.L., 2005. Government discourses on entrepreneurship: issues of legitimization, subjugation and power. *Entrepreneurship Theory and Practice* 29 (2), 173–184.
- Peterman, N.E., Kennedy, J., 2003. Enterprise education: influencing students' perceptions of entrepreneurship. *Entrepreneurship Theory and Practice* 28 (2), 129–144.
- Pinchot, G., Pellman, R., 1999. *Intrapreneuring in Action: A Handbook for Business Innovation*. Berrett-Koehler Publishers, Inc., San Francisco, CA.
- Pittaway, L., 2005. Philosophies in entrepreneurship: a focus on economic theories. *International Journal of Entrepreneurial Behaviour and Research* 11 (3), 201–221.
- Pittaway, L., Cope, J., 2007. Entrepreneurship education: a systematic review of the evidence. *International Small Business Journal* 25, 479–510.
- Plaschka, G.R., Welsch, H.P., 1990. Emerging structures in entrepreneurship education: curricular designs and strategies. *Entrepreneurship Theory and Practice* 14 (3), 55–71.
- Politis, D., Landström, H., 2002. Informal investors as entrepreneurs – the development of an entrepreneurial career. *Venture Capital: An International Journal of Entrepreneurial Finance* 4 (2), 78–101.
- Poropat, A., 2003. Stage theories of small business entrepreneurship: a critical review and recommendations for research. *Surfing the Waves: Management Challenges, Management Solutions*, Australian and New Zealand Academy of Management, December 2003. Fremantle, WA, Australia.
- Sarasvathy, S., 2005. *What Makes Entrepreneurs Entrepreneurial?* University of Virginia Darden School Foundation, Charlottesville, VA.
- Sarasvathy, S., 2008. *Effectuation: Elements of Entrepreneurial Expertise*. Edward Elgar, Cheltenham, UK.
- Schumpeter, J., 1954. *History of Economic Analysis*. Oxford University Press, New York, USA.
- Schumpeter, J.A., 1961. *The Theory of Economic Development*. Harvard University Press, Cambridge, MA . 1934.
- Scott, M., Rosa, P., Klandt, H., 1998. Educating entrepreneurs for wealth creation. In: Scott, M., Rosa, P., Klandt, H. (Eds.), *Educating Entrepreneurs for Wealth Creation*. Ashgate Publishing Ltd., Aldershot, England.
- Sexton, D.L., Bowman, N., 1983. Determining entrepreneurial potential of students. *Academy of Management Proceedings*, Academy of Management 408.
- Shane, S.A., 2008. *The Illusions of Entrepreneurship*. Yale University, New Haven and London.
- Short, J.C., Moss, T.W., Lumpkin, G.T., 2009. Research in social entrepreneurship: past contributions and future opportunities. *Strategic Entrepreneurship Journal* 3, 161–194.
- Solomon, G.T., Duffy, S., Tarabishy, A., 2002. The state of entrepreneurship education in the United States: a nationwide survey and analysis. *International Journal of Entrepreneurship Education* 1 (1), 1–22.
- Souitaris, V., Zerbini, S., Al-Laham, A., 2007. Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *Journal of Business Venturing* 22 (4), 566–591.
- Stevenson, L., Lundström, A., 2002. *Entrepreneurship Policy for the Future Series. Beyond the Rhetoric: Defining Entrepreneurship Policy and Its Best Practice*. Swedish Foundation for Small Business Research, Örebro, Sweden.
- Taylor, M., Plummer, P., 2003. Promoting local economic growth: the role of entrepreneurship and human capital. *Education and Training* 45 (8/9), 558–563.
- Teague, P., 2006. Social partnership and local development in Ireland: the limits to deliberation. *British Journal of Industrial Relations* 44, 421–443.
- Thompson, J., 2002. The world of the social entrepreneur. *International Journal of Public Sector Management* 15, 412–431.
- Thompson, J., Alvy, G., Lees, A., 2000. Social entrepreneurship – a new look at the people and the potential. *Management Decision* 38, 328–338.
- van der Sluis, J., Van Praag, M., Vijverberg, W., 2003. Entrepreneurship Selection and Performance: A Meta-analysis of the Impact of Education in Industrialized Countries. available at: <http://www1.fee.uva.nl/scholar/mdw/sluis/VDSLUIPaper.pdf> accessed 18th May 2005.
- van Praag, C.M., Versloot, P.H., 2007. What is the value of entrepreneurship? A review of recent research. *Small Business Economics* 29, 351–382.
- van Stel, A.J., Storey, D.J., 2004. The link between firm births and job creation: is there a Upas Tree effect? *Regional Studies* 38 (8), 893–909.
- Varga, A., Schalk, H.J., 2004. Knowledge spillovers, agglomeration and macroeconomic growth: an empirical approach. *Regional Studies* 38 (8), 977–989.
- Verheul, I., Wennekers, S., Audretsch, D., Thurik, R., 2001. *An eclectic theory of entrepreneurship*. Discussion Paper TI2001-030/3. Tinbergen Institute, Amsterdam.
- Wang, C.K., Wong, P.K., Lu, Q., 1999. Entrepreneurial intentions and tertiary education. Conference on Technological Entrepreneurship in the Emerging Regions of the New Millennium, June 2001. Singapore.
- Watson, T.J., 2000. Entrepreneurship and professional management: a fatal distinction. In: Westhead, P., Wright, M. (Eds.), *Advances in Entrepreneurship*. Edward Elgar Publishing Ltd., Cheltenham, UK, pp. 188–200.