

## **Opportunity Discovery through Routine Behaviours**

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### *Abstract*

*Objectives:* This paper argues that engaging in routine, automatic and repetitive behaviours is an essential part of the creative process. As a result, these low cognitive demand tasks must be seen as a key part of the opportunity discovery process.

*Prior Work:* The discussion builds on recent research in cognitive psychology which explores the role played by unconscious thought processes in the generation of new insights and ideas (Dijksterhuis, 2004; Dijksterhuis et al., 2006; Zhong et al., 2008). Such unconscious thought processes facilitate associative processes which underpin the discovery of opportunities. These processes can be triggered and managed through mind-wandering events, which occur when an individual is engaged in repetitive, automatic and routine tasks (Baird et al., 2012; Sio and Ormerod, 2009; Smallwood and Schooler, 2006).

*Approach:* The paper draws on recent research from three separate literatures namely; opportunity discovery in entrepreneurship, cognitive psychology and creativity, and organizational routines and habits. In doing so it seeks to transfer key insights across disciplines, and present new directions for future research in entrepreneurial behaviour.

*Results:* It is proposed that the completion of routine tasks during the entrepreneur's daily activities can increase opportunities for creativity. Specifically it is argued that through these means, more original solutions, which are prospective and future-orientated, are generated during the discovery process. In addition to the generation of more creative ideas, these mind-wandering events also lead to better choices being made in complex situations.

*Implications:* Future research should explore the role played by routine tasks in the daily lives of entrepreneurs. This research should focus on the nature, timing and context of repetitive behaviours, and the impact they have on instances of mind-wandering, and resultant creativity in thought processes.

*Value:* Development of this research can have a profound impact on the behaviours of entrepreneurs. While the benefits of 'taking time out' have been known for some time, the systematic and rigorous monitoring and research of the impact of these events has not been explored. Transferring and off-loading routine tasks to others may after all, not be in the entrepreneur's best interests. Instead this research points to the need to incorporate these exploitative behaviours into the daily activities of the entrepreneur, helping to trigger and manage the continual process of opportunity discovery.

## Introduction

Research in entrepreneurship has highlighted the importance of opportunity discovery, not only in the initial development of the business idea, but in the continual evolution and growth of the organization. This work has focused on different cognitive aspects of this discovery process, including the generation of cognitive structures through interaction with the external environment (Ardichvili et al., 2003; Baron, 2007; Forbes, 1999; Sternberg, 2004), insight by making connections and associations between these structures (Gaglio and Katz, 2001; Kirzner, 1997; Shane and Venkataraman, 2000), and the evaluation of the resultant emerging opportunities (Tang et al., 2012). However despite these advances some argue that there is a need to further unpack this cognitive 'black box' (Grégoire et al., 2010), and explore the associative process through which key insights and new means-ends relations are discovered (Baron, 2007; Kirzner, 1997). In particular the role played by unconscious thought processes is an area which has to date been underexplored in entrepreneurship research (Baron, 2007; Tang et al., 2012).

The discovery of opportunities has been positioned within the exploration-exploitation duality of the entrepreneurial process (Shane and Venkataraman, 2000). So once discovered, opportunities are exploited within the growing organization. However, these processes of exploration and exploitation are often portrayed as representing a fundamental tension not only within small businesses, but all growing and large organizations (March, 1991). The literature in entrepreneurship also seems to suggest that entrepreneurs 'transfer' exploitative behaviours or routines within the growing team (Dutta and Crossan, 2005; Jones and Macpherson, 2006; Macpherson and Holt, 2007). By transferring such routines, the entrepreneur can free up valuable cognitive resources, thereby focusing efforts on the continual need to adapt. However the subsequent entrenchment of these routinised behaviours within the growing team, can lead to the ossification of behaviours within the growing firm, undermining the continuing adaptive learning of the entrepreneur (Churchill and Lewis, 1983; Greiner, 1972; Scott and Bruce, 1987). As a result there can be a move away from the exploration of knowledge towards the exploitation of what is already known and fine-tuning of routines (Cyert and March, 1963; Levitt and March, 1988; Nelson and Winter, 1982; Politis, 2005) as small firms grow. Given the reciprocal inter-relationship between the exploration and exploitation of knowledge, and the importance of managing this tension in small businesses, one might therefore question the logic of their processual separation.

Recent research in cognitive psychology has pointed to the role played by unconscious thought process in facilitating creativity. During periods of incubation, our unconscious mind continues to work on ideas below the level of consciousness, facilitating associative processes in which links and connections are made between cognitive structures (Dijksterhuis, 2004; Zhong et al., 2008). This facilitating role is further enhanced when one engages in routine or automatic behaviours during the incubation period, triggering a process known as mind-wandering (Smallwood and Schooler, 2006). During these mind-wandering episodes, information processing is decoupled in a sense from the task-in-hand (Smallwood et al., 2003), with attention shifting from the external world, inward and towards one's thoughts and feelings (Smallwood and Schooler, 2006). Mind-wandering is thus seen to have a positive impact on creativity (Baird et al., 2012; Sio and Ormerod, 2009) and with this the potential discovery of opportunities.

Loasby (2007) noted that 'entrepreneurial and routine behaviour may appear to be in conflict; but if they are appropriately combined they become complementary'. He argued that 'entrepreneurship defies routine; but it requires routine and results in routine' (Loasby, 2007, p.1104). This paper will extend this argument, and put forward the counterintuitive proposition that entrepreneurs rely on routine, automatic behaviours to support and indeed trigger the very creative and intuitive process underpinning the discovery of opportunities. Drawing on recent research in cognitive psychology, it is argued that moments of creativity and insight are facilitated, and enhanced, through unconscious thought processes. Engaging in routine, automatic behaviours that involve low cognitive demand can lead to instances of mind wandering, during which individuals become more creative. Exploitation is thus seen to underpin exploration. It is therefore argued that the entrepreneur must incorporate and manage exploitative routine behaviours within their daily activities. The timing and sequencing of these mind wandering events is critical to optimizing the opportunities for creativity, and with this opportunity discovery.

The paper is therefore structured as follows. First an overview of the opportunity discovery process in entrepreneurship is given, alongside a discussion on routine behaviours in organizations. This is followed by a review of recent research in cognitive psychology which explores the role played by unconscious thought process in the generation of ideas, and experimental studies which have examined the impact of mind-wandering events

on creativity. Drawing on this discussion a number of propositions are put forward in relation to the opportunity discovery process. Finally directions for future research, and implications for practice are discussed.

## **Entrepreneurship, Creativity and Routines**

### *A Study of Entrepreneurial Cognition*

The study of entrepreneurial behaviour has tended to focus on the study of cognitive processes used by entrepreneurs in the discovery and exploitation of opportunities (Shane and Venkataraman, 2000), including the study of how entrepreneurs think and make choices, and the cognitive maps, schema and heuristics used by entrepreneurs (Forbes, 1999; Grégoire et al., 2010). Mitchell et al. (2002, p.97) defined entrepreneurial cognitions as 'the knowledge structures that people use to make assessments, judgments or decisions involving opportunity evaluation and venture creation and growth', or 'How entrepreneurs think?' A key element of this research relates to the means in which entrepreneurs develop cognitive processes to deal with uncertainties in the environment, through the creation of routine and non-routine cognitive entities (Loasby, 2007). Many have stressed the importance of cognitive processes, such as the entrepreneur's use of heuristics when completing both novelty generating activities such as the discovery of opportunities, and more routine functional activities associated with the exploitation of these opportunities (Busenitz and Barney 1997; Forbes 1999; Loasby 2007; Shane and Venkataraman 2000; Ucbasaran et al. 2001). These cognitive heuristics refer to simplified rules of thumb or strategies entrepreneurs employ as they make decisions in the face of uncertainties, which they develop to assist in the perception and interpretation of changes in the marketplace (Daft and Weick, 1984; Forbes, 1999). Given the high degrees of uncertainty and complexity that entrepreneurs are faced with (Baron, 1998), they tend to rely on simple rules of thumb when making decisions (Baron, 1998; Busenitz and Barney, 1997; Busenitz and Lau, 1996). While heuristics can be seen as simplified strategies that entrepreneurs use when making decisions, the creative process underpinning the discovery of opportunities is an area of research which is less researched (Baron, 2007; Grégoire et al., 2010; McMullen and Shepherd 2006; Tang et al., 2012), with most research assuming the prior existence of opportunities (Alvarez et al., 2013).

Research on opportunities can be divided into two broad approaches (Alvarez et al., 2013). In the first it is assumed that opportunities exist independently of the entrepreneur, and as such are there to be discovered by the alert entrepreneur (Gaglio and Katz, 2001). In the second approach, opportunities are created and enacted through a process of interaction and co-evolution with the world around the entrepreneur. In the former approach, the role of the entrepreneur is to position themselves in the right place at the right time, and gather the needed information from the environment to discover these lost 'pieces of luggage' (Alvarez et al., 2013). In the latter creation approach, opportunities evolve through an interactive process of learning. In this latter view, cognitive processes clearly influence the direction and shape of the evolving idea.

Tang et al. (2012) conceptualize the process of opportunity discovery in three stages of i) scanning and searching for information, ii) making connections and associations between disparate information, and iii) making evaluations on the resultant opportunities. Through scanning and information search, entrepreneurs first develop cognitive structures relevant to the domain in question (Tang et al., 2012). These structures represent accumulated knowledge of a market say, and this knowledge is a key component in the subsequent discovery of opportunities. So as entrepreneurs interact with the world around them, experiences are stored in memory as concepts, represented by cognitive structures or frameworks (Baron, 2007; Forbes, 1999; Mitchell et al., 2002; Shane and Venkataraman, 2000). These cognitive structures can be used to model the world around them or help entrepreneurs make sense of an uncertain landscape (Busenitz and Lau 1996; Cope 2005; Dutta and Crossan 2005; Kirzner 1997). So concepts might represent aspects of the markets within which entrepreneurs operate (Gaglio and Katz, 2001), such as a conceptual view of the behaviours of customers or suppliers. Clearly, the more experience one has within a particular industry, then the more detailed and complex these structures and frameworks become.

While the scanning of environments can result in cognitive structures being created and stored in memory, cognitive processes work on these to make connections and associations, and then evaluate emerging opportunities (Tang et al., 2012). Research has explored this role played by cognitive processes in this discovery of opportunities (Kaish and Gilad, 1991; Shaver and Scott, 1991). So entrepreneurs process stored cognitive structures, by stretching, expanding or combining concepts (Baron and Ward, 2004; Baron, 2007; Mitchell et al., 2002; Ward, 2004) to generate new ideas. Others identify the process in which entrepreneurs recognize meaningful patterns in complex trends or data (Baron, 2007; Gaglio and Katz, 2001). This process of 'joining the dots' is also connected with the notion of entrepreneurial alertness, which 'refers to an attitude of receptiveness to

available (but hitherto overlooked) opportunities' (Kirzner, 1997). This alertness involves both a process of positioning oneself in the right place to avail of market information (Kaish and Gilad, 1991), but of also making sense of that information through unique insight. In this process of recognizing an opportunity, the entrepreneur thus draws on representations of the environment, through cognitive frameworks and concepts (Shane and Venkataraman, 2000), to trigger an entrepreneurial conjecture (Kaish and Gilad, 1987). So drawing on these cognitive structures entrepreneurs can identify new means ends relationships in the discovery of opportunities (Baron, 2007; Kirzner, 1997; Shane and Venkataraman, 2000). Developing unique ways of viewing the world around them and in so doing spot underexploited opportunities.

In brief the process of opportunity discovery involves a) the creation and storage of cognitive structures which represent the external world, b) the processing of these structures to identify unique connections and associations, and c) the subsequent evaluations and judgment of emerging ideas. However there is a need to further unpack this cognitive 'black box' (Grégoire et al., 2010). For example, Baron (2007) notes that there has been little research carried out which explores the role of cognitive structures, such as concepts and frameworks in the generation of ideas. In addition Grégoire et al. (2010) point to the paucity of research examining the influence cognitive structures and representations might have on cognitive processing abilities. Related to these cognitive processes, Baron (2007) further notes that a clear understanding of the notion of entrepreneurial alertness is still lacking. What does alertness involve? What role, for instance, does unconscious awareness play in this processing of cognitive structures (Dijksterhuis and Nordgren, 2006)?

#### *The Entrepreneur and Routine Behaviour*

As noted above, Loasby (2007) remarked that 'entrepreneurial and routine behaviour may appear to be in conflict; but if they are appropriately combined they become complementary'. While past literature on entrepreneurial behaviour has focused on the use of heuristics, or rules of thumb, in the exploration and exploitation of opportunities (Busenitz and Barney, 1997; Forbes, 1999; Ucbasaran et al., 2001), studies in the wider organizational behaviour literature identify the routine as a key recurring cognitive and behavioural property (Cohen et al., 1996). The concept of the routine has been defined in a number of different ways, including behavioural regularities (Nelson and Winter, 1982), heuristics, rules of thumb (Becker, 2004) and standard operating procedures (Cyert and March, 1963). Most note however that routines result in repeated patterns of behaviour over time (Becker, 2005; Cyert and March, 1963; Nelson and Winter, 1982). With repetition, these behaviours become reflex-like, mindless processes responding to a certain stimulus with a particular set of actions. In the extreme case routines are viewed as automatic, non-choice phenomena (Cohen et al., 1996), involving more mindless and less reflective cognitive activities (Bartunek et al., 2007; Weick and Sutcliffe, 2006). As a result, some have associated the routine with stability, an inability to change and organizational inertia (Lichtenstein and Brush, 2001), which can encourage ossification over time (Churchill and Lewis, 1983; Greiner, 1972). Surely such behaviours are anathema to the heroic and creative entrepreneur, boldly seeking out and exploiting new opportunities.

Definitions and conceptualizations of the routine differ, and in particular in relation to the adaptability of the concept (Feldman, 2000; Feldman and Pentland, 2003; Pargimiani and Howard-Grenville, 2011). For example, Feldman and Pentland (2003) argue that whilst unreflective, habitual action is possible, routines are also an important source of flexibility and change, as individuals engage in reflective self-monitoring, as they assess what they are doing and adapt their performance to different contexts. However, a consistent theme in the literature relates to the automatic nature in which some repeated patterns of behaviour are enacted. It is in relation to these persistent and potentially pernicious routine behaviours that the attention of this paper shifts. Nelson and Winter (1982) present a view of routine behaviour as one in which actions are carried out in an automatic manner and without awareness, or conscious volition. 'The choice among behaviour options that takes place in the exercise of a skill typically involves no deliberation' (Nelson and Winter, 1982). Nelson and Winter (1982) further use the analogy of an experienced driver making choices to keep the car on the road. While deliberate choice can introduce flexibility and adaptability of behaviour, it does so at the expense of conscious attention and hesitation, interrupting the otherwise smooth flow of behaviour (Nelson and Winter, 1982). As Dewey (1922, p.172) notes 'habit made complete in routine shuts in thought so effectively that it is no longer needed or possible'. As a result 'all habit forming involves the beginning of an intellectual specialization which if unchecked ends in thoughtless action' (Dewey, 1922, p.173). Therefore, the more a behaviour is repeated then the less conscious its enactment becomes, and the more likely it is that it will be automatically repeated over time (Gersick and Hackman, 1990). Cohen (2012) argues that habitual behaviour is retained in tacit procedural memory, to which individuals have much reduced conscious access. The enactment of this procedural memory operates rapidly, and with little demand on our conscious attention (Cohen, 2012).

Engaging in such routine, automatic behaviours may be seen as an unnecessary waste of valuable time and resources of the entrepreneur. After all the entrepreneur needs to stay ahead of the game, and focus their energies on developing the strategic and marketing direction of the business, which clearly involves frame changing thought. However it is argued in this paper, that routines are more than mere passive inconveniences to be passed on to other employees. Their repeated enactment can facilitate and trigger key moments of insight, underpinning the process of opportunity discovery itself.

### **Creativity and Unconscious Thought**

As noted above some have called for research in entrepreneurial cognition to explore in more depth the interrelationship between cognitive structures and processes (Grégoire et al., 2010), and the role played by both conscious and unconscious thought (Baron, 2007). Entrepreneurs make unique connections and links in the discovery of opportunities, by combining or linking cognitive structures (Baron and Ward, 2004; Baron, 2007; Mitchell et al., 2002; Ward, 2004), or by recognizing patterns in complex data (Gaglio and Katz, 2001; Kaish and Gilad, 1991; Kirzner, 1997), and Tang et al. (2012) argue that this associative process is a conscious, proactive exercise. However recent research in cognitive psychology has highlighted the role played by unconscious, not conscious, thought processes, potentially shedding new insight on the process of opportunity discovery. This research thus points to the importance of stepping back from a problem, and directing one's conscious attention elsewhere. This temporary shift away from an unsolved problem to allow a solution to emerge has been referred to as incubation (Wallas, 1926). In sum the emergence of creative solutions may be due to unconscious problem-solving processes continuing to work on the problem, making unique associations during an incubation period (Bowers et al., 1990).

A number of theories have been put forward to explain this effect, with incubation having both a passive and active role in the associative processes underpinning creative moments. In the passive interpretation, the unconscious does not actively work on the problem during incubation, but instead prevents incorrect associations being taken further. During conscious thought, individuals tend to focus on a few attributes of a problem at the expense of others (Dijksterhuis, 2004; Dijksterhuis et al., 2006). This is due to the limited processing capacity of conscious modes of thought, and these restrictions can subvert the associative processes which underpin creativity (Zhong et al., 2008). Taking time away from a problem, following a period of concentrated problem-solving, can encourage the individual to forget inappropriate associations, and result in a process of mental set-shifting, allowing new ideas to emerge (Smith and Blankship, 1989). So not thinking about a problem, may therefore result in wrong associations and ideas becoming less accessible and being forgotten (Dijksterhuis, 2004). Therefore in terms of the process of opportunity discovery, by directing attention off-task following a period of problem-solving, the entrepreneur forgets inappropriate associations between cognitive structures and concepts. When they return to the problem, new links and insights can again be made through conscious creative effort. Thus in this passive view of incubation, unconscious thought acts to overcome some of the shortcomings of conscious thought.

Others have put forward an active interpretation of the role of unconscious thought in creativity. In this view, the individual continues to think about the problem during incubation (Bowers et al., 1990; Dijksterhuis, 2004), as the unconscious mind continues to work on ideas below the level of consciousness. Incubation in this sense differs from the more passive theories of forgetting-fixation, with the unconscious having an active role in idea processing. For example, Zhong et al. (2008) suggest that unconscious thought facilitates the discovery of remote associations, and Dijksterhuis (2004) proposes that with unconscious thought, disorganized sets of information become reorganized into clearer and more integrated representations of information in memory. Through a process of continued associative activity during unconscious thought, information is clustered resulting in a more organized representation (Dijksterhuis, 2004). This active interpretation of incubation clearly has important implications for the process of opportunity discovery. Contrary to Tang et al. (2012), it is during unconscious thought that unique associations are found between cognitive structures. Taking time away from the problem is therefore an essential part of the opportunity discovery process.

Dijksterhuis and Meurs (2006) push this active role further, arguing that unconscious thought can lead to more ideas being generated, and individuals being less constrained by conventional associations. Unlike passive interpretations, Dijksterhuis and his colleagues attribute the change in associative search patterns to something intrinsic to unconscious thought. They argue that unconscious thought excels at integrating and associating information and is capable of carrying out associative searches across a broad range of background knowledge

(Dijksterhuis and Nordgren, 2006; Dijksterhuis et al., 2006). Zhong et al. (2008) put forward a two-step process in which, unconscious thought associates and creates the novel idea, which is then transferred to consciousness. So while conscious thought excels at linear search and analytic processing, unconscious thought is better at associative processing (Dijksterhuis and Nordgren, 2006). When associations are strong and obvious however, linear and analytic search process of conscious thought should be just as effective as unconscious thought. However for associative search to function, cognitive structures need to exist, which as noted above emerge through experience (Ardichvili et al., 2003; Baron, 2007; Forbes, 1999; Sternberg, 2004). In this sense unconscious thought cannot “create” knowledge (Zhong et al., 2008), as conscious learning is needed to establish a knowledge base. Drawing from this discussion, the discovery of opportunities can be seen to involve a number of stages. First, the entrepreneur creates cognitive structures, through interaction with the world around them and conscious learning. These structures are the raw material in the creative process, and through unconscious thought, unique associations and insights are made. Emerging associations are then passed back to conscious thought for linear and analytical processing. The mind of the entrepreneur thus switches back and forth between conscious and unconscious thought, as opportunities evolve.

### **Triggering and Managing Unconscious Thought**

In light of this research, managing both conscious and unconscious thought processes during the exploration of knowledge becomes a key concern in the discovery of opportunities. The degree to which the mind is engaged during the completion of daily tasks can influence and even facilitate episodes of unconscious thought. Recent research in cognitive psychology has found that when completing simple routine or automatic tasks, the mind wanders, as attention shifts from the primary task to one's memories (Smallwood and Schooler, 2006), often without complete awareness on the part of the individual concerned (Giambra, 1995; Schooler et al., 2005). During these ‘mind-wandering’ episodes, information processing is decoupled in a sense from the task-in-hand (Smallwood et al., 2003), with attention shifting from the external world, inward and towards one's thoughts and feelings (Smallwood and Schooler, 2006). These internal thoughts include pertinent personal goals (Smallwood and Schooler, 2006), or current ideas or problems for which the individual has failed to find a solution. Experimental research has explored the link between mind-wandering and creativity, with measures of creativity increasing when individuals are engaged in low demand tasks during incubation periods (Baird et al., 2012; Sio and Ormerod, 2009), in other words following a period of working on a problem. It is argued that these undemanding tasks maximize the occurrences of mind wandering (Smallwood and Schooler, 2006), having a positive effect on creativity when compared with a demanding task or no task at all (Baird et al., 2012; Sio and Ormerod, 2009). Indeed Baird et al. (2012) found that individuals who completed undemanding tasks had significantly greater levels of creativity (40%) than the demanding and rest cases (no change), and no break case (20% decrease). So doing a familiar routine task is better than doing nothing at all.

Therefore it is argued here that unconscious thought processes have a key role to play in the emergence of ideas, and in the associative processing underpinning the discovery of opportunities. These unconscious thought processes can be triggered through mind-wandering events (Baird et al., 2012), which as noted above can occur during the completion of low cognitive demand, repetitive, routine and automatic tasks. In conclusion one might argue that the incorporation and management of such routine tasks in the daily life of the entrepreneur, could have profound implications for the continual discovery of opportunities during the entrepreneurial process. As noted above, Loasby (2007) conjectured about the link between routine and entrepreneurial behaviours, arguing that the creation of routines freed up valuable cognitive processing resources needed for other more pressing entrepreneurial activities. These conscious cognitive processes were seen to be the key element in the discovery of opportunities (Loasby, 2007; Tang et al., 2012). However the routine does more than free up the conscious creative processor. This recent research on mind-wandering points to the additional benefit of routine behaviour on the process of creativity itself, not in some passive resource-saving role, but as a core process generating new associations between cognitive structures. As noted above the repetitive nature of routines can result in reflex-like, mindless and automatic behaviours (Bartunek et al., 2007; Cohen et al., 1996; Dewey, 1922; Gersick and Hackman, 1990). In other words the creation and completion of routines is complimentary and indeed necessary to the continual process of adaptation and creativity (see Feldman and Pentland 2003; Pentland and Feldman, 2005).

*Proposition 1: The enactment of repetitive, routine and automatic tasks, following a period of problem solving, results in more creative and original opportunities being discovered.*

As routine tasks become repeated over time, choices and thought become increasingly automatic and unconscious (Dewey, 1922; Gersick and Hackman, 1990; Nelson and Winter, 1982), thereby decreasing 'the need for executive control in performing a task' (Smallwood and Schooler, 2006). This process reflects the analogy of driving a car put forward by Nelson and Winter (1982). As one follows the same route each day choices regarding which road to take become increasingly automatic, as attention shifts towards internal goals or unresolved current problems (Smallwood and Schooler, 2006). Research has also shown that mind-wandering not only shifts attention towards internal thoughts, but towards thoughts that are increasingly anticipatory, prospective and future-oriented (Baird et al., 2011; Mooneyham and Schooler, 2013). The future-oriented nature of such thinking clearly has significant relevance for entrepreneurial behaviour. As Kirzner (1997, p.XX) noted 'the entrepreneurial character of human action refers not simply to the circumstance that action is taken in an open-ended, uncertain world, but also to the circumstance that the human agent is at all times spontaneously on the lookout for hitherto unnoticed features of the environment (present or future), which might inspire new activity on his part'. In this manner, the search for opportunities is continually directed towards uncertain futures. Mind-wandering promoted by the enactment of routine tasks, thus has an active role to play in the discovery of prospective and anticipatory opportunities.

*Proposition 2: The enactment of repetitive, routine and automatic tasks, following a period of problem solving, results in opportunities which are future-oriented, being discovered.*

### **From Discovery to Selection**

The above discussion highlights the importance of unconscious thought processes in the generation of new insights. However once generated, it is important that entrepreneurs then select the right idea for development. Past studies of creativity have focused on the role of activities such as brainstorming (Osborn, 1953), to generate a stockpile of ideas, with the underlying logic that more ideas generated the greater the chance of finding the right one. However research has shown that individuals in general are poor at idea selection (Faure, 2004; Girotra et al., 2010; Putman & Paulus, 2009; Rietzschel et al., 2006; Rietzschel et al., 2010). These studies show that the quality of ideas selected was not dependent on the availability of good ideas (i.e., the productivity), but on the average quality of the generated ideas (Rietzschel et al., 2006). So while initiatives might be taken to produce a greater stockpile of original ideas, this 'advantage of having many creative ideas at one's disposal can easily be undone by a sub-optimal selection process' (Rietzschel et al., 2006, XX). Indeed in experiments in which individuals received instructions regarding the assessment of idea originality and feasibility, they selected ideas that were no better than the average quality of ideas generated (Rietzschel et al., 2010).

When studying entrepreneurs, scholars have focused on the role played by heuristics or simple rules of thumb when making choices (Baron, 1998; Busenitz and Barney, 1997; Busenitz and Lau, 1996). In many cases, these heuristics also result in suboptimal choices being made, as a result of biases such as over optimism or attribution error (Busenitz and Barney, 1997). Such problem-solving heuristics or tools might therefore result in poor selections being made, undoing some of the benefits gained by creative thought. Dijksterhuis et al. (2006) argue that while conscious thought can lead to good choices in simple matters, it can lead to progressively worse choices with more complex issues. So while the heuristics used by entrepreneurs can assist them in making key decisions during the entrepreneurial process, such simple rules of thumb might lead to sub optimal choices given the complex uncertainty surrounding the start-up process.

Research in cognitive psychology has again pointed to the role played by unconscious thought processes in such complex selective environments. Experiments have shown that unconscious thought can help individuals select the most attractive options among alternatives (Dijksterhuis, 2004; Dijksterhuis et al., 2006). As a result, Dijksterhuis and Nordgren (2006) argue that unconscious thought has a role to play in selecting ideas, particularly in complex situations. This finding was supported by Ritter et al. (2012), who also found that individuals who had a period of unconscious thought were able to select their most and least creative ideas, better than those who experienced conscious thought or selected ideas immediately. This research therefore points to the role played by unconscious thought, and processes such as mind-wandering, both the generation and subsequent selection of ideas. Drawing from this, one can posit that entrepreneurs need to incorporate and manage periods of mind-wandering within their daily activities, not only to facilitate the discovery of new insights, but in the subsequent selection of those most suited to the complex needs of the situation-in-hand.

*Proposition 3: The enactment of repetitive, routine and automatic tasks, following a period of problem solving, results better choices being made in complex situations.*

## Implications for Research

The above discussion highlights an important interrelationship between moments of creativity, heuristics and routine behaviours in the process of opportunity discovery. While past research has focused on the explorative and exploitative nature of these behaviours, it is argued here that light can be shed on how opportunities emerge by understanding their mutual interrelationship. Past research has highlighted the process through which heuristics and routines are learned within fledgling organizations, but this research has not examined in detail how these recurrent patterns of behaviours might themselves impact upon the creative process. Yet the nature, context and timing of these behaviours might have profound implications for the ongoing need to discover opportunities, and the process of creativity (Sio and Ormerod, 2009).

1. *Task type*: The type of task completed has an important influence on incidences of mind-wandering, with experimental work looking at different incubation tasks from high cognitive demand (e.g. counting backwards, visual memory tests) to low cognitive demand (e.g. reading). When task demands are high, idle cognitive processes and with this mind-wandering, are reduced. On the other hand, when routine and habitual tasks are completed in a repetitive and automatic manner, mind-wandering processes are triggered.
2. *Incubation period*: The length of the incubation period can also have an effect (Sio and Ormerod, 2009). Sio and Ormerod (2009) argue that with a long preparation period in which an impasse has been reached, incubation effects can have a positive effect on creative problems. In these cases, a strategic shift in restructuring the problem is achieved during incubation. However there is no standard on what is considered a long or short incubation period. For instance Smith and Blankenship (1989) consider 15-min a long incubation period. The length of the incubation might be considered relative to the preparation time worked on the problem before incubation.
3. *Timing of incubation task*: Finally, little research has explored the effect of repeated periods of incubation on the development of a single problem. For instance, is it beneficial to develop repeated periods of problem-solving-incubation-selection on the same problem over time, or are fewer extended problem-solving-incubation-selection sequences better?

In sum, future research should explore the nature and timing of incubation tasks during the daily activities of the entrepreneur and the impact these have on the evolution of ideas in the discovery of opportunities.

In exploring these issues further, a number of methodological issues come to the fore. Various methods can be used to capture instance of mind-wandering and their impact upon the development of opportunities. In essence these methods seek to capture instances of mind-wandering throughout the daily activities of the individual concerned. Through thought sampling techniques, individuals describe their internal experiences throughout the day, giving details on the nature of the experience and context in which it occurs. Sampling can be done by remote and mobile 'probes', in which the individual is prompted to report their experiences at regular or random intervals, during the completion of a task. Individuals can then either record instances of mind-wandering over a preceding period of time, or describe what is passing through their mind at the point preceding the probe. Both methods do not rely on individuals being aware of mind-wandering events as they occur (Smallwood and Schooler, 2006). Alternatively in self-caught methods, individuals monitor their own awareness of off-task events. Clearly this latter method relies on the individual's awareness that mind wandering is occurring (Smallwood and Schooler, 2006). Combining both methods can highlight differences in awareness of mind wandering (Smallwood and Schooler, 2006). Future research might explore the use of these techniques in monitoring daily activities of the entrepreneur, and associated occurrences of mind-wandering events. Self-reported diaries or daily logs can also be used to record the range, timing and nature of tasks completed throughout the entrepreneur's typical day. These logs might be further supported by observations, through shadowing activities. In addition to the methods outlined above, clearly the resultant impact on the developing opportunity is of significant importance for this research. Participants therefore should be prompted to record key characteristics of the idea being developed and considered at that point in time. In this manner, specific thought processes relating to the development of ideas over the course of the day are captured.

## Conclusions

As Loasby (2007, p.1104) argued, 'entrepreneurship defies routine; but it requires routine and results in routine'. Given the importance of engaging in regular, automatic routine behaviours, it makes sense that entrepreneurs identify operational tasks more associated with the exploitation of knowledge. The literature in entrepreneurship seems to suggest that entrepreneurs 'transfer' exploitative behaviours or routines within the growing team (Dutta



and Crossan, 2005; Jones and Macpherson, 2006; Macpherson and Holt, 2007). By transferring such routines, the entrepreneur can free up valuable cognitive resources, thereby focusing efforts on the continual need to adapt. However the subsequent entrenchment of these routinised behaviours within the growing team, can lead to the ossification of behaviours within the growing firm, undermining the continuing adaptive learning of the entrepreneur (Churchill and Lewis, 1983; Greiner, 1972; Scott and Bruce, 1987). As a result there can be a move away from the exploration of knowledge towards the exploitation of what is already known and fine-tuning of routines (Cyert and March, 1963; Levitt and March, 1988; Nelson and Winter, 1982; Politis, 2005) as small firms grow. The discussion presented in this paper puts forward a different view on the exploitation-exploration debate. Here automatic routine behaviours are seen as the necessary bed-fellow of creativity and opportunity discovery. So the development and regular enactment of low demand, automatic tasks, is needed in order to maximize the opportunities for associative processes, and with this opportunity discovery.

Drawing on the discussion above, and Tang et al.'s (2012) conceptualization of the opportunity discovery process, a number of implications for practice become apparent. First, opportunities are created through an associative process identifying links between cognitive structures. Experience in the marketplace, and scanning/searching activities increase the process through which these structures emerge (Ardichvili et al., 2003; Sternberg, 2004). Therefore the more the entrepreneur searches for information and gains experience within the market, the more relevant cognitive structures developed. Having accumulated relevant cognitive structures, the entrepreneur needs to maximize the opportunities to make new associations and links between these frameworks (Tang et al., 2012). This involves the management of cognitive processes throughout the entrepreneur's daily activities. As noted above, this includes alternating between high intensity, problem-solving tasks and more routine, automatic and low intensity tasks. The nature, timing and sequencing of these high-low intensity tasks depends on the context of the operation and business opportunities faced. In brief, downtime should be seen as a key part of the entrepreneur's day, and the continual opportunity discovery process. However this downtime is more than simply doing nothing (which some might argue is a challenge for the busy entrepreneur), it is the active engagement in routine, repetitive routines. Finally the evaluation and selection of ideas should be seen to include not just the application of heuristics, but again the incorporation of managed routine behaviours. Engaging in these low intensity tasks during selection is seen to be critical when dealing with highly complex and uncertain problems.

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