

Chapter 3: The concepts: Creativity, innovation and opportunity finding

The history of scientific and technical discovery teaches us that the human race is poor in independent and creative imagination. Even when the external and scientific requirements for the birth of an idea have long been there, it generally needs an external stimulus to make it actually happen; man has, to speak, to stumble right up against the thing before the idea comes...

Albert Einstein

3.1 Introduction

The statement above creates a logic and direct linear conclusion between the role of entrepreneurship training as an intervention or external stimulus in the stimulation of creative idea development. Creativity and innovation are regarded as universally distinguishable variables in the make-up of an entrepreneur. Smoller and Sombart as quoted by Herbert and Link (1982), Weber (1930), Schumpeter (1939), Beaudeau (1767), Bentham (1838), Von Tunen (1850), Von Magoldt (1855), and Cole (1946), are all authors quoted and described by Van Daalen (1989:16-22), who regarded innovation in one way or another as an attribute or skill that is present in entrepreneurship.

The combined variables (creativity and innovation) actively differentiate the entrepreneur from the small businessperson, with the development of a “new” product or service as distinguishable proof. As early as the 1930’s Schumpeter (1939) supported facts with the statement that the entrepreneur is an individual of whom it is expected to consider and apply a new combination of production techniques and processes.

Vesper (1980:15) categorises and differentiates the entrepreneur as someone who strives towards the development of new products; the

development of a new production method; the identification of new markets and market opportunities and the discovery of new input providers and industrial re-organising or restructuring. All of the abovementioned phenomena are formulated with the “new” in mind, which simply imply “innovation” and is fuelled by creativity.

Carland et al. (1984) as quoted by Watson (1994:44) stresses the eventual difference between the entrepreneur and the average small businessperson/manager as the critical application or omission of innovation. The authors further point out that the entrepreneur is someone who is recognised as a person who ultimately prefers the development or creation of activity. This activity or activities are manifested through the innovative combination of resources with the aim to show a significant profit or entrepreneurial performance. This accentuation of innovative activities are combined with the frequent appearance of the motivation to achieve, the desire for power, aim orientation, internal locus of control, desire to be independent and a controlled propensity to take risks. Almost all the authors in the science of entrepreneurship thus accept that creativity and innovation are exclusive and that they are differentiating entrepreneurial qualities. These are prerequisites for the classification of “entrepreneurs”. It is therefore of the utmost importance to indicate the differentiating and integrating characteristics of innovation and creativity.

3.2 Historical background

The concept “creativity” has always formed an important part of various disciplines, with a dominant root in the arts and psychology. However, Guilford in Sternberg and Lubart (1999:252) indicates that only 0.2% of abstracts submitted in psychological journals focused on creativity. Feist and Runco (1993:268-271) cited furthermore that this figure increased

slightly to 1.5% between 1975 to 1994. It is evident that non-empirical research on creativity exceeds the empirical. The role that creativity plays in society and likewise in entrepreneurship is unequivocally significant, but somewhat uncovered as a science.

To landmark the first evidential occurrence of creativity and creativity theory bounds to be irrelevant to the scope of this study. Couger (1995:12) cites the Bible as evidence to creative problem solving by recalling that as early as Moses' leadership this was engaged in when 500 000 Israelites were taken through the Sinai desert.

Rothenberg and Hausman (1976:31-48) provide a historical background to creativity referring to Plato, Aristotle, Kant, Galton and Freud, who had all influenced the history of creativity immensely. Plato described *inspiration* (a catalysing factor in creative behaviour) as a way to generate alternatives (within a "supernaturalist" context). Aristotle embraced creativity in an artistic context, whereas creativity is seen as part of natural laws and not as coming about merely by *chance*. Immanuel Kant first indicated the difference between "creation" and "imitation". His theory displayed that creative actions are directly dependent on "spontaneous activity" through the conscious mind. Francis Galton regarded creativity as the result of prepotency. He used the "genius" in line with the creative person, and stated that both contain talent qualities that flow from generation to generation and are thus inherited. The genetic inheritance of creativity is, however, a topic challenged in an array of research interventions over time. Sigmund Freud argued that the nature of creativity is a phenomenon that contains definite "dynamic factors" in the human mind with creative efforts as a consequence. He made his conclusions from analysing writers and comparing them with small children playing - both create an imaginative world which forms part of creative thinking and action.

Rickards (1999:26-33) constructed the following landmarks in creativity, as seen from a historical perspective:

- *Sultan, Köhler and the Gestalt School of Psychology*

Wolfgang Köhler concurrently with Max Wertheimer (founder of the Gestalt theory), explored the issues surrounding perception and reality during the *World War One*. Their research questions involved the observation of images changing from that which is motionless to the opposite. They also analysed the formulation of answers based on obstacles in thought. The Gestalt theory integrates certain mental processes to solve the latter. Their empirical research was conducted on apes in captivity. Sultan the ape, found novel ways of performing certain actions when in forced captivity (e.g. using a stick to reap his food closer). These experiments represented “characteristics of sudden unexpected discovery”. The research results provided insight into several contemporary studies on creativity.

- *Archimedes, Kekulé and “The Act of Creation”*

Arthur Koestler (1905-1983) researched the nature of the creativity process. His theories were documented in the book *The Act of Creation*. Koestler compared Archimedes’s bath experience (*Eureka!*) as an initiator of creation. This example served as a platform for the discovery theory and evolved in to the study of insight. He analogised the utilisation of insight as a problem-solving agent in the creativity process.

- *Wallas's four stages of creative thinking*

Graham Wallas (1858 – 1932) established the chronological flow of the creative process, derived from his theory on discovery. The different stages in his process are preparation, incubation, illumination and verification. This process still applied in various creativity development environments.

- *Brainstorming and the CPS (Creative Problem Solving) paradigm*

Alex Osborn developed a process during the World War II that refers to the generation of multiple ideas. These ideas were used to motivate fellow workers to generate new ideas in support of their country during the War. This whole process was based on the following dynamics, i.e. “postpone judgement”, “freewheel”, “hitchhike” and “quantity breeds quality”. Osborn’s actions led to the brainstorming technique. This technique plays a pivotal role during the idea production activity as part of the creativity process.

- *The whole brain metaphor*

Research, based on medical evidence, has shown that left and right brain hemisphere thinking exists. This evidence resulted from the work of the Nobel Prize winners, Bogan and Sperry (1969). Right brain thinking implies creativity while left brain thinking implies analytical logic. Another study showed that when the two hemispheres are physically divided (by removing the *corpus callosum*), it leads to decreased creative behaviour and achievement. This served as evidence for the “whole-brain” thinking paradigm and implies a more integrative approach to creativity.

- *Guilford's APA speech and his "structure of intellect" model*

Guilford cultivated pioneering work with regards to creativity development. His studies include a theory called "structure of intellect" that exposed the different "categories of thought" that exist when creative performance is achieved. Guilford's (1959) research resulted in the development of the well-known "divergent tests of creative thinking".

- *Torrance's Tests for Creative Thinking (TTCT)*

Paul Torrance developed validated instruments that measured individual creative talent. His tests are based on the "divergent thinking" theories of Guilford. The scope of application of *Torrance Tests for Creative Thinking (TTCT)* ranges from the measurement of individual creative talent to the effect of training interventions in catalysing talent employment. Torrance published more than a thousand academic articles on creativity.

- *Rhodes's 4P model:*

Mel Rhodes (1950) collected and analysed more than 40 definitions of creativity in order to develop a model of creativity. The model embraces four interdependent variables, consisting of the *person*, *process*, *product* and *press*. His work served as a pioneering agent in creativity research and development in describing the creative process, the research supported several studies. The 4P model contributed to the fundamental base of this study (see Chapter 4).

- *Edward de Bono and lateral thinking*

The widely known De Bono initiated lateral thinking as a method in unconventional and onorthodox thinking that leads to effective outcomes. He postulated the functionality of the brain as a “self-structuring information surface” and suggests a non-vertical way of thinking in order to utilise it productively and creatively. De Bono argues that thinking is a skill than can be acquired and developed. Lateral or non-vertical thinking is the nucleus of creativity and is thus a learnable and enhancable skill.

- *Gorden, synectics and the creative process*

W.J.J. Gorden is the co-founder of the creativity-inducing technique, *synectics* (the theory of combining divergent elements). The psychologist assessed the behaviour of engineering scientists during the invention process, and came to the conclusion, derived from his assessment, that certain behavioural changes (“psychological state”) take place immediately before a discovery occurs. This observation led to the formulation of the synectics technique. The technique, as briefly described, catalyses certain “psychological states” that improve new-idea generation by means of utilising “metaphors” and “manipulation”. Extensive evidence exists of increased creative performance due to the application of the synectics technique.

- *Teresa Amabile and the intrinsic motivation theory of creativity*

Teresa Amabile’s book entitled *Social psychology of creativity: a consensual assessment technique*, is one of the mostly cited works

in the field of creativity. Her work furthermore led to a new direction in social creativity research. The model suggests that certain intrinsic factors motivate the individual to operate on higher levels of creative behaviour. The environment, on the other hand, could provide the individual with obstacles in this process. The model consists of three components namely “task motivation”, “domain-related skills” and “creativity related skills”.

Rickards (1999:35) summarises the history of creativity in the following table, based on the foregoing description:

Table 12: Creativity history

Change agents	Labellers	Experimenters and measurers	Contextualists
De Bono’ lateral thinking	Wallas’s model	Bogan & Sperry’s whole brain	
Gordon’s synectics	Rhodes’ 4P model	Torrance’s TTCTs	Amabile’s intrinsic motivation
Osborn’s brainstorming	Koestler’s insight	Guilford’s SOI model	

(Source adapted from Rickards (1999:35))

3.3 Obstacles in creativity theory

Sternberg and Lubart in Sternberg (1999:3-12) expand on the reasons behind the rather undeveloped study of creativity as a result of the following obstacles, mainly vested in psychological theory:

3.3.1 The study of creativity yields a mystical approach

Mystical beliefs are in some instances connected to the creative phenomena or enigma. The authors quote Rothenberg and Hausman (1976); Ghiselin (1985) and Kipling (1937/1985) who compare the study of creativity with the mystical study of love, due to certain spiritual connotations. The mystic or vague nature of creativity in this context made empirical research somewhat challenging.

3.3.2 Pragmatic approaches to the study of creativity

Scientists or practitioners have adopted a pragmatic approach towards creativity in terms of firstly developing creativity, secondly understanding it and the lastly with the testing of the validity of their ideas on creativity. Scientific theory is mostly misused for commercial purposes only.

3.3.3 Psychodynamic approaches to creativity

A psychodynamic approach to creativity represents modern thought wherein creativity is seen as the “tension between conscious reality and unconscious drives”. Unconscious drives include variables such as “power, riches, fame, honour and love”. This theory is criticised due to the fact that it only resembles and focuses on cases of successful “creators” (e.g. Da Vinci). Weisberg (1993), as quoted by the authors, censure the theory as one that isolates creativity and also creates an unmeasurable concept.

3.3.4 Psychometric approaches to creativity

The authors criticise the inadequate measuring instruments for creativity that are based on the normal paper-and-pencil tasks. Only two eminent

tests were developed over time, namely the Unusual Uses Test by Guilford (1950) and the Torrance Test (1974). The latter includes the following subtests: Asking questions; product improvement; unusual uses and circles. The subtests are based on divergent thinking and are scored for fluency, flexibility, originality and elaboration. They argue that although laboratory testing of extremely creative individuals (e.g. Einstein or Michelangelo) is impossible, certain measures should be developed to include “actual drawings” and “writing samples”.

3.3.5 Cognitive approaches to creativity

Various scientists studied the mental process supporting creative thought. Some of these studies simplified creativity as a process where an “extra-ordinary” result is the product of an “ordinary structure”. This was concluded in a situation where creativity was not explored as a separate study but formed part of another. These studies only indicated a normal thinking process, for example generative creations or ideas. Creativity was thus seen as a concept in a larger thinking process and not a significant stand-alone item.

3.3.6 Social-personality approaches to creativity

Studies on the social-personality thought included personality traits, motivational inputs to creativity and the social climate as inducing factors in the creativity process. The authors emphasised the work of Amabile (1983); Barron (1968, 1969); Eysenck (1993); Gough (1979) and MacKinnon (1965) as evidence of creative personality characteristics. The following variables represent these traits: Independence of judgement; self-confidence; attraction to complexity; aesthetic orientation and risk taking. Maslow’s (1968) theory also resembles certain critical creative traits e.g. boldness, courage,

freedom, spontaneity and self-acceptance. The whole self-actualisation process also preponderates creativity as a trait. The social platform for creative behaviour is supported by Simonton (1984, 1988, 1994); Lubart (1990); Maduro (1976) and Silver (1981), as cited by Sternberg (1999). These research studies investigated the influence of culture and anthropological aspects in creative behaviour. The obstacles created by studying creativity within the borders of cognitive, personality and social spheres are represented by the fact that cognitive studies neglected the social and personality variables. Henceforth the social-personality studies somehow dilapidated the subjacent mental processes to creativity.

3.3.7 Confluence approaches to creativity

Contemporary studies on creativity elaborate on the confluence of different classical theories. Sternberg (1999:8) summarised the work of the following authors that support this paradigm: Amabile (1983); Csikszentmihalyi (1988); Gardner (1993); Gruber (1985); Lubart (1994); Mumford and Gustafson (1988); Perkins (1981); Simonton (1988); Sternberg (1985); Sternberg and Lubart (1991; 1995); Weisberg (1993) and Woodman and Schoenfeldt (1989). The confluence theory states that creativity consists of multiple dimensions. The theory therefore integrates cognitive, personality and social traits. This approach accentuates the fundamental importance of a supportive creative environment. The confluence approach must surely not be seen as an obstacle to the study of creativity, but rather as the current approach followed as part of an ongoing debate on the nature and occurrence of creativity.

Kaufmann, in Isaksen et al. (1993), adds his voice in respect of the lack of emphasis developing clarification regarding basic creativity theory

and concepts. He furthermore expresses his concern over the dominant trend in formulating testing instruments that are not based on the fundamentals of creativity.

3.4 Creativity defined

The scientific process of defining creativity is a continuous effort covering a number of decades of research and reasoning. More than 100 definitions were formulated to describe the rather enigmatic concept over time and several attempts are documented in both academic and popular literature. The scope of this study is, in particular, not to define creativity extensively, but rather to apply an acceptable variable make-up within an entrepreneurship training context.

It is possible to define the concept “creativity” through a wide range of probabilities; from the direct derivation of the term “create” or “creating” to definitions that just point out the ways in which the inborn quality is increased, decreased or improved. De Bono (1996:3) defines creativity as the formulation or creation of something that was not previously available in its present state. Value is continually placed on or added to the new creation. This is compared to the work of an artist who is always creating something new, which consequently has a certain value. He also adds that this is not at all an “apparent “ or “easy” process. It is therefore important to note that something unique or unlikely forms part of it. The “unexpected” and “variation” are thus two fundamental constructs within creativity. Torrance in Jalan and Kleiner (1995) defines creativity as follows: *... a process of being sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty: searching for solutions, making guesses, or formulating hypotheses about the deficiencies: testing and retesting them; and finally communicating the results.*

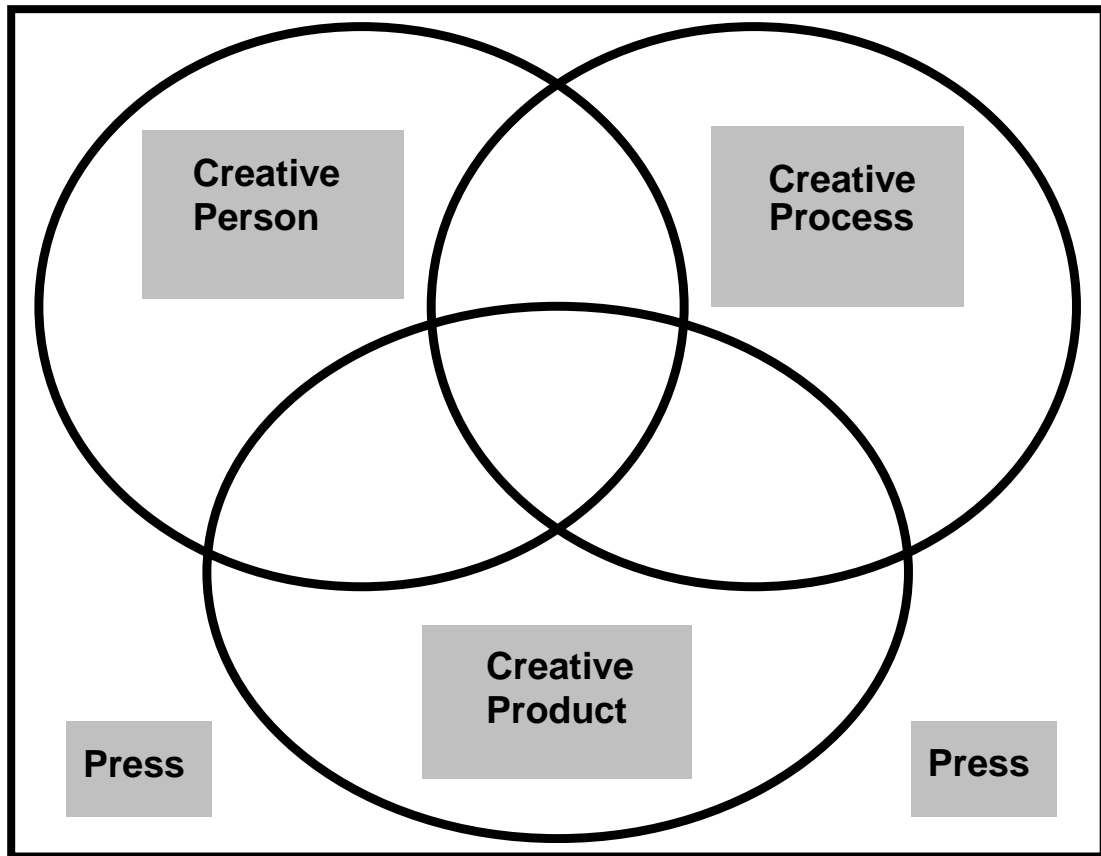
Couger (1995:14) points to the pioneering work of Newell et al. who classifies the definition of creativity under the following critical elements:

- The product of the thought process has to hand something “new” and/or valuable (for the reasoner or his/her culture).
- The reasoning has to be unconventional and it should change or readjust the historical thought processes.
- The thought process requires a high motivational and endurance input. This input has to be intense in the short term or continual through the long term.
- The initial problem has to be so vague that the whole process goes through an in-depth problem defining phase.

Botha (1999:17) managed to organise the majority of the definitions on creativity in an intensive attempt to search for a universal definition. The author quotes Davis (1992) stating that “there are as many definitions for creativity as there are people who have set their ideas on paper”. Her effort refers to the fact that, in reality, no monomorphistic psychological definition currently exists for creativity. It is evident that definitions vary from covering personality traits to the creative process or merely the outcomes of the process. Botha’s research paper categorised the multitude of definitions derived from the 4P model of Rhodes, as quoted by Davis.

The 4P structure (Person, Process, Product and Press) will serve as a definition classification framework and also formed the fundamental basis of the training model applied and tested in this study (see Chapter 6). The following graphic illustration shows the integrative nature of creativity (as formulated by the accepted definition thereof):

Figure 6: The 4P model of creativity



(Source: Adapted from Couger (1995:5))

3.4.1 The creative person

Botha (1999:38) reviews Sternberg in Davis (1992) who stated that the creative person is the result of three integrative psychological variables: Intelligence, cognitive style and personality. Mandler quoted by Smith et al. (1995:9) elaborates on the latter by defining creativity as the result of a cognitive process resulting in any form or degree of novelty. The cognitive process involves “individual or social context”; “deliberate or non-intentional”; “goal defined” dimensions; a “subjective sense of novelty” (does one really ever know whether an idea is novel or not?); “continuous or discontinuous problem solving”; “dreams” which

resemble novelty and “consciousness”, as well as “conscious or unconscious activation”.

Csikszentmihalyi (1996:45) distinguishes the creative person in a definition that states that no clear-cut characteristics can be allocated to the individual to declare him or her as someone who is able to create a novelty (e.g. a new product or service). The individual is creative on a cognitive level firstly due to his or her “genetic predisposition for a given domain”. A person with a definite sensitivity (“nervous system”) for colour will have an advantage in focusing on art. The same applies to a person with an attunement for sound who will have an advantage in music. A critical component of creativity is secondly an “interest in the domain”. This fact is also evident in the entrepreneurial environment, where a great number of successful new ventures were established due to the entrepreneur’s interest in a specific field, industry or even hobby. The third component in his definition emphasises the “access to the domain”. The role of the individual’s immediate social environment is an essential in creative thinking. The author correctly describes this domain as “cultural capital”. This environment may, for example, be “interesting books”, “stimulating conversations”, “role models” and “expectations for educational advancements” (see also the *creative press*).

Rothenberg and Hausman (1976:4) formulate a definition surrounding motivation, cognitive functioning, psycholinguistics and personality theory. The definition depicts the creative person as someone with an unusual thought with a positive outcome. Findlay and Lumsden (1988:9) define the creative person as someone with the ability to solve a problem in a situation where the context of the problem and interpretation is unclear. Boden (1994:75) defines creativity in a more simplistic way by means of perceiving a creative person as an individual who generates new ideas out of existing concepts with a result that is

normally “interesting”. The definition furthermore suggests that creative outcomes or novelties are not always supposed to be sustainable.

MacKinnon, in Isaksen (1987:120-130), disapproves the distinction made between creative personality traits and situational theories in defining creativity. The interaction amongst the variables is far more descriptive in defining the concept. The author suggests that future research in defining creativity and predicting creative behaviour (the *creative person*) should integrate these factors.

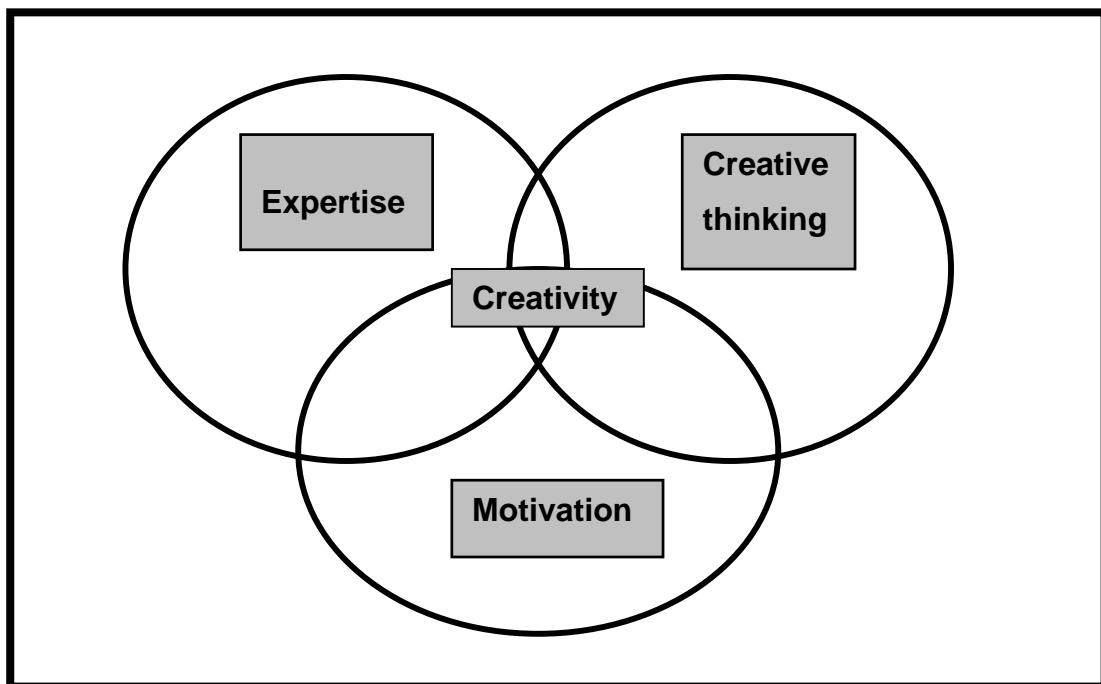
Shaw and Runco (1994:4-5) include affectiveness in their definition of the “creative person”. They observed the occurrence of creativity (within an affectiveness context) as being stimulated by “anger, fear, sadness and shame” as well as certain emotional responses, for instance “good feelings, walking on air and euphoria” and also “rejection, validation, external pressure, depression, anxiety and self-depreciation”. The authors consequently attach the “affective state” of the creative person as an important component of the definition and its inducing role in creative performance.

Davis (1986:15-16) cites Carl Jung who adds “vision” to the definition and notes that the creative person is a visionary individual in an unconscious state. Davis also quotes Otto Rank who defined the creative person as someone with a positive attitude and an “integrated personality”. The creative person should also be seen as a non-average individual. Ford (1999:2) defines the creative person as an individual with the ability to think in a divergent mode, as compared to the convergent. The latter entails a high level of similarity in thinking (a focus on centralised thinking) and a low level of abstraction. Divergent thinking embraces a high level of abstraction as well as a high

“disimilarity” in thinking (therefore applying techniques that motivate the free association of unrelated elements, themes or entities).

Amabile (1999:4) whose inputs are regarded as pioneering in the field of creativity, developed a “three-component model” that combines three interrelated concepts that, as a result, defines creativity the construct. The following graphic illustration indicates the composition of the model:

Figure 7: The three-component model of creativity



(Source: Adapted from Amabile (1999:4))

The above model suggests that the creative person is a function of “expertise”, “creative thinking skills” and “motivation”. Expertise pertains to knowledge of technical, procedural and intellectual aspects. Creative thinking skills embrace all the cognitive creative processes, for example, inspiration, imagination, flexibility and combining the non-conventional into a novel idea. Motivation refers to the desire to solve a problem or the drive (intrinsic motivation) to create the new. The combination and

integration of these variables results in creativity. Amabile's definition is a more practical effort and is primarily accepted and supported in the training model tested in this study (see Chapter 4).

McFadzean (2000:15) manages to conclude and summarise the traits of the creative person as follows:

- A desire to achieve a goal or winning attitude
- A high level of motivation, dedication and commitment
- A high level of self-confidence, not risk averse and accepting of failure
- The ability to link different (unrelated) elements or entities
- The assimilation of negativities regarding failed projects or attempts
- An ability to shift existing paradigms and assess different perspectives
- Problem and opportunity conceptualisation in a different or new frame of mind
- A "single minded" vision or road map
- A working style that induces hard work and relaxation in order to enhance incubation
- The ability to determine whether individual or group creativity should take place.

3.4.2 The creative process

Davis (1986:60) distinguishes the different meanings of the creative process by means of the three different views. The first meaning involves the successive steps from identifying a problem up and till the novel solution thereof. Secondly it shows the expeditious "perceptual" changes that take place when new idea creation occurs in a short time frame. The third meaning encompasses all the techniques that are used

when new ideas or solutions are generated. Davis describes the basic process as one that starts with problem recognition, a solving phase and the final solution phase.

The historical course of creativity-process development (as recorded by Davis) started with Graham Wallas in 1926 who suggested a process that consisted of four steps namely:

1. Preparation (problem assessment)
2. Incubation (conscious and unconscious mental dynamic)
3. Illumination (new idea conception)
4. Verification (evaluation of idea/s).

Martindale, in Smith et al. (1995:251), confirms that the Wallas process was derived from the observations of Helmholtz (1896) who focused on the significance of the problem phase. Helmholtz suggested that the intensity of the preparation should not be neglected and that this phase creates a platform for the success of the eventual outcome. John Dewey developed a far more simplistic creativity-process in 1937 that resided in two basic steps:

1. A condition of uncertainty, “perplexity”, or a problem situation.
2. An inquisition phase that involves that acquisition of relevant information that will lead to an effective solution.

Kingsley and Garry as observed by Martindale expanded the previous process and transformed it into six phases namely

1. A difficulty is experienced
2. The problem is defined

3. An investigation into possible “clues” or alternatives is conducted
4. Several suggestions are presented and tested
5. An accepted solution is decided upon
6. The accepted solution is tested.

Torrence developed the following five-step process in 1977:

1. The identification of a problem or “gap in information”
2. Generating ideas or hypotheses
3. Testing and/or changing the hypothesis
4. Communicating the results.

Wallas’s process served as the blueprint for a multitude of processes that were developed and researched over time in the field of creativity. The basic structure and sequence of the process seems to be accepted amongst academia, scientists and practitioners.

The creativity process used in this study is a combination of the processes developed by Williams (1999:7) and Nystrom (1979:39). This process is an integration of all the variables as discussed in the foregoing section. It shows the mental and action-driven requirements needed in each stage in order to develop a new idea, product, service or process. These stages were applied in an entrepreneurship-training context and will be elaborated upon in Chapter 4.

Table 13: The creativity process

Stages	Requirements
1. Awareness and interest	<ul style="list-style-type: none"> • Recognition of a problem or situation • Curiosity
2. Preparation	<ul style="list-style-type: none"> • Openness to experience • Analysis of how the task might be approached • Tolerance of ambiguity • Willingness to redefine concepts • Divergent thought processes (explore many possibilities) • Intuitive ability
3. Incubation	<ul style="list-style-type: none"> • Imagination • Absorption • Seeking ideas, possible answers and solutions • Independence • Psychological freedom
4. Illumination (Insight)	<ul style="list-style-type: none"> • Ability to switch from intuitive to analytical patterns of thought • Eureka! • A-ha!
5. Verification	<ul style="list-style-type: none"> • Critical attitude • Analytical ability • Testing

(Source: Adapted and integrated from Williams (1999:7) and Nystrom (1979:39))

3.4.3 The creative press (environment)

The context within which creativity takes place, or the creative environment, has attracted a multitude of research interventions. The main focus in defining creativity in an environmental context or the creative systems approach focused on the educational environment.

The more contemporary studies focused on the work environment. The majority of these studies assessed factors that contribute to creative productivity. These variables served as critical components in defining creativity. Plucker and Renzulli as documented by Sternberg (1999:35-51), cite Amabile, Hill, Hennessey and Tighe (1994); Oldham and Cummings (1996) and Gough (1979) who found evidence (in various stages) that a challenging work environment influenced the creation of new ideas or products positively. The successful interaction and interrelatedness amongst the variables Person, Product and Process appear in a creativity induced environment.

McManus (1999:2) reviews the work of Carl Rogers (1954:348) and quotes him directly:

“In industry, creation is reserved for the few – the manager, the designer, the head of the research department – while for the many life is devoid of original or creative effort. With scientific discovery and invention proceeding, we are told, at the rate of geometric progression, a generally passive and culture bound people cannot cope with the multiplying issues and problems. Unless individuals, groups, and nations can imagine, construct, and creatively revise new ways of relating to these complex changes, the lights will go out.”

The environment in which an individual finds him/herself actuates the existence of creative behaviour and performance radically. Rogers (1976) developed three conditions for a supportive environment in this regard:

3.4.3.1 Existensibility: Openness to experience

The creative environment should motivate the non-existence of boundaries and conventional limitations. The individual therefore needs to assess new information in an original context in order to establish creative thought. The author accents certain variables in the social environment that hinders openness of thought: past experience, cultural boundaries, social norms, fears and anxiety of future outcomes. Existensibility is the basic opposite of defensive psychological thinking.

3.4.3.2 Internal locus of evaluation

A creative environment is also an environment that permits the individual to evaluate his/her own novel idea and/or product without the criticism of externals. It thus implies that the environment should allow individuals to firstly develop confidence in what is regarded as new and secondly to take the risk that enables differentiation. The theory does not exclude the appraisal or feedback of others, but the initial assessment should be vested in the individual. Amabile (1983) supports this aspect and claims that castigation from an external source normally has a negative influence on creative development. Intrinsic motivation should be fostered and yields much higher creative performance than punishment from outside in terms of being non-creative. Torrance (1995) found, in the latter context, as derived from various longitudinal studies, that creative results should be rewarded. He states, however, that rewarding creativity should be excluded from “false premises”, distortions of the truth and the failure to test hypotheses.

This phenomenon is a somewhat neglected component of learning and is also ignored in conventional education systems. This study and

training model supported intrinsic motivation and evaluation as a platform for creative and innovative performance in an entrepreneurial context.

3.4.3.3 The ability to toy with elements and concepts

A creative environment needs to tolerate the ability to “play”. A non-rigid set of rules should facilitate the opportunity to explore problems in a playful manner in such an environment. This includes the free generation of ideas, inclusion of colour, appreciation of different figures and exploring the combination of unrelated concepts. Rogers (1954), as displayed in McManus (1999:6) stresses, however, that “play contributes to creative productivity only when it facilitates opportunities to increase the complexity of consciousness or the power of intrinsic motivation”.

McManus (1999:7) suggests that “complexity” be encouraged because of its integral position in the creative environment. She states, in a training context, that the following aspects should be part of the creativity-training environment and will encourage complexity:

- encourage the flow of stimulating information;
- ensure informational feedback whenever possible and as quickly as possible;
- provide new experiences and create sources of information;
- process whatever learning occurs;
- share stories of successes and failures; and
- tolerate mistakes as inevitable, i.e. learning through experience or trial and error.

The training environment should not only encourage complexity but also create safe psychological spaces (e.g. constructive communication) and flexible boundaries that accept the existence of new information.

Torrance (1995:28) defines a creative environment as a “responsive” surrounding that is fuelled by curiosity. Individuals must assess the new within a curious manner. Many novelties have been the result of a highly responsive environment. Torrance also indicates that a number of gifted children have ended up unsuccessful due to the non-existence of a responsive environment. The training environment, within an entrepreneurial context, should for example promote responsiveness in the sense of motivating learners to generate new ideas without the punishment resulting from the so-called unfeasible nature of some of the ideas.

3.4.3.4 Barriers within the creative environment

Certain variables in an environment may not be conducive to creative development. These variables are seen as barriers to creativity. Barriers are normally blockages to thinking and acting creatively. These barriers are based on the individual and will influence many tasks in the workplace. Antonites in Nieman and Bennet (2001), identified the following barriers to creativity within an environmental context:

- **The social environment**

The social environment entails all the variables affecting the human being, whether individually or in group format on a social or societal level. The following factors in this environment can influence creative behaviour negatively:

- A lack of understanding and support for new ideas in communities, among peers and parents.
- Many families have an autocratic decision-making structure, and therefore do not allow children to think independently.
- Risk taking is not allowed.
- Culture and certain customs or beliefs within a sub-culture might form barriers to creative behaviour (e.g. women in particular African cultural structures are not allowed to own or run entrepreneurial ventures. Their sole purpose is to raise children.)

- **The economic environment**

- Broadly speaking, the macro economy does not support the development of new ideas and products (e.g. an enabling environment that advances entrepreneurial performance).
- There are no growth prospects in the economy.
- No financial support is available for the development process of new products.
- Risk taking is seen as a negative element of the economy.
- No rewards exist for new and feasible ideas.

- **The physical environment**

- There are continuous or once-off distractions in the thinking process (e.g. disruptive sounds, climate and energy).
- In the education and training environment the venues are conventional (e.g. even rows and grey/dull colours).

- The existence of routine or related tasks (e.g. you have to eat, work, study and sleep as part of a specific timetable and routine).
- The work routine consists of always conducting the same tasks at the same time and in the same way.

- **Cultural barriers**

The study of the influence of culture on creative behaviour is a field on its own and not the main scope of this study. However the role of culture in creativity development is not neglectable. There are more than 12 different cultural groups in South Africa. Each one of them has characteristics that will, at some point in time, negatively or positively influence creative development. It is important not to stereotype in this regard due to the sensitive and proudness factors involved in cultural beliefs. The following barriers are reckoned to be generic cultural barriers:

- Individuals have to go to school, after that study at a university or college, then find a job with a governmental institution (cultural mindset). Entrepreneurial endeavour is not a feature of such a cultural group.
- The unknown is unsafe and therefore risk averseness is the rule. Although calculated, entrepreneurship entails a certain level of risk-taking.
- An expectation is created in certain cultures, which prescribes that one has to be practical and think economically before your ideas can be generated.
- To ask a question, or to question an issue, is impertinent and unacceptable.

- Stereotyping implies making assumptions about certain issues without proper knowledge of the background or particulars of the matter, with specific reference to cultural characteristics.
- The policy of a company is to follow strict orders and procedures, and also stay in line with the organisational structure.

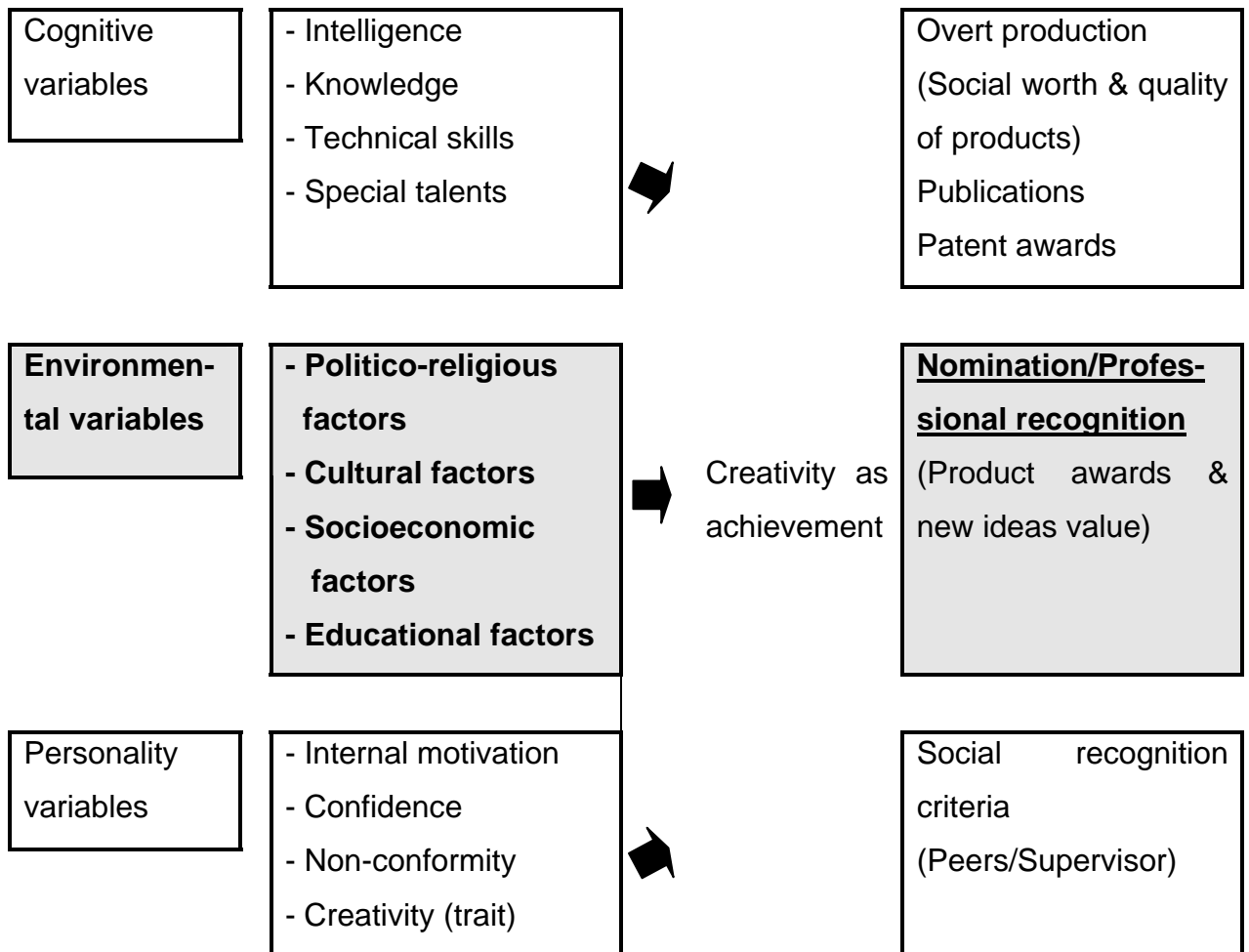
- **Perceptual barriers**

Perceptual blocks are barriers in the way of perceiving things (objects and/or abstract figures) clearly and correctly. The following aspects are potential blocks to creativity:

- Applying a narrow mindset to analyse problems. An example in this regard is for instance idea anxiety. Here one has an idea and you focus on the “great” idea without analysing the relevant facts supporting it.
- Making assumptions about a problem or idea without a holistic viewpoint or displaying an inability to structure the problem and evaluate the smaller elements.
- Prematurity. Individuals tend to assume that something will work without proper marketing research or feasibility studies. In this case they rely on the intuitive ability only.
- Characteristics and even the utilities of the new product are sometimes perceived differently by the owner in comparison to the potential customer. In many new products this perceptual block has resulted in failure in the market place.

There is a variety of barriers that influence an effective creative process negatively. It is also possible to add intellectual, emotional and time barriers to the process, and it is advisable to try and remove these barriers before embarking on any means of creativity. The work of Paul E Torrance needs to be re-emphasised: A responsive environment cultivates creative development and performance. Eysenck, in Boden (1994) as cited by Botha (1999:42) graphically illustrates the relationship between the environment and trait creativity:

Figure 8: Trait creativity and the environment



(Source: Adapted from: Botha (1999:44))

The illustration shows *inter alia* that environmental factors (e.g. politico-religious; cultural; socio-economic and educational) contribute

fundamentally to specific creative achievement, in this regard, in the form of recognition for the creation of a new idea or product. This view should be seen against a holistic framework, integrating cognitive and personality variables with the role and influence of the environment. Csikszentmihalyi (1996:127) argues that evidence exists of instances where the environment was disregarded, e.g. Michelangelo painting a ceiling in physically challenging circumstances and many classical poets who created outstanding work in small and clumsy tents. He disputes, however, that the “spatiotemporal context” in which an individual finds him/herself will affect creative behaviour. The author supports Eysenck’s illustration in terms of the importance of the environment for the creation of new ideas and/or products as well as an environment that accepts newness.

In conclusion, Murdock et al. in Isaaksen et al. (1993:116-119), graphically summarise the conceptual components of the definition of creativity as described in the foregoing discussions:

Table 14: Conceptions of creativity - an analytical simplification

	Definition	Key elements of the definition	Analytical simplification themes
Person	<p>Everyone has a creative capacity.</p> <p>Everyone has a different way of expressing it.</p> <p>There is a constellation of other relevant factors including motivation, personality, traits, skills and knowledge.</p>	<p>Creative capacity.</p> <p>Found in everyone.</p> <p>Different ways of expression.</p> <p>Constellation of relevant factors.</p>	<p>Creative capacity.</p> <p>Found in everyone.</p> <p>Different ways of expression.</p> <p>Constellation of relevant factors.</p>
Processes	<p>A dynamic reconceptualisation that results in potential for change, action, or a product which is original, functional for individual and/or larger audiences.</p> <p>Found in all people and influenced by cognitive, motivational, personality,</p>	<p>Dynamic reconceptualisation.</p> <p>Results in potential for change, action, or product.</p> <p>Original, functional for individual or larger audience.</p> <p>Found in everyone.</p> <p>Constellation of influences.</p>	<p>Dynamic reconceptualisation.</p> <p>Results in potential for original, functional, change, action or product.</p> <p>Found in everyone.</p> <p>Constellation of influences.</p>

	historical/ecological, developmental, biochemical, change.		
Product	A person establishes processes within a process which leads to products. There are tangible and intangible outcomes. You don't need to look at what led to the creative product. Some criteria for products are newness, relevance/ Appropriateness, elegance.	Tangible/intangible Outcomes of creative activity. Criteria: newness, relevance/ appropriateness, elegance	Tangible or intangible outcome (product) as a starting point for definition of creativity. Creativity is newness, relevance/ Appropriateness and elegance.
Process	A viewpoint to enable us to go beyond our immediate good idea or solution to any problem.	Viewpoint enables going beyond immediate good idea.	Viewpoint enabling going beyond immediate good idea.

(Source: Adapted from Murdock et al. in Isaaksen et al. (1993:116-119))

The authors furthermore compiled the following table, as derived from an in-depth analysis of research studies on creativity, in terms of how creativity should be developed in direct correlation with the definition:

Table 15: Nurturing and developing creativity – an analytical simplification

	Key elements of change	Analytical simplification themes
Person	How creativity is manifested is determined by combination of culture, outcome, approach, and person. This contributes to diversity. The level at which you are nurturing creativity determines variables for nurturing. More coordinated efforts among researchers. Be sensitive to natural setting which you are entering.	Know what, where, how, and who you are nurturing – it all affects how creativity is manifested. Level at which you are nurturing creativity determines variables for nurturing. More coordinated efforts among researchers.
Process	Balance: Divergent and critical thinking. Problem statement and emerging problem clarification. Continuity between theory and practice. Tools to prepare people and make process enduring.	Balance certain elements of process. Refine tools to prepare people for process and engage in process. Continuity between theory and practice.
Product	Importance of creative productivity and skills. Outcome provides context (domain) for concrete learning: Know it, then nurture it. Nurturers need to be nurtured. Research is needed. Organisations: Need to find ways to break creative barriers.	Outcome provides context for concrete learning. Nurture product evaluation. Nurture nurturers. Research. Organisations: Need to find ways to break creative barriers.

Press	<p>Model based on client needs. Realise that when you are nurturing creativity, you are going into an ongoing system. Understand it. Theory related self-reflection is a powerful tool. Organisations: look at metaphors</p>	<p>Model based on client needs – takes into account level of involvement, role, experience, motivation and change. Model, which is sensitive to the current environment, works with it and builds on it.</p>
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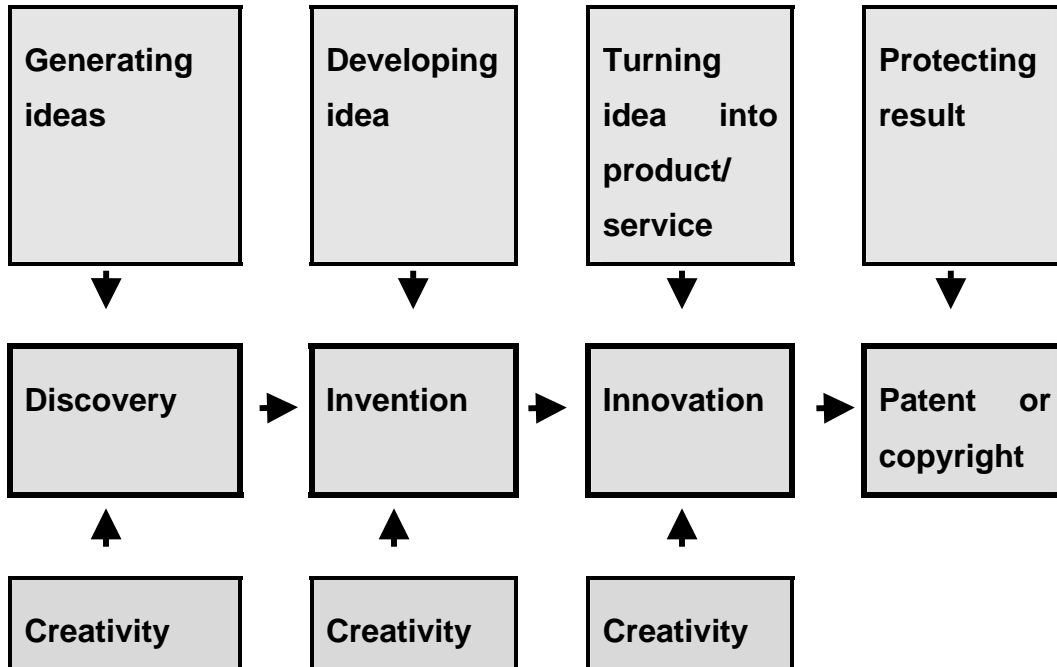
(Source: Adapted from Murdock et al. in Isaaksen et al. 1993:116-119)

3.4.4 The creative product

The result of creative thinking is defined as the novel outcome or product of creativity. The product can be seen as anything new that results from thinking creatively or applying creative techniques that encompasses creative thinking. The “new “ may range from ideas to physical and tangible products and intangible services or processes. The result of creative thinking in an entrepreneurial context is seen as an innovation, which will theoretically be expanded on in this chapter.

Creativity is furthermore seen as a catalysing agent in the creation of new products. The following graphic illustration shows the influence of creativity in the creation of new products, thus being the result of creative thinking.

Figure 9: The influence of creativity in the creation of new products



(Source: Adapted from Couger (1995:18))

The figure illustrates that the “product “ of creativity is more than just a new idea. Creativity forms a platform and integral input into the total developmental process. The following “products” or outcomes are thus the result of creativity, as derived from the graph:

- **Idea generation**

A multitude of options is generated in order to, for example, solve a problem, address a market need, or change the existing. Emphasis is placed on quantity and not quality. Badie (2002:68) suggests, however, that effective idea generation is not merely the result or outcome of creativity, but needs to be perceived as part of integrated analogical thinking. An integrated analogical thinking frame work

accompanied with creativity, serves as a focusing and targeted process that results in far more successful outcomes-based methodology.

- **Idea development**

A number of suitable ideas are chosen and filtered until the most viable option comes to light. The analogical thinking or reasoning method, as discussed in the previous paragraph, gives purpose to idea development, again an integrated approach to creative thinking.

- **Discovery**

A discovery normally occurs without purpose or accidentally. In relation to invention that needs a systematic thinking and operating process, discovery still needs some testing, in order to determine the feasibility thereof.

- **Invention**

An invention is directed in line with a goal. The entrepreneur realises for instance that a technological product will become obsolete in six months time. The invention process is then based on various research and testing interventions, before the new or changed product is commercialised.

- **Innovation**

The exploitation of the invention is seen as innovation. The new invention is now developed into a unique product, service or process.

All the variables as discussed, are the result of creative thinking. Couger (1995:286) argues that the product of creativity should be based on a two-fold measurement, firstly novelty or newness and secondly utility or value added. The author lists a number of characteristics of the product of creativity as measured in order to determine its novelty or utility:

- Qualified intellectual activity or creative strength
- Usefulness
- Newness accompanied by overcoming certain difficulties in the creation process
- A proper experimentation phase before the novel “instrumentality” took place
- Negative perception and scepticism before the success of the novelty
- An unsatisfied need, before the product existed
- Proof of increased income/sales after the introduction of the product (thus value added)
- Evidence of precise novelty: “novelty of a combination”, “novelty of a new application”, spatial and kinematic novelty”, novelty of a deletion of useless parts” and “novelty of a substitution”.

The author cites Brogden and Sprecher, stating that only 14 studies up to 1995 showed evidence of how to measure the actual novelty of a product, therefore being the result of the creative thinking process. No progress on this was found in the search for more recent findings, thus opening an opportunity for further research.

3.5 Myths of creativity

In the interest of training it is important to stamp out some common misperceptions surrounding creativity as identified by De Bono (1996:31-40).

3.5.1 Creativity is an innate talent and cannot be taught

If creativity were only an innate talent there wouldn't have been any sense in developing the phenomenon any further. Therefore, if nothing was done about creativity, it would just remain an innate talent. But, should training, structural and systematical techniques be applied, the general level of creative abilities could be improved. This argument is supported by the fact that certain individuals will still achieve more than others, but that any one can develop certain creative abilities. Thus there is no contradiction between "training" and "talent". The author adds that to learn creative techniques is in no way more difficult than learning certain sports or mathematics for instance. In this regard De Bono (1996) is quoted: "it may not be possible to train a genius – but there is an awful lot of useful creativity that takes place without genius".

3.5.2 Creativity is a phenomena linked with the so-called rebel

De Bono compares the typical conformist at school level with the typical rebel. The rebel differentiates him/herself from the conformist by a certain temperament, which points to an individual who isn't interested in the normal flow of things. It is therefore logical to argue that the rebel will seem more creative in later life than the normal child or conformist, who just adjusts to the general status quo. The rebel is also the individual who aims to challenge existing concepts and undertakes certain tasks in a different way. This individual thus has the courage and energy to

develop alternative viewpoints. Traditionally this individual is placed within the creativity frame of reference. The author states that this tendency is currently changing with the conformist realising the value and compensation associated with the “new game” and aiming to adjust to it. He further points out that the possibility exists for the conformist to gain far more than the rebel from the acquisition of certain creative techniques.

The conformist isn't necessarily opposed to something as is the case with the rebel, but this person can use the opportunity more constructively and could add new value to existing ideas which hold certain advantages for the development and training of entrepreneurs. Reference is also made to the Japanese culture where group conformation stands opposed to individual eccentricity. However, this conception is changing with the Japanese economy realising the independence of creativity and acknowledging and implementing it. This process is implemented in the same way that quality consciousness was established in the past as a trademark of the Japanese economy.

3.5.3 Right brain versus left-brain

Van Vuuren (1997) holds the view that the ability to think creatively is a right-brain activity. De Bono (1996) broadens this viewpoint and warns against a simplified opinion, namely that creativity is simply the application of right-brain activities. He describes this argument namely that left-brain activities should be negated in creative behaviour deceptive with regard to the creative thought process. The left-brain plays an important role in the systematic process where concepts and perceptions are seated. It is therefore in the left side of the brain where concepts and perceptions are formed and stored. De Bono (1996) proves this argument with the application of the “PET” (“Positive

Emission Tomography”) test. This instrument revealed that right and left-brain activity occurs simultaneously during creative behaviour.

3.5.4 Art, Artists and creativity

Owing to the broad application and definition of “creativity” the direct conclusion is made that this concept is directly linked to artists and the practice of the arts. This implicates that should creativity be taught, artists are being formed and trained at the same time. De Bono states implicitly that this is not the case. He describes the advantages of creativity as the changing of certain concepts and perceptions. This aim is reached through the usage of lateral thinking which implies that thoughts and actions do not take place in the same linear way as usual. He thus indicates that even artists may become trapped in a certain stagnated way of thinking and acting that doesn’t include a high level of lateral thinking. The flexibility that is inherent to creativity is therefore not applied in the aforementioned example. Artists can also be more analytical which doesn’t necessarily point to lateral or creative thought. The author furthermore states that the misconception exists that only artists can be trained in creative thought and actions. Emphasis must therefore be placed on the fact that creative thought implies the changing of existing concepts and perceptions and implies an educability which, in turn, holds certain advantages for the stimulation of creative thought as a prerequisite for entrepreneurship and as a component within a training frame of reference.

3.5.5 Exemption

De Bono (1996) suggests that the result of creativity training can be seen in the liberating feeling created through it in the individual. This also includes the awakening of the internal potential of creativity of

which the individual wasn't aware before. It is a known fact that individuals function more creatively should the space and opportunity be created to freely "play" with new thoughts and ideas. The conventional educational situation doesn't necessarily or usually create the opportunity for the individual to accept he/she may go of his/her inhibitions and shouldn't belittle him/herself should a mistake be made. The trainer/facilitator should continually emphasise that the individual should at all times feel free to express him/herself with the aim to overcome inhibitions and act creatively.

3.5.6 Intuition

De Bono (1996) points to the dual nature of intuition and its influence on creativity. Firstly, insight is associated with intuition where something is suddenly experienced as "new". The aim of this specific creative technique is to develop the nature of insight. Secondly, insight is associated with a feeling that is developed through experience and consideration. The content or steps taken that lead to this feeling aren't easily enunciated and therefore intuition is rather described as "thought". As a result of certain experiences one develops a certain feeling in respect of questions and decisions. It is, however, dangerous to argue that all creative thought is formulated around the intuition concept, because should this have been the case all decisions would have been based upon this and the completion of tasks would also have depended on it. De Bono (1996) repeats that intuition is in fact, an important component in the lateral thinking process. It must therefore be seen as a bonus if it adds something positive to the process.

3.5.7 The need for “craziness”

Creativity is generally accepted as being “less serious” and sometimes also regarded as “crazy”. This argument is easy to support and explain, because to think in a different way is often experienced as somewhat crazy. Within this framework, creative individuals can often, according to the perceptions of the rest of the group compete in a crazier (unorthodox) way than is generally accepted as the “norm”. The author regards provocation as a valid way of implementing lateral thought. The result of this is that the individual is released from the normal perceptual pattern and left with an unstable thought situation. He or she is stimulated further to develop new ideas. This process is purposefully and systematically implemented and is based on logical asymmetrical patterns and systems. The mere craziness is thus cancelled out by instituting a formal process to stimulate creative acts. The individual is enticed to formulate new ideas rather than embark on mere craziness. The application of this technique can also be of the utmost importance in the training of entrepreneurs where the development of ideas is seen in a realistic and serious light.

3.5.8 The group versus the individual

Traditionally creative thoughts are largely stimulated in groups by making use of various techniques. One of these techniques is known as “brainstorming”. Through the application of this technique it is indicated that that creative thought should be a purposeful group process. Other people in the group stimulate the individual in the group’s idea generating rather than the individual who just “waits” for inspiration to develop ideas. De Bono, however, states that group-motivated actions are not a pre-requisite for creative thought. Through the application of the provocation technique more emphasis is placed on the individual.

The development process is therefore not dependent on the input of the group. In a group situation, the individual often has to sit and wait and listen to the ideas of others. He/she is often forced to repeat his/her idea to ensure support for it. From time to time the group follows a direction that doesn't agree with the individual's individual direction and this often distracts from his/her continued attention and participation. He, however, emphasises that the social aspects of group participation is very valuable and that it takes active discipline to function on an individual basis. It is therefore important to indicate that purposeful creativity isn't necessarily a group-oriented action. This argument also holds far reaching implications for entrepreneurial training.

3.5.9 Intelligence and creativity

Getzel and Jackson (1996) as recorded by De Bono (1996) indicate that up until an IQ (Intelligence Quotient) of 120, creativity and intelligence are comparable. After this the confluence splits. It is held that individuals with a higher IQ are often not motivated to speculate about new ideas. The highly intelligent individual regards any new idea and abnormal idea as absurd and he/she would not be very likely to support it. The individual with a much lower IQ, on the other hand, would be more likely to implement the mentioned lateral thinking techniques. This implies that the individual with a higher intelligence has lower creative abilities, and accordingly so, also the less intelligent individual. These creative thought abilities are educable and hold enormous advantages for the training of creative thought abilities in the entrepreneur.

De Bono (1996) concludes by referring to the fundamental advantages of creative thought. These advantages are closely linked to the prerequisites for successful entrepreneurial behaviour and achievement. Firstly, improvement. The most noticeable characteristic of successful

creative thought lies in the nature of it to improve the individual's situation. The individual can use creative thought as a means to improve various situations. This points to the development of an idea, resulting in the improvement of an uncomfortable or undesired situation, process or even product. Secondly, problem solving. Should the standard procedure for the completion of a task or process followed not show the desired results, creative thoughts and ideas are used or developed as solution alternatives. Thirdly, value and opportunity. This advantage is linked to the creation and adding of value as well as the designing of opportunities. Within the entrepreneurial framework the advantages of a new opportunity and/or the development of new products/services or processes are indicated. This also includes the correct positioning of products in the required market situation. This advantage is regarded as part of the entrepreneurial enthusiasm and process. Fourthly, a futuristic viewpoint. Consideration within a future framework calls for a specific reasoning ability.

Creative thought can be seen as a way by means of which the future can be indicated. All results and actions can be generated within the light of creative alternatives. Creativity can thus be experienced as a motivator through whom the entrepreneur is interested in what could be around the corner for him/her. Through this method the entrepreneur is forced to react in a pro-active manner to alternatives in contrast to a reactive approach. This process requires well thought out creative thinking processes. The misconceptions as indicated in the work of De Bono are supported by Adams; Parnes; Torrence; Davis, Miller, Newell et al. and Raudseep, as referred to by Couger (1995).

Creativity and creative thinking as a single construct is a catalyst in the creation of the new. The final result, within an entrepreneurial context, results in the occurrence of an innovation (e.g. new product, service or process). The construct innovation therefore needs explanation.

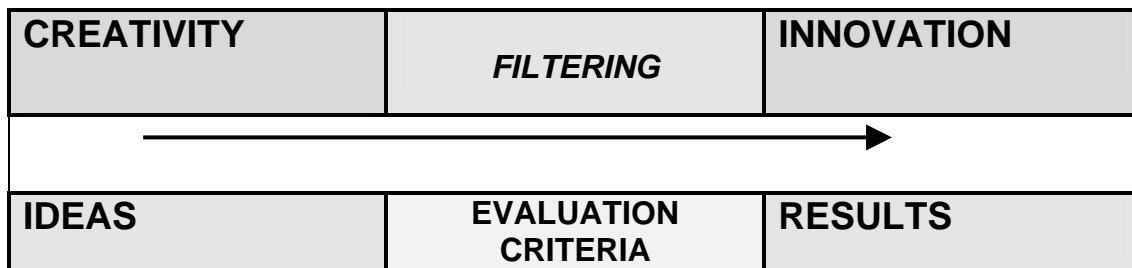
3.6 Innovation

Majaro (1988:27) differentiates between creativity and innovation as constructs. Creativity is the thought process that leads to the development and generation of ideas. Innovation is the practical implementation of the idea concept to ensure that the set aims on a commercial, profitable basis are met, in line with a specific opportunity in the market environment. Innovation is therefore ideas that seem to be newer, faster, more cost effective and possibly more aesthetical. This implementation should be usable, practical and aimed at showing results. Figure 10 in this chapter illustrates the position of innovation as a result of creative thought.

Gilmartin (1999:34) locates innovation between creativity and opportunity identification, and regards creativity as the foundation for innovative behaviour. Zimmerer and Scarborough (1996:80-95) broaden the above-mentioned viewpoint by stating that, between the idea generating process and the innovation process, a systematic filtering process should take place. This process acts as a development mechanism, with the aim to change “raw ideas” into tangible, value-driven innovations.

The process can be diagrammatically presented as follows:

Figure 10: The development of innovation



Daydreaming
Flights of fancy
Brainstorming
Observation of other individuals

New innovations
Better innovations
Faster innovations
More cost effective
More esthetical

(Source: As adapted and changed from: Zimmerer & Scarborough (1996:91))

It would subsequently be important to discuss innovation as a concept in broader terms, due to the fact that the innovation process is ultimately the commercialising of the entrepreneur's ideas.

Gee and Tyler in Martin (1994:2), point out that innovative undertakings contribute more to economic growth and job creation than others. Furthermore, newly industrialised and developing states' economic ability to grow to maintain international competitiveness, is largely determined by the presence of technological innovation. Cumming (1998:6) divides the innovation process into three consecutive steps: Firstly the birth of the initial idea (creativity), secondly the successful development of that idea and thirdly the successful application of the

idea. He developed a comprehensive and inclusive model that indicates the different factors which have a positive effect on the three steps.

Table 16: Summary of factors having a positive effect on each of the three steps

Diverse information sources	Birth of initial idea (Creativity)	Risk taking encouraged
Staff with diverse interest		Adequate resources
Supportive management		Good strategic direction
Failures willingly tolerated		Free information exchange
Freedom to pursue own ideas		Brainstorming encouraged
Success recognised		Access to external stimuli
Patent programmes		Non-constraining environment
Suggestion programmes		Technically competent team
Non-conformity tolerated		Challenging environment
Adequate funding		Successful development
Adequate manpower	Clear project objectives	
Management's belief in project	Full-time team members	
Risk taking encouraged	Enthusiastic cooperative team	
Strong project champion	Empowered team	
Senior project champion	Use of external expertise	
Strong project leader	Users' needs understood	
Good project selection process	Good contact with users	
Good source of project ideas	Thorough development	
	Innovation	
Meets customer's needs	Successful application	Outperforms current products
Value for money		High quality implementation

(Source: Adapted from Cumming (1998))

Though more suitable for an existing business' need, Cumming's model is also applicable in an entrepreneurial context. It is also evident that all

types of entrepreneurship are based on innovative acts. It serves as a prerequisite of change in the pattern of allocating resources, as well as new abilities to add value to new possibilities for the positioning of products or services in certain markets.

Drucker (1994:20) suggests that innovation is an entrepreneurial instrument, one which is used to develop a differentiated undertaking or service. It is possible to regard innovation as a discipline in itself, where it is possible to be taught as well as to practise. He adds that entrepreneurs should purposefully search for sources of innovation, as well as changes and their symptoms. This could point to certain opportunities for successful innovation. It is furthermore also important to identify the principles of innovation and to successfully implement them.

In this regard Drucker (1994:20) is quoted as follows:

Entrepreneurs are a minority among new businesses. They create something new, something different, they change or transmute values...they always search for change, respond to it, and exploit it as an opportunity.

The origin of innovation is of the utmost importance. It is critical that the causal relationship that leads to the invention of the successful instrument is pointed out. Drucker identifies seven resources of innovative opportunities:

- **The unexpected**

Unexpected success, or failure and the unexpected external incident are highlighted. IBM is a very relevant example pertaining to unexpected success. IBM developed computer equipment to use in

banks during the 1930s. Due to the depression of the American economy nothing could in reality be sold to the banks. However, state libraries saw this computer equipment as very advantageous for their systems. All stacked stock was sold, which resulted in unheard of and unplanned success. It is also relevant to mention Akio Morito's statement as quoted here by Martin (1994:4):

I do not believe that any amount of market research could have told us that the Sony walkman would be successful, not to say a sensational hit that would spawn many imitators. And yet this small item has literally changed the music-listening habits of millions of people all around the world. Many of my friends in the music world, such as conductors Herbert von Karajan, Zubin Mehta, Lorin Maazel, and virtuosos like Isaac Stern, have contacted me for more and more walkmans, a very rewarding confirmation of the excellence of the idea and the product itself

- **Incongruency/Incompatibility**

Incompatibility exists between reality as it appears in practice and as it is supposed to be. During the 1950s it seemed that the aeronautical industry would definitely surpass the shipping industry. The costs of the shipping industry as a result increased and the speed at which stock reached their final destination went down dramatically. The result of this tendency was that more and more stock was heaping up in the harbours, leading to a higher incidence of theft. The industry tried to resolve the problem by manufacturing faster ships. This solution, however, was very capital intensive and as a result the economies of scale didn't improve. A solution was, however, developed with the invention of the process during which the products were loaded into specific cargo containers on land and then merely loaded onto ships as packed entities.

- **Innovation relies on the need for process**

The task-related nature, rather than the situation-orientated source of innovation is emphasised. The change occurs within the processes of the venture, industry or service. The importance of the completion of a specific task is crucial. It also points to the improvement of an already existing task or process, or the replacement of a missing or weak link in the process of the development of a new process, based on newly generated knowledge. This need arises where everyone in the venture or industry realises that there is a problem in the process, but virtually nothing is being done about. Should a solution to the problem be found, it is usually accepted as obvious and later on as the standard.

- **Changes in marketing and industry structures**

These phenomena usually occur unexpectedly. The change in the market structure of any industry (for instance the information technology industry), often creates opportunities for innovation. Should there be a definite change in the market structure, all role players should adapt to it. In this instance the leadership is often replaced.

- **Demographic changes**

Change in the make-up of the population includes those relating to the size of the population, age structure, composition, rate of employment, educational levels and income, which then creates innovative opportunities. The Internet *per se* formed a platform for new venture creation by innovative young entrepreneurs.

- **Changes in perception, state of mind and reason**

It could be most dangerous when the temporality of change with regards to perception is not addressed correctly. It is therefore important to distinguish between real perception shifts and mere fads. True innovations that influenced dramatic changes seemed to be sustainable products or services, and not short-term occurrences.

- **New knowledge**

Both scientific and non-scientific knowledge is emphasised. Knowledge-based innovation features high on the list of successful innovations. These innovations aren't necessarily of a technical and scientific nature, but can also feature on a social level. There is a relatively long waiting period between the origination of new knowledge and the true implementation of it as new technology. Furthermore, there is a waiting period for new technology to appear as a new product or service. The product of the inventor of chemotherapy, Paul Erich took 25 years to come into use. Rudolp Diesel had to wait 35 years before the diesel engine was commercialised.

The first four changes usually take place within the entrepreneurial enterprise. These are changes that are largely visible within the specific service or industry sector. Drucker (1994:25) points out that these four are mainly symptoms, but that they are worthy indicators of changes that have taken place, or things that can be changed with relatively little input. The last three changes or resources of innovative opportunities are visible outside the entrepreneurial enterprise or industry. It is important to notice that there is a high level of interaction between the

seven resources. It is also important to analyse these resources separately as each resource has its own unique qualities.

Burch (1986:14) adds another source of innovation namely self-development. This includes the provision of raw materials, intermediary products, alternative materials or methods.

According to Hyvarinen (1993:11), the environment as such plays a vital role in the stimulation of innovative behaviour. This environment includes economic support structures, support groups, training, infrastructure, political influences, competition, location, tax “know-how”, economic growth and the diffusion rate of innovation. Hisrich and Peters (1998:8) attach reason to this by demanding that entrepreneurship and innovation is not only about the ability to create and conceptualise, but rather about the ability to consider all the forces in the environment.

Miller and Friesen (1982:54) strongly emphasise the environmental factor by pointing out that the more dynamic and competitive the external environment, the larger the chance of innovation presenting itself. When competitors’ products “change” faster, or when consumers’ needs fluctuate, the occurrence of innovation will flourish. Pinchot and Pinchot (1996:24) suggest that a certain climate has to evolve wherein new ideas can be generated and made operational. The entrepreneur often acts as the climate controller during the innovation process. This climate supports the general belief in the success of the new as well as a climate where daredevilry, inquisitiveness and perseverance are stimulated.

On a practical level Pearson (1993:7) identifies important qualities of innovative ideas and activity. This has a peculiar impact on the allocation of resources and the cash flow position of the entrepreneur.

The study is based on two dimensions of insecurity, namely possible areas of implementation and the possible approach to be followed. He therefore implies that there are various uncertainties and challenges, which are to be identified before ideas could successfully be developed as innovations. These factors include the opposition or lack of interest from the existing system (for example the community), technical problems and the inability to support the innovation. It also includes viability in the market place as well as the survival of the innovation should time scales exist, especially as a result of the financial impact.

Herzberg, in Whiting and Solomon (1989:78), supports the latter and proposes that the source of innovation be situated within the input of the individual. He demands that the innovative individual should have the necessary subject-orientated knowledge. The success of the ongoing innovation by the entrepreneur is tied to a life-long learning curve.

Grindley, in Cozijnen and Vrakking (1993:62), confirms that high levels of knowledge of functional abilities, a knowledge centre of technology and market behaviour combined with a certain experience could play a significant role in the successful implementation of innovation.

There are, however, certain obstacles to the implementation of innovation in the market place. Piatier (1984:102) describes the following three aspects as universal stumbling blocks in a way of the implementation of innovation. Firstly, the risk involved (financial or personal). Secondly, time lags between the invention and the actual implementation of the ideas. Thirdly, the cost involved, especially with intensive production processes. This includes the substantial cost of patent rights, research and development.

Sahlman and Stevenson (1991:76) regard success as the biggest problem for further or continued innovation. It is important to create a willingness to accept an existing product as being outdated or obsolete. The authors point out that too many entrepreneurs change existing products incrementally, thus making them faster, better or less expensive instead of developing new products and services. This phenomenon is especially prevalent in the information and communication technology (ICT) environment where incremental change is not found to be attractive and where success in the industry is closely linked to fundamental innovation and change.

Quinn (1985:73-84), on the other hand, argues that it is advantageous to change incrementally as sufficient critical information can be gained. Mistakes in the development process can be avoided in this way. In a training context Zimmerer and Scarborough (1996:90) regards the fact that “only one answer exists for each question” as a big strain on innovative behaviour as well as the fact that emphasis is not placed on the handling of failure and problem solving.

The tendency to value past achievement too much could, as mentioned, be a large hindrance for entrepreneurial performance and innovative behaviour. In a training environment it is thus of the utmost importance to point out to the entrepreneurs involved that continual self-development is of great value in the area. Training as such is currently seen as inhibiting to effective innovative behaviour and implementation, as indicated by various authors. Education and training *per se* values standardised decision making rather than unconventional decisions. The latter shows a high correlation with innovation. The opportunity to think in an unconventional way allows the entrepreneur or potential entrepreneur the opportunity and creates the ability to handle ambiguity or chaos effectively.

Herzberg in Kreitner and Kinicki (1998:379) describes innovation as being dependent on chaos and uncertainty.

“The greater the tolerance for ambiguity, the more one’s internal freedom to experience”.

The acceptance of the feeling of “I don’t know” creates the opportunity for innovative behaviour. The entrepreneur should thus find pleasure in creating situations where uncertainty exists. This situation should create a feeling of certainty for the entrepreneur in contrast to the negative cycle that could be created by training, for example where chaos and uncertainty are avoided and the handling of it has total ineffectiveness as a result when it does occur. From this, one can conclude and add that an entrepreneur is a person who consciously develops a passion, and strives towards uncertain situations in his or her environment. This passion frees the entrepreneur to experience the spontaneity of the moment and appends largely to impressive innovative idea. The authors are quoted as follows: “Innovative people are sensuous. Their minds work as a whole – the discipline of the neocortical brain, the emotions of the mammalian brain, the aggression of the reptilian brain. Logic, color, and energy are combined into a passionate intuition.”

The authors developed a model that points out the individual qualities of an innovative individual. The authors analyse the following required qualities:

- **Intellectual ability**

This is the ability to see problems in a new way, and the ability to cross the borders of conventional thought; the ability to distinguish between ideas that are worthwhile to investigate and those that

aren't; the ability to influence and persuade other individuals. It includes obvious and explicit knowledge of the area of interest, problems, products and services. There is a preference for new thoughts regarding own choices to be made.

- **Personality traits**

A willingness to overcome obstacles; to take calculated and worthwhile risks; to accept and handle ambiguities and chaos and self-efficiency are regarded as positive personality traits.

All the above qualities are largely motivated and strengthened by intrinsic task motivation, which is part of a successful entrepreneur. The fact remains that these variables can be taught as was pointed out by various authors and the omission of this aspect definitely won't set up true entrepreneurial achievement.

3.7 Opportunity identification

"I was seldom able to see an opportunity until it had ceased to be one"

- Mark Twain

It is important to point out the fundamental difference between the entrepreneur's idea and the opportunity the idea is destined for. Timmons (1999:80) defines an opportunity as a phenomenon that seems attractive. Attractive in the sense of the profitability that it poses for the entrepreneur as well as attractive with regards to the value it will hold for the consumer who is destined to use it. This opportunity must be maintainable and temporary. Opportunities in the free market system usually present itself where the situation is changing. A form of chaos is also present which is consequent with knowledge and information gaps.

This is as a result of certain vacuums/openings present in the market or business branch.

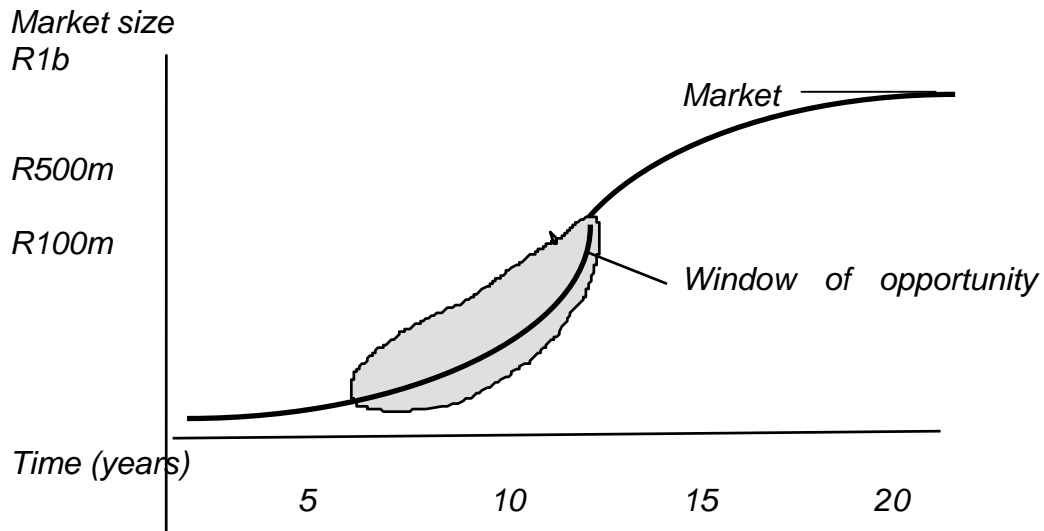
It is furthermore important to point out that opportunities are situational. This situationalism varies from being totally idiosyncratic or strange or unusual to being absolutely common and applicable or present in various markets, industries, products or services. It is then indeed the entrepreneur with credit value, intentionality, and creativity who exploits the opportunities that exist. It can be concluded from various research papers that the ideal entrepreneur per definition is an individual who develops a passion or obsession for the development and identification of opportunities in chaotic situations. With this quality in hand the successful entrepreneur continually distinguishes him/herself with regard to certain ideas or opportunities.

Dyer (1997:18) denotes that the successful entrepreneur is opportunity orientated. This behaviour is measured in as much as how he/she identifies new opportunities and formulates new ideas to make use of these opportunities. The development or transformation of these ideas in marketable or market-orientated products or services as well as the effective implementation of it are regarded as opportunities. The author also suggests that the whole process should be system orientated.

The new or entrepreneurial venture's system design must support the identification and development process and be able to simplify the management. According to the author this approach could hold long-term advantages. Hisrich and Peters (2002:39) regard the entrepreneur's total commitment to the identified opportunity as of the utmost importance.

The identification of opportunity as well as its in-depth analysis is the precursor for the creation of the suitable business plan (see Business skills (B/S), Chapter 2). To analyse an opportunity correctly Timmons (1999:84) presents the following graphic illustration:

Figure 11: Analysis of opportunity



(Source: As adapted from Timmons (1999:84))

Opportunities are per definition time limited. The frame work wherein the opportunity is present is called the window of opportunity or opportunity opening. The entrepreneur must be able to take hold of the opportunity using his/her idea. Figure 11 shows that with the growth of any market certain opportunities open up as time goes by. As the market becomes bigger and more established, opportunities that are more advantageous than earlier or later in the market growth cycle, will present themselves. The opportunity (window) therefore opens at a certain time and as growth increases it becomes satisfied, the opportunity possibilities decrease. The length of time that the market opportunity is “open” thus is of the utmost importance.

Hisrich and Peters (2002:41) add to this by regarding the window of opportunity as one wherein the true and perceived value of the opportunity must be determined as well as the risk and income that could result from it. The opportunity should also be placed in relation to the entrepreneur's personal skills and goals and an in-depth competitive-analysis surrounding the opportunity should be determined. They add that the "window" could be the most measurable determinant of risk and income. The risk reflects the market, competition, technology and the amount of capital needed. The aforementioned also forms the basis for income and reward. The authors point out that a large difference exists between the appearance and value of an opportunity analysis plan and the real business plan. The difference is of importance with regards to the fundamental role that the opportunity analysis plan has to play in the in-depth analysis of the opportunity as such. This plan also includes a descriptive analysis of the product or service, including an analysis of the entrepreneur and, if available, his/her team specifications in respect of all planned activities and resources that are needed to change the opportunity into a viable business. Finally, it is important to complete the financing aspects (first and second phase) in terms of the nature and amount needed.

With the physical analysis of the opportunity the following questioning frame work has to be present:

- Which market need has to be satisfied?
- What personal observation was completed to analyse the need?
- What social prerequisites are seen as underlying this need?
- What market research was done to describe the market need?
- Are the patent requirements seen as a part of the opportunity?
- Does noticeable competition exist in the market and how can the behaviour of the competition be best described?

- What does the international market and competition look like?
- What would the profitability be like in terms of the activity that it requires?

Sahlman and Stevenson (1991:36) mention that certain hurdles could arise within this window of opportunity. Certain strategies followed by competitors can hasten the closing of the window, product substitutes could be developed, technology may hold certain complications due to its turbulent nature, consumer preference can drastically change as well as the manufacturer's attitude. The authors suggest that these hurdles could easily be overcome or prevented by means of the implementation of cost-effective methods, distribution power, patent right, trade secrets and obvious product differentiation. Zimmerer et al. (1996:80-83) argues that an opportunity could be used in a positive way should the product or service be able to penetrate the market in a very short period of time. This is also the case where the technical risk is low and a well thought through pre-testing was done on the product and in the market. He concludes by mentioning that should the entrepreneur and his venture have the ability and resources to implement a new product strategy, the success rate seems to be much higher. In order to work analytically, successfully summarising opportunities correctly, synthesis of specific information is necessary. Information as required by the entrepreneur is normally complex.

Binks and Vale (1990:159) link the complex nature of information required by entrepreneurs to the complex nature of entrepreneurial decision-making. The information is firstly acquired on the question side. For instance market-evaluation, marketing requirements, competition, consumer preferences and secondly, on the supply side: Technological consciousness and knowledge ability, cost evaluation and well-

considered knowledge of the implication of the various scales that are applicable to market penetration and expansion.

Van Vuuren (1997) uses the following techniques with regard to the optimal use of:

3.7.1 A needs-orientated paradigm

As was already discussed, every opportunity is a combination of the need for specific products, services or processes. This need can be approached directly or the ignorance about a product or a need in the consumer can be triggered by the release of a new product, service or process. The entrepreneur with successful training techniques could stimulate needs orientation. The author suggests that in the training situation the entrepreneur can, for instance, gather information about the needs of individuals or groups in his/her immediate social environment.

3.7.2 Changes

Opportunities are usually to be found in non-consequential changing situations. These situations are mostly bound to the appearance of chaos and information that is reflexive and contradictory. During the training situation the entrepreneur must therefore be made aware that certain changes leading to chaos and the unusual could actually increase his/her achievement.

3.7.3 Change orientation

In the previous excerpts emphasis was placed on the changing, risky and insecure environment that the entrepreneur finds himself in or will soon be in. Van Vuuren strongly emphasises the fact that

entrepreneurs should first and foremost be made aware that they have the ability to manage change effectively. Secondly, this requirement calls for the ability to handle opposition, to manage conflict as well as to have certain negotiation skills that, for instance, are necessary in the buying, selling and internal environment.

3.7.4 Component charts and gaps

Van Vuuren explains on a logical level that products, services and processes have certain components. He refers to the restaurant industry where general service and product components exist. The example of a hair salon can also be used here. It's not just about the product or hair-cut and the necessary client services, but other factors like electricity, rent, the design and composition of the interior, equipment and the creation of image all come into play. The opportunity lies in the identification and formulation of successful components within the venture in order to optimally satisfy consumer demand. This satisfaction must be in relation to the price and quality of the physical and/or service product. The successful way in which distribution takes place as well as the way that value is added to the whole process is also of some importance. The author adds that it is obvious that a shortage in the national supply could develop. With this it is suggested that the entrepreneur should develop a global perspective in order to overcome shortages of local products or to overcome the gaps by making use of national imports. It is also important to perceive entrepreneurship from an international or global managerial perspective and this leaves ample opportunity for continuous research into the field.

3.8 Training and creativity, innovation and opportunity finding in an entrepreneurial context

One can conclude from the above that it is obvious that creativity or creative thoughts aim to achieve a so-called “newness”. De Bono (1996) continually stresses that successful creativity calls for certain skills that change primary concepts and perceptions. He highlights the fact that creativity is a logical process and should the individual accept and understand the process as logical, it will motivate him/her to take further creative action. This statement presents certain training possibilities for the entrepreneurial training environment.

Couger (1995:12-13) supports De Bono in the educability of individuals in creativity. He supports the statement with the reference to an analysis of 142 studies where the creativity of individuals increased markedly after a training intervention.

Carrier (1999:3) stated in her pioneering work that a necessity for new pedagogical paradigms exist in the field of teaching entrepreneurs the role of creativity, innovation and opportunity finding. This relevant statement fuelled the development of a new paradigm regarding the creativity, innovation and opportunity finding intervention in the field of entrepreneurship training. This paradigm and method is primarily based on the needs of entrepreneurship training in South Africa, with a significantly different training milieu and needs framework, compared to the typical Western or Eurocentric methods and views.

The need for training entrepreneurship in South Africa is a given fact without any further elaboration being needed, as elucidated in Chapters 1 and 2. Although unique in a fundamental sense, it is still evident that the pedagogical paradigms regarding creativity, innovation and

opportunity finding training are also lacking new approaches and successful outcomes. Carrier (1999:4) summarised the problematic situation and suggests that the following transformations should take place:

- Courses offered by training institutions that focus on training the traditional manager and not the entrepreneur.
- Lack of skills training for growth-oriented business (thus primarily opportunity driven) should receive attention.
- The lack of models addressing the creativity, innovation and opportunity finding issues directly, should form part of entrepreneurship training.
- Proper differentiation should be made between a business idea and an opportunity in a training context
- Less emphasis must be placed on the pre-entrepreneurial phase of actively seeking business opportunities, but rather an accentuation of feasibility and realistic market related opportunities.
- The total lack of tools, textbooks and approaches to cultivate creativity, innovation and opportunity finding must be addressed.
- Creativity, innovation opportunity finding and the contrasting stifling pedagogical paradigms in the teaching of business and entrepreneurship should be considered.
- Lecturing as a teaching method, is an approach that often reveals more about the teacher than about the subject taught.

Carrier's views are supported in much of the research conducted. Solomon and Fernald (1991:47) note that "much of the criticism focuses on lack of creativity and individual thinking required at both undergraduate and graduate levels". Plaschka and Welsch (1990:73) criticise the fact that many business schools follow a "product" approach rather than a "customer" approach to entrepreneurship education.

Carrier (1999) correctly indicates that far too few entrepreneurship training programmes focus on the pre-entrepreneurial phase (entrepreneurial processes). The core of this phase is centered in the identification of an opportunity as well as the generation of viable product/service ideas. She adds to this the lack of instruments, textbooks and approaches.

The author (Carrier 1999:8) uses the following techniques to address the problem directly:

- Combination methods:
 - Discovery matrix
 - Morphological analysis
- Analytical methods:
 - Value analysis
 - Characteristics lists
 - Scenario development
 - Lateral thinking
- Association methods:
 - Metaphors and analogue
 - Association/bi-association
 - Mental mapping
- Explorative methods
 - Brainstorming
 - Combined word recognition
- Dream methods
 - Creative visualization
 - Daydreaming

The primary aim of these techniques is to stimulate and use right-brain activities to create “new” ideas. This process is concluded with an opportunity-identification technique that places the ideas in a reality framework.

Dolan, in Van Vuuren (1997:2), however confirms that there is firm evidence indicating that entrepreneurs should rather be innovative than creative. Majaro (1988:27-30), on the other hand, verifies that there is a strong link between innovation and creativity. He argues that there is an obvious interaction between individual and environmental creativity, which together seem to be the power source of innovation.

Entrepreneurs and enterprises will gain tremendously where innovation is fed by absolute creative ideas and the processes involved with it. It is further reasoned that a large number of successes can be linked to the dualistic force of combined creativity and innovation. He suggests the following analogy: The entrepreneur will not be able to be innovative without a high level of creativity (innate or taught); this combination will ensure real success.

3.9 Conclusion

Some researchers supported the fact that entrepreneurship education finds itself in a growth phase in the product life-cycle context. It is though not applicable to use the term “growth” without proper consensus on the content, method or even paradigms in the field. Notwithstanding the lack of consensus on paradigm in the inclusion and content of creativity, innovation and opportunity finding as entrepreneurial skills a holistic view on content development is necessary in the field of entrepreneurship training and development. To focus only on certain variables will not induce entrepreneurial performance effectively.

It is herewith again emphasised that creativity, innovation and opportunity finding form an integral part of the total entrepreneurship training model.

A primary limitation to this study evolves from the general lack of research at a global level regarding the training of the entrepreneurship learner in creativity, innovation and opportunity finding. An array of research interventions concentrate on methodology (in a training context) to increase “employee” creativity and innovation in the workplace, thus placing emphasis on “corporate” enhancement. Research in general fails therefore to note the significance of specific training interventions, models and methodology with regards to creativity, innovation and opportunity finding in an entrepreneurial context. This study endeavours to contribute to development in an entrepreneurial context.