CHAPTER 1

THE INTRODUCTION TO THIS STUDY

Groucho Marx, with impeccable timing amplified by his characteristic body language and deadpan facial expression, says “Why, a four-year-old child could understand this report. Run out and find me a four-year-old child. I can’t make head or tail of it” (1933 Film *Duck Soup*). The same might be said of the experience of insight. It is so simple for a spontaneous, wide-eyed four-year-old child, for whom everything is a fresh discovery, a new insight. Yet a report of the phenomenon, particularly a PhD thesis, runs the risk of so complicating the experience that one literally “can’t make head or tail of it”.

In this introduction, three aspects of the study will be covered; the motivation for the study, the nature and aim of the study, and finally an overview of the study.

1.1 The Motivation for the Study

The saving grace of this study, if there is one, is that it was not undertaken primarily to obtain a PhD. In my seventieth year, that is not exactly a requirement for a ‘retread’ priest and psychotherapist; though doubtless vanity plays its part. The most significant conscious motivation has been, and continues to be, my own personal experience of insights, or intuitions as some might describe them. I am not making any great claims for these experiences which usually occur while reflective or prayerful, sometimes ‘out of the blue’ or during conversation and particularly in a therapeutic setting. I am simply making the point that they motivate me to explore the experience of insight further. In fact some of these experiences were comparatively trivial, although always meaningful. One was probably life-saving; it occurred while going unconscious, completely buried in an avalanche of snow while skiing in the Alps; it certainly precipitated a profound sense that I owed my life to God, and over time led to my ordination as a priest. Another very different experience of insight led to accepting an invitation in 1979 to work

in South Africa, which to my shame I had turned down just three weeks before; the result of that has also been life-changing. Because of these experiences I have come to value the meaning and significance of experiences of insight, and have long wanted to investigate the matter further in order to come to a deeper and more integrated understanding for myself and for the sake of others.

The incredible pressures of Christian ministry and involvement in the struggle for justice made it impossible to pursue the privilege and luxury of academic work, until after the remarkable transition of power in South Africa, and the completion of the main work of the Truth and Reconciliation Commission. Perhaps it is not such a bad thing to be a lot older, and hopefully a little wiser, before beginning a PhD.

1.2 The Nature and Aim of the Study

The continuing lack of a clear mechanism for insight, combined with the legacy of an historical suspicion that the phenomenon of insight is somehow supernatural, has both challenged and inhibited researchers in exploring this most mysterious, fascinating and important human experience. The fundamental difference in the attempt to understand, is between qualitative and quantitative approaches to insight. These two approaches need not necessarily be in competition with one another but may be complementary to one another. This study is a qualitative one for at least three reasons:

(1) It has to be acknowledged that a qualitative study is the researcher's particular and personal interest. I started my working life as a research assistant in electronics, specialising in autopilots in the aircraft industry, which involved a fair amount of number crunching and hard technical science. I have since then, as a priest and psychotherapist, become increasingly interested in human beings and increasingly convinced about the value and significance of human science, in the quest for meaning and understanding, rather than exact measurement. I value exact measurement where it is possible and cherish the ideal of the complementary role of qualitative and quantitive studies, yet it is also sadly true that what is of least significance in human terms is often what is most easily measured and quantified.

(2) Insight itself, according to Csikszentmihalyi and Sawyer (1995:329) is what distinguishes "mental processes that are routine, shallow, and trivial on the one hand, and those that are unusual, profound, and important on the other". So it is vital that the methodology employed enables understanding not just of trivial experiences, as is so often the case with the puzzle-problem approach of cognitive psychology, but is also able to illuminate profound examples, as in the case study approach of great minds experiencing insight and in the approach of spirituality to insight.

(3) Humanistic psychology, in which the fullest range of human potential has become open to investigation, involves the call to experience a different, more fully conscious and more empathically insightful way of being-in-the-world, rather than simply a different way of thinking. This implies transcending the limits of the ego-self, the ordering centre of the conscious personality, which at the current stage of research can only be explored by way of description and discovery of meaning and intentionality, rather than by measurement or explanation.

So, it is at least arguable, that at this point in terms of research into insight generally, there is a particular value in a qualitative exploration and description of a deeper and broader understanding of the experience of insight to open the subject further, both for its own sake and also as a way of opening up aspects and structures of the experience for other complementary quantitative studies, particularly cognitive and neurological ones.

1.3 An Overview of the Study

This section will attempt to fulfil both meanings of the word 'overview'; namely, to give both a broad survey and a brief summary of each chapter of the study.

Chapter **2**, the literature review, begins with definitions of insight and intuition, with a preliminary exploration of their relationship. Then nine different approaches to the experience of insight are developed in order to assess their significance for the understanding of the experience of insight.

- The holistic approach of gestalt psychology with its characteristic emphasis on the experience of insight as an integrated whole with an emergent quality, rather than simply

the sum of individual stimuli and responses. So insight involves understanding the underlying structure of a problem, enabling a person to complete a schema, suddenly reorganise visual information, restructure the problem (regarded as the *sine qua non*), remove mental blocks or find a problem analogue.

- The existential approach of phenomenology adds a new dimension because it insists that the structure of the experience cannot be understood just as a mechanism but only on the deeper level of the self, experiencing 'impact', (the influence of the life-world on the self), and 'interpreting' meaning (the influence of the self on the life-world) in an existential space of possibility.
- The puzzle-problem approach of cognitive psychology adds a wealth of detailed research work on specific areas of cognitive functioning in insight. Yet three dangers lurk: the focus on the mechanism rather than the person and the meaning, laboratory studies divorced from life-world experiences resulting in trivial experiences of insight and most fundamentally, the lack of agreement about exactly what constitutes an insight problem.
- The creative approach of genius, dreams, design and invention broadens the whole investigation and emphasises that the creative experience is a possibility for everyone. The distinction between convergent insight and divergent insight proves useful and is consistent with the conclusion that insight depends on releasing constraints, whereas invention requires strategic cycles of constraint release and imposition.
- The representational approach of models adds an important contextual dimension to the isolated individual's mental processes by including the social, cultural and environmental influences as well as the element of chance in insight.
- The approach of great minds and dedicated lives experiencing verified experiences of insight contributes an important historical and particular perspective and is especially valuable and germane to this study. It illustrates the significance of rich detailed description, the *sine qua non* of the existential-phenomenological approach.
- The approach of metaphors-of-mind and analogies, less precise than models, is particularly valuable because metaphor may be at the core of human cognition and provide suggestive ideas for elucidating the elusive human scientific nature of insight, particularly in life-world situations. Yet precisely because analogies and metaphors are

remarkably seductive it is essential to recognise the points of difference within the similarities.

- The intersubjective approach of psychotherapy adds a new dimension of transliminal intersubjectivity which is potentially very valuable and enables investigation of insight in terms of intuitive thinking and awareness, as well as the 'clues' and 'links' with other people and material, prompting insight which would not have occurred to an isolated individual. It is also particularly useful for understanding self-insight.
- *Finally*, the body-mind-spirit continuum approach of spirituality, in which spirituality is defined in terms of a person's sense of meaning, values and purpose in life, is regarded as an essential complement to the previous eight approaches, extending the depth and breadth of human experiences beyond the biological, psychological and sociological frameworks. It also enables a better appreciation of insight in aesthetic experience of goodness, truth and beauty than any of the other approaches.

The third chapter begins with three predisposing factors in choosing the existential-phenomenological methodology. Then five interlocking reasons, related to different aspects of the existential-phenomenological approach itself, are adduced which cumulatively indicate this methodology as the most appropriate for this particular study of the experience of insight. This is followed by a brief philosophical background of existential phenomenology and its adaption pioneered by Giorgi for its use in pursuit of psychological understanding.

The focus then moves to the application of the methodology in the research process. An essential part of the preparation for the research was a self-reflective search of my own experiences of insight. This was undertaken in order to sensitize me to the nature of the research, to help clarify my central research question for the interviews of the research participants, and to attempt to identify my own preconceived notions or biases with a view to 'bracketing' them. It proved to be a profoundly moving and revealing experience exceeding my expectations. The development of the ethical protocol and informed consent form are then described, with copies in Appendix D.

The reason for starting with interviewing the research participants before doing the literature review is explained, and six elements are identified as crucial for the research question of the

interview, leading to the formulation of that key question. The selection of a reasonable variety of research participants with ability to identify and articulate a significant experience of insight in their lives is explained. Four aspects of the interview are then considered; theoretical clarification, qualitative characteristics, methodological implications and practical considerations. The procedure for the analysis of the protocols is then described in seven steps.

A preliminary and exploratory study was undertaken as a necessary part of the researcher's own learning curve. This forms the basis of the next chapter.

Chapter **4**, the preliminary study, begins with outlining the fourfold purpose of this particular part of the study, before introducing the research participant, a socio-political cartoonist.

The structure of this chapter is formed by three main, but inter-related, aspects: the verbal text of the interview, the visual text of the cartoon and the con-text of the socio-political commentary. One result of this was discovering the richness, variety and density of the emerging material.

Working with the *verbal text* I learned eight valuable lessons which are described. The work with the *visual text* of Cartoon **5** is developed under five main headings. In order to explicate the embedded socio-political-cultural *con-text* eleven key terms are clarified with relevant notes, situations, dates and South African legislation, to enable a fuller appreciation of the context.

The researcher is aware that this has resulted in an unusual preliminary study and goes beyond the normal application of the existential-phenomenological methodology selected, yet it is submitted that it was necessary in order to do justice to the particular quality of the material, provided a very valuable learning experience and proved worthy of inclusion in the main study.

Chapter **5**, the investigation and findings, begins with the reasons for including the full interviews and each step of the research process for all the research participants in the text of this chapter, rather than the more usual custom of presenting the investigation and results of one of the research participants in full, with the others relegated to various appendices.

The research participants are then introduced, followed by the transcript of the tape recorded interview and the analysis of each protocol following the steps of the methodology described in

chapter **3** as far as the essential situated structural statement of each participant's experience. The fruit or results of each participant's experience are also included.

The general structural statement of the experience of insight follows. It is composed of ten findings representing the ten constituent components of the experience. The first three progressively describe the initial stages and preconditions for insight. The next three represent the dynamic core of the experience of insight and are characterised by a passive, a reflexive and finally an active experience. The final four components describe the unfolding nature, results and recurring quality of the experience of insight.

In chapter **6**, the discussion of the findings, the emphasis falls on the importance of the coherence of the ten constituent components of the experience of insight. A general structure of this particular holistic nature does not appear in the literature. So particular findings should be seen and evaluated in relation to this whole dynamic general structure.

The framework of the chapter consists of two essential steps.
First, each of the ten constituent components are illustrated by the experience of all four research participants with particular attention to the varieties and limits of their experiences, encompassed within that particular research finding.
Second, the nine approaches to the experience of insight developed in the literature review are considered, where relevant, to show connections with, and support for, each component of the research findings; also to reveal points at which the research findings question or challenge a particular approach or its metaphysical presuppositions.

The most significant findings which emerge from this two-fold process are discussed in the next and final chapter.

The final chapter, **7**, on the distinctive value of this research, contains a comprehensive and integrative reflection upon the findings of this thesis. It addresses the value and contribution of the work, which has distinct characteristics; uniqueness is not claimed. The evidence gathered emerges from a plethora of walks of life; a variety of contexts within which insights were experienced and a range of forms of insight. There are twenty distinct themes reflected upon

within the holistic and unitive structure of the experience of insight and its integrative effect. These include two of the precursors of insight, namely the 'disposition of openness' required for insight and the importance of 'confronting and containing' the raw material of insight. Then the three themes of the dynamic core of insight are explicated, namely the 'moment of impact', the 'moment of interpreting' and insight as 'key to a self-actualising process'. Two qualities of the nature of insight, namely the way it is 'self-authenticating' and 'recurring' are explored. In addition, the effect that the selection of participants had on the research, the quality of their understanding as a result of insight and the fruit of their experience of insight are considered. The value of relating this qualitative research to neurobiological research is also discussed. The various relationships between sight and insight, foresight and insight, humour and insight, and intuition and insight, are also explored.

Finally, the chapter also offers reflection on the way the researcher is inserted in this quest, how and what he learned through the process and the limits, shortcomings and omissions of the research. It is also hoped that the recognition of these omissions, requiring further investigation, will open possibilities to others.

CHAPTER 2

THE LITERATURE REVIEW

2.1 Introduction and Approach

> There appears to be a general tendency, in all cultures and historical periods, to differentiate between mental processes that are routine, shallow and trivial on the one hand, and those that are unusual, profound, and important on the other. In the English language, the word that best denotes the second type of mental process is *insight*, derived from the Old Dutch for 'seeing inside'. (Csikszentmihalyi & Sawyer 1995, p. 329)

In the ideal detective story, the reader is given all the clues yet fails to spot the criminal; it remains a mystery. Solving the mystery is not dependent on any one clue, or remembering them all, but a quite distinct activity of organising intelligence that *sees* the clues in a unique explanatory perspective. Such *insight* is a "supervening act of human understanding" (Lonergan 1983, p. x). Insight apprehends relations and meaning: it unifies and organises.

The approach taken in this literature review begins with some definitions and phenomenological characteristics of insight. Consideration is then given to definitions of intuition and its relationship to insight. The main body of this review investigates nine different approaches to understanding the phenomena, and clarifying both the nature and the experience of insight. This approach was influenced by, but by no means confined to, the outline of *The Nature of Insight* by Sternberg and Davidson (1995).

An evaluation of the contribution of each approach to the understanding of insight is made at the conclusion of each approach. Obviously these nine approaches are not watertight compartments; there is a flow and development between most of them even where sharp differences emerge. The primary purpose of defining these nine approaches in this context is in the service of clarity and of organising a very considerable body of diverse material on the subject of insight.

2.2 Some Definitions of Insight

At this point it is appropriate to consider a number of definitions of insight to provide greater clarity.

Seifert, Meyer, Davidson, Patalano and Yaniv (1995, p. 66) draw on definitions in *Webster's new world dictionary* (Guralnik 1984) which define *insight* as "seeing and understanding the inner nature of things clearly, especially by intuition". In this context *intuition* is "the immediate knowing of something without the conscious use of reasoning". The *Encarta World English Dictionary* (Rooney 1999, p. 970) defines *insight* as "the ability to see clearly and intuitively into the nature of a complex person, situation or subject". The same dictionary defines *intuition* as "something known or believed instinctively, without actual evidence for it" (Rooney 1999, p. 985). In philosophy Osbeck (1999, p. 238) insists on the *non-inferential* nature of intuitive apprehension. It is the "immediate knowledge of something" (from the Latin *intueri* 'to look upon'). There may be some questions about these definitions because of the way insight is defined in terms of intuition, which in effect substitutes one problem for another. It will be necessary to return to this question in more detail later.

The *Oxford Dictionary of Psychology* (Coleman 2006) defines *insight* as "**1.** clear and deep understanding or perception. **2.** the process by which the meaning or significance of a pattern, or the solution of a problem, suddenly becomes clear, often accompanied by an 'aha!' experience". This has the advantage of not defining insight in terms of intuition which is defined in this source as "immediate understanding, knowledge, or awareness derived neither from perception nor from reasoning".

A number of researchers in the field have developed definitions of insight. A representative cross-section of definitions is presented here with a summary.
Smith proposes a distinction be drawn between the terms *insight* and *insight experience*. He defines *insight* as "an understanding" which can be acquired in a variety of ways and which may emerge either gradually or suddenly. Whereas "The *insight experience* is the sudden emergence of an idea into conscious awareness" (Smith 1995, p. 32). This is both a valid and useful distinction. But, despite the fact that the primary focus in this research is on the *experience of*

insight, it is considered valuable to keep the frame of insight/insightfulness as wide as possible at this stage, to develop a sufficiently comprehensive framework to thoroughly understand the experience. This is why nine different approaches to understanding the nature and experience of insight will be investigated in the main body of this review of scholarship.

Dominowsky and Dallob (1995, p. 37) write more descriptively than definitively:

> To gain *insight* is to understand (something) more fully, to move from a state of relative confusion to one of comprehension. There are numerous everyday examples of such changes as in 'getting' a joke or reading some material that seems murky but then becomes clear. The difference between 'I don't understand' and 'I see' is what is intended. The occurrence of insight is associated with the 'Aha!' experience with the proverbial light bulb going on over one's head.

This is a particularly clear and accessible definition.

Mayer's (1995, p. 3) definition is more precise: "The term *insight* has been used to name the process by which a problem solver suddenly moves from a state of not knowing how to solve a problem to a state of knowing how to solve it". Significantly, he does not propose or define any mechanism for insight which is the object of intense ongoing research, nor does he claim that insight provides a solution. He merely indicates that insight provides the right solution path.

Ansburg (2000, p. 143) proposes that "insight occurs when a solver restructures a previously intractable problem such that a new understanding of what needs to be done appears in consciousness". Here *restructuring* is defined as the process and *consciousness* is specifically mentioned, as it is in the next definition.

Siegler (2000, p. 79) defines insight as "a sudden change from not knowing a problem's solution to knowing it consciously". This implies that Siegler thinks it possible for the subject to know the solution unconsciously by what he calls a "spreading activation" between the crucial concepts in a conceptual framework. This is in sharp contrast to Mayer's (1995, p. 3) distinction between knowing the *solution path* and the *solution* to a problem.

In summary, if the net is cast more widely, three features recur in most of the definitions of insight:

(1) *Transition.* All the definitions are clear that insight is not just a step forward on the path to a solution. It is a transition from not knowing (Ansburg 2000, Mayer 1995, Ohlsson 1992, Siegler 2000) either to knowing how to solve the problem (Mayer 1995) or to the complete solution (Coleman 2006, Duncker 1945, Siegler 2000).
(2) *Suddenness.* Almost all definitions agree that the transition from not knowing to knowing is experienced consciously as sudden, unexpected and abrupt. This is particularly emphasised by Coleman (2006), Duncker (1945), Mayer (1995), Rooney (1999), Siegler (2000), and Wertheimer (1959).
(3) *Understanding.* Sometimes this is expressed as deeper or a more appropriate form of understanding, sometimes as grasping of essential features, in which either restructuring is emphasised (Ansburg 2000, Dominowski & Dallob 1995) or becoming conscious is important (Ansburg 2000, Siegler 2000). The other possibilities are that understanding may result from exposure to new information (Csikszentmihalyi & Sawyer 1995), or from drawing on previous experience by analogy of structure (Dunbar 1995, Gardner 1993, Gruber 1995).

There is an important, distinctive and different way in which insight is defined and used in psychology and psychiatry. In psychology, which is the context of this study, according to the *Encarta World English Dictionary* (Rooney 1999, p. 970), insight is "the ability of a person to understand and find solutions to his or her personal problems", whereas in psychiatry it is defined as "the perception, lacking in some psychiatric disorders such as schizophrenia, that symptoms such as delusions and hallucinations are not objective". The *Oxford Dictionary of Psychology* (Coleman 2006, p. 739) clarifies insight as "often used to distinguish neurosis, in which insight is typically present, from psychosis in which it is typically absent". Insight in psychoanalysis is defined by the same dictionary as "conscious understanding of unconscious reasons for maladaptive behaviour and is believed to be curative in itself".

So while it would be neat and simple to be able to identify one clear universal meaning of the word "insight" it seems advisable in our approach to be aware of:
(1) the different meanings of the term *insight* in the psychiatric definition of problems and behaviour compared with the value of *insight* in the therapeutic relationship.

(2) the distinction between insight as "an understanding" which may be acquired in a variety of ways and which may emerge gradually or suddenly, compared with the "insight experience" as the sudden emergence of an idea into conscious awareness.
(3) the more modest and surely accurate claim, that insight does not always provide a solution, but the right solution path.

(4) the potential varieties in the quality of the "insight experience" in, for example, the laboratory experimental setting, compared with hunches or intuitions in life-world experiences of insight, and particularly with major creative or scientific breakthrough "insight experiences".
The question of the value and subtlety of these distinctions will be explored, clarified and evaluated in the process of exploring the nine different approaches to the experience of insight (see **2.3 – 2.11**).

2.2.1 Some Definitions of Intuition

Recently, after being largely ignored by psychologists, the notion of intuition has become a hot topic among popular writers such as Gladwell (2005) whose introductory example of "the statue that didn't look right" is widely discussed.

According to Duch (2007, p. 1), "[i]ntuition is manifested in categorisation based on evaluation of similarity, when decision borders are too complex to be reduced to logical rules". This characteristic of intuition in terms of defining and grouping of people or things into categories, is clearly a double-edged sword: incisive and effective when accurate; divisive and dangerous when wrong or inappropriate. Tversky and Kahneman (1974) have documented the problems and failings of the use of intuition. Greenwald and Banaji (1995) have gone further, describing intuitions as judgements that capitalize on inappropriate stereotypes and generalisations. Duch (2007, p. 1) continues by arguing that intuition "is also manifested in heuristic reasoning based on partial observations, where network activity selects only those path(s) that may lead to solution, excluding all bad moves". This is a more positive characteristic of intuition, enabling an immediate knowing or discovery of solutions, probably involving a rapid process of trial and error rather than following rules or the conscious use of reasoning and inference. He claims it is

rapid, effortless and similar to perception. Ambady and Rosenthal (1992) have found that quick gut-level judgements are remarkably accurate. Yet intuition is not infallible.

In the cognitive dual-process models, intuition is part of the system that is automatic, holistic, affective, fast, and associative; in contrast to rational thought which is deliberative, analytical, propositional, slow and rule based (Denes-Raj & Epstein 1994, Hammond 1996, Hogarth 2001, Ubel & Lowenstein 1997). In making the distinction between the two parallel processing systems it is also necessary to recognise the extent to which they are inter-related, inter-active, and inter-dependent.

2.2.2 Exploring the Relationship between Intuition and Insight

As has been noted above an *intuition* may be described as incorrect; but an *insight* would not normally be described as wrong. It might be more appropriate to speak of an *oversight* since an *insight* usually implies a clear and correct understanding.

It is interesting that the phrase "heuristic reasoning" is used in the definition of intuition by Duch (2007). The word heuristic comes from the Greek *heuriskein* 'to find' which is the source of the English *eureka,* traditionally regarded as the triumphal "Aha!" expressed by Archimedes as he ran naked from the baths of Syracuse, following his *insight*, so perhaps there is not such a sharp distinction between insight and intuition.

Hogarth (2001) has argued that affect is merely a *correlate,* not an *essential component* of intuition. In Hogarth's view "some intuitive judgements may be accompanied by a feeling of certainty, but others may develop more slowly over the course of time" (Pretz & Totz 2007, p. 1249). This distinction would reveal a subtle difference between some intuitions which gradually develop a feeling of certainty as a *correlate,* and the sudden "Aha!" experience of insight which is regarded by the vast majority of researchers as a typical characteristic and an essential *component* of insight.

Pretz and Totz (2007, p. 1249) define an intuition as "made without reflection as opposed to a rational conclusion based on explicitly available evidence", and conclude "intuitions are immediate insights rather than reasoned responses". If *intuitions* can be equated in this way with

immediate insights, it raises the question of why an intuition may be recognised as incorrect, whereas an insight would not normally be described as wrong. Perhaps it is more accurate to argue that an instinctive intuition may be involved in an insight, but that intuition and insight are not identical. This would be consistent with a number of definitions which regard intuition as knowing or believing something instinctively rather than insightfully. Hill (1987) made a distinction between two types of intuition: inferential and classical. Both types can be characterized as automatic, but are the result of different mechanisms. *Inferential intuitions* are heuristic judgements based on analytical processes that have become automatic through practice. Whereas in contrast, *classical intuition* is a holistic judgement that integrates diverse sources of information. Pretz and Totz (2007, p. 1249) comment that the latter "is a Gestalt understanding of intuition, one that is qualitatively non-analytical". Hammond (1996) speaks of intuition as the *holistic integration* of multiple cues without full awareness in situations of irreducible uncertainty, inevitable error and unavoidable injustice. This emphasis on holistic integration is entirely compatible with Hill's (1987) view of *classical intuition* and addresses the context in which such intuition is so valuable. Osbeck (1999, p. 238) argues that, in the epistemological heritage of intuition in philosophical understanding, "the most salient point is the *non-inferential* nature of intuitive apprehension … in that it [intuition] provides the *basis upon which* inference can be drawn ... deduction has no role in intuition".

Several empirical studies provide evidence to support the hypothesis that intuition relies on a *holistic mechanism* (e.g. Bowers, Regehr, Balthazard, & Parker 1990, Dijksterhuis 2004, Wilson & Schooler 1991). The evidence presented by Pretz and Totz (2007) affirms this distinction between heuristic (or inferential) and holistic (or classical) aspects of intuition, and they urge research of the mechanisms behind these two types of intuition.

It does not appear to be possible, at this stage of the study, to define and clarify the exact similarities and differences between *insight* and *intuition.* It is beyond the limits of this research to examine the difference mechanisms underlying both. The working understanding at this point is that the holistic quality of classical intuition is indeed part of the holistic process of the experience of insight. Yet the definitions by researchers in this section about the relationship will be considered, where relevant, in the nine difference approaches to insight (sections **2.3** to **2.11**) and their significance evaluated in seeking to discover the experience of the four different

research participants (chapters **4** and **5**). The philosophical importance of the non-inferential nature of intuitive apprehension will be commented on under the distinctive value of this research (section **7.16**).

2.2.3 Some Phenomenological Characteristics of Insight

It may be helpful now, to draw attention to a number of intriguing phenomenological characteristics that are usually associated with insight (e.g. Halpern 1989, Metcalfe & Weib 1987, Ohlsson 1984a, p. 1984b). Seifert et al. (1995, p. 67) list the following:
(1) *Suddenness,* in which insight seems to happen abruptly through a quantum leap of understanding instead of some incremental process
(2) *Spontaneity* in which insight seems to happen internally of its own accord without the intention or effort of an instigating agent
(3) *Unexpectedness,* in which insight happens by surprise and without warning
(4) S*atisfaction,* in which insight elegantly fulfils a previously unresolved need, or problem, culminating in a triumphant "Aha!" experience

However, significantly, Seifert et al. (1995) do not include the phenomenon of *restructuring*, which entails a qualitative reformulation of the problem representation, and which classical gestalt psychologists considered as the *sine qua non* of insight (Scheerer 1963). Seifert et al. (1995, p. 67) assume that restructuring "constitutes one potential basis of insight, but that insight can (and does) stem as well from the addition of missing pieces to a formerly incomplete but appropriate mental representation". This will be examined in more detail under the holistic approach of gestalt psychology, but at this point it is necessary to include it as the best working explanation of the characteristics of *suddenness, spontaneity, unexpectedness* and *satisfaction*.
So finally:
(5) *Restructuring* a wrong representation of the problem, or *completing* an otherwise correct, but incomplete schema representing the problem, resulting in insight (Mayer 1995).

2.3 The Holistic Approach of Gestalt Psychology to Insight

The historical precedence of the gestalt view of insight makes it a reasonable place to begin, not only because other traditions in psychology tapped into and worked with this view, but also because of the continuing value of understanding the phenomenon of insight in terms of a gestalt, in a holistic, structural and dynamic way.

A seminal work by the founder of gestalt psychology, Wertheimer (1959) has as its main theme *insightful problem solving*, and that is also the title of Dunker's (1945) celebrated monograph. Yet for Köhler (1947) in gestalt psychology insight is an experience, *verständlicher Zusanenhang*, which, he says, "may be expressed in English as *understandable relationship*" (Köhler (1947, p. 326).

The distinction between insight as *problem solving* and insight as *understanding*, as well as the way they come together, is part of life. As Gruber puts it:

> We seek out problems as a way of testing and expanding our understanding of the world. The two meanings of insight come together: efforts towards comprehension evoke problems, and so on in a swirling stream. In our study of insight, we need to see how problems requiring insightful solutions grow out of a given understanding, and then how solution leads to changes in that understanding. (1995, p. 399)

Heale (1961) has documented the considerable body of gestalt literature, and Mayer (1995) has abstracted five inter-related examples of insight in the tradition of gestalt psychology. These will now be enumerated and their links to contemporary views will be indicated before these contemporary views are further examined and explored in subsequent sections.

2.3.1 Five Inter-Related Views of Insight in Gestalt Psychology

(1) The first example is *insight as completing a schema.* This view was due to the work of Selz (cited in Frijda & de Groot 1982, Humphrey 1963), who produced psychology's first non-associationist theory of problem solving. According to this view, insight occurs when a problem-solver fills in a gap in a structural complex (for an example, see Figure 1). His work foreshadowed not only the gestalt revolution that was to follow, but also the development of

modern cognitive psychology (e.g. Seifert et al. 1995). A particular example, which has already been touched on, is the insistence "that insight can (and does) stem as well from the addition of missing pieces to a formerly incomplete but appropriate mental representation" (Seifert et al. 1995, p. 67). This is simply another way of describing insight as completing a schema (see Figure 1 as an example).

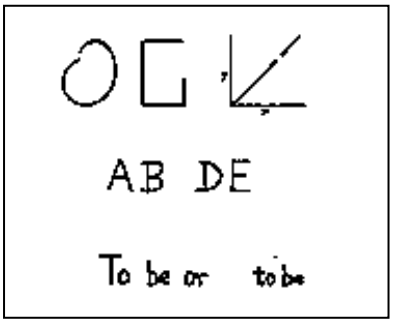

Figure 1. A variety of gaps evoking gap-filling behaviour (Gruber 1995, p. 401)

(2) The second example is *insight as suddenly reorganising visual information.* This view was due to the work of Köhler (1925, 1947, 1969) on the gestalt theory of perception. According to this view insight occurs when a problem solver literally looks at a problem situation in a new way (see Figure 2 as an example).

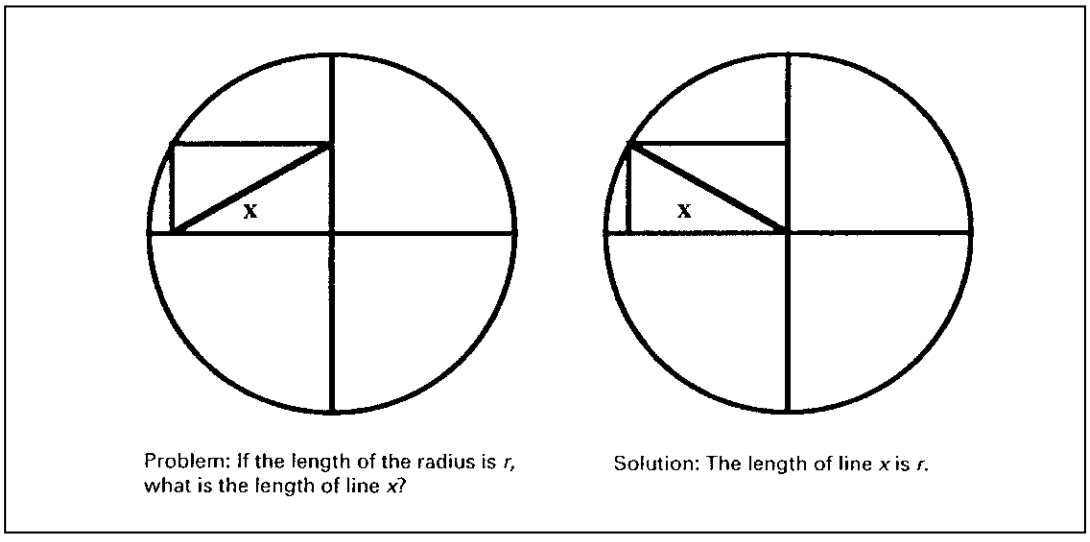

Figure 2. A geometrical problem and its solution (Köhler 1969, p. 146)

Köhler (1925, p. 217) describes insightful problem-solving as (1) representing "complete methods of solution" and as "complete wholes" rather than individual responses, (2) appearing "quite suddenly" rather than being gradually reinforced, and (3) being "never practiced formerly" rather than reproduced from prior experience. Köhler (1969, p. 146) concludes that "the decisive step is what we may call a re-structuring of the given material". Interest in visual thinking is very much in vogue in modern cognitive psychology (Finke 1989, 1995, Kosslyn 1980, Schooler Fallshore & Fiore 1995). In particular, the role of computer-assisted visualisation and concrete representations that enable people to build mental models are the focus of on-going research in scientific and mathematical problem solving (Mayer 1989).

(3) The third example is *insight as reformulating the goal or restructuring the givens of a problem.* This view is derived from the work of gestalt psychologist Duncker (1945, p. 9) who expressed it succinctly: "What is really done in any solution of problems consists in formulating the problem more productively". His most famous study involves the radiation problem (see Figure 3).

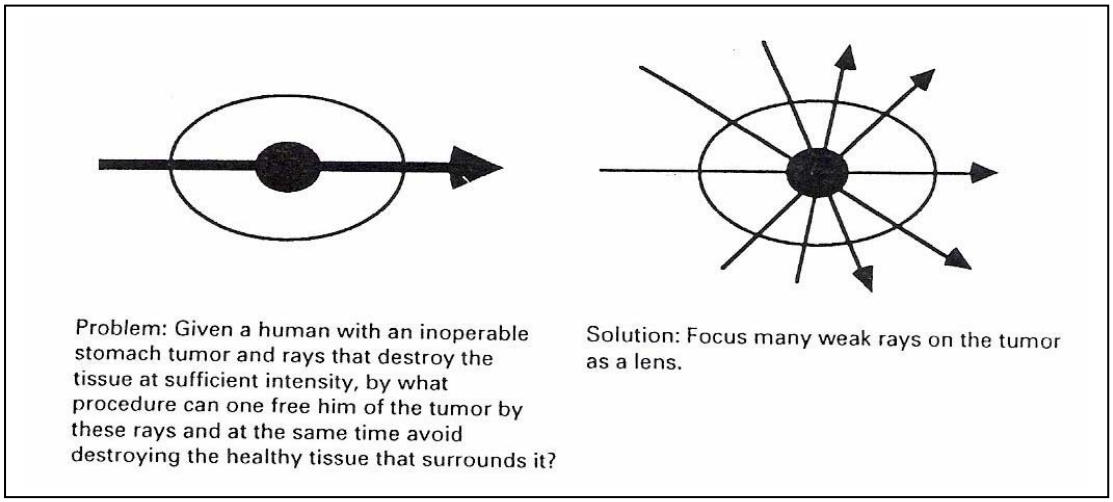

Figure 3. The tumour problem and its solution (Duncker 1945, p. 1)

Duncker provided empirical support for the idea that thinking often progresses through a series of qualitatively different phases, rather than as a linear chain of associations (e.g. Davidson 1995, Kaplan & Simon 1990, Metcalfe 1986a & b, Metcalfe & Wiebe 1987, Weisberg 1995). This view foreshadows the idea that humans are sense makers who are actively trying to construct *meaning* in what they encounter (Resnick 1989).

(4) The fourth example is *insight as removing mental blocks.* Luchins (1942) provided a classic example of how previous experience can block creative problem solving in his water-jar experiment (see Figure 4 below). The subjects's task is to "figure out on paper how to obtain a required volume of water given certain empty jars for measures" (Luchins 1942, p. 2).

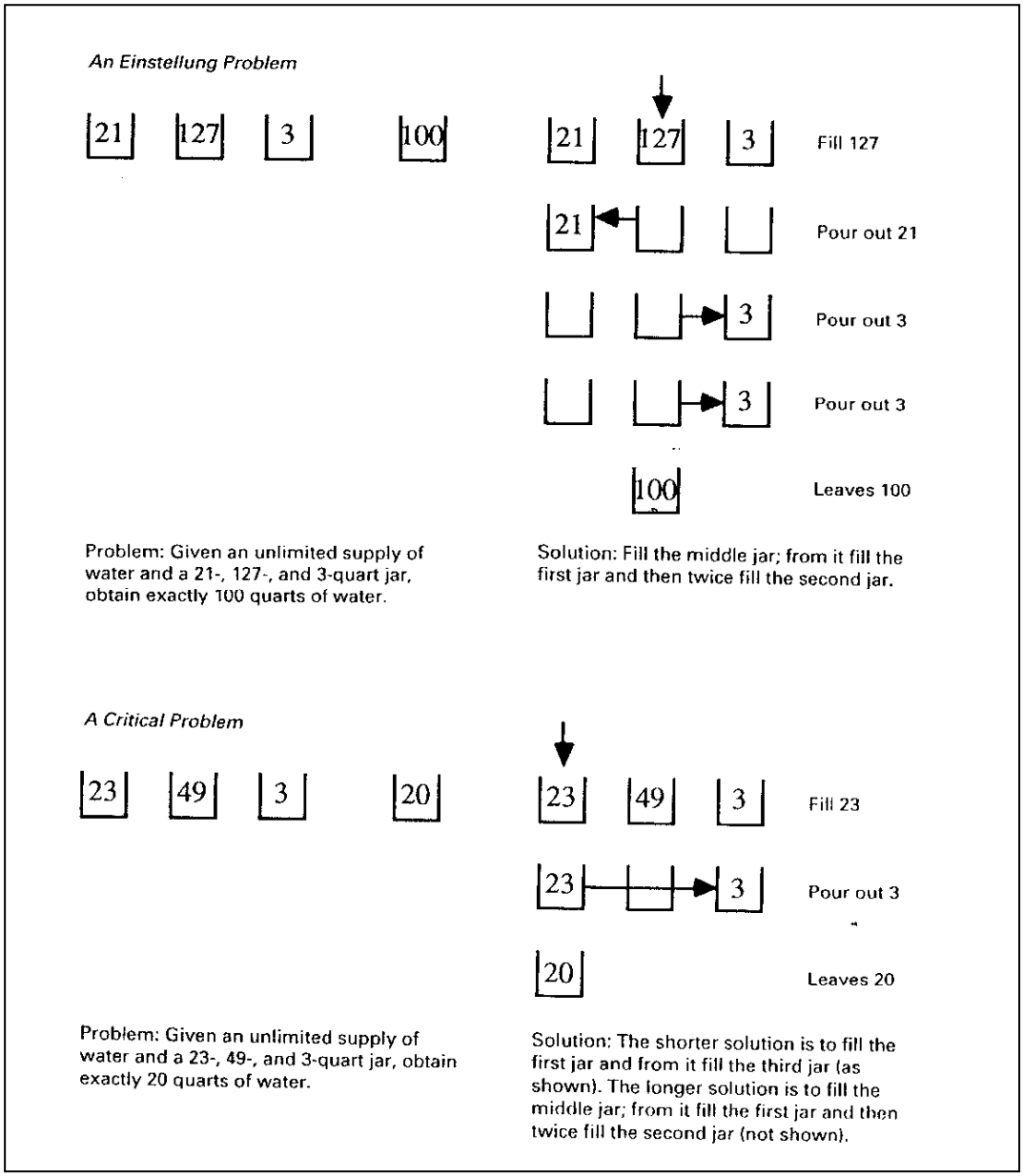

Figure 4. Some water-jar problems and their solutions (Luchins 1942, p. 2)

Subjects who solved the *Einstellung* problem, which is an 'attitude' or 'ethos' problem, tended to use the same more complex procedure (i.e. 49 – 23 – 3 – 3 = 20) when solving the *critical* problem rather than the shorter way (i.e. 23 – 3 = 20). In contrast, subjects who did not have to solve the *Einstellung* problem solved the *critical* problems using the simpler procedure.

So insight involves overcoming the learned way to look at a certain situation, in order to look at it in a new way, without mental blocks (see Figure 5 below).

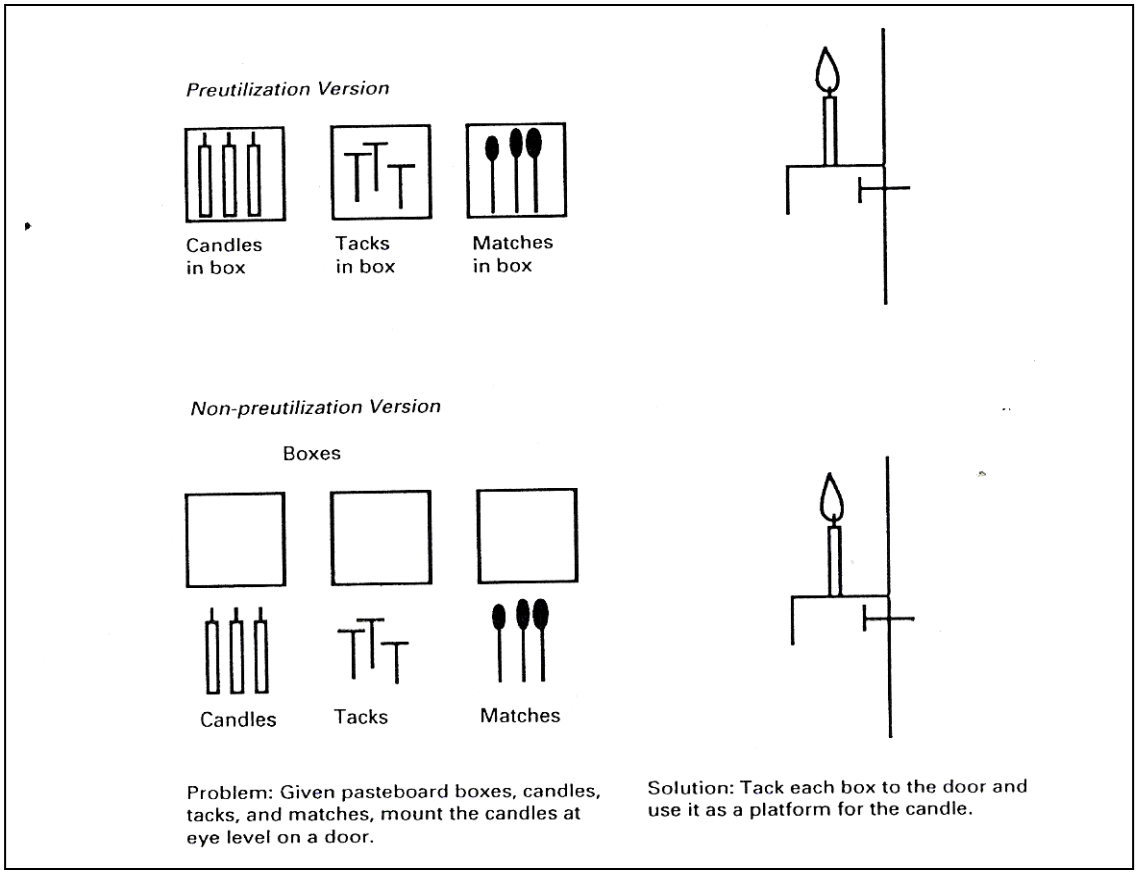

Figure 5. The box problem and its solution. (Duncker 1945, cited in Mayer 1995, p. 18)

Duncker (1945) referred to this phenomenon as "functional fixedness" when what was required was a novel use of the object (see Figure 5 above, for his box problem). This view of insight continues to stimulate research, theory and practice in the psychology of thinking. So for example the teaching of problem solving has become an educational goal (Chipman, Segal & Glaser 1985, Halpern 1992, Nickerson, Perkins & Smith 1985, Segal, Chipman & Glaser 1985, Sternberg & Davidson 1989). This is particularly true in the field of science and mathematics

(Halpern 1992, Polya 1965, van Hiele 1986), mentoring (Mayer 1992), computing (Anderson 1987), and is very much in vogue in business studies (Korthagen 2005).

(5) The fifth example is of *insight as finding a problem analogue.* In his gestalt classic, Wertheimer (1959) suggested that insight sometimes involves grasping the structural organisation of one situation and applying that organisation to a new problem. He provided a very simple example of finding the area of a parallelogram, assuming you know the area of a rectangle, to illustrate the distinction between rote learning and learning by understanding (see Figure 6 below).

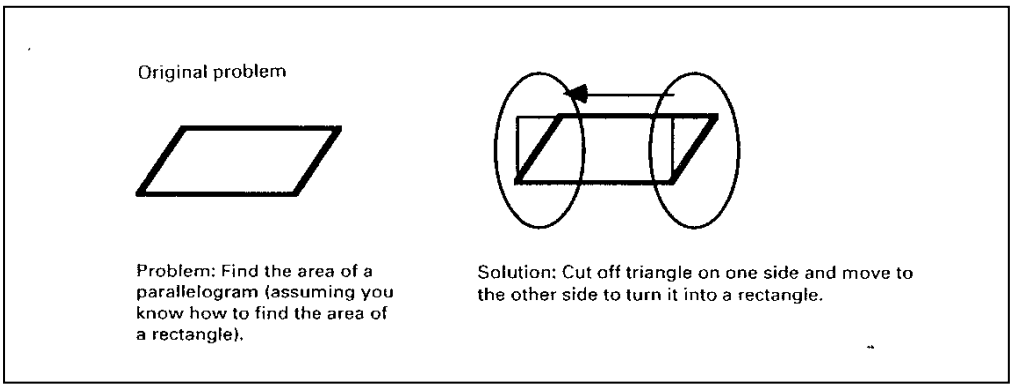

Figure 6. An area problem and its solution (Wertheimer 1959, p. 15)

He concluded: "What matters is … how one applies what is recalled, whether blindly, in a piecemeal way, or in accordance with the structural requirements of the situation" (Wertheimer 1959, p. 62). Echoing Wertheimer's thinking by analogy, modern cognitive psychologists continue their research on creative and insightful thinking (Detterman & Sternberg 1992, Dunbar 1995, Gentner 1983, Gick & Holyoak 1980 & 1983, Mayer 1992, Perkins 1995, Simonton 1995, Singley & Anderson 1989, Vosniadou & Ortony 1989). Trottier (2001) regards finding a problem analogue as the best of these five quasi-definitions of insight, but cautions that it "appears to be more appropriate as an explanation for insight (Chen & Daehler 2000) rather than a definition" (Trottier 2001, p. 6). The significance of this body of work will be explicated and evaluated under the third approach; that of cognitive psychology (**2.5**).

2.3.2 An Evaluation of the Contribution of the Approach of Gestalt Psychology

The strengths of this approach will be considered first and then the weaknesses.

The Strengths

(1) This emphasis on the experience of insight as an integrated whole – a gestalt - rather than simply the sum of individual stimuli and responses is particularly valuable. This *integrated whole* experience of insight is instantly recognisable. A classic example given in the Oxford Dictionary of Psychology illustrating the importance of this, is that:

> the sequence of notes C,D,E,C,C,D,E, played evenly on any musical instrument is immediately recognisable as the well-known folk tune *Frère Jacques*, and the sequence F,G,A,F,F,G,A,F which does not contain a single element in common with the first, sounds exactly like the same tune; but the sequence E,D,C,C,E,D,C,C which contains the same elements as the first sequence in a new configuration, sounds like *Three Blind Mice*, an entirely different gestalt. (Colman 2001, p.16)

(2) The significance of these five inter-related views of insight as: *completing a schema*, *suddenly reorganising visual information*, *restructuring the problem*, *removing mental blocks* and *finding a problem analogue* is highlighted by the following summarising points:

(i) All five views have been taken up individually and developed in subsequent research as revealed in the references above, and are fundamental in the puzzle-problem approach of cognitive psychology (**2.5**).

(ii) All five views together appear as a gestalt with an *emergent* quality. As Merleau-Ponty (1964b, pp. 48-49) points out: “The melody is not a sum of notes, since each note only counts by virtue of the function it serves in the whole … Such a perception of the whole is more natural and primary than the perception of isolated elements.” It is this meaningful whole of insight that is the enduring value of the gestalt view. As Wertheimer (1967, p. 5) expresses it: “What I hear of each individual note, what I experience at each place in the melody, is a *part* which is determined by the character of the *whole*”. Sadly, it is all too common in music, literature, art and human understanding for the appreciation of the *invaluable whole* to be lost in the critical analysis of the *valuable parts*; essential as critical analysis is, it is not possible to dissect a living thing.

(iii) All five views, with the addition of one more recent discovery, namely the role of *random recombination of ideas* that ultimately yields a fruitful synthesis, have been recast into a simple

network approach, using nodes and links and integrated into a single unified whole (Schilling 2005). In her article, she describes key results from work in graph theory on small-world networks and how these findings are related to key concepts in insight. By applying the small-world findings from graph theory to the explanations of insight from gestalt psychology as examined above, Schilling shows that the moment of insight may be the formation of new small-world network properties in the mind. In so doing, Schilling argues that the revolutionary nature of insight is due to the dramatic decrease in path length in the network of connected cognitive representations – a mathematically verifiable property of small-world networks. The fact that this research is constructed on the building blocks of gestalt psychology's understanding of insight, is sufficient to make the point of the enduring value of this approach.

(3) So these five views of insight abstracted by Mayer (1995) from the considerable gestalt literature are not intended to be exhaustive, but to illustrate how relevant they remain, and challenge us to find a more holistic, structural and dynamic alternative to the tendency to an atomistic approach. It is generally acknowledged that for the gestalt psychologists the *sine qua non* of insight was defined in terms of a problem being solved through restructuring: "That is, if we compare the initial solution attempt(s) with the insightful solution, they must be the result of different analyses of the problem" (Weisberg 1995, p. 163).

The Weaknesses

It is of course important to recognise the weaknesses and limitations of the approach of gestalt psychology. Essentially there are three:

(1) The basic shortcoming of Köhler's approach, and that of classical gestalt psychology as a whole, is its objectivism. The self's insight into meaning is essentially "a mirroring in consciousness of the direction taken by physical forces structurally at work in the cortex" (Fuller 1990, p. 163). This is the well known gestalt theoretical notion of *isomorphism*.

(2) Many gestalt experiments are tantalising and thought provoking, but hardly acceptable by modern standards of scientific methodological rigour and theoretical clarity (Dellarosa 1988, Ohlsson 1992, Weisberg 1986). Gestalt psychology's research questions and tentative answers about insight are "too vague", in Mayer's opinion (1995, p. 27), "to be called right or wrong … the real challenge is to reformulate and clarify in a more productive way the questions we have inherited". It is very easy to criticize the approach of gestalt psychology on the grounds of its lack of scientific rigour, but as Mayer remarks:

> sometimes the gestaltists are accused of being soft scientists, whereas contemporary psychologists consider themselves workers in a hard science. An alternative way to frame the distinction is that the gestalt psychologists worked on *hard* questions, whereas modern cognitive psychologists sometimes prefer *easy* ones. (1995, p. 26)

(3) Gestalt psychologists paid very little attention to human cognition or the question of why certain types of people are more likely to have creative insights than others (Sternberg 1988).

Nevertheless the lasting legacy of gestalt psychology is the recognition that the key to creative problem solving continues to be the process by which a person understands the underlying structure of a problem, a process that the gestalt psychologist called *insight*.

So having briefly surveyed and evaluated the holistic approach of gestalt psychology, it is appropriate to turn to the second of the nine different approaches to the phenomenon and experience of insight.

2.4 The Existential Approach of Phenomenological Psychology to Insight

In contrast to the objectivism of gestalt psychology, existential phenomenology stresses the significance of being, experience and meaning, so in this approach it will be necessary to first sketch the backdrop of anxiety which is the context of insight. Then an existential-phenomenological theory of insight is propounded, revealing insight as: ‘impact’, ‘interpreting’ and ‘feeling’. Finally, the enduring significance and contribution of this existential-phenomenological theory of insight will be evaluated in terms of strengths and weaknesses. In this process, Fuller’s (1990) work will be used as a basic text, as it is arguably the best exposition of this theory applied to the understanding of insight.

2.4.1 The Courage to Be and See: Insight

It has become almost a truism to describe our time as an “age of anxiety” with Tillich (1979, p. 44) and Auden’s (1948) *The Age of Anxiety*, and that was before the impact of environmental collapse was recognised. Tillich (1979, p. 5) defines the courage to be as “the ethical act in which man affirms his own being in spite of those elements of his existence which conflict with

his essential self-affirmation". In discussing forms of anxiety, Tillich distinquishes three in which non-being threatens being, in terms of death, meaninglessness and condemnation:

> Non-being threatens man's ontic self-affirmation, relatively in terms of fate, absolutely in terms of death. It threatens man's spiritual self-affirmation, relatively in terms of emptiness, absolutely in terms of meaninglessness. It threatens man's moral self-affirmation, relatively in terms of guilt, absolutely in terms of condemnation. (1979, p. 49)

This is the context in which the struggle for insight takes place. If one of the phenomenological characteristics of insight, as identified in section 2.2.3, is the 'Aha!' experience, an elated sense of being, then one of the preconditions is to wrestle with the raw material of insight and the anxiety it provokes. The courage to be and see "resists despair by taking anxiety into itself" (Tillich 1979, p. 71).

2.4.2 An Existential-phenomenological Theory of Insight

Existential-phenomenological psychology finds that, in contrast to Köhler's objectivism:

> an activity of insight does indeed make a difference in the meanings we actually grasp: that insight is an invariantly required co-organiser of meaning, that insight has a standing of its own … What is truly original is not meaning's transphenomenal counterpart in objective space, but meaning itself in its structured truth as a life-world event … a network of meaning forms all around us, beyond the cortex, beyond us altogether in the lived dimensionality of the existential space of possibility. (Fuller 1990, p. 164)

This is a strong statement that the insightful self *sponsors* meaning and that meaning itself is a *structured* truth. Reason and Rowan (1981, p. 241) state the phenomenological position graphically: "reality is neither subjective nor objective, it is both wholly independent of me and wholly dependent on me". So "insight, vital interest on someone's part, is partner to the formation of meaning in an existential space of possibility. There is no disinterested observer and no 'mere' facts" (Fuller 1990, p. 166). On the contrary, "[i]nsight is involved, excited understanding … Uninvolved, unfeeling objective processes cannot provide the openness

meaning needs to come to a self-showing in its necessity" (Fuller 1990, p. 167). So insight is immediate contact with reality in terms of what is required, what is of value and wholes of meaning.

2.4.3 Insight as Impact and as Interpreting

One of the significant contributions of existential phenomenology to the understanding of insight is the recognition of the significance of the experience of what is often called *impact*. Heidegger articulated it thus: "To undergo an experience with something – be it a thing, a person, or a god – means that something befalls us, strikes us, comes over us, overwhelms and transforms us" (Heidegger 1971a, p. 57). Without actually using the word, his vivid depiction amounts to experiencing *impact*. Merleau-Ponty (1973b, p. 137) expressed it more precisely: "My perception is the impact of the world upon me". So Fuller (1990 pp. 171-172), applying this experience more particularly to the experience of insight, writes: "Insight, as determined in openness by life-world meaning is *impact* …The insight that determines its meaning does not create them, but rather is determined by their original structural integrity … Impact is a felt sense of things, being affected by them". In the impact of insight sensible meanings strike a responsive chord in us, stirring up intimations of itself within us. So "[i]nsight is letting life-world differences *be* in letting them touch us" (Fuller 1990, p. 178). The melody may haunt us, the demonstration convince us, and the sculpture bowl us over. We begin to tap our feet with the music, we are attuned and existentially involved.

> Insight is both interpreting and impact, both determinative of and determined by meaning in its structural originality … not two separate behaviours, but rather two ways of considering the same psychological reality: insight as *impact-interpreting* … interpreting meaning is feeling the impact of meaning … feeling the impact of meaning is an interpreting of meaning. Insight as interpreting and impact at once … bodily self and sensible meaning … determine one another circularly, reciprocally and simultaneously, each influence influencing the other even as it is influenced by the other. (Fuller 1990, p. 172)

What makes something be figure and something else be ground, Merleau-Ponty (1962) comments, is the way we concretely relate to them in our act of looking. It depends upon our

perspective. The interpretive determining of meaning is a situated enactment in an ongoing context. Heidegger, writing in *Being and Time* (1962a) and *On Time and Being* (1972, p. 15), expresses it particularly clearly: "The unity of time's three dimensions consists in the interplay of each toward each." So past, present and future are in active communication with one another and reciprocally determine one another, and enable past experience, present meaning and future possibilities to come together and influence one another in the experience of insight. Fuller argues that conventional psychology emphasises the *past*, Köhler introduces a *present* dimension, and phenomenological psychology introduces the *future* into psychology. So in existential-phenomenological terms, "[i]nsight as interpretively determinative of meaning temporally is the imaginative (future) releasing of meaning (present) from a perspective (alreadiness)." (Fuller 1990, p. 197)

From this perspective, interpreting involves liberating possibilities of significance and understanding involves venturing meaning and discovering whether it 'rings true'. There is a creative freedom and openness in such insight. The category of the possible is an existential one, so "[i]t is not that the body and brain cannot venture meaning … but that the body and brain *conceived objectively* cannot" (Fuller 1990, p. 192).

Insight is both active and receptive: an *active receptivity* and a *receptive activity*. Meaning and self do not relate to one another simply as subject and object as if they are distinct or independent or even opposing constituents. Meaning and self are circularly determinative of one other. They are like "interwoven strands of a single fabric, [or] inter-depending nodes of a single live system" (Fuller 1990, p. 194). Reference to inter-depending nodes of a single live system is reminiscent of Schilling's (2005) "Small-World" network model of cognitive insight; but in this existential approach of phenomenology it is not conceived *objectively*. The understanding that we determine meaning and meaning determines us is the fundamental and distinctive contribution of this approach. So, in the experience of insight, the self and the world complete and complement one another. As Fuller (1990, p. 196) expresses it: "[they are] relative to one another reciprocally and simultaneously. A thoroughgoing, rather than a one-sided, relativity rules. Relativised, the *duality* of the self and the world is no longer the *dualism* of the subject and object". So this is a very different symmetry of subject and object, with a very different valuing of human experience, and specifically the experience of insight, from the opposing concepts of 'facts' and 'subjective

experience', and the suspicion with which old-style natural science has often regarded subjective experience.

2.4.4 Insight as Feeling

Disposition is the term used by phenomenologists to describe the affective dimension of *Dasein's* (literally 'being there') situatedness in, and attunement to, life-world possibilities of significance. It conveys "what Heidegger calls *Befindlichkeit*, the alreadiness of the 'affective self-finding' of Dasein" (Fuller 1990, p. 199). So *disposition*, as much the sense of how things stand with us, as it is of how we stand with ourselves, is not just an inner subjective experience. It is always and already existentially beyond itself in the world.

This understanding of disposition is essential in order to grasp the significance of the term *feeling*, as used by phenomenologists, in relation to insight: it has a threefold temporal interplay in the experience of insight.

> *Feeling* thus envisaged is the breadth of being already disposed to available meanings, the depth of imagining the possibilities meaning has coming to it, the immediacy of a present releasing of and being touched by meaning, precisely as these temporal dimensions of the self play into one another at the moment. (Fuller 1990, pp. 201-202)

So the term *feeling* is used in this rich way by existential phenomenologists to indicate "the affective character of our involvement in the world with an immediacy that the term *insight*, with its intellectual overtones, does not" (Fuller 1990, p. 202).

As Merleau-Ponty (1964c, pp. 226-227) reminds us, the last century "has wiped out the dividing line between 'body' and 'mind', and sees human life as through and through mental and corporeal". To use Heidegger's vivid image, "we do not 'have' a body in the way we carry a knife in a sheath…rather we 'are' bodily" (Heidegger 1979, p. 99). So meanings are taken up and lived bodily; a person may be *attuned* to the mood of the meeting, the critical tone of a voice, or the significance of political developments. This is entirely consistent with *The Feeling of What Happens* (Damasio 2000). Current neuroscience understands that all emotions use the body as their theatre, but emotions also affect the mode of operation of numerous brain circuits and are responsible for profound changes in both the body landscape and the brain landscape (Damasio

2000, Panksepp, Nelson & Bekkedal 1997, Panksepp 1998). There is no subjective - objective dualism. So Heidegger writes:

> Beauty is not something on hand like an object of sheer representation. As an attuning, it thoroughly determines the state of man. Beauty breaks through the confinement of the 'object' placed at a distance, standing on its own, and brings it into essential and original correlation to the subject. Beauty is no longer objective, no longer an object. The aesthetic state is neither subjective nor objective. (1979, p. 123)

"Bodily feelings," writes Fuller, "like their complementary life-world values are possibilities of existential space, not things inside us … feeling does not merely accompany the 'real understanding' gained by other mental faculties … To know is to feel; to feel is to know" (Fuller 1990, p. 207). This view is increasingly supported by neuroscience. As Damasio (2000, p. 43) argues, "it is possible that feelings are poised at the very threshold that separates being from knowing, and thus have a privileged connection to consciousness". Something is felt to be false, ugly, useless; as somehow wrong; it 'ought not to be'; or something is felt to be true, good, beautiful or perhaps useful; as somehow right; it 'ought to be'. As Keats expressed it in the final lines of *Ode On a Grecian Urn* (cited in Garrod 1960, p. 210): "'Beauty is truth, truth beauty' – that is all/ Ye know on earth and all ye need to know".

Without feeling, no problems would ever be discovered, much less solved, or even recognised as solved. Gestalts develop, meanings are emergent, in their being felt. Feeling – psychological openness – is involved in the self-formation of all cognitions, sometimes with more, sometime with less, intensity. "What is phenomenologically decisive in the phenomenon of feeling is that it directly uncovers and makes accessible that which is felt and it does this not, to be sure, in the manner of intuition but in the sense of direct having-of-oneself" (Heidegger 1982, p. 133). This is one reason why dictionary definitions of *insight* in terms of *intuition* were questioned previously. Although feelings, hunches and intuitions are psychological states, and indeed the very self itself, the things that feeling insight knows, its cognitions, are not; they are non-psychological life-world meanings; a *duality* is involved not a *dualism*. Other questions about the wisdom of including intuition in the definition of insight will be raised subsequently in the relevant sections.

2.4.5 Disturbed Disposition: Unconscious Behaviour

It is important, in speaking of disposition and the place of feelings and interpretation in insight, to distinguish between 'attuned disposition' and 'disturbed disposition', and thus between 'true insight' and 'misinterpretation'.

Heidegger points out that the usual and 'natural' interpretation of fear, for example, bases its account on the evil or threat approaching from the surrounding dangerous world (1962a, p. 392). Existential thought rejects such an interpretation; that a threatening object linearly and externally 'triggers' fear on our part. "Fear", writes Fuller (1990, p. 210), "does not stand to threat as effect to cause … The feeling of fear rather already is ahead of itself, venturing life-world possibilities, releasing something as the threat it can be … not the 'impact' of an objectively given threat". In Fuller's words:

> In the disturbed disposition of phobia … instead of finding ourselves flexibly open to what might do us harm, and indeed to what might not, we discover ourselves irrationally 'threatened' by things that in fact portend no significant harm to us at the moment. Phobia has its reasons, to be sure, but these reasons, rather than being ahead of our lives, lie behind them mechanically and linearly governing present reactions, robbing both meaning and ourselves of a future … phobia amounts to a loss of the freedom of the threefold temporal interplay (temporal circle) of impact-interpreting. (1990, p. 211)

This loss of freedom is particularly evident in forms of paranoia for example, and is characterised by suspicious ideas and beliefs of persecution or fixated delusions rather than flexible insight for understanding.

The term "disposition", as used by phenomenologists, does not refer simply to a person's internal natural qualities of mind, character or inclination as in conventional thought, but refers to the way in which we are existentially beyond ourselves to the world. So if disposition is linked with unconscious motivation, phenomenologists adamantly refuse to speak of "the unconscious" as an inner compartment; instead they assert it is more precise to speak of an unconscious relation to meanings, or unconscious drivenness, in which one literally no longer knows what one is doing. So phenomenologists speak of *unconsciously* motivated behaviour, of blind mechanisms being in charge, rather than the self. Fuller concludes:

> Unconsciously motivated relations to the world stand in the starkest contrast, then, to relations of feeling insight to the world, where one has felt *structural understanding*, on the one hand, of the *understandable relationship* that prevails between one's meanings, and, on the other, of one's feelings and motivation in regard to those meanings. (Fuller 1990, pp. 212-213)

2.4.6 An Evaluation of the Contribution of the Approach of Existential Phenomenology

First the strengths of this approach will be considered, and then the weaknesses.

The Strengths

(1) It is important to recognise the significance of philosophical underpinnings of each of these approaches for our understanding of insight. A number of commentators (e.g. Heidegger 1977, May 1969, Polanyi 1978, Roszak 1992), have drawn attention to the fact that the western world is heir to over four centuries of scientific and technical achievements enabling humans to exercise power over nature and now over human nature. This is both the greatest human advance and at the same time the gravest human danger. In this context, the fundamental contribution and strength of existential-phenomenological philosophy and psychology, is its understanding of human *being*, the reality of human *experience* and the refusal to subordinate human *existence* to function.

Existentialism means centring upon the *existing* person; the emphasis is on the human *being* as he or she is *emerging* or *becoming.* The word "existence" comes from the Latin *ex*(s)*istere* "to emerge, come into being", from *sistere* "to cause to stand firm" (Rooney 1999). As May expresses it:

> The extreme of the existentialist position is expressed in Jean Paul Sartre's statement that 'existence precedes essence', the assertion that only as we affirm our existence do we have any essence at all. This is a consistent part of Sartre's great emphasis on decision: 'we are our choices'. (1969, p. 17)

May (1969:21) argues that "*without* some concepts of 'being' and 'non being' we cannot even understand our most commonly used psychological mechanisms". The distinction, as May

(1969, p. 18) pointed out long ago, is whether the "person has meaning in terms of the mechanism" or the "mechanism has meaning in terms of the person". The existential emphasis is firmly on the latter, and it holds that the former can be integrated within the latter. So insight cannot be understood just as a mechanism, but only on the deeper level of the meaning of the human being's potentialities, including the individual's unique pattern of abilities. Phenomenology is the essential disciplined effort to clarify the presuppositions that cause us to see the phenomenon primarily through our own theories, prejudices, dogmas and systems in order to 'bracket' them; it is the effort to experience the phenomena of insight in their full reality as they present themselves.

This is particularly important in terms of the experience of insight. Deterministic presuppositions make it possible to understand everything about art except the creative act and the art itself. Existential phenomenology, as we have seen, regards the insightful self as *sponsoring* meaning, as "partner to the formation of meaning in an existential space of possibility" (Fuller 1990, p. 166). The argument is that the philosophical underpinnings of existential phenomenology are true, both to the nature of insight, as well as doing justice to the humanity of the person experiencing insight.

(2) It is a great strength to recognise and reflect on the value of psychological descriptions that are near and faithful to experience. For example, May (1969, pp. 19-20) reflects on his experience of writing his book *The Meaning of Anxiety* (1950). For a year and a half he was in bed in a TB Sanatorium. So he had a great deal of time to ponder the meaning of anxiety, and plenty of first-hand data of his own and his fellow patients. In this period he studied *The Problem of Anxiety* by Freud (1936) and *The Concept of Dread* by Kierkegaard (1946). May expresses his experience like this:

> I valued Freud's formulations: namely his first theory, that anxiety is the re-emergence of repressed libido, and his second, that anxiety is the ego's reaction to the threat of the loss of the loved object. Kierkegaard, on the other hand, described anxiety as the struggle of the living being against non-being – which I could immediately experience there in my struggle with death or the prospect of being a life-long invalid. He went on to point out that the real terror in anxiety is not this death as such, but the fact that each of us within himself is on both sides of the fight, that "anxiety is a desire for what one dreads", as he put

> it; thus like an "alien power it lays hold of an individual, and yet one cannot tear oneself away". (1969, p. 19)

What struck May (1969, p. 20), powerfully, was that Kierkegaard "was writing about *exactly what my fellow patients and I were going through*. Freud was not; he was writing on a different level, giving formulations of the psychic mechanisms by which anxiety comes about". In contrast "Kierkegaard was portraying what is immediately experienced by human beings in crisis" (May 1969, p. 20). Freud was writing on a technical level; he *knew about anxiety*. Kierkegaard was writing on the existential level; he *knew anxiety.*

This example is not given in order to devalue one approach at the expense of the other; both are necessary. It is to draw attention to the value of psychological descriptions that are faithful to experience, particularly in our historical context and predicament. In the claim, for example, of strong Artificial Intelligence that computers can be programmed to adequately model human insight and indeed have insight themselves, as well as make scientific discoveries, there is an underlying danger. It is the subtle, dehumanising and reductionistic tendency to make human beings into the image of the machine, into the image of the techniques by which human experience, such as insight, is studied. The very detailed, respectful, descriptive and existential approach of phenomenology is of particular value in gaining understanding of the conscious experience of insight. Other approaches will be explored in subsequent sections which focus more on the unconscious mechanisms involved.

The Weaknesses

(1) The current limitations and problems in the development of an existential-phenomenological psychology have to be seen in the context of its brief history in challenging dominant views of determinism and dualism, as well as in the partial understandings and misunderstandings of those seeking to apply it. Three problems will be mentioned; the first developmental, the second philosophical and the third practical:
(a) it naturally takes many decades to develop a new and coherent *human scientific* philosophical basis for psychology to effectively challenge the dominant *natural scientific* philosophy. Much has been done, but much remains to be done. Georgi's (2004) articulation of "A Way to Overcome the Methodological Vicissitudes Involved in Researching Subjecivity", drawing on the

work of the philosopher Mohanty (2000), is an excellent example of the patience, clarity and due humility required.

(b) there is a danger inherent in the necessary emphasis upon philosophical underpinnings of becoming lost in the terminology, theory and detached intellectualism, in the necessary but complex areas, which existential phenomenology explores and analyses. As May (1950, p. 90) observes in this context, "One can certainly become philosophically detached in the same way as one can be technically detached". Precisely because existential concepts deal with profound issues of personal reality, "these concepts can the more seductively give the illusion of dealing with reality" (May 1950, p. 90).

(c) the opposite danger is the practical one of misunderstanding or misusing these concepts. So, for example, Williams and Irving (1996) argue that while some counsellors have adopted the principle tenets of phenomenology, they have built their work on an interpretation of *intuition,* which is contrary to phenomenological rationale, and have presented it as a form of knowing which is esoteric and mystical which does not allow counsellors to reflect critically on their practice. The situation would be very different if these counsellors had experienced *insight,* which by its very nature could be examined, and so enable inter-subjective verification and validation in the therapeutic setting, as well as providing material for subsequent critical reflection and elaboration.

(2) There appears to be a significant omission in the considerable body of existential-phenomenological research. There seems to be very little research based on the actual experience of insight of people in a variety of contexts in daily life, which is the natural setting for existential phenomenology, as opposed to an artificial laboratory situation. So, for example, there is no contribution from the theoretical perspective of existential phenomenology in the major work on *The Nature of Insight* (Sternberg & Davidson 1995). There is the very valuable *Study of the Kind of Therapeutic Self-Insight that Carries a Greater Sense of Freedom* (Todres 1990), but it is limited to therapeutic self-insight. There is some research on insight in psychotherapy (e.g. Williams & Irving 1996). There is also some research on orienting attitudes in the perception of illusions (Bors & Silberman 1993) which relates marginally to insight.

The research most closely related is *The Transformational Experience of Insight: A Life Changing Event* (Levitt, Frankel, Hiestand, Ware, Bretz, Kelly, McGhee, Nordtvedt & Raina

2004) which produces a model of insight generated by grounded theory analysis of interviews. It is an excellent and detailed qualitative study, but one limiting factor, from the perspective of this particular research, was that they were all essentially self insights; the core category was "integrating novelty: meeting challenges to interdependence". Another important difference was that the computer programme, QSR-Nudist 4, was used to analyse and organise the data, which will not be used in this study.

There appears to be no existential-phenomenological study of insight as a complex Life-Event, such as Fischer and Wertz' (1979) study on being criminally victimised. This research is a tentative first step towards filling that gap.

2.5 The Puzzle-Problem Approach of Cognitive Psychology to Insight

The majority of researchers in the field of insight would identify with the general approach of cognitive psychology, so it may be helpful to begin by distinguishing between three alternative perspectives on insight within this broad approach.

2.5.1 Three Alternative Perspectives on Insight

Seifert, Meyer, Davidson, Patalano, and Yaniv (1995) distinguish between the *business-as-usual perspective* which focuses on whether or not insight actually exists as a distinct, significant cognitive phenomenon; the *wizard Merlin perspective* which questions whether insight is scientifically researchable and understandable; and the *prepared-mind perspective* which is their own view as cognitive scientists.

(1) The *business-as-usual perspective* is exemplified by Langley and Jones (1988), Perkins (1981) and Weisberg and Alba (1981a,1981b). Those who represent this perspective are described by Seifert *et al*. (1995, p. 68) in these terms: "To the extent that they acknowledge insight's existence at all, they attribute it to normal mental processes such as memory search, hypothesis testing, and trial-and-error solution attempts based on past experience". Weisberg and Alba (1981a) found that subjects very seldom solved the classis nine-dot problem (see Figure 7 below) through a quantum leap of insight. Even after explicit hints, progress towards success

appeared to occur only gradually; “spontaneous reorganisation of experience does not occur during problem solving” (Weisberg & Alba 1982, p. 326).

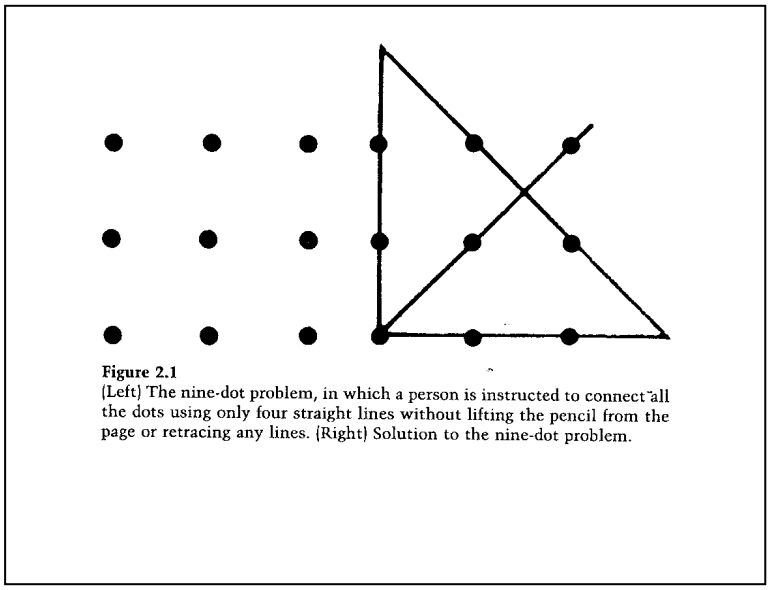

Figure 2.1
(Left) The nine-dot problem, in which a person is instructed to connect all the dots using only four straight lines without lifting the pencil from the page or retracing any lines. (Right) Solution to the nine-dot problem.

Figure 7. The nine dot problem and its solution (Dominowski & Dallob 1995, p. 43)

Other researchers espousing this business-as-usual perspective are Saugstad and Raaheim (1957) and Weaver and Madden (1949). The perspective is based on apparent failure to observe spontaneous insightful problem solving by students in laboratory situations. Despite the obvious limitations of examining such a significant experience in this particular way, other laboratory studies have revealed apparent intuitive quantum leaps of insight (Dominowski 1981, Metcalfe & Weibe 1987). In addition Popper (1968 cited in Bowers 1990, p. 94) warned “there is no such thing as a logical method of having new ideas, or a logical reconstruction of this process. My view may be expressed by saying that every discovery contains ‘an irrational element’, or ‘a creative intuition’”.

(2) The *Wizard Merlin perspective* is epitomised by Feynman. Kac, one of Feynman’s collaborators, is quoted as saying:

> there are two kinds of geniuses, the ‘ordinary’ and the ‘magicians’ … once we understand what they [the ‘ordinary’] have done, we feel certain that we, too, could have done it. It is different with magicians … even after we understand what they have done, the process by

> which they have done it is completely dark … Richard Feynman is a magician of the highest calibre. (Gleick 1992, pp. 10-11)

Such examples, as Seifert et al. (1995, p. 74) argue, "attest strongly to the seeming reality of insight as a distinct, unique, and impressive mental feat worthy of further investigation: they do not make insight out to be just business-as-usual". However they conclude that this makes it very difficult for "analysing and thoroughly understanding the mental processes that mediate true insight" (Seifert et al. 1995, p. 74), with the result that no scholars of note fully espouse it. Yet, the value of researching the lives and insights of particularly creative minds has contributed significantly to our understanding of insight. This will be examined in more detail under "The Great Minds Approach", section **2.8**.

(3) The *prepared-mind perspective*, which regards insight as useful in understanding problem solving, (e.g. Davidson 1986, 1995, Dominowski 1981, Ellen 1982, Metcalfe & Wiebe 1987, Seifert et al. 1995, Sternberg & Davidson 1983) owes its origin to Wallas (1926) who outlined four major phases of information processing that may mediate innovative problem solving and creativity. These phases consist of a synergistic combination of (1) mental preparation, (2) incubation, (3) illumination, and (4) verification. A compelling, and very frequently cited illustration of each of these phases, is found in Poincaré's account of his own creative process:

> For fifteen days I strove to prove that there could not be any functions like those I have since called fuchsian functions. I was then very ignorant; every day I seated myself at my work table, stayed an hour or two, tried a great number of combinations and reached no results. One evening, contrary to my custom, I drank black coffee and could not sleep. Ideas arose in crowds; I felt them collide until pairs interlocked, so to speak, making a stable combination. By the next morning I had established the existence of a class of fuchsian functions, those which come from the hypergeometric series; I had only to write out the results which took but a few hours.
>
> Just at this time I left Caen, where I was living, to go on a geologic excursion under the auspices of the school of mines. The changes of travel made me forget my mathematical work. Having reached Countances, we entered an omnibus to go some place or other. At the moment when I put my foot on the step the idea came to me, without anything in my former thoughts seeming to have paved the way for it, that the transformations I had used

> to define the fuchsian functions were identical with those of non-Euclidean geometry … I did not verify the idea; I should not have had time … but I felt a perfect certainty. On my return to Caen, for "conscience" sake I verified the results at my leisure. (Poincaré 1913, pp. 387-388, cited in Mayer 1992, p. 49)

This sort of experience is reported by other innovative mathematicians, scientists, artists, musicians, and a whole range of creative people. So these four phases, proposed by Wallas (1926), and their synergistic combination in cognitive psychology will be explored in more detail in the light of more recent scholarship in the following four sections: first, the mental preparation for insight (**2.5.2**); second, the incubation phase of insight (**2.5.3**); third, the process in the moment of insight (**2.5.4**); and fourth, the verification of insight (**2.5.5**).

2.5.2 The Mental Preparation for Insight

"In the language of cognitive psychology, the preparation phase has a *priming* function" (Simonton 1995, p. 482). For this "priming" to be effective there are three conditions that need to be fulfilled:

(1) The problem has to be taken seriously and confronted head on. Researchers stress the importance of motivation, problem analysis and mental representation as part of the preparation for insight (Kaplan & Simon 1990, Keane 1989, Ohlsson 1984b, Seifert et al. 1995). Frequently there is a failure to apply relevant prior information. Gick and Holyoak (1980) found their research subjects were not able to apply information from structurally analogous stories to solving insight problems such as Duncker's (1945) radiation problem (**2.3.1**, Figure 3).

(2) When an impasse is reached it must be recognised as such, even when success seems tantalisingly close, in order that "failure indices get properly stored" in long-term memory "to help guide the problem solver back to the problem…and become integrated with other general knowledge in long-term memory" (Seifert et al. 1995, p. 112). Sometimes there is an inappropriate use of stored information as illustrated in Maier's (1931) two string problem. (See Figure 8 below.)

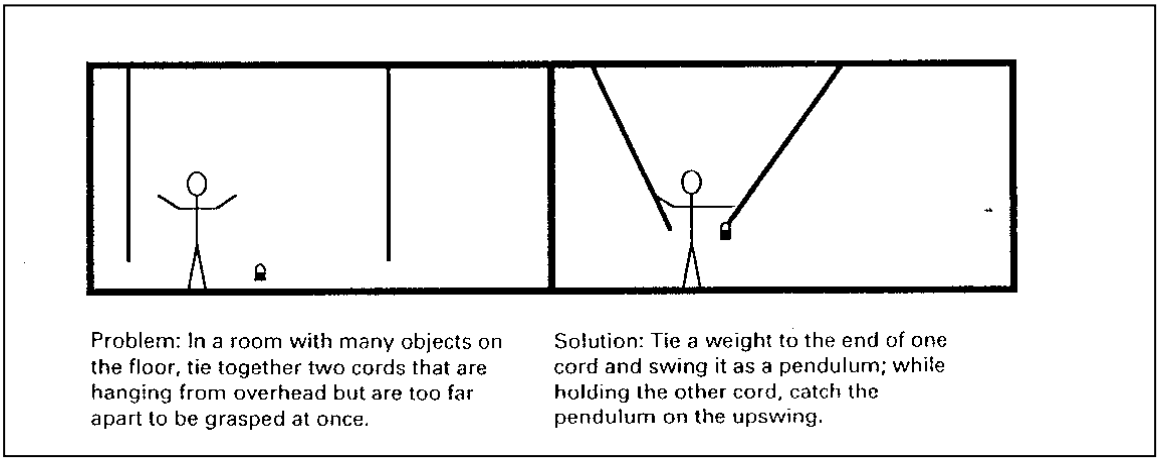

Figure 8. The Two-String Problem and its Solution (Maier 1931, cited in Mayer 1995, p. 15)

Subjects may have seen the pliers as a tool for grasping objects, rather than as a useful weight for making a pendulum; functional fixation.

(3) A prototypical positive example of mental preparation and developing expertise has been investigated by Chase and Simon (1973) who found that chess masters are superior to other players in terms of remembering meaningful and effective arrangements of pieces on a chess board. This type of structured analogous memory organisation is presumed to "facilitate their ability to select good moves" (Seifert et al. 1995, p. 80).

2.5.3 The Incubation Phase of Insight

Obviously research by natural scientific methods on the incubation stage of insight is inherently difficult. (For a review of hypotheses about incubation effects, see Anderson 1990, Glass & Holyoak 1986, Posner 1973.) There have been essentially four main hypothetical possibilities according to Seifert et al. (1995):

(1) The least interesting is the *intermittent covert conscious work hypothesis* on the problem, which is hardly incubation or easily distinguishable from preparation.

(2) The next mundane possibility is the *fatigue-dissipation hypothesis*, a fancy name for a rest, enabling the problem to be seen in a new way as a result of being refreshed and reinvigorated. High arousal tends to increase the dominance of high-probability associations at the expense of

low-probability associations (Simonton 1980, Zajonc 1965). So it is no accident that the final insight may arise when the individual is engaged in some relaxing activity, as during Poincaré's beach stroll.

(3) This, regarded by Seifert et al. (1995) as more interesting from a cognitive standpoint, is the *selective-forgetting hypothesis*, in which the incubation phase allows problem solvers to forget, or leave only weak residual memory traces, of inappropriate solution strategies.

(4) Finally, and most mysterious, is the *subconscious random-recombination hypothesis*, in which incubation allows relevant information in long-term memory to recombine in an insightful synthesis. As an example, consider how the ring-like molecular structure of the organic compound benzene was discovered by the chemist Kekulé:

> I turned my chair to the fire and dosed … again the atoms were gambling before my eyes … My mental eye … could now distinguish larger structures, of manifold confirmation; long rows, sometimes more closely fitted together; all twining and twisting in snake-like motion. But look! one of the snakes had seized hold of its own tail, and the form whirled mockingly before my eyes. As if by a flash of lightning I awoke. (Koestler 1964, p. 118)

It seems as if Kekulé was stimulated by new perceptual information through dreaming. His image of the snake seizing its own tail, which closely parallels the actual structure of the benzene ring, led to the discovery of the benzene ring.

"In assessing these various possibilities, a mix of the subconscious random-recombination and conscious-work hypotheses seems most favoured by the introspective reports of some creative individuals" according to Seifert et al. (1995, p. 83).

One of the obvious problematic limitations of laboratory studies of insight, and of the hypotheses outlined above, is that they focus too exclusively on internal cognitive processes, hermetically sealed from *life-world* experiences. Carefully controlled "hints" are hardly an adequate substitute. Fleming's discovery of penicillin, which stemmed from his accidentally noticing an absence of bacterial growth on the bottom of a dish, illustrates Pasteur's famous remark "chance favours the prepared mind" (cited in Posner 1973, p. 148). This has some similarities with Smith's (1995) suggestion that the context may facilitate insight.

So Seifert et al. (1995) promote a *fifth* hypothesis, based on the significance of failure indices in long-term memory, and assimilating a new stimulus into the prior memory representation of the problem; like adding a missing piece to a jigsaw puzzle. Their rubric for this is the *opportunistic-assimilation hypothesis;* their vivid illustration of this is Feynman's experience:

> Finally they get all this stuff into me, and they say, "the situation is so mixed up that even some of the things they've established for years are being questioned – such as the beta decay of the neutron is S and T [a specific type of particle interaction]. Murray [Gell-Mann] says it might even be V and A [another specific type of particle interaction], it's so messed up". I jump up from the stool and say, "then I understand EVVVVVRY-THING!" They thought I was joking. But the thing I had trouble with at the Rochester meeting [a previous conference] – the neutron and proton disintegration: Everything fit *but* that, and if it was V and A instead of S and T, that would fit too. Therefore, I had the whole theory! I went on and checked some other things, which fit, and new things fit, new things fit and I was very excited … I had this new equation for beta decay … It was the first time, and the only time, in my career that I knew a law of nature that nobody else knew. (Seifert et al. 1995, p. 94, quoted in Crease & Mann 1986, pp. 213-214)

This corresponds with Simonton's (1995, p. 483) *external subliminal associative priming hypothesis.* So a casual remark, by a disillusioned colleague, about the situation being so confused that it might even be V and A rather than S and T, leads Feynman, the exemplar of the Wizard Merlin perspective on insight, for the first and only time in his career, to the awesome experience of realising that he knows a law of nature that nobody else knows: such is the richness of the life-world!

Consideration of the incubation phase of insight inevitably leads into the moment of insight which has been the focus of intense research.

2.5.4 The Process in the Moment of Insight

Having *first* considered the mental preparation for insight and *second* the incubation phase of insight, the *third* question is what happens in the moment of insight? The relevant research will be considered from three perspectives; the cognitive (**2.5.4.1**), the affective with the distinctive "Aha!" experience (**2.5.4.2**) and the behavioural (**2.5.4.3**).

2.5.4.1 The Cognitive Components of Insight

Gick and Lockhart (1995) elaborating on previous work, propose three possible points of difficulty in the insight problem solving process; they all turn on the key gestalt understanding of the importance of the *representation* of the problem of insight: One is *accessing* an existing representation that will effectively solve the problem. The second is *constructing* a new representation from existing elements, when no solution-generating representation exists. The third dimension of difficulty is *applying* the representation, as perceived, to obtain the solution.

They suggest these are three relative dimensions of difficulty as they may exist in varying degrees for different problems and for different problem solvers. So one person's insightful problem solving may be another's routine problem solving owing to differences in knowledge representations.

Another attempt to analyse the cognitive components of insight is the three-process theory (Davidson 1986,1995, Davidson & Sternberg 1986), according to which much of the difficulty psychologists have had in isolating insight is because it involves at least three processes rather than a single one; selective encoding, selective combination and selective comparison. *Selective encoding* occurs when a person suddenly sees in a stimulus, or set of stimuli, one or more features that have not been obvious previously. This can contribute to restructuring one's mental representation of relevant information. Davidson (1995) gives Semmelweis's discovery of the importance of asepis as an example of selective encoding in insight. When he noticed that more women on the poor ward of the General Hospital in Vienna were dying from infection during childbirth than were women on the rich ward, "he encoded that doctors washed their hands less frequently while on the poor ward and realised the relevance this had for spreading puerperal fever" (Davidson 1995, p. 128).

Selective combination occurs when one suddenly puts together elements of a problem situation in a way that previously has not been obvious to the individual. It is often difficult to find an appropriate and effective combination. Davidson (1995) gives Darwin's formulation of the theory of evolution as an example, involving selection combination in insight, because he "had all the facts for a long time: what he finally discovered was how to put them together to form a coherent theory" (Davidson 1995, p. 128).

Selective comparison occurs when one suddenly discovers a non-obvious relationship between new information and information acquired in the past. It is here that analogies, metaphors and models are used to enable insight. Davidson gives Archimedes' theory of specific gravity as an example of selective comparison in insight to determine whether there were impurities in it:

> He noticed that the amount of water that was displaced was equal to the volume of his body that was under the water. By drawing an analogy between his bath and the problem with the crown … He could compute the crown's volume by placing it in water and measuring the amount of displaced water. The crown could then be weighed against an equal volume of [pure] gold. (Davidson 1995, p. 129)

This theory is process-orientated rather than problem-orientated, and the key is to select the relevant elements, the relevant combination and the relevant comparison(s). To be referred to as *insightful* the processes must seem to occur abruptly when they do occur and, once they have occurred, must result in a change in the person's representation of the problem. Davidson (1995) argues that *insight* is part of *intelligence,* and found that the highly intelligent subjects performed better on all types of problems than the average ability subjects.

It is widely recognised that individuals who are most productive of original ideas usually display exceptional intellectual versatility (Davidson 1986, Raskin 1936, Simonton 1976, 1995, White 1931). One manifestation of this versatility is an insatiable curiosity about developments beyond the confines of a particular speciality area (Manis 1951, Simon 1974). Darwin, for example, read the *Essay on Population*, "for amusement" Gruber 1995, p. 424), yet the Malthusian thesis propelled Darwin towards the central insight of his own theory.

2.5.4.2 The Affective Components of Insight

Gick and Lockhart recognise that although the "Aha!" response to insight "is the one to have received the most attention and concern, we believe that there are other affective components to problem solving in general, and to insightful problem solving in particular" (Gick & Lockhart 1995, p. 203). This is surely true at each stage of the process:

(1) There is an affective component in finding and engaging with the problem, for example, deciding to study a problem in the first place (Getzels & Czikszentmihali 1976). As Gick and Lockhart comment "the affective component may play a big role in motivating the problem

solver" (Gick & Lockhart 1995, p. 203). If this is true in laboratory puzzle problems, which is the context of their comment, how much more is it an obvious truth and compelling component of life-world situations.

(2) There is an affective component in motivating the problem solver to stay with the problem in the face of failure to solve the problem. For example, the experience of "reaching an impasse while attempting the mutilated checker-board problem…may result in feelings of being stuck and frustrated or irritated" (Gick & Lockhart 1995, p. 203). (See Figure 9 below.)

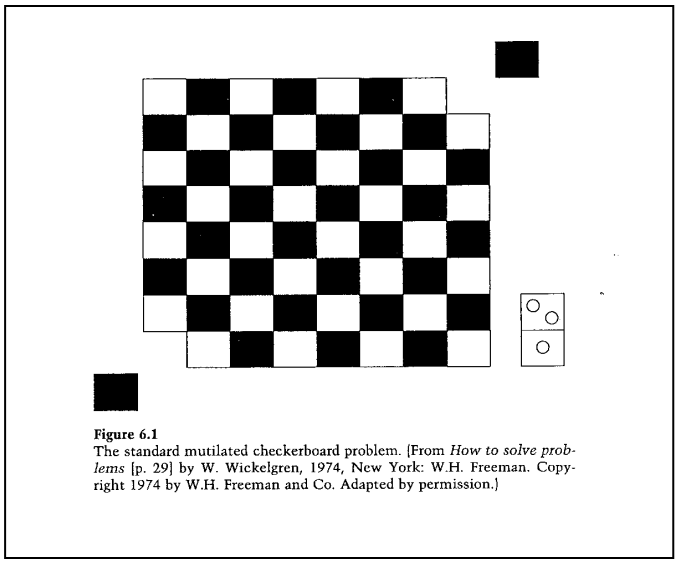

Figure 6.1
The standard mutilated checkerboard problem. [From *How to solve problems* [p. 29] by W. Wickelgren, 1974, New York: W.H. Freeman. Copyright 1974 by W.H. Freeman and Co. Adapted by permission.]

Figure 9. The standard mutilated checkerboard problem. (Wickelgren 1974, cited by Gick & Lockhart 1995, p. 198)

Problem: 32 dominoes cover exactly 2 adjacent squares, of the 64 squares on the checkerboard. If 2 squares are cut off at diagonally opposite corners of the board, how would you place 31 dominoes so that all 62 remaining squares are covered? If you think it is impossible, give a proof of why.
Hint: Consider the colour of the squares of the board.

Again, how much more is this true in real life when so much more depends on the outcome. The importance of failures in expectation, and the explanations constructed to account for them, in contributing to understanding and new knowledge representations, have been discussed extensively by Schank (1986).

(3) There is an affective component in the transition to a solution state, in which at least part of the experience may be a feeling of an intuitive nature. As Gick and Lockhart (1995, p. 214) comment, "expert scientists often seem to have a strong intuitive sense that a newly conjectured

representation will work although formal evaluation may remain a long way off". It is a misunderstanding and over-simplification of the creative process to suppose that the discovery of complex theories happens in a single "Aha!" experience; however such an experience of insight may often be true of critical elements or stages in the development of a theory. For example, Watson (1968, p. 123) describing a stage of formulating the structure of DNA writes, "suddenly I became aware that an adenine-thymine pair held together by two hydrogen bonds was identical in shape to a guanine-cytosine pair held together by at least two hydrogen bonds". "This sudden awareness", as Gick and Lockhart (1995, p. 214) express it, "does not correspond to a transition from total puzzlement to total understanding about the overall structure of the DNA, but as an important step in the progression towards the final solution. It appears to have the essential properties of insight", as they have described it, in terms of "a transition to a solution state, at least part of which does not involve step-by-step reasoning".

So three important affective components of insight prior to the actual "Aha!" experience of insight have been identified. The distinctive "Aha!" experience is the characteristic affective response accompanying insight. For example, in Poincaré's words "I did not verify the idea; I should not have had time … but I felt a perfect certainty" (Poincaré 1913, p. 388). Gick and Lockhart (1995) propose that this affective response, the "Aha!" accompanying the transition to a solution state, consists of two components:

(1) The first aspect is that of *surprise*, which is a result of the fact that the representation that will solve the problem is different from the initial representations attempted. As Gick and Lockhart (1995, p. 215) comment about this surprise, "there is something of the same intuitive sense of success along with the hesitancy that comes with a lack of explicit verification, in Watson's description of the final stages of the discovery of the structure of DNA":

> Upon his arrival, Francis [Crick] did not get more than halfway through the door before I let lose that the answer to everything was in our hand … however we both knew that we would not be home until a complete model was built in which all the stereochemical contacts were satisfactory … I felt slightly queasy when at lunch Francis winged into The Eagle to tell everyone within hearing distance that we had found the secret of life. (Watson 1986, pp. 125-126)

(2) The second aspect is that of *suddenness*, which derives from the fact that the correct representation leads to an easy application and solution and, therefore, the solution seems to

appear suddenly. The extent of the surprise will depend on the degree of incongruity between the original representation(s) and the representation that solves the problem. So, for example, a "joke sets up an expectation that does not fit with what is generated by the punch line, and humour is found in the resolution of the incongruity" (Gick & Lockhart 1995, p. 203).

Similarly, accepting the dominant interpretation generates the internal contradiction that constitutes the riddle which is not resolved until the initial meaning is replaced by the non-dominant meaning (Long & Graesser 1988). In addition, the nature of the surprise may vary between positive (delight) and negative (chagrin). Often as Gick and Lockhart (1995) point out, there is not only the satisfaction of having solved the problem, or riddle, but also the sense of having escaped the power of dominance, the tyranny of the phenomenon of automatisation; vividly illustrated in the Stroop affect.

This process is often referred to as *fixation* (Dominowski 1981, Smith 1995, Weisberg & Alba 1981a&b). Some jokes are still funny even on being repeated, and some riddles are still not solved immediately, even when they have been heard before and the solution is 'known'. Gick and Lockhart (1995, p. 209) "suspect that this is because the riddle and joke still have the capability to invoke a dominant but incorrect representation".

2.5.4.3 The Behavioural Components of Insight

Simonton (1995, pp. 483-484) maintains that what he calls a "priming process" explains some contextual features of insights. Taking these considerations seriously may lead to a conscious and deliberate change of behaviour in order to maximise the benefits of increasing the possibility of insight. He specifies three effective "priming processes":

(1) Insights frequently occur when the creator gives up on a particular problem and turns to other activities. Even taking a total vacation from professional concerns may expose the incubating mind to the influx of new and potentially fruitful associations.

(2) Those individuals who are most prolific in the production of important insights commonly engage in many varied projects simultaneously (e.g. Simon 1974, Tweney 1990). As Poincaré (1921) indicated in the beach-stroll anecdote, the central component of a major synthesis often emerges from cross talk between hitherto unrelated works in progress.

(3) Eminence in a creative endeavour is strongly associated with having many professional contacts (Simonton 1984a, 1992a, 1992b). Whether deliberately or inadvertently, exchanges with rivals, correspondence, colleagues, collaborators and other associates can prime new associative explorations.

So, for example, it is often said that the value of international conferences is not primarily due to the content of the papers presented, but rather in the contacts, relationships and ideas that may emerge informally and can be followed up. The frequency of these conferences is evidence of the valuing of this opportunity for professional stimulation and the possibility that it will contribute to further understanding and insights.

2.5.4.4 A Merger of the Cognitive and Affective Components of Insight

In an attempt to take the research forward, the three-process theory of Davidson and Sternberg's approach to studying insight (Davidson 1986, Davidson & Sternberg 1984,1986,) was merged with Metcalfe's feelings-of-warmth (nearness to solution) approach (Metcalfe 1986b, Metcalfe & Weibe 1987). In general, the theory was supported, previous research replicated and merging approaches validated for future research. Six particular findings reported by Davidson (1995) are of interest:

(1) Subjects who solved the insight problems correctly were more likely to switch strategies, indicating that these problems were restructured before being correctly solved.

(2) High feelings of warmth predict failure to solve the un-cued insight problems, but do not predict failure on un-cued non-insight problems, indicating that insight cannot be predicted before it occurs.

(3) Highly intelligent subjects gave lower warmth ratings on un-cued insight problems than subjects of average intellectual ability. This difference is believed to be due to the fact that average ability subjects solved more of the insight problems incorrectly and had high feelings of warmth for their incorrect solutions.

(4) Correctly solved insight problems show an abrupt and dramatic increase in ratings from 1 to 10 when a solution was reached (confirming the "Aha!" experience) whereas correctly solved more routine, non-insight problems, show an incremental pattern of about 5 points.

(5) Insight seems to be a necessary, but not sufficient, condition for solving many selective combination problems, because problem solvers still have to work out the details. This finding is in agreement with the view that verification follows illumination (Wallas 1926).
(6) High ability subjects take longer to solve insight problems than do average ability subjects (whose solutions are more frequently incorrect) because often considerable preparation time is needed before insight can be experienced.

Clearly there is value in this approach and yet it is a limited exploration of cognitive and affective components of insight. Further research is needed, yet some limitations may be inherent in the approach of cognitive psychology itself.

2.5.5 The Verification of Insight

As Poincaré says of his experience of insight as he put his foot on the step of the bus, "I did not verify the idea; I should not have had time … but I felt a perfect certainty. On my return to Caen, for 'conscience' sake I verified the results at my leisure" (Poincaré 1913, p. 388).

Poincaré uses the same term *verify* as Wallas (1926). While illumination is an immediate *seeing* of something not seen before, verification is a conscious effort to explicate *what* is seen and to incorporate it into a larger body of insight. Verification is clearly the correct term in a mathematical context, but Greenman (1987, p. 126) argues that in other contexts "it is not verification in any strict sense except that of either a coherence or a pragmatic or existential theory of 'truth'. The term *validation* would, perhaps, be better".

Although it is convenient and useful to speak of Preparation, Incubation, Illumination and Validation as four *stages* in the insight process, it is important to bear two things in mind; *firstly*, that it is a synergistic combination rather than four distinct and separate stages, and *secondly* that what is verification or validation with respect to a particular insight is, at the same time, preparation for further insight.

2.5.6 Some Questions about "Insight Problems" in the Laboratory

The creative process, including insight, is notoriously unpredictable, and compared to other logical processes, is comparatively rare (Hademard 1949). This makes laboratory research on insight extremely difficult. There is evidence (e.g. Dunbar 2000) that artificially induced insight in laboratories, by the use of carefully devised but comparatively trivial insight problems, does not possess the same *quality* as insights occurring spontaneously in a more natural environment, which frequently use deeper and more structural analogical features.

According to Pols (2002, p. 17), "insight problems are at least as important for the study of insight as insight itself. For without insight problems, insight (in problem solving) wouldn't even exist". This myopic statement about the character of insight is the result of a view of insight entirely restricted to the puzzle problem approach in a laboratory setting.

Weisberg (1995), while not advocating the truth of the gestalt conception of insight, argues that it is possible to use the gestalt definition of insight to clarify insight problems; namely, "insight brought about through restructuring of the problem situation" (Weisberg 1995, p. 161). He reaches three main conclusions:
(1) The taxonomic classification indicates that a significant proportion of the problems regularly used in investigations of insight are not actually solved through insight in the classical sense. In some, the solution can only occur through insight (called "pure insight problems"), whereas in others, the solution can be brought about *either* through insight *or* in other ways (called "hybrid insight problems"). Out of twenty-four insight problems Weisberg (1995) identifies five as hybrid, including the very frequently used nine-dot geometrical problem in **2.5.1**, Figure 7.
(2) Examination of a broad range of problems classified as insight problems indicates that, when insight occurs, it occurs in different ways for different problems. This indicates that insight may not be a unitary phenomenon, which questions theories that purport to explain insight in terms of a single set of mechanisms.
(3) On the basis of the first two points he questions the generality and ultimate importance of the concept of insight.

These issues deserve detailed responses. In relation to point (1), it has to be acknowledged that scholars have drawn contradictory conclusions from data on the same problem, for example, with reference to the nine-dot problem. In this case Weisberg (1995, p. 162) does not seem aware that "instructing subjects that the solution to the problem depended on their lines going outside the square, thereby restructuring the problem for the subjects", is not the same as the subjects having the insight to restructure the problem for themselves. In fact Weisberg and Alba (1981) found that after receiving the hint, more than seventy-five percent of the subjects were still unable to solve the problem. Yet, years later, Weisberg still draws the conclusion that "this resulted in their drawing lines outside the square, but it did not significantly facilitate solution, which contradicts the gestalt view" (Weisberg 1995, p. 162). This seems to betray an inadequate understanding of the gestalt view of restructuring, an over-optimistic sense of the power of 'hints' (Burke 1972), and an impoverished experience of insight, in the same way that explaining a joke ruins it.

In relation to the point (2), that when insight occurs it occurs in different ways for different problems, there is no argument. That is exactly what one would expect, and it does question theories that purport to explain insight in terms of a single set of mechanisms. The gestalt view of restructuring as a change in the thinker's representation of the problem (Ohlsson 1984b), was never intended to be reduced to "a single set of mechanisms". This is the clear implication of Mayer's (1995) exploration of a collection of five inter-related examples of insight in the gestalt tradition, outlined earlier in **2.3.1**. It is also the clear implication of Davidson's (1995) "three-process theory of selection in insight" in **2.5.4.1**, involving selective encoding, selective combination and selective comparison.

Finally, in relation to the point (3), that on the basis of the first two points, Weisberg (1995, p. 159) raises "questions about the generality and ultimate importance of the concept" of insight. The value of many of Weisberg's observations has to be acknowledged. For example, that the solution of the fake coin problem (Weisberg 1995, p. 185) used in several investigations of insight, "requires the significance of *BC* in the date become clear to the problem solver which could be described by saying that he or she must achieve insight into the significance of *BC*". But it is necessary to differentiate between merely *superficial* and properly *structural* experiences

of insight and in this case it "is not using insight in the classical, technical sense of restructuring" (Weisberg 1995, p. 166). So clearly it is not a "pure" insight problem, but a "hybrid" problem, in Weisberg's terminology. It is important to acknowledge that his probing, questioning and taxonomic classification plays a valuable role in keeping researchers honest, and exposes some of the limitations of laboratory insight problems, and has empirical support (Chronicle, MacGregor & Ormerod 2004). Nevertheless his final rather sweeping conclusion questioning "the generality and ultimate importance of the concept" of insight, does not seem to be warranted by the evidence of the first two points. This conclusion is considerably reinforced when the importance and creative significance of real *life-world* experiences of insight are considered, which is explored in more detail later.

Another perspective on the limitations of laboratory experiments is provided by Dunbar (2000) in exploring *The Analogical Paradox.* He examines why subjects in many psychological experiments tend to focus on superficial features when using analogy (Blanchette & Dunbar 1998, 2000), whereas people in more natural everyday contexts frequently use analogy with deeper and more structural features. His main conclusion is that in natural everyday contexts information is encoded, and therefore may be retrieved, in a *richer* way. He also draws attention to three related facts:
(1) Analogy is a key component of human mental life (Hofstadter 2000, Holyoak & Thagard 1997).
(2) There is a similarity between analogy and metaphor (Gentner 2000).
(3) Psychologists have found that analogy is a very powerful way of changing opinion (Thagard & Shelley 2000) so is frequently used by politicians (Dunbar 2000, Faries & Reiser 1990) and scientists (Dunbar 1995, 1999, 2000).

Another example of the limitations of laboratory insight experiments is of the difficulty of seeking evidence of incubation in laboratory studies (Alton 1979, Alton & Johnson 1976, Dreisdadt 1968). Typically, subjects work on a problem for a while, take a break and then return to the problem. Control subjects work without a break but for the same total length of time. Despite the obvious inadequacy of evidence based on such a limited laboratory procedure, compared with real life experience, an astute researcher such as Perkins (1995, p. 526) concludes

"in summary, there is little reason to believe that incubation, in the sense of extended unconscious reasoning, exists".

2.5.7 An Evaluation of the Contribution of the Approach of Cognitive Psychology

It is important to recognise the breadth of research conducted by cognitive psychologists. It is both a sign of healthy activity and of bewildering variety in terms of definitions of insight, understanding exactly what constitutes an insight problem, and competing models of the mechanisms underlying the phenomenon of insight. These will be evaluated in more detail in terms of strengths and weaknesses in this section.

The Strengths

(1) The number and variety of quality research papers being produced on cognitive psychology needs to be acknowledged; they far outweigh contributions from other schools of psychology.
(2) The value of careful and detailed work on specific areas of insight, largely building on the contribution of restructuring from gestalt psychology, has enabled cognitive psychology to move from dissecting stimuli into components, to a more holistic concern. An example would be the work of Davidson (1986,1995) and Davidson and Sternberg (1986) in recognising the three inter-dependent selective processes of encoding, combination and comparison resulting in a change in the person's representation of the problem.
(3) The increasing recognition by cognitive psychologists of the significance of affective components of insight is also a factor; for example, Gick and Lockhart (1995) and the integration of research, such as the merger described by Davidson (1995) of the three process theory with Metcalfe's (1986b) feelings-of-warmth approach (Metcalfe & Weibe 1987). This is also evident in the openness to discoveries of Neurology (e.g. Damasio 1994, 1999) and insights from Affective Neuroscience (e.g. Thagard 2007).
(4) There is the considerable potential of Graph-Theoretic research in, for example, confirmation of re-structuring during insight (Durso, Rea & Dayton 1994), and the "Small-World" network model of Schilling (2005). There is also potential in deconstructing insight following up the work of Sandkühler and Bhattacharya (2008) on the Electroencephelogram (EEG) correlates of insightful problem-solving. Another field is that of Magnetic resonance imagining (MRI) scans following the research of Bowden and Beeman (1998) and Beeman and Bowden (2000),

particularly focusing on the supposed unconscious processing during the incubation phase. There may also be potential, despite the present difficulties, of computer modelling in specific problem-solving structures like neural networks and evolutionary algorithms as suggested by Pols (2002).

The Weaknesses

(1) Exciting as the potential of natural science is, it is essential to recognise its limitations for understanding the distinctively human experience of insight as emphasised by existential-phenomenological psychology's insistence on developing a human science. The potential problem is research that not only results in knowing more and more about less and less, but that is fundamentally reductionistic, objectified and dualistic in a way that hardly does justice to the quality, meaning and significance of the human experience of insight. The subtlety of this potential problem is that the more accurately and comprehensively a given mechanism is developed, the more the insightful person is lost in the abstractions, unless very great care is taken.

(2) There is a danger in laboratory studies, for the focus to be too exclusively on internal cognitive processes divorced from life-world experiences. So, for example, carefully controlled 'hints' or an 'opportunistic-assimilation' hypothesis (Seifert et al. 1995) are hardly an adequate substitute for normal human experiences, communication and relationships. There is also a world of difference between being *given* trivial insight problems and targets in the laboratory, compared with *generating* insights in self-chosen problems with real motivation for solution in life-world situations, in which people can draw on their own areas of expertise.

(3) The difference between re-structuring and re-combination needs to be recognised. While these processes are regarded as distinct in visual perception (e.g. Werstijnen 1997), many insight researchers seem to group them together (e.g. Ansberg 2000, Dominowski & Dallob 1995), which leads to difficulties about the definition of insight.

(4) There is considerable confusion with respect to what constitutes an insight problem. The question is whether problems are 'all-or-nothing' insight problems requiring re-structuring for solution, or whether there is "a slope of insight-like quality with classical insight problems at the top, classical incremental problems at the bottom, and less definable problems like anagrams or matchstick problems somewhere in between" (Pols 2002, p. 100). This refers to research by Weisberg (1992), Bowden and Beeman (1998) and Mori (1996); it raises the fundamental

question of where to draw the line between what is insight and what is not. The current *de facto* determiner of what constitutes an insight problem is not the problem itself but the effect it produces (Trottier 2001).

(5) In view of people's individual differences and abilities it seems unlikely that there is any such thing as a universal insight problem, since, for instance, while one person may have no idea how to solve the mutilated checkerboard problem (see Figure 9 in section **2.5.4.2**), a mathematician may see it as a simple and routine topology exercise. For an approach so dependent upon puzzle-problems this is a very serious matter. In Trottier's words (2001, p. 11) "Without an exact definition of insight and insight problems, it will never be a rigorous sub-domain of cognitive science".

(6) In view of the influence of the "constraint" model of Isaak and Just (1995) and of "spreading activation" theory of Durso et al. (1994), Siegler (2000) and others, it would be important even if very difficult to test, to discover whether *all* kinds of insight problems raise implicit constraints. If people visualise geometrical problems rather than think about them in words, it would be an argument against the influential "constraint" model since, as Pols (2002) points out, it only deals with implicit verbal constraints.

(7) Finally, it is noticeable that frequently, having outlined a theory of insight, cognitive psychologists refer to a particular life-world experience of insight as an example and confirmation of that theory in action. In so doing, respect for experiential insight is being expressed in practice, even if it is not fully acknowledged in the formulation of cognitive theory.

Perhaps it is appropriate to review the approaches to insight that have been developed so far. The *first* was the holistic approach of gestalt psychology with five inter-related views of insight (**2.3**). The *second* was the existential approach of phenomenological psychology to insight with its emphasis on insight as disposition, impact, interpreting and feeling (**2.4**). The *third* was the puzzle-problem approach of cognitive psychology which has just been reviewed (**2.5**).

The next three approaches to be explored are the creative approach of genius, dreams, design and invention to insight (**2.6**), the representational approach of models of insight (**2.7**) and then the case-study approach of great minds experiencing insight (**2.8**).

2.6 The Creative Approach of Genius, Dreams, Design and Invention to Insight

Creativity is certainly among the most important and pervasive of all human activities and it is a very particular way in which human beings can display optimal functioning. Yet psychologists have seldom, if ever, viewed it as a central research topic (Sternberg & Lubart 1995). Guilford (1950), in his presidential address before the American Psychological Association, made an impassioned plea for making creativity a more focal point of psychological research, to which there has been a significant response.

It is widely acknowledged amongst scholars that "moments of real insight are properly included within the realm of creativity research, even if they are not creativity itself" (1989, p. 271). In addition, the process of reorganising information as part of creative thinking has been researched with special attention to processes involved in insight (Baughman & Mumford 1995, Mumford, Supinski, Threlfall & Baughman 1996, Smith & Dodds 1999, Sternberg & Davidson 1995). So, if the processes involved are similar even if the products differ, it is not improper, provided due care is taken, to explore parallels between creativity and insight.

2.6.1 An Overview of the Literature on Creativity

This overview of the literature on creativity draws substantially from the work of Simonton (2000) and Lubart (2000-2001). Simonton identifies four main aspects of creativity: the cognitive process of creativity, personal characteristics of creative people, the life span development of creative products and the social context of creativity. They will each be examined in turn.

(1) *The cognitive process*: the creative act has often been thought of as mysterious and mystical "more akin to divine inspiration than to mundane thought" (Simonton 2000, p. 152). Cognitive science identifies the importance in creativity of:

(a) insightful problem solving with the empirical demonstration of intuitive information processing as a regular manifestation of the cognitive unconscious (e.g. Bowers, Farvolden &

Mermigis 1995, Schooler & Melcher 1995). This will be illustrated later in this approach by the account of a recurring dream.

(b) The creative cognition approach (Finke, Ward & Smith 1992, Smith, Ward & Finke 1995, Ward, Smith & Vaid 1997) with evidence of the value of visual imagery and emphasising that creativity involved ordinary cognitive processes. This will be illustrated in this approach by the interpretation of a dream.

(c) Expertise acquisition which is regarded as essential. Even the creative genius does not produce ideas or skills de novo (Hayes 1989, Simonton 1991b). This will be illustrated later in this approach in terms of design and invention.

(d) An increased use of computers to test and attempt to reproduce creativity (Boden 1991, Martindale 1995, Simonton 1999b).

(2) *Personal characteristics*: the key characteristics are intelligence and personality. A critical development was the realisation that the simplistic uni-dimensional concept of intelligence had to be superseded. In its place Guilford (1967) developed his structure-of-intellect model, Sternberg (1985) formulated his triarchic theory of intelligence, and Gardner (1983) evolved his theory of multiple intelligences; each is associated with a specific manifestation of creativity, such as painting, music, poetry or science. Researchers have compiled a reasonably adequate description of the creative personality (e.g. Martindale 1989, Simonton 1999a). Creative persons are disposed to be independent, unconventional, even bohemian, and are likely to have wide interests, considerable openness to new experiences, flexibility or flow and boldness in risk taking. There is considerable evidence that creativity tends to be associated with a certain amount of psychopathology (e.g. Eysenck 1995, Jamison 1993, Ludwig 1995), yet often compensatory characteristics enable these creative people to channel their energies productively and adaptively (e.g. Csikszentmihalyi 1997, Ludwig 1995, Rothenberg 1990). This illustrates how supposed psychological weaknesses can sometimes be converted into a form of optimal functioning.

(3) *Lifespan development*: creativity is more than a cognitive and dispositional attribution in which individuals may vary. It is also an activity that develops and matures over the course of a life span. Simonton (1987) has documented a number of influences, such as family environments and circumstances, that seem to favour the emergence of creative personalities. The significance of genetic contribution to creativity has received considerable attention (Lykken 1998, Simonton 1999c, Waller, Bouchard, Lykken, Tellegen & Blacker 1993). Clearly exceptional creativity

does not always emerge from the most nurturing environment (e.g. Eisenstadt 1978, Goertzel, Goertzel & Goertzel 1978, Simonton 1984). On the contrary, creative potential seems to require both diversifying experiences that help to weaken the constraints of convention socialisation and challenging experiences that develop perseverance in the face of obstacles (Simonton 1994). There is considerable evidence of peak creativity in the second and third decade of people's lives, with creativity waning as a function of age (e.g. Lehman 1953, Lindauer 1993b), yet there is also evidence of numerous factors that help maintain creative output throughout the lifespan (Csikszentmihalyi 1997, Lindauer 1993a, Simonton 1989, 1991a, 1997a).

(4) *Social context*: the original research on creativity tended to adopt an excessively individualistic perspective. From the late 1970s there was increasing recognition of the social context of creativity (e.g. Amabile 1983, Harrington 1990), with particular emphasis on the inter-personal (Amabile 1996, Farr 1990, Roy, Gauvin & Limayem 1996), interdisciplinary (Csikszentmihalyi 1990, Dunbar 2005, Martindale 1990) and socio-cultural environments (Simonton 1976, 1984a &c). The latter includes political environments, warfare, internal oppression and foreign domination (Simonton 1994). These *zeitgeist* factors affect the general level of creativity activity at a given time and place, but cannot easily account for individual differences in creativity. So, for example, "the general milieu may largely explain why the Renaissance began in Italy but not why Michaelangelo towered over his Italian contemporaries" (Simonton 2000, p. 156).

2.6.2 A Darwinian Chance Configuration Theory of Creative Genius

As noted in the introduction to the nine different approaches to insight (**2.1**) these are not watertight compartments; there is a flow and development between most of them, so the question arises at this point, under which approach is it most appropriate to consider Simonton's (1995) Darwinian chance configuration theory of creative genius? It could reasonably be included under models of insight – it is a Darwinian model; or under metaphors of insight – it is being used as a metaphor; or under the creative approach to insight – it is about creative genius. All have some claim; the latter gets it by a short head; so it is included here under this approach of creativity.

Simonton (1995) argues that the emergence of new ideas in the heads of creative geniuses follows a pattern remarkably close to the appearance of new varieties of life forms on this planet. He refers to Campbell's (1960, with adaptions in 1965, 1974, 1991) model of creative thought which he called the *blind variation and selective retention theory*, according to which ideas undergo haphazard re-combinations in the mind, and the resulting blind variations then pass through a selective filter. Only a subset of the ideational combinations are retained for further cognitive processing. As Simonton observes, "many others have expanded Campbell's basic model into more comprehensive theories of discovery and creativity (e.g. Eysenck 1993, Kantorovich 1993, Kantorovich & Ne'eman 1989, Martindale 1990, Shrader 1980, Stein & Lipton, 1989; see also Findlay & Lumsden 1988)" (Simonton 1995, p. 467).

Simonton's own contribution (1988b & 1988c) is the chance configuration theory of creative genius:

> According to this system, creativity begins with the chance permutation of mental elements. The latter include ideas, concepts, recollections, emotions, sensations or any other basic component of mental functioning. Most of these permutations are too unstable to enjoy anything more than an extremely ephemeral existence in the fancy. Nonetheless, from time to time, a specific combination of elements coalesces to form a cohesive whole, or conceptual gestalt. This so-called chance configuration represents the insight that transfers to more deliberate and elaborate processing at later stages in the creative process. (Simonton 1995, p. 467)

Poincaré's introspections illustrate the Darwinian model of creativity so well that Campbell referred to his own theory as *Poincaréan* (Campbell 1991). For Poincaré, who has already been quoted in section **2.5.1** (3) as an example of the prepared mind perspective, "ideas arose in crowds; I felt them collide until pairs interlocked, so to speak, making a stable combination. By the next morning I had established the existence of a class of Fuchsian functions" (Poincaré 1921, p. 387). He compared these colliding images to "the hooked atoms of Epicurus" that jiggle and bump "like the molecules of gas in the kinematic theory of gases" so "their mutual impacts may produce new combinations" (Poincaré 1921, p. 393). Simonton concludes: "This represents an explicit and vivid statement of how free variations yield chance configurations" (Simonton 1995, p. 469).

2.6.3 Unconscious Chance or Conscious Logic in Insight?

Sometimes, there is a tendency to see a phenomenon either as random or as not random, which is a misconception. "A continuum connects the utterly capricious with the altogether determined" (Simonton 1995, p. 472). This is illustrated by correlation coefficients in statistics. It is not possible to "draw a sharp line between solutions determined by a secure logic and insights happened upon by an erratic fancy … we find a comparable continuity in the variation process that sustains biological evolution" (Simonton 1995, p. 473).

Against this it has to be recognised that Simon, the Noble laureate:

> stands in the forefront of those cognitive psychologists who believe that insights arise by a process that is intrinsically logical (e.g. Simon 1973). So logical is the process that Simon believes that we can already programme computers to make scientific discoveries (e.g. Langley, Simon, Bradshaw & Zythow 1987)". (Simonton 1995, p. 474)

For a contrary view see Penrose (1999, 2005). The jury is still out on this one.

Hadamard (1949, p. 28) maintained that "the intervention of chance occurs inside the unconscious: for most of these combinations – more exactly, all of those which are useless – remain unknown to us". As Simonton (1995, p. 475) comments, "there we have it: the blind variations happen mostly in subterranean domains, and we usually witness only the chief results". It is important to avoid two potential pitfalls in this explanation. First, it is not appropriate to expect too much of these unconscious processes, since once these intuitive insights emerge, the conscious mind often must do the real work, verifying the hunch, elaborating the details, or providing the logical justifications. Second, it is a mistake to maintain that the free-associative process is invariably inaccessible to awareness. On the one hand, Simonton (1995) cites Kekulé's reverie in which the vivid imagery commanded conscious attention and led to his discovery of the benzene ring (quoted in Findlay 1948, p. 37). Another example of conscious awareness is Poincaré's experience of "ideas arising in crowds" (as in section **2.6.3**) which he could report because he had made the 'mistake' of drinking coffee shortly before going to bed; the resulting insomnia enabled him to be aware of his intuitive meditations. On the other hand, Simonton (1995) insists that the variational process may apparently operate below the threshold of direct awareness. This is also illustrated in Poincaré's experience. He reports: "disgusted with my failure, I went to spend a few days at the seaside, and thought of something else. One

morning, walking on the bluff, the idea came to me, with … [characteristic] brevity, suddenness and immediate certainty … " (Poincaré 1921, p. 388).

Clearly the line between conscious and unconscious is not hard and fast, and as in the case of chance, it is a matter of degrees. Simonton (1995, p. 477) explains it in these terms:

> The core consciousness contains the central focus of attention, where our information-processing machinery is concentrated, but surrounding that core is a peripheral awareness of subliminal stimulate and partially retrieved memories. That periphery fades off into the ill-defined realm of the unconscious…Normally, each of us is not fully aware of what is going on at that farthest fringe. One may sense merely a vague feeling that something is going on in the back of one's mind…Nevertheless, when the succession of subconscious images chances on a bona fide insight, core consciousness will suddenly change focus and spotlight the discovery … Poincaré's beach stroll exemplifies this event perfectly.

So, contrary to Simon's explicit quest for an actual computer discovery programme that makes Nobel-prize quality insights (for contrary views to Simon see Czikszentmihalyi 1988, Penrose 1999,2005, Sternberg 1989, Tweney 1990), Max Planck (1949, p. 109) held that great scientists "must have a vivid intuitive imagination, for new ideas are not generated by deduction but by an artistically creative imagination".

Simonton (1995, pp. 488-489) outlines four further varied implications of the Darwinian viewpoint of insight:

(1) The model helps us accommodate the full range of mental processes involved in creativity (Eysenck 1993, Kantorovich 1993, Simonton 1988c), including homospatial and Janusian thinking (Rothenberg 1979, 1986, 1987) and imageless thought (Roe 1952). In stark contrast cognitive psychology tends to stress only those processes that can be easily translated into computational models (Boden 1991).

(2) A mathematical model derived from this theory predicts how insights are distributed over the course of a career (Simonton 1984b,1989). The model accounts for both individual differences and interdisciplinary contrasts in career trajectories, including the location of the first, best, and last major influential insight (Simonton 1991a,1991b,1992a).

(3) This theory enables us to predict fluctuations in artistic styles. Martindale (1986,1990) has not only advanced such an extension but has tested its implications by applying computer content analyses to actual literary creations.

(4) The variation-selection model explains the circumstances that allow two or more individuals working independently to come up with identical insights (Simonton 1979, 1987b, cf. Lamb & Easton 1984, Merton 1961). In fact, a stochastic model based on the Darwinian premise can even handle the eventful case when both Darwin and Wallace independently arrived at the same evolutionary theory (Simonton 1987b).

It is a very impressive range of implications of the Darwinian perspective and bears testimony to the power of the Darwinian metaphor-of-mind in terms of insights.

2.6.4 Insight and Creativity in Dreams

Much emphasis in research on creativity has been on breaking down the process into common elements (Perkins 1981) of examining it through an information processing lens (Hofstadter 1985a, 1985b, Sternberg 1986), in terms of persistent lifelong struggles (Gruber 1981), or in terms of psychometric approaches (Torrance 1988, Barron 1988) and computational models of scientific insight (Langley & Jones 1988). Yet, it is important to recognize that every now and then powerful insights of a more holistic and new reality do in fact occur.

Reference has already been made to the reverie or dreamlike state of Kekulé and Poincaré. The visual nature of dreams and the origin of the word insight, emphasising its parallels with vision, indicate that dreams may well be a very common and significant dimension of insight.

In February 1976 Feldman had an experience that seems to be a classic example of such an insight. He was not in the bath like Archimedes but in the shower; he did not run into the streets naked, but rushed almost naked to tell his insight to a colleague across the hall in the hotel . He writes “Based on my own experience, I am certain that moments of real insight are properly included within the realm of creativity research, even if they are not creativity itself” (Feldman 1989, p. 271).

So we shall examine Feldman’s experience of insight from the perspective of creativity within this particular approach. Feldman (1989, p. 272) recounts:

> For at least three years before my morning shower in February, I had been having a recurring dream – not every night, but perhaps as often as once a week. The dream consisted simply of an amusement park ride in action. I was aware after several repetitions of the dream that this image was somehow related to my work, specifically to my efforts to understand development and creativity … it was clear to me that this image was central and intimate and important, and I was embarrassed that I had no idea what it was. (See Figure **10** below.)

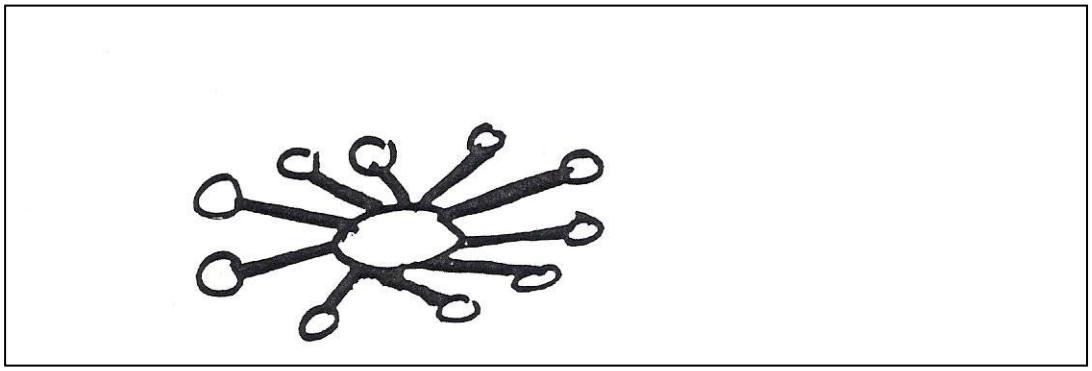

Figure 10. The amusement park ride dream image. (Feldman 1989, p. 273)

According to Feldman, from time to time the image would change in subtle ways, but the basic parts were always there: central power source, rotating and rising peripheral containers with places for riders in them. Initially he thought it was a neuro-physiological image – something about how the neurons in the brain fire or interconnect, which he found dispiriting for he was aware that if the image was indeed neuro-psychological he would be unlikely ever to make sense of it. However he was clear that the image was central to his work and was not about his emotional life. On a flight to a meeting, Gruber referred to a Darwin's "branching tree" diagram, the only illustration in *The Origin of Species* (Gruber 1981), and asked Feldman if he was aware of any such images in his own work. Feldman recalls that despite

> the irony in the fact that Gruber had spent much of his career trying to show the relative unimportance of moments of insight in major works of originality … I felt comfortable enough to tell Gruber that I had been dreaming about the amusement park ride for better than two years … For the first time I tried to draw a picture of what the image looked like … It was the following morning that I went rushing into his hotel room across the hall

> and tried to explain what I had just learned in the shower. I remember the flash of insight distinctly: What I actually said (out loud I believe) was, "The ride is not inside, it's outside". (Feldman 1989, pp. 274-275)

This was because he had assumed it was a neuro-physical metaphor. In the shower he realised it was not a micro model, but a macro model of the forces that contribute to developmental change, representing an overarching organising principle. He later came to label the image and what it represented as the processes of "co-incidence" (Feldman 1979, 1980, 1986a, 1986b, 1989). An image "capturing the multiplicity of dynamic forces that influence development and that do not at the same time compromise the integrity or importance of the individual's own contribution to the process" (Feldman 1989, p. 276).

This is not the place to explicate the theory further, or examine its application in explaining the amazing phenomena that is called the "child prodigy" in his later research and writing which flowed from this image, nor is it the place to evaluate the significance of this insight in the broader body of research; this will be done in the evaluation at the end of this section. Yet Feldman himself is clear: "My insight in the shower transformed a dream image into a tool to work with … it has remained an important part of my mental landscape ever since" (Feldman 1989, pp. 281-282). However it is appropriate to add that Feldman is also clear that "I have not had a dream that included a carnival ride of any description since my rush from the shower. Not once. I take this as evidence that … what I was dreaming was well resolved in the concept of co-incidence that emerged into awareness so suddenly" (Feldman 1989, p. 277).

2.6.5 Insight and Creativity in Design

Finke (1995 , p. 256) makes a distinction between convergent and divergent insight, reflecting: the classic distinction between divergent and convergent thinking (Guilford 1956, Mednick 1962): "in *convergent insight,* one discovers a creative structure or solution that makes sense of apparently disconnected facts". It is particularly valuable in classic insight problems where conventional approaches will not work (Gardner 1988, Metcalfe & Wiebe 1987, Weisberg & Alba 1981b). So "convergent insight is particularly useful in solving mysteries where one must collect relevant clues and then discover a coherent explanation for them" (Finke 1995, p. 256).

"*Divergent insight* in contrast, occurs when one begins with a structure and seeks to find novel uses for it or novel implications of it … artists often generate interesting structures without specific goals in mind, simply to explore the possibilities those structures afford" (Finke 1995, p. 256). This is a function-follows-form approach rather than a form-follows-function approach. "Divergent insight can be likened to the explorer who follows a path to see what might be discovered rather than to confirm what is already known or suspected. In divergent insight, one tries to find the meaning in the structure rather than to structure that which is meaningful" (Finke 1995, p. 256).

Finke explores divergent insight within the framework of creative cognition by using the technique of generating and interpreting pre-inventive forms. His findings imply that:

> divergent insight is enhanced when one is forced to explore a structure in unusual or unexpected ways. In addition the subjects were more likely to make a creative discovery when they were using pre-inventive forms that they themselves had generated, rather than forms that other subjects had provided. (Finke 1995, p. 260)

Finke concludes:

> in convergent insight, one seeks a particular structure that solves a problem or mystery, whereas in divergent insight, one begins with an interesting structure and seeks novel interpretations of it in order to explore new, creative possibilities. Both are important in creativity; one is diagnostic and explanatory, the other playful and exploratory. (Finke 1995, p. 267)

Given the important complementary role of both convergent and divergent insights in creativity and problem-solving, the issue of constraints arises.

2.6.6 Constraints on Thinking in Insight and Invention

Isaak and Just (1995) construe insight and invention as problem-solving phenomena. They argued two main proposals. The first is that "insight problems often contain information that leads subjects incorrectly to accept additional operator constraints not mandated by the problem" (Isaak & Just 1995, p. 283). The second is that invention comprises three phases: "(1) design space limitation, in which the inventor narrows the space of potential novel solutions to a

problem; (2) design generation, in which the inventor develops candidate novel solutions; and (3) design analysis, in which the inventor evaluates and revises candidate solutions" (Isaak & Just 1995, p. 285). The argument is that design generation taps generative processes similar to those involved in insight, and that invention and insight may be distinguished primarily by the presence of an analytical component in invention.

In discussing generative versus analytical phases in problem-solving they drew on the distinction made by Osborn (1963), the originator of brain storming, between *idea finding* requiring the rapid production of many different ideas, with little immediate regard for their plausibility, and *idea evaluation* of the merits and disadvantages of each idea. In a similar way Wallach (1967) suggested that creativity in both scientific and artistic domains involves two phases: the *generation* of conceptual possibilities and the *analysis* of their implications. The same distinction was made by Anderson (1990) and in Finke, Ward and Smith's (1992) model. Isaak and Just (1995) also draw attention to Klahr and Dunbar (1988) and Dunbar and Klahr (1989) who argue that scientists explore in two alternate spaces in pursuit of discovery: the generation of *hypothesis*, and the testing of them in *experiment.* Clearly successful creativity depends on increasing both the playful and unrestrained facility with which solutions are *generated* (Viesner 1967, Wallach 1967) and the acuity and perspicacity with which they are *analysed* (Isaak & Just 1995).

However, Jansson and Smith (1991) found that engineers who designed products after viewing examples of other products with similar functions, included in their own designs unnecessary features of the sample products, even when specifically warned not to borrow such features. Isaak and Just (1995, p. 305) give an example:

> The bird-airplane analogy contains the constraints that the airplane functions of lift and thrust be realized in wing forms, just as they are in birds … in the flapping of wings … The form-function constraints contained within initial invention analogies generally must be unpacked, released, and reformulated as invention proceeds … Airplane designs in which wings provided both lift and thrust proved unworkable.

A recent study of fixation effects of pictorial examples in a design problem-solving task by Chrysikau and Weisberg (2005) showed:

(1) That although participants consulted the problem instructions they tended to follow the pictorial examples even when they included inappropriate elements. This conclusion broadens the potential negative implications of fixation. It is also a noteworthy finding that negative transfer is a general phenomenon that affects individuals irrespective of expertise.
(2) That fixation can be diminished or even eliminated with appropriate "defixation instructions". Since in so many fields, such as physics, chemistry and engineering, use is made of pictorial examples, it would be of considerable importance to understand more about the origins of fixation, in order to develop instructional techniques to eliminate its negative effects.
So Isaak and Just (1995, pp. 310-311) conclude that:

> many writers (e.g. Hademard 1945) often use *insight* to mean *invention* … we clarified the similarities and differences between insight and invention by analysing each in terms of constraint operations … Whereas insight depends on releasing constraints, invention requires reiterative cycles of constraint release and imposition … Constraint release in both insight and invention can be facilitated by combinatory and analogical play … what might distinguish the best problem-solvers and inventors is their conscious and strategic use of operations on constraints.

Important as this conscious and strategic use of operations is, it is not the whole picture; sometimes there is an undeniable element of chance.

2.6.7 Serendipity, Profusion and Profligacy in Creativity and Invention

Simonton points out that what appears logically irrelevant may actually provide the missing piece of the puzzle. "When Gutenberg was trying to devise a method to mass produce the Bible, the solution came from an unexpected quarter – the presses that he saw whip in action during the Rhineland wine harvest!" (Simonton 1995, p. 473). Anecdotal evidence reveals that often a researcher is investigating one question in the laboratory when he or she unexpectedly stumbles on another, often utterly unrelated finding. Classic examples of this, in the history of science and technology, are cited by Simonton (1995): they include animal electricity, laughing-gas anaesthesia, electromagnetism, ozone, photography, synthetic coal-tar dyes, dynamite, the record player, vaccination, saccharin, x-rays, radioactivity, classical conditioning, penicillin, sulphur

drugs, Teflon, and Velcro (see also Austin 1978, Mach 1896, Shapiro 1986). Examples like these again reveal the truth of Pasteur's famous remark "[c]hance favours the prepared mind".

If chance sometimes sneaks into the process of creativity, insight and invention, it is also necessary to acknowledge that waste is also part of the process. "Creativity is a very wasteful business. It spews forth insight after insight, only a tiny fraction of which survive further scrutiny" (Simonton 1995, p. 485). Faraday lamented:

> The world little knows how many thoughts and theories which have passed through the mind of a scientific investigator have been crushed in silence and secrecy by his own severe criticism and adverse examinations; that in the most successful instances not a tenth of the suggestions, the hopes, the wishes, the preliminary conclusions have been realised. (quoted in Beveridge 1957, p. 79)

Barron (1963, p. 139) expressed it well: "The biography of the inventive genius commonly records a lifetime of original thinking, though only a few ideas survive and are remembered to fame". As Simonton (1995) observes, Edison obtained 1093 patents, many for totally worthless inventions. The futile development of one failed idea alone cost Edison all the money he had earned from the electric light bulb. Picasso created nearly 20,000 pieces over the course of his career, many of which were hardly masterpieces; in fact Picasso himself admitted that many of his pieces were "fakes". Even W.H. Auden warned that because great poets are so prolific, "[t]he chances are that, in the course of his lifetime, the major poet will write more bad poems than the minor" (quoted in Bennet 1980, p. 15).

In similar vein Simonton (1995, pp. 487-488) comments:

> The biographies of almost every creative genius mention personal favourites that fail to impress others, as well as highly popular pieces for which the creators had little regard. Beethoven's Fifth Symphony was not his favourite product in that form, and among his piano compositions he had a rather low opinion of both his *Moonlight* Sonata and the Bagatelle *Für Elise.* Einstein regretted his pioneering efforts in developing quantum theory, while proclaiming a unified field theory that his colleagues believed was sadly ill conceived.

Simonton's conclusion is that from a Darwinian perspective these sort of examples of profusion and profligacy should not surprise us.

2.6.8 An Evaluation of the Contribution of the Creative Approach

The evaluation of the creative approach to insight processes, particularly in relation to dreams, design and invention and what it adds to the understanding of insight will be assessed in terms of strengths and weaknesses.

The Strengths

(1) The creative approach demonstrates more clearly than most other approaches that creativity which involves is a possibility for practically everyone; so the strength is accessibility. There is no specific process-related difference between creative and non-creative work; it is a continuum rather than a dichotomy. In Lubart's metaphor "the engine is the same but some people use better grade fuel than others" (Lubart 2000-2001, p. 301).

(2) Amabile (1996) identifies three components which influence the 'grade of fuel', resulting in the quality of creative productions of an individual and an organisation. They apply equally to insight. The *first* is the quality of motivation for the task, including intrinsic interest in, and commitment to, the task. The *second* is domain-relevant skills such as knowledge, experience and technical skills. The *third* is creativity-relevant processes which would include the ability to flow freely, break tight mental sets, think laterally and heuristically for idea-generation. So another strength of this approach is applicability.

(3) The strength of Simonton's thought lies both in its detail and its comprehensiveness. The detail includes the conceptual gestalt of insight as the specific combination of elements coalescing to form a cohesive whole, the continuum from the utterly capricious to the altogether determined, and the way core consciousness will suddenly change focus and spotlight a *bona fide* insight. The comprehensiveness, relates to the breadth of the heuristic power of this model of creative insight in terms of the range of implications flowing from this Darwinian perspective.

(4) Feldman's dreams leading to insight into "co-incidence" were not only important to him and had the effect of helping to transform and reorganize his way of thinking about and understanding of developmental processes; it is also an important part of a broader body of scholarly work demonstrating that major developmental changes not only occur but also are central features of what it means to be human (Bickhard 1980, Campbell & Bickhard 1986, Feldman & Goldsmith 1986, Gardner 1988, Pea & Kurland 1984).

(5) Feldman's dreams showed him that his:

> mind was quite spontaneously *making new things*. That these new things may have been produced in part out of already existing things does not diminish the fact … that it had the ability to produce a virtual torrent of small transformations and to produce them in coherent, organised ways. (Feldman 1989, p. 287)

In view of the Aristotelian tradition that everything must come from something else and that therefore there is fundamentally nothing new, which has seen its fullest expression in Western rationalism, this is a significant point. It is recognised that one part of the mind tries to keep things the same, which provides for a continuity of experience and stability in our sense of reality. The other part of the mind aims to continuously change and transform, which enables insight. It is possible that "conscious versus unconscious thought may have been an evolutionary adaptation for keeping these two functions – transformation and categorisation – from destroying each other. The interplay becomes productive and central in the process of making something both new and useful" (Feldman 1989, p. 289). The strength of this is best appreciated in comparison with Perkins (1981,1986,1990,1995) who sees insight as relatively mundane and undifferentiated from more typical processing and thinking. Feldman's sustained semiconscious and perhaps even unconscious processes applied to problems in parallel with, and eventually in concert with, conscious processes, can hardly be described as "mundane" or "typical processing".

(6) Finke's (1995) distinction between *convergent* and *divergent insight* in creativity is valuable in itself in revealing the breadth and variety of insights. It is also useful for differentiating between a playful *creative* generative space and perspicacious diagnosis and *analysis*, which is also consistent with the distinction between the generation of scientific *hypothesis* and the testing of it in *experiment*.

(7) Isaak and Just's (1995) conclusion that *insight* depends on releasing constraints, whereas *invention* requires conscious reiterative and strategic cycles of constraint release and imposition is reasonably well known, yet in practice it is often overlooked, resulting in problems. So its strength is primarily as a reminder to close the gap between knowledge and behaviour.

The Weaknesses

(1) In his preface to *The Nature of Creativity*, Sternberg (1988, p. vii) begins with the revealing sentence "Research in creativity has taken on the role of a prodigal stepbrother to research on intelligence". He explains, "step-brother" because although it is in the same family, it has never quite seemed to measure up; "prodigal" because of his tendency to go beyond accepted bounds,

and even at times to be grandiose. This has to be regarded as a major weakness which has not been adequately addressed since he wrote. To complicate matters, a number of scholars following Guilford (1950) have tried to incorporate creativity under the rubric of intelligence. Others, like Getzels and Csikszentmihalyi (1976), have argued that creativity is psychologically distinct from intelligence.

(2) Insight is generally thought to be a significant and integral aspect of creativity. But what is hotly debated is how insight is defined and the specific role that it plays in the creative processes. In the concluding summary of *The Nature of Creativity* (Ed. Sternberg 1988b) the range of views:

> spans the entire spectrum from those who imply that creativity is little more than building on an initial insight (Feldman; Taylor) to those who deny that moments of insight have any importance whatsoever for creative processes (Gruber & Davis; Simonton; Weisberg). The majority view, however, falls in between, with flashes of insight discussed as small but necessary components of creativity (Gardner; Langley & Jones; Sternberg; Torrance). (Tardif and Sternberg 1988, p. 430)

(3) Feldman acknowledges, of course, that he is "using introspective evidence – that most treacherous source of data. But on the other hand, these are the sources of information about creative processes that I know best, or at least first hand" (Feldman 1989, p. 271). The designation of personal experiential evidence as "most treacherous", is of course from the perspective of an objectivist natural scientific view, as opposed to a human and developmental scientific view (Pea & Kurland 1984), which with relevant safeguards would regard vital experiential evidence as a strength.

(4) The limitation of Isaak and Just's (1995) model of constraints has already been noted; namely, that it applies to implicit, verbal and algebraic constraints, not to visual, geometrical or imaginative ways of thinking.

(5) Finally, there is very little clarity or consensus about what happens in the incubation phase of creativity. It may involve (a) automatic spreading of activation in memory, (b) passive forgetting of problem details or entrenched ideas that do not work, (c) broad attention and use of serendipitous cues from the environment, or (d) associative thinking through a random or directed combination process (Lubart 2000).

2.7 The Representational Approach of Models of Insight

Models in this context, more precise than metaphors (in **2.9**), are nevertheless a simplified version of the complexity of insight in order to analyse and solve problems or to make predictions. Five different models of insight will be examined: firstly, intrapsychic and interpersonal models of insight (**2.7.1**); secondly, evolutionary ecological and interactionist models of insight (**2.7.2**); thirdly, an interpsychic model of insight (**2.7.3**); fourthly, the difference between insight in presented problem solving and discovered problem finding will be defined (**2.7.4**) before finally examining an evolving systems model of insight (**2.7.5**). This will be followed by a brief look at the strengths and weaknesses of these models.

2.7.1 Intrapsychic and Interpersonal Models of Insight

As Csikszentmihalyi and Sawyer (1995) observe, a number of studies of scientific creativity (Gruber & Davis 1988, Simonton 1988a) and artistic creativity (Getzels & Csikszentmihalyi 1976, Martindale 1990) have focused on mental processes, or models of the creative process from the perspective of cognitive psychology. Against this dominant trend, a few researchers have attempted to understand the social and cultural influences and environments in which creativity is manifested (Campbell 1960, Csikszentmihalyi 1988, 1990a, Harrington 1990, John-Steiner 1992, Woodman & Schoenfeldt 1989). As John-Steiner (1992) points out, these two approaches, the first *intrapsychic* and the second *interpersonal,* have not yet been successfully integrated.

Because the moment of insight is so fascinating and seductive as a peak experience in creative individuals, it is very tempting to study it in isolation. But as Csikszentmilhalyi and Sawyer (1995, p. 331) recognise:

> When we look at the complete 'life-span' of a creative insight in our subjects' experience, the moment of insight appears as but one short flash in a complex time-consuming, fundamentally social process. It is true that the individuals we interviewed generally report their insights as occurring in solitary moments: during a walk, while taking a shower, or lying bed just after waking. However, these reports usually are embedded within a more

> complex narrative … the overall sense of these complete narratives stresses the salience of social, interactional factors.

Years of hard work frequently precede insight. Creative and insightful individuals rarely work in a vacuum, isolated from the social systems that constitute their domain of activity. This time is usually fundamentally social, deeply rooted in interaction with colleagues and entails a growing understanding of the culturally constituted domain. As Csikszentmihalyi and Sawyer (1995, pp. 331-332) observe of their research subjects, "[m]ost of these eminent people paraphrased the saying 'creativity is 99 percent perspiration and 1 percent inspiration' … The social interaction within which the creative insight is nestled is coincident with this '99 pecent perspiration'" (Csikszentmihalyi & Sawyer 1995, pp. 331-332).

Now the question arises: are mental processes and social and cultural influences sufficient to gain understanding of insight and creativity? What about evolutionary and environmental perspectives?

2.7.2 Evolutionary, Ecological and Inter-actionist Models of Insight

Campbell (1960) used the evolutionary paradigm to explain the growth of knowledge in general, of which creativity and insight are special cases. Campbell's 'evolutionary epistomology' may be summarised as:

> changes in 'ways of knowing' start with (1) a blind variation stage, during which a large number of random and novel responses are generated, followed by (2) a selection stage, in which the best-adapted variations are chosen from all the options, and finally (3) a retention stage, during which the selected variants are added to the pool of responses for transmission to the next generation. (Csikszentmihalyi and Sawyer (1995, p. 333)

Perkins (1988) and Martindale (1990) based their three stage models of invention and artistic insight respectively, on Campbell's evolutionary model. Simonton (1988a) also developed a theory of scientific creativity based on Campbell's framework, in which the "variation stage" involved the chance permutations of mental elements. He defined these mental elements as "the fundamental units that can be manipulated in some manner" by the creative process (Simonton 1988b). Some of these chance permutations will be more stable than others, and so these

configurations will emerge into consciousness, resulting in an experience of insight. At this stage, conscious work is required to transform the chance configuration into a symbolic form of the insight, so that it can be communicated, as in a journal article, painting, or musical form.

Harrington (1990) argued for an ecological approach to creativity and compared the influence of the biological ecosystem on the organism to the influence of social environments on the creative individual. Extending this model, Harrington discussed the importance of "organism-environment fit" in the creative process and how creative individuals can be active shapers of their environments.

The interactionalist model of creativity, developed by Woodman and Schoenfeldt (1989), who explored the combination and interrelation of psychological and environmental factors in human behaviour, particularly highlighted the importance of contextual influences, social influences, cognitive style, personality traits and antecedent conditions.
Csikszentmihalyi (1988,1990a), developing a systems view of insight,

> separated these influences into the *field*, the group of gatekeepers who are entitled to select a novel idea or product for inclusion in the domain, and the *domain* consisting of the symbolic system of rules and procedures that define permissible behaviour within its boundaries … The creative process involves the generation of a novel product by the individual, the evaluation of the product by the field, and the retention of selected products by addition to the domain. Thus the creative process involves a recurring circle from person to field to domain and back to the person, paralleling the evolutionary pattern of variation (person), selection (field), and retention (domain). (Csikszentmihalyi & Sawyer 1995, pp. 335-336)

These models of insight are of considerable importance because of the danger of isolating an individual's cognitive processes. This danger is of particular relevance in what has been called "The Great Minds Approach" to insight. So before investigating that approach, an inter-psychic model and an evolving systems model of insight will be explored.

2.7.3 An Interpsychic Model of Insight

The systems view of insight developed by Csikszentmihalyi (1988,1990a) proposed that creativity was not being operationalised adequately at the psychological level alone because many of the cognitive psychological processes "inadequately represent this social, interactional aspect of the process of creative insight" (Csikszentmihalyi & Sawyer 1995, p. 332). In order to link the intrapsychic and interpsychic levels, they postulate a conscious-subconscious interaction that parallels the interpsychic-intrapsychic dimension. They seek to address the question "if conscious attention is serial and limited, whereas the subconscious capacity of the mind is parallel and multiple, how can the individual coordinate them?" (Csikszentmihalyi & Sawyer 1995, p. 339).

Csikszentmihalyi and Sawyer (1995) have an ongoing interview study involving structured video interviews of approximately two hours duration, with a sample of something like one hundred people who have made significant creative contributions to the sciences, arts, humanities, business or politics. Generally they are over sixty years old and still actively involved in their fields.

They noticed that these stage-like narrative descriptions tended to group into two distinct types not formerly discussed in the literature. These types varied in terms of the length of time involved in the overall creative process:

> Some individuals described working for several years on a problem before the flash of insight, whereas others spoke of working for a few hours in the morning and having the insight in the afternoon. Most creative individuals experienced both types of creative process … This variation in time scale applies not only to the preparation phase but also to the phase of evaluation and elaboration: in some cases, the evaluation occurred in a matter of minutes, whereas in others it took months or even longer to elaborate or confirm the insight. (Csikszentmihalyi & Sawyer 1995, p. 336)

Although the creative process probably involves a continuous spectrum of time spans, they examine the two extremes, adopting the distinction developed by Getzels (1964) between

presented problem solving and *discovered problem finding*. The first, the short time-frame process, tends to occur when a problem is known in the domain and all that needs to be found is a solution to it. The second, the long time-frame process, tends to occur when the nature of the problem to be solved is less clear and may not be formulated until the moment of insight. Great creative breakthroughs, paradigmatic shifts, belong to this category. They claim to have identified two variants of the four stages, as indicated in the next section.

2.7.4 Insight in Presented Problem Solving and Discovered Problem Finding

The four stages of insight will be illustrated in terms of the distinction between insight in presented problem solving and discovered problem solving.

(1) *Preparation.* Darwin is an example of someone who prepared himself for his insights into evolution through a childhood interest in collecting insects, the reading of geology, and the painstaking observations he made during the voyage of the *Beagle*. As Csikszentmihalyi and Sawyer (1995, p. 340) note, "Curiosity, interest, access to information, and some impulse that sets questioning in motion are all part of the preparatory phase of the creative process". Clearly in terms of Kuhn's (1962) distinction between *presented problems* and *discovered problems*, Darwin was wrestling with the latter, involving a general sense of intellectual and existential unease outside a paradigmatic context.

(2) *Incubation.* The social influences of the domain and the field appear to act as the primary controlling mechanisms of the creative individual's subconscious, who internalises the domain's built-in assumptions and rules, much as Kuhn's (1962) paradigm constrains the thinking of individuals in a scientific field. Csikszentmihalyi and Sawyer (1995, p. 341) make a helpful distinction:

> One major difference between presented and discovered processes at the incubation stage appears to be the diversity of inputs that the latter includes … Practically every respondent we interviewed seems to have combined information from more than one domain prior to the occurrence of a major insight … because of the longer time frame, the model suggests that problem finding creativity will make greater use of the subconscious and will combine information derived from more different sources.

They distinguish three levels of processing:

(i) *Conscious Attention (Serial Processing).* Genetically programmed predilections, learned motives, socialised interests and cultural values all enter into determining which stimuli or issues will be invested with attention. Only a few pieces of information can be attended to at any one time; so this level is characterised by serial, directed-attention processing.

(ii) *Semiconscious Filters.* These filters determine what information is viewed as relevant and passed to the subconscious. Personality traits, such as curiosity, interest, intrinsic motivation and flexibility are also important at this level.

(iii) *Subconscious Processing Entities, or the Society of Mind.* The distributed, parallel nature of this network of subconscious processing entities allows multiple chunks of information to be viewed simultaneously. Connections between ideas can be tested, perhaps in a subconscious generate-and-test fashion.

The three levels *function synchronously*. Whereas ideas can be addressed only one at a time in consciousness, once they have passed to the subconscious, ideas that enter awareness in a serial fashion can be considered in parallel. By contrast, in *presented problem* solving, according to Csikszentmihalyi and Sawyer (1995, p. 347) "a surprising number of individuals we interviewed, told us they carefully structure their work day to include … a period of idle time … without this solitary, quiet time, they would never have had their most important ideas". This time included activities such as gardening, repetitive activities with the hands, snoozing, a bike ride, taking a shower, shaving, taking exercise, walking and driving.

(3) *Insight.* The two types of creative insight, *presented* and *discovered*, correspond to Kuhn's (1962) distinction between normal science and revolutionary science. The former consists of working within an accepted tradition, incrementally advancing the field with experiments and discoveries. The latter, in contrast, involves a discontinuous leap to a new perspective or paradigm. The small insights, or hunches, that seem to be a frequent part of everyday life are more like problem solving, whereas the revolutionary insights that change the course of history will be problem finding insights. Within their three-level model, "insight is a type of information retrieval, the reverse of the information storage flow in the preparation stage. This reverse process begins in the subconscious" (Csikszentmihalyi & Sawyer 1995, p. 343). Their theory suggests a more active subconscious process than Simon's (1977). They argued that as

similarities between ideas or configurations in different domains are recognised in the subconscious – such as that between geological and biological cases in the case of Darwin – a new configuration combining the two emerges and filters into consciousness. Csikszentmihalyi and Sawyer assert:

> Although in the popular conception, insight results from a specific stimulus (such as the apple that fell on Newton's head), we have not found descriptions of this sort in our interviews. The insights are always described as welling up from the subconscious, but there is never a mention of a specific external stimulus. (1995, p. 343)

While acknowledging that this may hold in the vast majority of cases, it is clearly contradicted by Feynman's experience (**2.5.3**), although it may be compatible with Simonton's (1995, p. 483) *external subliminal associative priming hypothesis.* Csikszentmihalyi and Sawyer (1995, p. 344) concede in conclusion: "Perhaps there is, nonetheless, a sort of internal stimulus, a subconscious event that causes a final, critical shift in the subconscious network, like the final shout that releases the avalanche". Nevertheless that final shout is, according to their theory, an internal voice not an external one.

By contrast, in *presented problem* solving according to Csikszentmihalyi and Sawyer (1995, p. 348), "almost without exception our respondents told us that the daily problem solving insights came to them during this idle time … several described how insights can be sparked by interaction … the importance of dialogue in generating ideas".

(4) *Evaluation and Elaboration.* In *discovered problem* solving Csikszentmihalyi and Sawyer conclude:

> In our four-stage model of creative insight, the evaluation and elaboration stage represents a reverse filtering of the insight from the subconscious network into consciousness. Like the preparation stage, this process also is intricately bound up with the internalised social model of the field and domain … In reality most creative ideas, especially of a discovered kind, are the result of multiple cycles of preparation, incubation, insight, and elaboration, with many feedback loops. (1995, p. 344)

A good example of the complexity of this process appears in Gruber's (1981) work on Darwin which illustrates how "the development of the evolutionary paradigm was the result of a lifetime

spent elaborating the implications of an insight that was itself a result of a protracted series of partial understandings" (Csikszentmihalyi & Sawyer 1995, p. 344).

By contrast, in *presented problem* solving, often there is a very short time scale; the problem was clear and now it is clearly solved by the insight and there is no need for feedback loops or extensive evaluation or elaboration.

2.7.5 An Evolving Systems Model of Insight

Gruber's developing work, over more than fifteen years, shows how "insights, whether they are small steps or great leaps, are part of a coherent life. They express the thinker's organisation of affect and purpose as well as his or her organisation of knowledge" (1995, p. 399). So, for example, in considering the famous story of Archimedes, he makes the important point that we do not know exactly what happened in the bath, but we do know that Archimedes wrote an important 47 page, highly deductive mathematical treatise on floating bodies. He argues that it is more plausible to think of the problem of the composition and density of Hiero's crown as embedded in this enterprise, rather than an isolated event (see also the work of Drake 1978, Galileo 1586/1961, and Heath 1897, relating to Archimedes). So the task is not only to understand the inner structure of each episode of insight, but to relate this structure to the creative life of which it is a part.

Gruber (1989) has called this model, *The Evolving Systems Approach.* In this view of creative work there are three major subsystems: (1) an organisation of *knowledge*, (2) an organisation of *purpose*, and (3) an organisation of *affect.* This approach enables case studies of creative people at work, in a way that illuminates the developing system as a whole.

> Therefore, in the study of insight, we are especially concerned with the way in which each insight is a move in the development of the creator and of his or her work. By the same token, we are particularly on the lookout for the many moments of insight occurring in a creative life, rather than supposing that the heart of the matter lies in one great creative leap. Thus, insights express and are part of the functioning of the creative system rather than its rupture. (Gruber 1995, p. 400)

So in examining some insights in the history of science, Gruber (1995) makes the point that accounts of many of the most celebrated cases of insight were written long after the event, which led to several kinds of error. He specifies three: telescoping, rationalisation and decontextualisation. (i) *Telescoping;* refers to the loss of detail due to limitations of memory, intermediate steps drop out and beginning and ends remain. As a result, many incremental and intermediate steps may be replaced by one or two points suggesting a leap. (ii) *Rationalisation;* describes changes in intuition and in affective feeling that disappear from memory and are replaced by post hoc rational and empirical accounts. This of course does not apply to interviews or the use of contemporaneous notes as in Darwin's notebooks used by Gruber (1981a) or Holmes's (1989) work with the notebooks of Lavoisier and Krebs. (iii) *Decontextualization;* occurs when the surrounding conditions, circumstances or experiences of the insight are overlooked. The coherent episode, in which a moment or moments of insight occurs, can be thought of as a figural event seen or remembered against a background of several overlapping contexts. These contexts would include "hints" in picture puzzle experiments, and the enterprise in which the problem in question is a part, as in Archimedes' prolonged work on floating bodies. It may also include the wider intellectual currents that contribute to defining the problem, the forms of acceptable solutions, and the theories that will shape the way in which the insight is recorded and interpreted.

2.7.6 An Evaluation of the Contribution of the Approach of Models of Insight

This evaluation consists firstly of the strengths of these models of insight and then secondly the weaknesses.

The Strengths

(1) Instead of a narrow focus on mental processes from the perspective of cognitive psychology, there is a broader understanding of social and cultural influences as well as environmental factors in which creativity and insight are manifested. Sudden insights, when the individual concerned is alone, are usually embedded in a more complex interactional process and are often preceded by years of hard work which is not usually in complete isolation.

(2) The element of chance, both in discoveries (as in Section **2.6.5**) and in permutations and variations emerging into consciousness, resulting in serendipitous insight seem undeniable, even if infrequent and mysterious.
(3) The ongoing structured video interview study (**2.7.3**) of Csikszentmihalyi and Sawyer should be of great value and when complete will be a considerable bank of experience to examine for years to come.
(4) The distinction between the two types of creative insight, *presented* and *discovered*, corresponding to Kuhn's (1962) distinction between normal science and revolutionary science, is a valuable one, but not absolute. For example, Darwin's development of the evolutionary paradigm was, as Csikszentmihalyi and Sawyer (1995, p. 344) put it, "the result of a lifetime spent elaborating the implications of an insight that was itself a result of a protracted series of partial understandings".
(5) Gruber demonstrates that "insights, whether they are small steps or great leaps, are part of a coherent life", expressing the thinking insightful person's "organisation of affect and purpose as well as his or her organisation of knowledge" (Gruber 1995, p. 399). This emphasis on the coherence of life is entirely compatible with the existential-phenomenological approach and is particularly important in the light of a general tendency to isolate startling creative phenomena like insight, as well as Cognitive psychology's tendency to separate processes. Gruber's (1995, p. 400) conclusion is also an important corrective: "Thus, insights express and are part of the functioning of the creative system rather than its rupture". This is particularly important in the context of mechanistic and reductionist views of the universe which regard creative actions or insights as interventionist. All this prepares the way for an effective treatment of the next approach to insight which will be considered, namely the "Great Minds Approach".

The Weaknesses

(1) Despite recent developments it has to be acknowledged that the intrapsychic and interpersonal approaches have not yet been fully successfully integrated.
(2) It is questionable whether the postulate of Csikszentmihalyi and Sawyer (1995), of a conscious-subconscious interaction that parallels the interpsychic-intrapsychic dimension, is adequate to do justice to the rich individual experiences of those involved in their structured

video interviews. Certainly their presentation of the material so far appears to be rather generalised and constrained by natural scientific perspectives.
(3) It seems strange that Csikszentmihalyi and Sawyer (1995, p. 343) can categorically state that "the insights are always described as welling up from the subconscious, there is never a mention of a specific external stimulus", since Feynman's experience, and that of others in which collegial discussions trigger insight, is well known. Perhaps there is some misunderstanding at this point and greater clarification is required.

2.8 The Case–Study Approach of Great Minds Experiencing Insight

In the previous sections several models of insight, notably the intrapsychic, interactional and evolving systems models, prepared the way for exploring the Great Minds Approach to insight, without the danger of artificially isolating the individual's cognitive processes.

Several examples of Great Minds experiencing insight have already been mentioned in this Literature Review, namely Feynman (**2.5.1**, **2.5.3**), Kekulé (**2.5.3**) and Crick and Watson (**2.5.4.2**). But to do justice to this approach it is necessary to examine the processes of a "Great Mind" experiencing insight in context and in much greater detail. To be true to the context and the greater detail, the heading for this section should really read "The Case-Study Approach of Great Minds and Dedicated Lives of People Experiencing Insight", because most of the people in this category have dedicated their whole lives to their chosen discipline.

As examples of "Great Minds" the insightful processes and experiences of two remarkable, but very different people will be examined: first, Poincaré and then Darwin. First, Gruber's evolving systems model (described in **2.7.5**) is applied in approaching Poincaré's experience of insight (**2.8.1**), then Poincaré's own account of his experiences of insight is examined before an evaluation of the importance of purpose in his life of insight. Then, Darwin's thought, purpose and affect in his Malthusian moment of insight is examined, drawing on his letters to Lyell (**2.8.2**).

2.8.1 The Approach to Poincaré's Experience of Insight

Gruber notes that:

> There is a certain irony in the way students of creativity have used Poincaré's famous moment of insight, taking it out of context and ignoring that mathematician's excellent description of the relationship between microgenetic and macrogenetic processes making up a complex event, extended in time. (1995, pp. 412-413)

The relationship between microgenetic and macrogenetic processes has been carefully researched by Wallace (1991). What she says about the genesis and microgenesis of sudden insight in literature also applies to Poincaré's (1952) description of his eureka experience in his essay "Mathematical Discovery". Wallace (1991, pp. 41-42) emphasised the point that *insight* refers to "a *family* of phenomena occurring in creative work. The family includes problem finding … problem resolution, synthesis, discovering similarities, analogies, increase in certainty, recognising error, the *mot juste*, and so on". Although these may all occur as relatively sudden transformations of the cognitive field, whether in the field of mathematics or literature, she points out that each has an internal microgenesis and each occurs within the context of a longer developmental sequence (see also Wallace 1989).

Poincaré's (1952) essay, "Mathematical Discovery" is in Gruber's estimation:

> one of the best known, most widely cited, and often reprinted accounts of what seems to be a eureka experience. Arieti (1976), for example, gives a succinct but full enough account of the event as a whole, but then boils it down to the received, truncated version: 'at the moment he put his foot on the step, the idea came to him … this was the creative moment' (Arieti 1976, p. 268) … this episode provides an excellent example of the transformation in memory known as *telescoping*: a complex event, extended in time, is compressed into an instantaneous point. This entails a double loss – the disappearance of the inner temporal structure or microgenesis of the momentary event, and the neglect of its multiple relations with other processes. (1995, p. 413)

It is helpful to first note the time and context of mathematical thought of Poincaré's period, and then turn to the seven steps in Poincaré's own account of his insight.

Poincaré's first treatise on Fuchsian functions was anticipated in its point of view and style of thought in his first published work in 1878 when he was 24 years old. It was not until thirty years later that he gave his lecture on "Mathematical Discovery" that was included in *Science and Method* (1908). Until 1900, Poincaré had been the supreme mathematical analyst. As Bell (1937) points out at the Second International Congress of Mathematics in 1900, Poincaré proclaimed that "we believe that we no longer appeal to intuition in our reasoning … we may say today that absolute rigour has been attained", but in the ensuing years he moved rapidly towards intuition. It was a period of considerable writing on the psychology of mathematical thought, generally stressing the role of dreamwork and intuition.

According to Gruber, *Science and Method* is one long argument in praise of both psychological and mathematical intuition: "[W]hat the true scientist alone can see is the link that unites several facts which have a deep but hidden analogy. The anecdote of Newton's apple is probably not true, but it is symbolic, so we will treat it as if it were true" (Poincaré 1952, pp. 27-28). He concludes that "logic therefore remains barren, unless it is fertilised by intuition" (Poincaré 1952, p. 193). Gruber summarises Poincaré's proposed relationship between step-wise calculation and penetrating intuition, as a model of mathematical discovery in terms of:

"Arduous work ⟶ Sound conclusion ⟶ Naming the result
⟶ Compression of thought ⟶ Further economies
⟶ Intuitive grasp". (Gruber 1995, p. 414)

This is a summary of the seven steps in Poincaré's own account of his experience of insight, as outlined by Gruber (1995, pp. 415-420):

(1) *Caen.* For a fortnight, Poincaré has been working on a mathematical problem, to prove the *non*-existence of the class of functions he later called *fuchsian.* A sleepless night, occasioned by too much coffee and too much obsession, leads to a first important idea. By morning, he had established the contrary of his original intention. Nothing is said of any sudden illumination. But he does speak of ideas "surging" and "jostling one another" and he does distinguish this phase from the next morning when he devoted a few hours to "verify" the result. He seems to be describing a two-phase sequence of intuitive combinatorial work of discovery followed by some more rigorous process of proof. Although he speaks of the surging ideas sometimes forming a "stable combination", this does not seem to mean the sudden emergence of a *solution*.

(2) *Caen.* At a time unspecified, but soon after the first episode, Poincaré formed a new intention, to represent the functions he had just found in a new way. Quite consciously and deliberately, he adopted the strategy of reasoning backward: "I asked myself what must be the properties of these series, if they existed, and I succeeded without difficulty in forming the series that I have called *Theta-fuchsian*" (Poincaré 1952, p. 53).

(3) *Coutanses.* Poincaré attended a geological conference 90 km from Caen, where he was living. Here, with no forewarning, he had his celebrated foot-on-the-step-of-the-bus illumination, a perception or recognition of the identity of two mathematical transformations. He waited until his return to Caen to verify this "finding".

(4) *Caen and seaside.* Poincaré had begun a work on a seemingly unrelated mathematical project. Making no progress, he went away for a few days. "One day, as I was walking on the cliff, the idea came to me, again with the same characteristics of conciseness, suddenness, and immediate certainty …" (Poincaré 1952, p. 54). Again he had perceived an identity, previously unnoticed, between two mathematical transformations.

(5) *Caen*. Returning to his home and teaching post, Poincaré deduced the consequences of his new finding and set about systemising and generalising it. He succeeded easily, with one notable exception. Struggling with this obstacle did not help him "better understand the difficulty, which was already something. All this work was perfectly conscious" (Poincaré 1952, p. 54).

(6) *Mont-Valerien and Caen.* Poincaré was in military service near Paris, 200 km from Caen.

> [M]y mind was preoccupied with very different matters. One day, as I was crossing the street, the solution of the difficulty which had brought me to a standstill came to me all at once. I did not try to fathom it immediately, and it was only after my service was finished that I returned to the question. I had all the elements and had only to assemble and arrange them. (Poincaré 1952, p. 54)

Clearly, the solution that came to him all at once was not a finished product but something that needed further fathoming and reorganising.

(7) *Caen*: Now having all the elements of a definitive treatise, Poincaré (1952, p. 55) composed it "at a single sitting and without any difficulty".

Gruber concludes that of these seven episodes:

> three include sudden illumination – on the bus, on the cliff, and in the street. Another is described as freighted with intuitive thought. The remaining three are characterised as

> conscious and deliberate work. For Poincaré one of the hallmarks of his sudden illuminations is the suspension of intentional work on the problem, although this is not necessarily the case for other individuals. Thus, Poincaré gives a detailed first-order description, not of one great insight but of a continuously working, evolving system of thought that produces important insights from time to time … for Poincaré, mathematics was a language in which he thought. (1995, pp. 416-417)

Giving energy and direction to that thought was a powerful sense of purpose.

Poincaré, as Gruber (1995, p. 418) points out, was very careful to emphasise the ways in which the creative process is regulated by the thinker's conscious and enduring purposes:

> On the one hand, he compares the elementary ideas of a mathematician's thought processes to molecules in a gas whose collisions produce new combinations. On the other hand he says of these elements 'Now our will did not select them at random but in pursuit of a perfectly definite aim. Those it has liberated are not, therefore, chance atoms; they are those from which we may reasonably expect the desired solution' (Poincaré 1952, p. 61). Finally, whatever is produced by these unconscious processes must be developed in a second period of conscious work. 'It never happens that unconscious work supplies *ready-made* the results of a lengthy calculation in which we have only to apply fixed rules … all that we can hope from these inspirations … is to obtain points of departure for such calculations … [the latter] demand discipline, attention, will, and consequently consciousness'. (Poincaré 1952, p. 62-63)

A further question arises about the relation between purpose and unconscious thinking in Poincaré's experience. For he emphasises the idea that he often worked without a clear sense of purpose, or as Miller puts it, Poincaré had his initial great insight about Fuchsian functions as a sudden "illumination with no pre-determined path" (Miller 1992, p. 399).

As Gruber (1995, p. 419) argues: "Having a sense of purpose is in no way incompatible with working with no pre-determined path. It seems that Poincaré worked from first principles and had a sense of what the end product might be". At least two years before his famous insight on the step of the bus Poincaré "suspected that there ought to be certain generalisations of elliptical functions of a single complex variable … but he did not know exactly what they were or whether

these solutions ever existed" (Miller 1992, p. 398). So it is clear that, in Gruber's (1995, p. 419) words, "creative work can be purposeful and protracted, playful and intuitive, deeply knowing and yet partially unconscious, just as Poincaré described himself ".

The paradox for the creative individual is somehow to direct this undirectable subconscious process so that useful insights result. Csikszentmihalyi and Sawyer (1995, p. 339) state: "In fact, many of our respondents claim that they have developed the ability to do just that: to control without controlling, indirectly to direct the subconscious mind".

There are at least three levels in Poincaré's description: mathematics itself, his own thoughts about mathematics, and his reflections on the psychology of thinking. At this third level Poincaré is examining what Gruber (1995, p. 420) calls "a single project within a single enterprise. Such episodes are very far from constituting the whole creative process … to display any sense and order, the intentional episodes must be embedded in a still larger framework of purpose, regulated by an overarching point of view".

This "larger framework of purpose" is particularly clearly revealed in Darwin's research, which will now be explored.

2.8.2 Thought, Purpose and Affect in Darwin's Malthusian Moment of Insight

Gruber (1995) treats insight as both an experience and a problem-solving act or series of acts with cognitive, motivational, and affective characteristics. In contemporary theory, emotion and cognition are frequently treated as separate but interacting systems (e.g. Izard 1984), by contast in the evolving systems approach, Gruber

> conceives of the thinking, feeling person as exhibiting a stream of thought, a stream of purpose, and a stream of affect. They are in continual interaction, yet each has its own varying contents, tempos, and rhythms … the 'same' insight, arising on a platform of despair, is not really the same if instead it emerges out of a stream of pleasurable activity. This way of looking at insight as temporarily extended and situated has among its advantages the fact that it expands the data base on which we can draw to understand the subject's affect. (1995, pp. 421-422)

A number of researchers have documented the events leading up to Darwin's great moment in which he saw how Malthus's theory of population growth could be used in a theory of evolution through natural selection. Gruber (1981a) has stressed how Darwin's notebooks reveal numerous partial insights, on several occasions almost obtaining the clarity of the Malthusian moment.

In order to trace the rising level of affect leading up to Darwin's Malthusian moment, evidence is drawn from Gruber's notes on Darwin's letters to the geologist Lyell, who was Darwin's chief scientific mentor for at least ten years, and the man who had earlier "literally danced with delight when Darwin told him about his theory of the formation of coral reefs, a theory supplanting Lyell's own version" (Gruber 1995, p. 423).

August 9th, 1838. Darwin wrote "I am living very quietly & therefore pleasantly & am crawling on slowly but steadily with my work" (Darwin 1986, p. 98).

September 14th, 1838. Darwin wants Lyell to return to London from Scotland, lest "the Scotch mists will put out some volcanic speculations". Darwin says that he is tempted to neglect geology "by the delightful number of new views, which have been coming in, thickly and steadily, on the classification & affinities & instincts of animals – bearing on the questions of species – notebook after notebook has been filled with facts, which begin to group themselves *clearly* under sub-laws" (Darwin 1986, p. 108). Here a change of pace moves towards a crescendo when, visiting his brother, he read Malthus's *Essay on Population* (1826) "for amusement".

September 28th, 1838. The day his insight came to a climax. His notes do not say anything *explicit* about his feelings, but both the format of the notes and the contents convey an air of excitement. Words are underlined, doubly underlined, and triply underlined. He inserted between the lines and in the margins commentaries on his commentary. There is a liberal use of metaphor and emphatic language. For example, his closing sentence: "One may say there is a force like a hundred thousand wedges trying [to] force every kind of adapted structure into the gaps in the economy of nature, or rather forming gaps, by thrusting out weaker ones" (Gruber 1995, p. 422). He may even have written this later the same day after returning home from his brother. He is quoted as recollecting one of the more momentous insights in the history of science, as "I can remember the very spot on the road, whilst in my carriage, when to my *joy* the solution occurred to me" (F. Darwin 1892/1958, p. 43, italics added).

2.8.3 An Evaluation of the Contribution of the Great Minds Approach

As in previous evaluations the strengths and then the weaknesses will be outlined.

The Strengths

(1) After considering hypotheses, theories, insight puzzle problems and models of insight there is something refreshing and stimulating about their application in considering verified life-world experiences of Great Minds wrestling with very substantial issues and experiencing significant insights. These are insights which have not only changed our world, but which have become part of the warp and woof of our own pattern of thinking and daily understanding. It is evidence of the existential value of this detailed first order description and approach.
(2) The value of Gruber's evolving systems approach integrating the organisation of knowledge, purpose and affect in the many moments of insight in a creative life, is seen in revealing the inner temporal structure or microgenesis of the momentary event, the connection of its multiple relations with other processes and therefore in a more coherent, holistic, contextual and developmental understanding of the experience of insight.
(3) Some light is shed on the cooperation between conscious and subconscious processes which result in useful insights. Csikszentmihalyi and Sawyer (1995, p. 339) state that "many of our respondents claim that they have developed the ability … indirectly to direct the subconscious mind". As Gruber (1995, p. 417) says of Poincaré, for example, "mathematics was a language in which he thought". In reflecting on the lives of those who qualify for the Great Minds approach it becomes clear that there is a concentration of energy, a focused sense of purpose and a dedication not just of thought and feeling but often of life itself to the chosen issues, which is an expression of, a co-operation with, and an indirect direction of subconscious processes leading to insights.

The Weaknesses

(1) There are dangers inherent in any historical approach, such as telescoping, rationalisation and de-contextualisation, which have been noted and hopefully avoided in this thesis, but they remain potential weaknesses of this approach.

(2) It is important to recognize that there is a natural scientific suspicion, if not scepticism, about using introspective evidence – that most treacherous source of data – as Feldman puts it. Yet from a human scientific perspective it is vital 'first order' evidence, essential for understanding the experience of insight. It is submitted that the existential-phenomenological methodology is a very powerful process in respecting, describing, clarifying, understanding and refining the essential structure of the human experience of insight.

So it is by the Great Minds approach, considering substantial experiences of insight over real issues, that many of the other theories, models and approaches are finally tested and either find their fulfilment or are found wanting. In these terms, the holistic approach of gestalt psychology has proved foundational to the whole enterprise of researching insight (**2.3**); the existential approach of phenomenological psychology is essential in describing and understanding the experience of insight (**2.4**); the puzzle-problem approach of cognitive psychology is marginal in terms of life-world experience of insight (**2.5**); the creative approach of dreams, designs and inventions is useful in broadening the concept and application of insight (**2.6**); and the representational approach of models of insight continues to be valuable in contextualising and clarifying evolving systems of insight (**2.7**)

Three more approaches to insight remain to be examined. First, the Metaphors-of-Mind approach (**2.9**), then the Inter-Subjective approach of psychotherapy (**2.10**) and finally the Body-Mind-Spirit continuum approach of Spirituality to insight (**2.11**).

2.9 The Metaphors-Of-Mind Approach to Insight

Three different metaphors-of-mind for insight will be examined:
(1) Insight in minds and genes (**2.9.1**) in which insight is compared with the phenomena of biological evolution on a timescale of one minute to ten million years.
(2) An investment perspective on creative insight (**2.9.2**) in which the attitude required for insight is compared to a willingness to buy low and sell high.
(3) Finally, the vision metaphor for insight (**2.9.3)** emphasised by the word *insight* itself, which includes the significance of the quality of vision (**2.9.4**), and also involves the problem *space*

metaphor for insight (**2.9.5**). **T**he issue of verbalisation and insight (**2.9.6**) is touched on before examining the significance of metaphor in the current research of insight (**2.9.7**) and concluding with an evaluation of the contribution of the metaphors-of-mind approach (**2.9.8**).

2.9.1 Insight in Minds and Genes

The excitng thing about the metaphor of evolution for insight is that in both evolution and insight a new form or structure occurs spontaneously. Perkins (1995) seeks to illuminate human insight by an analogue; by comparing it with phenomena of biological evolution on a time scale of one minute to ten million years. He enumerates the principal propositions of his arguments as follows (Perkins 1995, pp. 496-497):

(1) Human insight presents some typical characteristics, including a long search, a precipitating, and a rapid culmination.

(2) These characteristics can be generalised into the concept of *generative breakthrough events,* episodes of sudden innovation that might appear in any creative system, including evolution.

(3) Evolution does offer insight-like episodes – that is, episodes with the characteristics of generative breakthrough events. The evolution of birds is one example; the creatures of the Burgess Shale near the dawn of multi-cellular life provide another.

(4) The work of any creative system can be viewed as a process of search through a space of possibilities or a "possibility space".

(5) The searches of creative systems occur in possibility spaces with vast, relatively clueless regions, in the midst of which occur small pockets rich with clues, in which rapid progress can be made. Possibility spaces with this structure are called *Klondike spaces.*

(6) Typical earmarks of insights (more generally, generative breakthrough events) such as suddenness are consequences of the Klondike topography. The basic phenomenon of insightlike episodes has little to do with intelligence or cognition.

(7) Besides analysing insight, it is worth analysing insightfulness. The insightfulness of a creative system is its adaptation to the demands of effective search in a Klondike space. More insightful systems make more discoveries.

(8) Human cognition not only generates insights but does so in an insightful way: that is, human processes of search often are well adapted to the topographies of Klondike spaces.

(9) In contrast, evolution, as classically conceived by Darwin, lacks this insightfulness. It is a brute-force process.
(10) However, modern conceptions of evolution suggest that evolution may be smarter than Darwin imagined. On a vastly greater time scale than human beings, genes in their passage and perturbations from generation to generation may function in an insightful way.

Perkins' (1995) argument is not always easy to follow, but we may draw three main conclusions:
(1) In order to give the mind its due, instead of focussing on insights we should rather focus on *insightfulness*, since "[a]ctual moments of human insight are the tips of a much larger iceberg of insightfulness" (Perkins 1995, p. 527). The searches human beings conduct are much better tuned to cope with the hazards of Klondike spaces than is the blind search process of Darwinian natural selection. In addition, we can learn to plan better, look for generativity, and adopt strategies of brainstorming (Perkins 1981, 1990, 1992).
(2) With the exception of incubation, which he rejects in *The Mind's Best Work* (Perkins 1981), Perkins'view of I*nsight in Minds and Genes* (1995) is consistent with a number of other accounts in the literature, and simply analyses the phenomena of insight at a greater level of abstraction. So other accounts have the benefit of more detailed mechanisms but, he claims, encompass less well the general phenomena of insightfulness.
(3) Natural selection, with its long time scale and parallel processing, can achieve amazing biological designs through what Darwin conceived of as a relatively dumb process; yet recent research indicates that it may be much more intelligent than as originally thought. Wesson cites the rapid response insect species make to insecticides, sometimes within a single harvest season (Wesson 1991, pp. 236-237); the way bacteria adapt to feed on substances they normally cannot use at all (Wesson 1991, p. 234); and the way learning drives evolution (Wesson 1991, p. 241). These examples suggest that evolution may be insightful after all; it is simply not enough to speak of random variation and survival of the fittest, even if that is the core of the process. So, Perkins sums up his argument with:

> The process of evolution seems to have as much claim to thinking as many programmes in artificial intelligence research (cf. Boden 1991). If so, the case of evolution would provide the *Guinness Book of Records* with the slowest 'thinking' process known … But, of course … this is the mere wink of a evolutionary eye. (1995, p. 530)

Acknowledging the significance of that wink, it is appropriate to move on to a completely different metaphor-of-mind for insight.

2.9.2 An Investment Metaphor for Insight

Sternberg and Lubart argue that creative insight requires a specific attitude in addition to cognitive abilities:

> The creatively insightful person seeks the paths that others would avoid or even fear; he or she is willing to take risks and stray from the conventional. Drawing on concepts from the world of financial investments, we call this attitude for insight a willingness to buy low and sell high…previously we have found the investment metaphor to be useful in examining creativity in general. (1995, pp. 535-536)

Buying low, in this context means actively pursuing ideas that are unknown or out of favour but that have growth potential. *Selling high* involves moving on to new projects when an idea or project becomes valued and yields a significant return. People tend to buy high, pursuing ideas that are obvious or common for fear of the risks involved. Someone who buys low and sells high needs to be something of a maverick, ready to take chances and possibly fail (Dreman 1977, 1982, Malkiel 1985).

Kahneman and Tversky (1982), in Sternberg and Lubart (1995), found that most people are risk-averse when choosing between potential gains, but are risk-seeking when choosing between potential loses. Creative insights usually involve a potential gain, which means that people will tend to avoid the risks of buying low preferring to work with ideas that are already fairly well developed and accepted (Dreman 1977, Kahneman & Tversky 1982, MacCrimmon & Wehrung 1985); beating new paths is not for the faint hearted. An interesting study by Clifford (1988) shows that failure tolerance declines as children progress through school, perhaps owing to systemic rewards for good grades and a corresponding fear of failure.

If a field, speciality or problem seems to be under-represented at a particular time, one has a ‘buy signal’. Expanding on the notion of *human capital*, Rubenson and Runco (1992) explain why younger people may be greater risk takers and hence more prone to major creative insights and, ultimately, discoveries and inventions (Lubart & Sternberg 1995/1998). Assuming old creators will possess more knowledge in their fields, they will be able to produce minor contributions at

less cost than younger colleagues. So Sternberg and Lubart (1995, p. 548) argue: "With too little knowledge, major insights will not occur because there are not enough raw materials. Conversely, with too much knowledge, major insights will not occur because they would devalue one's current knowledge base".

Market demands cannot be ignored. According to Simonton (1984c), political turmoil creates more demand for creative insights because of a greater need to find imaginative solutions to serious problems. This was certainly the case in South Africa over the negotiations for a just and peaceful transition in the 1990s. On the other hand, market demands cannot be the sole motivator. The impetus toward insightful problem solving ultimately has to come from within, not from external factors. Sternberg and Lubart quote Gary Trudeau, creator of the controversial and influential Doonesbury political comic strip, on his receipt of an honorary degree at Yale in 1991:

> The impertinent question is the glory and engine of human inquiry. Copernicus asked it and shook the foundations of Renaissance Europe. Darwin asked it, and redefined humankind's very sense of self. Thomas Jefferson asked it and was so invigorated by it that he declared it an inalienable right … Whether revered or reviled in their lifetimes, history's movers framed their questions in ways that were entirely disrespectful of conventional wisdom. (1995, p. 550)

In stark contrast to such questions and insight, Janis (1972) described a phenomenon he referred to as *groupthink;* a mindless conformity and collective misjudgement - an experience not entirely unknown to any of us.

Sternberg and Lubart (1995) argue that in a fundamental sense, evaluation of both financial and creative worth is parallel, because in both cases it is based largely on social consensus. "Previous accounts of people's conception of creativity suggest novelty or statistical rarity, high quality, and appropriateness to problem constraints as the main criteria for judging creative performance" (Sternberg & Lubart 1995, p. 550. See also Amabile 1982,1983,1996, Jackson & Messick 1965, MacKinnon 1962, Sternberg 1985, 1988b). Sternberg & Lubart (1995, p. 550) argue that the same dimensions are used for determining whether a problem solution is insightful, and that "it is essentially an insight or series of insights that forms the basis of a creative product".

Successful people find themselves more and more in demand as mentors, public speakers and committee members. As their reputation increases so demands on them increase, and the creatively insightful person can find herself or himself with almost no time or energy left for creative endeavours: with the result that bankruptcy of insights beckons. So as Sternberg & Lubart (1995, p. 554) express it: "what diminishes is not any insightful ability but rather the attitude and spirit of buying low and selling high".

Sternberg and Lubart (1995, p. 555) add the reminder: "In using metaphors … therefore it is important to recognise points of dissimilarity as well similarity; in fact examining where the metaphor is imprecise often yields more understanding of the concept". So they clarify the limits of their metaphor by stating: "We want to show that there are major conceptual points of comparison between financial and creative investments; we are not equating creativity and money…Our theory makes only structural, not content, parallels" (Sternberg & Lubart 1995, p. 556). Clearly, it is often necessary for creatively insightful people to invest themselves, their time and energy, in their projects in order to add value to the initial idea before receiving a significant return. It is significant that Sternberg in particular, much of whose work has in the past emphasised the crucial importance of cognitive ability for insight (Sternberg 1985,1986, Sternberg & Davidson 1989), concludes: "exclusive reliance on cognitive models may rule out one of the most important factors for creative insight, which is not an *ability* so much as an *attitude* towards life" (Sternberg & Lubart 1995, pp. 556-557 italics added).

Finally, consideration must be given to the most commonly used metaphor of all, for insight; namely sight.

2.9.3 The Vision Metaphor for Insight

The word *insight* itself emphasises its parallels with vision. When a person says "I see" it may indicate that she understands; yet when she says "I see!" the tone of voice may indicate that she has made a discovery or even experienced an insight. Insights are often described in terms of "seeing the light", a "light bulb experience", a "sudden flash", or a "moment of illumination". The analogy of perception guided the early gestalt theorists in characterising the processes of insight and, as Schooler et al. (1995, p. 564) point out that "[t]he Gestaltists' perceptual characterisation of insight remains considerably influential to this day". They cite Ellen (1982),

who suggests insight is akin to gestalt figure-ground reversals, and Gruber (1995) who hypothesises that a process comparable to perceptual gap filling may play an important role in insight. Other approaches have also emphasized the parallels between insight and vision. So, for example, Ohlsson (1984) speaks of insight as occurring in "the horizon of mental lookahead", Ippolito and Tweney (1995, p. 444) specifically speak of insight as a special form of perception which they call "inception" and which "stands between the perceptual and the symbolic … characterisations of insight". Simonton (1995, p. 477) refers to consciousness as able to "suddenly change focus, and spotlight the discovery".

Schooler et al. (1995) use, throughout their discussion, the analogy relating insight to recognising out-of-focus pictures or pattern of dots. (See Figure11. Face in the snow.)

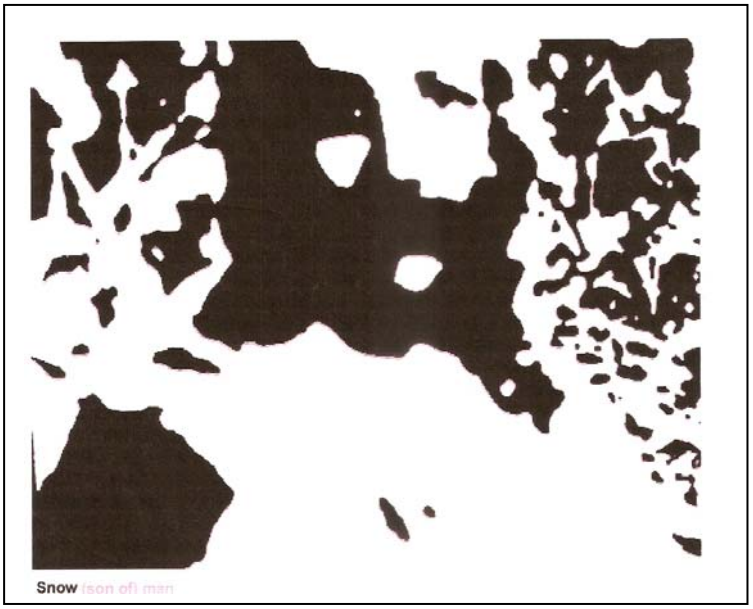

Figure 11.. The face in the snow. (easyweb.easynet.co.uk/~philipdnoble/**snow**.html)

Like insights, recognition of out-of-focus pictures can be hampered by a mental set (e.g. Brunner & Potter 1964) and facilitated by a simple cue, typically resulting in a sudden shift, from no sense of what is depicted, to clarity about what is depicted. Given these parallels, Schooler et al. tested their hypothesis that insight and recognition of out-of-focus pictures draw on some shared cognitive processes (Schooler et al. 1995) They concluded that of all the cognitive measures they employed, recognising out-of-focus pictures was the single best predictor of insight performance.

The mutual sources of suddenness in perception and insight which are identified by Schooler et al. (1995) have two essential qualities. The first is that there is "no intermediate process detectable in conscious experience" (Gruber 1995, p. 401). This is supported by other researchers' characterisations (e.g. Gick & Lockhart 1995, Metcalfe 1986a, Metcalfe & Davidson 1995, Simon 1986), and "it seems likely that pattern recognition processes may be involved in each" (Schooler et al. 1995, p. 578). The second is coherence and certainty. "In the case of the out-of-focus picture, suddenly all the disparate shadings and features congeal to produce a single coherent image. Similarly with insight, when the solution is seen, all the parts suddenly seem to fit together" (Schooler et al. 1995, p. 579). They identified this as the gestalt, and suggest that this "coherence simply be equated with the basic constructs of pattern recognition" (Schooler et al. 1995, p. 579). They also claim that "this view is supported by the work of Anderson and Schooler (1991), which suggests that memory is remarkably attuned to patterns of information in the environment, in a manner comparable to that which perception is sensitive to the invariances in the physical world" (Schooler et al. 1995, p. 579, see also Gibson 1979, Marr 1982).

2.9.4 The Significance of the Quality of Vision

Crucial to the vision metaphor for insight is the quality of seeing. Pattison (2007, p. ix), in his Gifford Lectures, makes a strong argument "to suggest a more intimate way of perceiving them [images and artefacts] through 'haptic' or touching sight". The concept of haptic vision is Pattison's way of critiquing the prevailing Cartesian myth of a detached, disembodied and unitary way of seeing. Unlike the scientific metaphor of the eye as a carmera, haptic vision is not static or unitary. It moves around an object, caressing its surface and employing a gaze that dwells on texture and colour. It is sentient and notes small alterations in its own attitude. Haptic vision enlivens and it is valuable for transformative insight and understanding, as Hampton (2008) points out. How else is it possible to wake up to the potential for destruction in viewing the world through a car windscreen? How else can the manifold seductions of virtual reality be countered? How else can the effects of global warming be experienced in such a way that people find the collective will to avoid disaster? One has only to think of the overcrowding of data in so many PowerPoint presentations. "I see what you mean" was never more true and less digestible.

Haptic vision enlivens the experience of seeing, deepens understanding and so may contribute towards transformative insight.

It is also necessary to note the limits of this metaphor of sight for insight. "The feeling of insight may be similar to gaining sight, but it is not identical. The process of insight may mimic visual pattern recognition, but they remain distinct" (Schooler et al. 1995, p. 584).

2.9.5 The Problem Space Metaphor for Insight

A closely related metaphor to vision, which is frequently used in discussions of insight, according to Schooler et al. (1995, p. 564), is the notion that "thought is equivalent to moving through physical space". Schooler et al. quote Roediger (1980, p. 232): "In thinking of consciousness, or more broadly, of mind, we usually resort to a metaphor of an actual physical space, with memories and ideas as objects in that space". So we use such phrases as "searching my mind", "changing the direction of thought", "approaching the problem from a different angle", "thoughts in the back of my mind", "it's on the tip of my tongue" and "finding the answer". In problem solving, this mental space metaphor has become merged with a computer metaphor (e.g. Newell & Simon 1972) in which the problem solver moves through a problem space from sub-goal to sub-goal in order to reach the final goal.

From the point of view of the searcher, the boundaries of the problem may be defined so as to preclude finding the solution, as Isaak and Just (1995) suggest. In terms of the insight problem, by Perkins' (1995) account, the physical space metaphor is like gold mining, in which there is little idea of progress until suddenly a gold rich vein is hit.

Schooler et al. combine the vision and physical space metaphors problem solving by proposing a two-process model:

> (1) a pattern recognition process comparable to vision that surveys the possible directions in which to move (i.e. identifying the potentially applicable operators)
> (2) a reasoning process that decides between the potential directions (selects a set of operators) and moves forward (executes the operators). (1995, pp. 565-566)

With respect to insight, Schooler et al. (1995) claim this double characterisation is particularly useful because "one may have a fine vantage point yet still fail to see the goal. In such cases, the problem is one of recognition". On the other hand, "one may be heading in the wrong direction and need to determine a way to move to a better location that affords a better view" (Schooler et al. 1995, p. 566).

With this analogy in mind Schooler et al. (1995) consider some of the impasses to insight and how impasses are overcome. In terms of the latter, they advocate two strategies: improving solving recognition and searching for a new problem representation.
Improving recognition may occur by:
(1) focusing on appropriate clues and problem elements (e.g. Gick & Lockhart 1995, Isaak & Just 1995)
(2) taking a break as Poincaré did (Anderson 1981, Simon 1966, Smith 1995)
(3) being receptive to cues from the environment as Feynman was (Seifert et al. 1995)
(4) changing the context either physically (Smith, Glenberg & Bjork 1978) or psychologically (Bower 1981, Malpass & Devine 1981)
(5) allowing unconscious retrieval as for example, in Simonton (1995, p. 477), "when the succession of subconscious images chance upon a bona fide insight, core consciousness will suddenly change focus and spotlight the discovery". (See also Bowers, Regehr, Balthazard & Parker 1990, Langley & Jones 1988, Ohlsson 1992, Yaniv & Meyer 1987).

Impasses could also be overcome through searching for a new problem representation by:
(1) recognising that one is at an impasse, for example Einstein's difficulty in freeing himself from the assumption of absolute time (Dunbar 1995, Gick & Lockhart 1995, Gruber 1995, Kaplan & Simon 1990).
(2) persevering, as in Edison's saying that "creativity is 99% perspiration and 1% inspiration" (Csikszentmihalyi & Sawyer 1995, p. 331)
(3) being willing to take risks (Dunbar 1995, Sternberg & Lubart 1995)
(4) recognising the importance of playfulness, for example in Einstein's insistence on "combinatory play" (Finke 1995, Ippolito & Tweney 1995, p. 449, Simonton 1995)
(5) developing a broad knowledge base across several domains to enable connections (Dunbar 1995, Simonton 1995)

(6) recognising analogies which virtually all researchers regard as representing one of the central sources of insight (Dunbar 1995, Lee 1991).

While recognising the intrinsic value of this metaphor for insight and the theoretical value of the strategies for overcoming impasses to insight, it is difficult not to question their practical value in actually facilitating insight. It is a little like advice on analysing how to construct a joke.

2.9.6 Verbalisation and Insight

A number of studies have documented the disruption that can ensue when subjects are asked to verbalize some particular tasks. For example verbally describing a previously seen face can interfere with the subject's subsequent ability to recognise that face (Schooler & Engster-Schooler 1990). Their interpretation of this result, "termed *verbal overshadowing*, is that verbalization may emphasise verbalisable processes at the expense of non-verbalizable ones" (Schooler et al. 1995, p. 583). They also claim that this holds true of colour recognition (Schooler & Engster Schooler 1990), taste judgments (Wilson & Schooler 1991), aesthetic evaluations (Wilson, Lisle, Schooler, Hodges, Klaaren & Lafleur 1993), visual imagery (Brandimonte, Hitch & Bishop 1992, Brandimonte, Schooler & Gabbimo 1993), and implicit learning (Fallshore & Schooler 1993).

Given the link traced between insight and perception, Schooler and colleagues explored their hypothesis that insight might also be vulnerable to verbalisation. So they had subjects engage in verbalisation (thinking aloud) while solving insight and non-insight problems. They concluded that "compared to the silent control subjects, subjects who verbalized were substantially less likely to solve the insight problems but exhibited no decrement on the non-insight problems" (Schooler et al. 1995, p. 583).

The notion that verbalisation may interfere with insight takes on particularly troubling dimensions in the context of a thesis on insight. Just as explaining a joke can ruin its humour so discussing theories of insight may make it more difficult to be insightful.

2.9.7 The Significance of Metaphors-of-Mind in the Current Research of Insight

This section will briefly consider the problems in the current research of insight before reflecting on the nature of metaphor and examining the significance in the current and ongoing research of insight. In this context it is useful to distinquish between the event of insight, the explanation of insight and the experience of insight. In the review of the literature so far it has to be acknowledged that there are a bewildering variety of possible elements that have postulated as explanations or mechanisms at work in insight.

Since there is no generally agreed upon operational definition by which insight and insight problems can be defined and identified, Weisberg (1995, p. 182) proposed that, "a moratorium should be placed on theorising about the mechanisms underlying restructuring and insight". In reviewing *The Current State of Insight Research* Trottier (2001, p. 11) concludes: "Without an exact definition of insight and insight problems, it will likely never be a rigorous sub-domain of cognitive science". Sadly this is still the case.

A metaphor, by definition, is an implicit comparison which is not meant to be taken literally, but involves figures of speech or symbolism, in which one thing is used to represent another. The word 'metaphor' comes from the Greek *metaphora,* from *metapherein* 'to transfer', literally 'to carry between' (Encarta World English Dictionary 1999). So metaphors, less precise than models, may usefully serve as a basis for elucidating the elusive nature of insight. But metaphors are not only appropriate at the current stage of research into insight because of the lack of a concise agreed explanation for insight. It is also arguable that metaphors will continue to be appropriate because, as documented particularly by Dunbar (1995,1999,2000) and Gentner (2000), analogies, comparisons and metaphors are an important source of knowledge and conceptual change in insight. This is particularly true of insight in life-world situations, where people "frequently use deeper, more structural features" when using analogies, rather than "subjects in many psychology experiments who tend to focus on superficial features" (Dunbar 2000, p. 313).

It is illuminating, as an example, to consider the metaphor of an explosion as suggested by Schooler et al. (1995), in which it is useful to distinquish between the event, the explanationand the experience. Many different and distinct processes can lead to an explosion, so there may be

many different explanations for an explosion. But these different processes all lead to a sudden and violent scattering of material that results in a transition event to a state very different from that preceding the explosion. "Similarly, although many different processes may lead to an insight, these can all be united by the insight event that results in the transition of the solver to a solution state very different from the non-solution state that preceded the insight" (Schooler et al. 1995, p. 562). This is consistent with Mayer's (1995, p. 3) definition of insight which was identified in Section **2.2** as a particularly useful definition, as a transitional event in which "a problem solver suddenly moves from a state of not knowing how to solve a problem to a state of knowing how to solve it". "Then it becomes more sensible to consider insight as a single construct" (Schooler et al. 1995, p. 561). It is also true that the experience of an explosion, such as the Twin Towers of 9/11, may be significantly different for different people, but it is of no less importance on that account. In fact it may make it all the more interesting and provide a fuller account of the event. Yet it is arguable that the research literature on insight hardly reflects the significance and importance of this personal *experience.* This issue will be taken up in Chapter **3** on the methodology most appropriate to include the experience of insight for this investigation.

2.9.8 An Evaluation of the Contribution of the Metaphors-of-Mind Approach

The Strengths

(1) Without a generally agreed or exact definition of insight and of insight problems in the current state of research, metaphors, less precise than models, may usefully serve as the basis for elucidating the elusive and allusive nature of inisight.
(2) Even as research definitions of insight become more rigorous, analogies, comparisons and metaphors will continue to be an important source of knowledge and conceptual change in the experience of insight, particularly in life-world situations. Indeed it may well be that analogy is the core of cognition, as Hofstadter (2000) has argued.
(3) The value of the metaphor of evolution for insight, in which evolution is much smarter than originally conceived of by Darwin, is that in both a new form or structure occurs spontaneously; a 'generative breakthrough event', but on a vastly longer timescale.

(4) Perkins' (1995, p. 527) recognition of moments of human insight as the "tips of a much larger iceberg of insightfulness" helps to relate the distinct experience of insight to a level of understanding which may be described as 'insightful'.
(5) The strength and significance of Sternberg and Lubart's (1995) investment metaphor is that it highlights what is often missing in cognitive models of insight, mainly that what is crucial is not so much pure intellectual ability as an attitude towards life, which perhaps comes as close to the existential-phenomenological understanding of disposition as already involved in the world as is possible for a cognitive scientist from a natural scientific perspective.
(6) The word insight itself emphasises its parallels with vision and demonstrates the fundamental importance of metaphor. This also goes beyond linguistic importance since Schooler et al. (1993,1995,1996) concluded that of all the cognitive measures they employed, recognising out-of-focus pictures (as in **2.9.3**, Figure11) was the single best predictor of insight performance.
(7) The concept and practice of haptic vision is a powerful way of critiquing and counteracting the prevailing Cartesian myth of a detached, disembodied and unitary way of seeing; it enlivens the quality and experience of seeing, deepens understanding and so may contribute towards transformative insight.
(8) The problem space metaphor is particularly meaningful for those who work extensively on computer searches, and involves refining problem representation and improving recognition to overcome impasses to insight.

The Weaknesses

(1) Metaphors and analogies are, by their very nature, imprecise. It is easy to be seduced by the points of similarity in a metaphor and so to overlook the points of difference. Often teasing out these differences yields more understanding of the phenomenon and experience of insight. So metaphors are useful and suggestive guides, but become dangerous when they control thinking.
(2) Analogies and metaphors are remarkably seductive (e.g. Faries & Reiser 1990, Thagard & Shelley 2000). This danger applies both to theorists who can get carried away with their own analogies and lo.se vital perspective about their limitations, and also to the public bombarded by advertising, or manipulated by cheap political sloganeering when metaphors and analogies are used indiscriminately. So examining these 'hidden persuaders' is vital. Of course if the flaw in the analogy is exposed, its seductive power is completely broken, and the resulting insight is

particularly effective in reversing opinion, so metaphors and analogies need to be used responsibly.

(3) As argued, insight itself invites metaphors and insightful solutions often flow from analogies, which is a strength as identified in (6) above, but the shadow side is that insight itself "requires multiple analogies to illuminate its multifaceted nature" (Schooler et al. 1995, p. 559). As Gruber comments, "a single metaphor is always imperfect, but a set of metaphors all almost converging on the same target, do illuminate and define it" (Gruber 1995, pp. 402-403). But using a set of metaphors in this way is not easy.

2.10 The Inter-Subjective Approach of Psychotherapy to Insight

First, the significance of insight in psychotherapy is introduced and then three assumptions underlying this approach of psychotherapy are spelt out. The main structure of this section revolves around the insight of the therapist, the self-insight of the client and the evolving insight in the inter-subjective psychotherapeutic relationship. Obviously, these are not watertight compartments but profoundly inter-related, as in the different dimensions of an object; length, breadth and height.

2.10.1 The Significance of Insight in Psychotherapy

The importance, indeed the centrality, of insight in psychoanalytic psychotherapy is widely acknowledged: "Since Freud's time, insight has been perceived as the cornerstone of the psychoanalytic theory of structural change" (Crits-Christoph, Barber, Miller & Beebe 1993, p. 408). Insightful interpretation has been described within the clinical psychoanalytic literature as the "supreme agent in the hierarchy of therapeutic principles" (Bibring 1954, p. 763). The importance of insight is not confined to the classical psychoanalytic context. In a seminal study of encounter groups, at a time when, in reaction to barren intellectualism, visceral experience was regarded as key, Lieberman, Yalom and Miles (1973) found that having an experience was not enough. It was essential to have an understanding of the experience; an insightful and therefore meaningful experience. An experience without any insight is meaningless. An experience of an

intellectual insight without any emotional component, if that were possible, would lack transformational power.

Insight in the psychoanalytic approach involves a conscious awareness of some wishes, defences and compromises (e.g. Brenner 1982) that have interacted to produce emotional conflict or deficits in psychological development. Such insight is generally regarded as essential for therapeutic change and usually "follows a slow, gradual accretion of self-knowledge" (Moore & Fine 1990, p. 99). Clearly this involves insight on the part of the therapist, self-insight on the part of the client/patient, and the evolving process of insightfulness, in the inter-subjective relationship.

2.10.2 Three Assumptions Underlying this Approach

Rea (2001, pp. 102-103) eloquently outlines three assumptions underlying the clinical application of important intuitive insight in a shift towards a less prescriptive, more discovery-oriented practice (Bohart 1998):

(1) A client is more than a symptom constellation. The Diagnostic and Statistical Manual of Mental Disorder (DSM-1V), and standardised treatment have been highly successful in reliably defining mental disorders and clarifying therapy into replicable approaches, but neither does justice to the full breadth of a client's experience, suffering or needs (Henry, Strupp, Butler, Schacht & Binder 1993, Schneider 1998b,1999). As Erickson expresses it: "Each person is a unique individual. Hence psychotherapy should be formulated to meet the uniqueness of the individual's needs, rather than tailoring the person to fit the procrustean bed of a hypothetical theory of human behaviour" (quoted by Zeig & Lankton 1988, p. vii).

(2) A therapist is more than a technician. Following a narrowly defined conception of therapy has the advantage of reducing ambiguity, confusion, frustration, and doubt. However, it is tolerance for precisely these experiences that enables a psychotherapist to think creatively and remain more focussed on what is happening in the room than in the literature (Karon 1998).

(3) Therapy is more than a treatment; it is a multifaceted and profoundly personal relationship between complex people. Buber (1970) framed this very distinction with eloquence and continuing relevance in differentiating between "I-It" and "I-You" human relationships. Manualised and prescriptive therapy, especially in their more rigid forms, come precariously

close to "I-It" relationships. Henry et al. (1993, p. 438) in their examination of "standardised treatment" conclude: "[a]lthough treatment was delivered, the therapy … did not always occur".

2.10.3 Insight of the Therapist

Three aspects of the insight of the therapist will be considered; insight as analytic intuition, insight as interpreting psychoanalytic theory and insight in terms of therapist characteristics and techniques.

2.10.3.1 Insight as Analytic Intuition

Intuition is a rapid, highly structured form of non-conscious processing (Bowers et al. 1990, Lewicki, Hill & Czyzewska 1992, Reber 1989), which in empirical studies has been shown to be faster, more accurate and more sophisticated than analytical thinking (Hammond, Hamm, Grassia & Pearson 1989). Reber (1989) deduced that knowledge acquired and held implicitly is always more complex than can be explicated, so verbalisations appear to lag well behind the actual depth of our intuitive understanding. This was confirmed by Schooler et al. (1993) in investigations of the relationship between insight and language.

Williams (2006) identifies some important areas of congruence between Jung and Bion which illuminate analytic intuition. Bion points out that psychic reality cannot be apprehended by the senses in the way that physical symptoms can be. "I propose to use the term 'intuit' as a parallel in the psychoanalyst's domain to the physician's use of 'see', 'touch', 'smell' and 'hear' (Bion 1970, p. 7). So you *see* the client's tears, but *intuit* the emotional reality – that, for instance, they are tears of rage or shame, not grief. Jung (1971, p. 454) described intuition as the ability to see beyond the empirical evidence, so intuition was "not *contrary* to reason but beyond reason". It was perception via the unconscious, as opposed to perception via the senses.

Bion saw intuition as coming alive in the analyst only in a state of "reverie" or relaxed attention (Bion 1962a, p. 87). Jung, in a similar way, describes intuition as operating when the analyst is in "a state of contemplation, in which ideas pass before the mind like dream images … such a moment often works like a revelation" (Jung 1946, p. 116). But for both Bion and Jung the cost of working in this way is considerable. Jung describes it as being brought to an "unbearable standstill" – "when my conscious mind no longer sees any possible road ahead and gets stuck"

(Jung 1931, p. 42). Bion describes it as a sense of "dread" requiring "an act of faith" that accompanies the relinquishing of memory, desire and conscious understanding, in opening himself to the experience of bewilderment (Bion 1970, p. 35). He even describes it as a "blindness" that is a prerequisite for "seeing" (Bion 1970, p. 58).

As Williams (2006, p. 96) points out "both Bion and Jung were aware of the need for correlation between conscious and unconscious data in order to arrive at analytic insight. Bion termed this process of correlation 'binocular vision' while Jung termed it 'transcendent function'". Both conceived of the partition between the conscious and the unconscious in an identical analogy – a semi-permeable membrane, a "mental diaphragm" (Bion 1980, pp. 108,110). Jung thought an individual remained creative to the extent that he/she was able "to sustain permeability of the partition separating conscious and unconscious" (Jung 1958, p. 70).

2.10.3.2 Insight as Interpreting Psychoanalytic Theory

In research focussing on the insightfulness of the therapist in assessment and interpretations, the task of the psychotherapist has been specified as "(a) arriving at a succinct formulation of the patient's main maladaptive relationship pattern and (b) centering interpretations around this pattern … interpretations that accurately bear on this central theme are a primary curative factor in psychotherapy" (Crits-Christoph, Cooper & Luborsky 1988, p. 490). This "central theme" is termed the *Core conflictual relationship theme* (CCRT) which was developed as a reliable measure of central relationship patterns having three components: "(a) the patient's main wishes, needs or intentions towards the other person in the narrative; (b) the responses of the other person; and (c) the responses of the self" (Crits-Christoph et al. 1988, p. 491). In addition, in this study an *interpretation* is defined either as the therapist explaining "possible reasons for a patient's thoughts, feelings or behaviour" or as the therapist alluding to "similarities between the patient's present circumstances and other life experiences" (Crits-Christoph et al. 1988, p. 491). So accuracy of interpretations depends on the degree of congruence between the contents of the patient's CCRT, assessed by independent judges, and the content of the therapist's interpretations. The study concluded: "A statistically significant and moderately strong relation was found between accuracy of interpretations … and treatment outcome" (Crits-Christoph et al. 1988, p. 493).

However, two questions arise. *First*, does psychoanalysis, in being centrally concerned with the unconscious and the historical determinants of experience and behaviour, have a diminished interest in, and understanding of, the phenomenon of self-insight as a human experience? It appears to be primarily interested in this phenomenon as it pertains to its central theory and practice. *Second*, is there an element of circularity in this particular process of insight? It appears that insight is required for diagnostic formulation and that the validity of insightful interpretations are judged by their faithfulness to this diagnosis. The argument is *not* that this circularity invalidates the research, since the diagnostic formulation is done by independent trained judges, but the question arises, whether in normal psychoanalytic practice without independent judges, this rather technical and circumscribed role for insight may lead to a limited understanding, and diminished expectations of the relational experience of insight in the therapeutic relationship?

So, for a balanced clinical approach, *both* learning the logic of psychoanalytic theory *and* the ability to intuit psychic reality is crucial. In Rea's vivid image, instead of standing in a balanced way on both feet, there is a danger of "standing on one's own foot. Our meticulous logic certainly asserts its value convincingly, but it has done so by stepping on the very element with which it was meant to work in tandem" (Rea 2001, p. 105).

2.10.3.3 Therapist Characteristics and Techniques

A comprehensive and frequently quoted review of therapists' personal characteristics and in session activities and techniques that negatively and positively impact the therapeutic alliance, has been undertaken by Ackerman and Hilsenroth (2001,2003). It is noteworthy that the number of studies evaluated is considerable, the range of research participants and therapists involved is impressive, the variety of treatments considerable and the instruments and raters employed in assessing the results the best available. However, as Roth and Fonagy (2006, p. 464) point out in their critical review of psychotherapy research *What Works for Whom?*, disentangling process factors is very difficult "simply because these measures are not independent of one another". The table summarising the results of Ackerman and Hilsenroth's (2003, p. 28) research on the next page reflects their correlation of personal attributes and therapeutic techniques, that were reported

to be important in the development and maintenance of a strong therapeutic alliance. However, references of sources has been added from the text of their research.

This evidence "supports the belief that the alliance is a pan-theoretical construct, impacting psychotherapy process on multiple levels" (Ackerman & Hilsenroth 2003, p. 28).

Table 3. Summary of Therapist's Attributes and Techniques

PERSONAL ATTRIBUTES	THERAPIST'S TECHNIQUES	REFERENCES OF SOURCES
Flexible	Exploration	Allen et al. (1996), Bachelor (1991), Gaston & Ring (1992), Joyce & Piper (1998), Kivlingham et al. (1993), Mohl et al. (1991)
Experiences	Depth	Hersaug et al. (2001), Mallinckordt & Nelson (1991)
Honest	Reflection	Ackerman et al. (2000), Hembre & Kvarme (1996*)* Svenson & Hansson (1999)
Respectful	Supportive	Sexton, Hembre & Kvarme (1996)
Trustworthy	Notes past success	Horvath & Greenberg (1989)
Confident	Accurate interpretation	Allen *et.al.* (1996), Crits-Christoph et al. (1993), Ogrodniczuk & Piper (1999), Saunders (1999)
Interested	Facilitates affect	Saunders (1999)
Alert	Active	Dolinsky et al. (1998), Luborsky et al. (1983), Mohl et al. (1991)
Friendly	Affirming	Bachelor (1991, 1995), Crits-Christoph et al. (1998), Diamond et al. (1999), Price & Jones (1998), Saunders et al. (1989)
Warm	Understanding	Crits-Christoph et al. (1998), Mohl et al. (1991), Saunders et al. (1989)
Open	Attends to experience	Crits-Christoph et al. (1998), Horvath & Greenberg (1989), Hersoug et al. (2001), Joyce & Piper (1998), Price & Jones (1998)

The strength of this research lies in the comprehensiveness of the review of both therapist's personal attributes, and techniques. The weakness in this research appears to be the lack of correlation between therapist's attributes, and techniques, which is not so securely found in the literature, but is displayed in the summary Table **3** above, as if they were clearly correlated.

So, in terms of whether it is possible to draw significant deductions from this research for the understanding of insight as far as this research is concerned, the crucial questions are:
(1) Is it possible to correlate personal attributes and therapeutic techniques as clearly and distinctly as this research suggests?
(2) Is the technique of "accurate interpretation" by the therapist an adequate description of the experience of insight in the therapeutic relationship?
(3) Does the personal attribute of "confident" on the therapist's part necessarily lead to "accurate interpretation", let alone facilitative and empowering insights?

Clearly, it is not possible to give an unambiguous affirmative answer to any of these questions, so despite the potential value and the comprehensive scope of this research, its contribution to this study of insight is limited, for four main reasons:
(1) Personal attributes and therapeutic techniques are not necessarily related as closely and distinctly as this research suggests. Therapists with similar personal attributes and characteristics may be trained in, and embrace, a variety of techniques.
(2) The use of the term "insight" has changed over time, because the basic premises of the psychoanalytic frame have moved from a more intrapsychic model to the relational model which incorporates object relations thinking (Atwood & Stolorow 1984, Stolorow, Atwood & Brandchaft 1999). The present study provides a different lens on the discussion and makes a distinction between insight in terms of intuitive thinking and awareness (the art of psychotherapy, e.g. Rea 2001) as opposed to insight as interpreting and applying psychoanalytic theory (the science of psychotherapy, e.g. Malan 1979).
(3) Free association forms a central part of the process of psychoanalytic technique and this is not clearly evident in Ackerman and Hilsenroth's (2003) personal attribute of "flexible". Yet free association is a certain way of relating to the client's world that allows for the development of 'clues' or 'links' and possible insight.

(4) The personal attribute of "confident" on the part of the therapist is surely no guarantee of "accurate interpretation" in the therapist's technique. In fact accurate insight underlying interpretation is often most accurate, facilitative and empowering when humbly held in mind by the therapist until it emerges in the relational field that patient and therapist share – the transference-counter-transference relationship .

2.10.4 Insight of the Client

Both quantitative research and qualitative research of client self-insight will be examined in a way that reveals the strength of both approaches.

2.10.4.1 Self-Insight in Quantitative Research

In research focussing on client insight, by Kivlighan, Multon and Patton (2000), insight was rated from the Important Events Questionnaire (Cummings, Martin, Hallberg & Slemon 1992) about the counselling session just completed. Trained judges evaluated the *insightfulness* of these clients' responses using Morgan, Luborsky, Crits-Christoph, Curtis & Solomon's (1982) Insight Rating Scale. They also used the target complaint scale (Battle, Imber, Hoehn-Saric, Stone, Nash & Frank 1967) in which clients identified three problem areas that they wanted to address in counselling. The most important finding in the study of Kivlighan, Multon and Patton was the confirmation of the psychoanalytic assertions about client insight and symptom formation and reduction:

> Sessions where clients were judged to have more insight were immediately followed by a week when the client had less target complaint distress. Conversely when clients were judged to have less insight in a session, they had more target complaint distress the following week. (2000, p. 56)

This is a very clear indication of the significance and therapeutic power of insight in psychotherapy. This finding replicates and extends the work of Grenyer and Luborsky (1996) who had shown that insight ratings were significantly higher at the end of treatment when compared to the beginning of treatment. Kivlighan, Multon and Patton (2000, p. 56) also found it "very encouraging that the different methods of operationalising insight seemed to converge on a common underlying construct". They refer particularly to the pan-theoretical measure of Hill, Corbett, Kanitz, Rios, Lightsey and Gomez (1992), as well as to Gelso, Kivlighan,Wine, Jones

and Friedman's (1997) method of measuring client insight at multiple time periods during treatment instead of just at the end of the treatment. However they do recognise the importance of further psychometric studies of insight ratings.

In considering self-insight, it is particularly important to be aware of the danger for the client of defining him/herself, or worse still of being implicitly defined by the therapist, in reductionistic, compartmentalised and utilitarian ways which obscure the essence of the uniquely human dimensions of human identity. Living in a world of proliferating technology (Heidegger 1977, Roszak 1992) there is a risk of unconsciously colluding with a cultural trend to view humans as 'objects' in order to fit 'normatively' into the emerging world of specialised and efficient systems.

2.10.4.2 Self-Insight in Qualitative Research

So, in existential-phenomenological research focussing on the self-insight of the client that carries a greater sense of freedom, Todres (1990,2002) emphasises the fact that human living is an unfolding narrative in which meaning rather than measurement is the appropriate currency of understanding. He therefore expresses the results of his study in a way that reveals possibilities with actual variations rather than conclusions which are deterministic in nature, and are thematic rather than final. So "[t]he aim is not a conclusion, not to close the subject, but to open it further" (Sardello 1975, in Todres 1990, p. 49).

Thus Todres' (1990, pp. 140-141) findings of the kind of therapeutic self-insight that carries with it a greater sense of freedom is constituted by its ability to:
(1) descriptively thematise the quality of a problematic and significant self-other relationship that was previously embedded in an unclarified emotional existence
(2) progressively articulate the quality of a related central theme which links and makes sense of all kinds of previously unrelated interactions in the person's life
(3) validate the credibility of the emerging theme by realising its power to organise further dreams, memories and behaviour
(4) understand the restrictive quality of being bound to the profiles of the theme
(5) thematise a level of personal agency and responsibility in perpetuating the restrictive qualities of the theme-bound existence

(6) recognise and then question the inevitability of one's self-image and self-project
(7) articulate and actualise a more complex self-image/project in which the freedom of greater ambiguity is experienced
(8) achieve a sense of self-acceptance, understanding of and continuity with one's previous restrictive mode of being, by finding a positive value in its motives and desires
(9) actively support freer engagement with the world, so the future as 'potential' becomes empowered.

In reflecting on this research, Todres (2002) identifies five points about this self-insight, which may be briefly summarised thus:
(1) particular self-insights were important, but their credibility, meaningfulness and freeing power lay in the personal narrative that had been forged as their context
(2) self-insight implies the work of linking parts into wholes and recognising patterns that have proceeded it, and the potential directions that can come after it
(3) the insightful quality of this pattern of discovery/creation is in its 'sense-making' which is emotionally healing because of the inner need for (a) personal truth when words fit experiences, (b) self-acceptance/forgiveness/care, and (c) hope for personal agency in which there is a transcendental quality beyond a self that is reduced to the sum total of its past experiences
(4) therapeutic self-insight is "not the fundamental point of psychotherapy: it is more a means to an end, and points to an experience…'of being more than' or of 'being as possibility' that is the essential power of psychotherapy" (Todres 2002, p. 10, see also Todres 1993,2000a)
(5) the relationship with the therapist provides an important lived context for the validation and support of the emerging themes. Two images are used to describe this therapeutic relationship; it is an 'anchor' that also gives a 'foothold' to a new possibility (Todres 1990, p. 141)..

2.10.5 The Evolving Insight in the Inter-Subjective Psychotherapeutic Relationship

Three aspects of insight in the inter-subjective psychotherapeutic relationship will be examined, with the explicit purpose of illustrating the richness and variety, the speed, sublety and transliminal nature of the way insight occurs in this relationship. First, the unique interpretation of interpretations in insight. Second, the role of implicit knowledge and intuitive thought in

insight and third, associations as representatives of the "unthought known" (Bollas 1987) in insight.

2.10.5.1 The Unique Interpretation of Interpretations in Insight

In speaking to a client, a psychotherapist may have a clear idea in her mind exactly what she wishes to say, and it may make perfect analytical sense,but as Bollas puts it:

> we know only too well that the analysand will be affected by virtually every interpretation in quite unique ways (and how could it be otherwise?). Each interpretation evokes associations, categories of thinking, and self-states just as it promotes a subjective movement in the analysand that will ultimately deliver more of the analysand's idiom of thinking than the analyst's originating contribution. (1992, p. 44)

So it is important to be aware of the way two subjects evoke one another in unique ways, inaugurating a reciprocal engagement in simple and complex self-experiencing, in which both participants engage in moments of deep experiencing and episodes of reflective objectification. This is what Bollas (1992, p. 46) terms: "*play work* to honour the two-and-fro of work and play, of reflecting and experiencing, that takes place between the two participants in psychoanalysis".

2.10.5.2 The Role of Implicit Knowledge and Intuitive Thought in Insight

A crucial question is whether there is an openness in the inter-subjective relationship to the rich variety of forms of intuition and insight. It might come as a flash of understanding, an imaginative or creative impulse, or a choice which suddenly emerges. It could emerge through an evocative suggestion, a prediction, a nudge or an hunch; or even as an empathic sense of knowing, a clarity of 'seeing' a previously overlooked issue, a transcendent experience. Yet it need not be dramatic, or may not even be noticed initially, for as Lewicki, Hill and Czyzewska express it:

> our nonconscious information-processing system appears to be incomparably more able to process formally complex knowledge structures, faster, and 'smarter' overall than our ability to think and identify meanings of stimuli in a consciously controlled manner. (1992, p. 799)

In similar vein, Reber (1989) deduced that knowledge acquired and held implicitly is always richer and more complex than can be explicated. Yet, it appears human beings are capable of using that tacit knowledge to inform action, preferences, judgements and learning, very frequently without knowing that they have done so. Is this not what is frequently experienced as intuition: the *sense* we have of where to look, what to look at, and how to look at it? Intuition is derived from the Latin *intueri* 'to look upon' as in the definitions of insight (**2.2**), "the ability to see clearly and intuitively into the nature of a complex person, situation or subject" (Guralnik 1984).

2.10.5.3 Associations as Representatives of the Unthought Known in Insight

Bollas (1987, p. 4) explored the "reliving through language of that which is known but not yet thought", which he terms "the unthought known". It is often argued that insights are known at some unconscious level before becoming conscious, for example Siegler and Stern (1998), who set young school age children problems of the form A+B–B. The results were striking. Almost 90% of the children discovered the unconscious version of the shortcut/insight/intuition before using the conscious version. There may be a certain scientific elegance and simplicity in this, yet unfortunately it is true that what is of least significance in human terms is often what is most easily measured and quantified. A person's experience involves meanings that may be far greater than he or she knows. Perhaps reflecting on the more complex intersubjective approach of psycholoanalysis provides a more significant, profound and true to life experience even if less precise, of the 'unthought known' in the experience of insight.

It is evident that in the inter-subjective relationship there are binary pairs that structure the dialectic between the client and psychotherapist. There are transferences and counter-transferences, the client's narratives and the therapist's associations, the client's revelations and the therapist's questions, to mention just a few. If these can be viewed as the work of two separate yet deeply involved unconscious subjectivities, then Bollas concludes:

> much of the work of psychoanalysis is a kind of dream work. Mutually agreed upon core interpretations are, then, the dreams of psychoanalysis, constructed more through the

> interlocking logics of an unconscious dialectic than from the secondary-process delivery of a white-clothed surgical intervention. (1992, p. 99)

In this situation the psychotherapist may share a spontaneous thought or memory that he is having, which is not a question, clarification or interpretation, but is more of a free association in response to such "dream work". Such an association may provide the client with a pre-conscious link to unconscious latent thoughts; such an association may be a representative of the "unthought known" (Bollas 1987,1992) and trigger insight. The irony is that the therapist's misunderstanding of his client, as well as the client's distortion of the therapist's meanings, may be as essential to the "dream work" of psychotherapy as part of the process of coming to a fuller and more true understanding.

It is sobering to recognize that most of our life is lived unconsciously, in dialogue with other people's unconscious, yet in the therapeutic relationship it is only too easy for the psychotherapist to be unduly afraid of his/her internal life, so that the very natural associations and other material from the non-conscious information processing system which might trigger insight are excluded. Bollas concludes: (1992, p. 116) "Is this 'mental apartheid' not conveyed to our patients, whom, after all, we otherwise credit with sensing even the slightest details of our life? Do we not convey a fear of subjectivity itself?"

Before concluding this inter-subjective approach of psychotherapy to insight with an evaluation, it may be appropriate to explore the nature and relationship of insight as interpreting psychoanalytic theory and insight as analytic intuition. This will be reflected upon, initially in a slightly whimsical fashion, evoked by poetic imagery in the film version of Ondaartje's *The English Patient*.

2.10.6 A Reflection on the Difference between Insight as Interpreting Psychoanalytic Theory and Insight as Analytic Intuition

Hana, who has been tenderly nursing the English patient, steps out into the night. To her surprise she finds a candle, then another at some distance, and another - following them in rising expectation, she comes to where Kip, the Sikh sapper, awaits. Then she rides pillion on his motorbike to the church, where in the dark shadows of the cavernous space he hoists her on a

sling attached to a rope coming from the high dark ceiling. As she is swung from wall to wall, torch in hand, the torchlight illuminates details of fascinating medieval murals. Both scenes are hauntingly beautiful in the way they are choreographed and lit.

Perhaps in these two scenes there are illuminating, and complementary, images of insight as interpreting psychoanalytic theory and insight as analytic intuition. In the first, Hana walks, following the candles with increasing excitement in her step; in the second, she swings wildly on the end of the rope. The candles lit by another guide her; the torch is held in her own hand. The fixed points of light are at intervals on a path; the swaying beams of torchlight move from wall to wall, mural to mural. The candles are an invitation to explore; the sling in which she sits at the end of the rope reveals a commitment already made. The candlelit path has been trodden by others; swinging on the end of the rope is a unique personal experience. There is a sense of order about following the candles; a sense of poetry in motion as she swings from wall to wall. Both have dark spaces and shadows, but the lights are regular on the path; the torchlight is kaleidoscopic as she swings. Such is the difference between insight as interpreting psychoanalytic theory and insight as analytic intuition.

In a therapeutic relationship, both forms of insight are very valuable, both are complementary and both are an invitation to intercourse. Such intercourse is a constant ‘back and forth’ in the reciprocity of giver and receiver. There is a freedom of coming together and moving apart. Now from reflection to evaluation.

2.10.7 An Evaluation of the Contribution of the Inter-Subjective Approach of Psychotherapy

As in previous evaluations, the particular strengths and weaknesses of this approach will be enumerated.

The Strengths

In order to do justice to this approach it is necessary to include *firstly,* the insight of the therapist, *secondly,* the self-insight of the client and *thirdly,* the evolving inter-subjective insight.

Firstly, the insight of the therapist.

(1) Insight as applying and interpreting highly developed psychoanalytic theory, which is increasingly supported by recent findings of neurological science (e.g. Damasio 2000,2006, Kaplan-Solms & Solms 2002, Solms & Turnbull 2002), leads Christoph et al. (1988, p. 493) to conclude that "[a] statistically significant and moderately strong relation was found between accuracy of interpretations and treatment outcome".

(2) The insightfulness of analytic intuition is reflected upon profoundly in the literature (e.g. Bollas 1987,1992), not only its nature and its relation to conscious and unconscious processes, but its development in the psychotherapist and its use in the psychotherapeutic relationship.

Secondly, the self-insight of the client.

(1) This self-insight is related to finding meaning and making sense of, as well as understanding, a person's own life. This usually involves an increased awareness of wishes, defences, compromises, developments and conflict. The non-judgmental nature of such insight is important.

(2) Not only is a *client* more than a symptom constellation, a *therapist* more than a technician, and *therapy* more than a treatment, as Rea (2001) reminds us, but *self-insight* is more than an end of psychotherapy; it is a means to an end which points to an experience of being 'more than', or of 'being as possibility' as Todres (2002, pp. 8-9) expresses it.

(3) An important finding and clear indication of the significance and therapeutic power of self-insight in psychotherapy is that of Kivlighan et al. (2000, p. 56): "Sessions where clients were judged to have more insight were immediately followed by a week when a client had less target complaint distress".

(4) The qualitative approach of Todres' (1990) emphasis on human living as an unfolding narrative, in which meaning rather than measurement is the appropriate currency of understanding, values not just individual and particular self-insights but the way self-insight implies the work of linking parts into wholes and recognising patterns that have preceded it as well as potential directions that come after it.

Thirdly, insight in the inter-subjective relationship.

(1) It is important and sobering to recognise that much of life is lived unconsciously in dialogue with other people's unconscious. So despite the unpredictability and unique complexity of the

way in which two subjects evoke one another, and the problems that this raises for research, it is important in the therapeutic relationship to trust intuitive insight – the non-conscious information processing system and implicitly acquired knowledge – rather than just the ability to think in a consciously controlled manner (e.g. Rea 2001).

(2) It is part of the special nature of the therapeutic alliance and of inter-subjective insight, that it can facilitate the repair and understanding of the client's relationships (e.g. Roth & Fonagy 2005). A particularly valuable therapeutic feature of such evolving insight is frequently its non-judgmental nature.

The Weaknesses

Firstly, insight of the therapist.

(1) Rea (2001, p. 98) reminds us:

> As clinical psychology closes in on its near-perfect emulation of the "medical model", it would seem we have swallowed both bait and hook (Albee 2000); that is, although we have gained the empirical (and professional) validation afforded a hard science, we have also limited our understanding of people to what can be readily quantified, and narrowed our concept of intervention to what we can operationalize (Goldfried & Wolfe 1998).

In this situation, it is not surprising that the subject of intuitive insight has been regarded with suspicion and often relegated to a "fringe curiosity, to be used often but discussed very little" (Rea 2001, p. 98).

(2) Psychoanalysis does appear to be primarily interested in the phenomenon of insight as it pertains to its central theory, diagnostic practice and method of interpretations (e.g. Roth & Fonegy 2005), which is a rather limited view of a much broader human experience which frequently occurs outside of the therapeutic setting.

(3) One of the consequences of limiting the therapeutic use of insight almost entirely to interpretations is that it implies there is virtually no place for insight with clients who have a low quality of object relations, (but are not necessarily "borderline") since Connolly, Crits-Christoph, Shappell, Barber, Luborsky and Shaffer (1999) suggest that interpretations are toxic to such clients. That interpretations may be toxic to some clients is not disputed; that intuitive insight expressed in supportive and empathic terms in therapy with such clients can be very valuable, reveals that such insight needs to be distinguished from interpretation of psychoanalytic theory.

(4) The attempt to link the personal attributes of therapists with particular therapeutic techniques impacting the therapeutic alliance must be acknowledged as having largely failed, at least as far as insight is concerned (e.g. Ackerman & Hilsenroth 2003). The phenomenon of insight is far too rich and varied, as well as depending on a number of personal attributes and skills of therapists, to be convincingly portrayed in this way.

Secondly, self-insight of the client.

(1) Clients frequently desire a diagnostic label as a way of being understood and 'normalising' their problems, instead of the much harder work of gaining self-insight. Nevertheless it is of vital importance that 'patients' are not subtly defined in reductionistic terms which may give a false sense of being understood, and may diminish a sense of personal agency as well as obscure the essence of the uniquely human dimensions of identity.

(2) A significant limitation of the study by Kivlighan et al. (2000), acknowledged by the authors, is that insight is measured at a general, abstract level, and the three specific client target complaints were combined into a composite score; yet, psychoanalytic theory suggests that there is a specific relationship between a particular unconscious conflict and the resulting expression of a particular symptom. It is only realistic to recognise that these measurements, particularly where a client's problem is multi-determined, are problematic. Unfortunately it is generally true that the accuracy of the measurement is directly proportional to the triviality of the variable.

Thirdly, insight in the inter-subjective relationship.

(1) While it is true that "insight has been perceived as the cornerstone of the psychoanalytic theory of structural change" (Crits-Christoph et al. 1993, p. 408), it is revealing that none of the recent major reviews of psychotherapy research list "insight" as an entry in their subject index; it is only treated as a minor part of the therapeutic alliance (e.g. Ackerman & Hilsenroth 2001, 2003, Norcross 2002, Roth & Fonegy 2005). This is probably largely due to the complexity of two separate, yet deeply involved, unconscious subjectivities in which the processes are difficult to identify and almost impossible to research in a quantitative way. Further qualitative research is needed "not to close the subject, but to open it further" (Sardello 1975).

2.11 The Body-Mind-Spirit Continuum Approach of Spirituality to Insight

In order to explore the body-mind-spirit continuum approach of spirituality to insight, it will be necessary to first sketch the origins and consummation of spirituality, then trace the origins of spirituality in Africa and then draw a distinction between spirituality and religion, before clarifying what is meant by the body-mind-spirit continuum. It will then be possible, in the main body of this approach, to define trans-cultural and ecumenical spirituality, before exploring and reflecting on four specific, but very different, experiences of insight. Finally an evaluation will be undertaken of the contribution of the approach of spirituality to the understanding of insight.

2.11.1 The Phenomenon of Man: The Origins and Consummation of Spirituality

"*To see or to perish* is the very condition laid upon everything that makes up the universe, by reason of the mysterious gift of existence. And this, in superior measure, is man's condition". So writes de Chardin in his foreword to *The Phenomenon of Man* (1959, p. 31). This *seeing* in human beings is quite specifically the ability for awareness, self-reflection and conscious insight.

De Chardin conceives of evolution, not simply as a crude or brute force of survival of the fittest, not as chaotic or random, but as an evolving ascent towards consciousness – drawn and directed by spirit. He traces the progress of cosmogenesis from *geosphere* (the solid material of the earth) to *biosphere* (the whole area of the earth's surface, atmosphere and sea inhabited by living things) leading to *noosphere* (a term coined by de Chardin, denoting the sphere of mind and defined in terms of an increase in consciousness). This remarkable synthesis of the material and physical world with the world of mind and spirit acts as a transforming agency promoting what de Chardin describes as 'hominisation', or body-mind-spirit evolution, in which man discovers that he is "evolution becoming conscious of itself" in Huxley's striking expression (de Chardin 1959, p. 221).

This synthesis of the material and physical world with the world of mind and spirit is very significant in terms of understanding the origins and consummation of spirituality. Through his combination of wide scientific knowledge with deep religious feeling and a rigorous sense of values he has in the words of Huxley's preface "freed theologians to view their ideas in the new

perspective of evolution, and scientists to see the spiritual implications of their knowledge. He has both clarified and unified our vision of reality" (de Chardin 1959, p. 26).

De Chardin uses a vivid simile:

> Like the meridians as they approach the poles, science, philosophy and religion are bound to converge as they draw nearer to the whole. I say 'converge' advisedly, but without merging, and without ceasing, to the very end, to assail the real from different angles and on different planes. (1959, p. 30)

There are three inter-related themes under which de Chardin sums up his argument:

(1) A world in involution, or the cosmic law of complexity-consciousness
(2) The first appearance of man, or the individual threshold of reflection
(3) The social phenomenon or the ascent towards a collective threshold of reflection.

During evolution, awareness becomes increasingly important to organisms until in humankind it becomes the most important characteristic of life and gives humankind its dominant position. "When for the first time in a living creature, instinct perceived itself in its own mirror, the whole world took a pace forward" (de Chardin 1959, p. 181). This particular "pace forward", this self-awareness, this capacity for self-reflection, is the origin of spirituality.

So de Chardin (1959, pp. 183-184) argues that "[t]he greatest revelation open to science today is to perceive that everything precious, active and progressive originally contained in that cosmic fragment from which our world emerged is now concentrated in a 'crowning' noosphere". In the course of this argument he recognises that "[t]here is no concept more familiar to us than spiritual energy yet there is none that is more opaque scientifically" (de Chardin 1959, p. 62). He also acknowledges that we are caught up in the logic of a system where the *within* of things has just as much, or even more value, than their *without*, and illustrates his meaning in terms of "the magic of a sound which goes in our ears as a vibration and reaches our brains in the form of inspiration" (de Chardin 1959, p. 63). This understanding of the *within* and *without* is similar to the famous definition of spirituality, in a very different and political context, as an "excess of being over appearance" in the work of Lefort (2006). De Chardin assumes that "essentially, all energy is psychic in nature", but adds that:

> in each particular element this fundamental energy is divided into two distinct components: a *tangential energy* which links the element with all others of the same order…as itself in the universe; and a *radial energy* which draws it towards ever greater complexity and centricity – in other words, forwards. (1959, pp. 64-65)

In this view, *tangential energy* is understood by science and *radial energy* by self-reflection and spirituality. He sees religion and science as

> the two conjugated faces or phases of one and the same complete act of knowledge…in the conjugation of reason and mysticism the human spirit is destined, by the very nature of its development, to find the uttermost of its penetration with the maximum of its vital force. (1959, p. 285)

There are three striking points of originality in de Chardin's argument as far as the origins and consummation of spirituality is concerned:

(1) He sees the universe not only in a process of *spatial expansion* (from the infinitesimal to the immense) and in a process of *organic involution* upon itself (from the extremely simple to the extremely complex), but he also sees this involution of complexity as experientially bound up with the psyche or consciousness.

(2) He sees the power of reflection in human beings in terms of "the value of a 'threshold' or a change of state … nothing less than a new form of biological existence" (1959, p. 303) which is characterised by such things as emerging from instinct into thought, invention, sympathy as well as antipathy, and consciousness of the future.

(3) He sees the human group as turning towards a "second critical pole of reflection of a collective and higher order…that transcendent focus we call Omega, the principle which at one and same time makes this involution irreversible and moves and gathers it in" (1959, p. 303).

These are three remarkable insights.

De Chardin's vision is that the phenomenon of man should culminate forwards in some sort of "supreme consciousness" (de Chardin 1959, p. 258). He argues that "in every organised whole, the parts perfect themselves and fulfil themselves" (de Chardin 1959, p. 262), and that there is a "Resonance to the All" (de Chardin 1959, p. 266) which he denotes as "Omega".

In this way he comes to a striking conclusion that "the only universe capable of containing the human person is an irreversibly 'personalising' universe" (1959, p. 290). He clarifies 'personalising' as "the palpable influence on our world of *an other* and supreme Someone" (1959, p. 298). This reaches the climax in which a person is able to say "literally to God that one loves him, not only with all one's body, all one's heart and all one's soul, but with every fibre of the unifying universe" (1959, p. 297).

This climax is not just a breathtaking description of spirituality. The whole process is dependent upon insight. De Chardin argues that insight is increasing and irreversible because "internal vision is essentially the germ of a further vision which includes all the others and carries still farther on" (de Chardin 1959, p. 231). This is the crux of the dynamic relationship between insight, spirituality and love.

2.11.2 The Origins of Spirituality in Africa

Spirituality emerged as human beings began to be self-reflectively conscious and ask questions about the meaning and purpose of life and 'what will become of me after I am dead?' Evidence from Upper Paleolithic rock paintings in South Africa and Botswana examined by Clottes and Lewis-Williams (1998) and by Lewis-Williams (1986) reveals this self-reflective consciousness ... These rituals and symbolic images seen in altered states of consciousness are best interpreted from the perspective of San spirituality as Lewis-Williams (2002, pp. 121-130) argues. The notion of powerful natural animal and human/animal spirits is nearly universal in traditional shamanistic religions (Hayden 2003, pp. 57-60). In examining the evolution of religion, Rossano (2006, p. 359) concludes: "ecstatic states and social emotions … are hypothesized to form the foundational basis for the emergence of religion". Spirituality is central to all philosophical-religious traditions that have informed conceptions of the good life since ancient times in the East and West (Ng, Ho, Wong & Smith 2003).

2.11.3 A Distinction between Spirituality and Religion

Spirituality is derived from the Latin word *spiritus* which refers to a non-material vital life force within the person. Spirituality typically encompasses the search for existential meaning, whether or not in the context of a particular religious tradition. This search may, or may not, implicate a

supernatural or sacred component. So spirituality has been defined as the different ways in which people understand and seek transcendent or existential meaning and value (Sulmasy 2002). The personal element is emphasised by Hill, Pargament, Hood, McCullough, Swyers and Larson et al. (2000), and relatedness by Zimmbauer, Pargament and Scott (1999).

Religion, on the other hand, is derived from the Latin word *religare* which means to bind together, and so tends to be associated with rigid social structures and institutions (Pargament 1997). This viewpoint emphasises dogma, doctrine, tradition and organisation (Zimmbauer et al. 1999) rather than the development of human potential. So it is sometimes said, tongue in cheek, that religion is for those who fear going to hell, whereas spirituality is for those who have been through hell and want to live more fully. However, to be fair, according to most definitions, orthodox religion refers to both the public practices, rituals and observances, as well as the inward attitudes, values and disciplines specific to that particular expression of faith.

Sulmasy (2002) has pointed out that although not everyone has a religion, anyone who is seeking for ultimate or existential meaning has a spirituality. Ho and Ho (2007) view religiosity and spirituality as two overlapping constructs; neither is necessary or sufficient for the other, so it is "possible to be religious without being spiritual, or spiritual without being religious, be both or be neither" (Ho & Ho 2007, p. 65). Religiosity has the potential for hypocrisy, dogmatism and even fanaticism (Stern 2004), whereas "spirituality has inherent immunity to guard itself against these perils because of it propensity towards humility, contemplativeness, and self-reflection" (Ho & Ho 2007, p. 65). It is, of course, important to acknowledge that spirituality and religion are multifaceted and multidimensional constructs (Gartner 1996). Religion "may lead to growth and transformation for some people and to distress and despair for others" (Fitchett, Murphy, Kim, Gibbons, Cameron and David 2004, p. 180). Much depends on the person's image of God (Linn, Linn & Linn 1994), the interaction of brain, body and world (Clark 1997), coping mechanisms (Pargament 1997), self-competency and whether religion is being used merely as a defence (Pargament & Park 1995), as well as whether their religious orientation is intrinsic or extrinsic (Park & Cohen 1993).

2.11.4 The Body-Mind-Spirit Continuum

The body-mind-spirit continuum of spirituality resolutely denies the dualistic model of the universe. The traditional western divisions between body *and* soul, earth *and* heaven, secular *and* sacred, human *and* divine, natural *and* supernatural, polarise the world as though they existed alongside each other in unresolved juxtaposition. "Like Descartes' principal of thought and extension, neither can be reduced to the other" (Robinson 1977, p. 139). Yet neither has the power to unify the other with itself, or to break through to a *coincidence* of opposites, to a higher all-embracing unity. As Robinson (1977, pp, 140-141) argues "God is not *one* of the poles of traditional theism, but transcends these inevitable finite distintions". The 'beyond' is to be found always and only in the 'midst' as a function and dimension of it. As Robinson (1977, p. 79) lyrically expresses it: "This is a shot-silk universe, spirit and matter, inside and outside, divine and human, shimmering like aspects of one reality which cannot be separated or divided"; or as de Chardin (1965, p. 56) more prosaically puts it: *"co-extensive with their Without, there is a Within to things"*. It is submitted that this overcomes the duality without denying the diversity. In the vivid poetic words of Gerard Manley Hopkins (Oxford Dictionary of Quotations 1999, p. 384):

> The world is charged with the grandeur of God,
> It will flame out, like shining from shook foil;
> It gathers to a greatness, like the ooze of oil
> Crushed …

This approach of spirituality reveals an intensely personalistic and relational world in which everything depnds on the response of love. It is the ability to take up *evil* into God and transform it that is the most striking, and the most shocking feature of this approach; meaning can be wrested from it even at the cost of crucifixion. But as Dag Hammarskjöld (1964, p. 65) reminds us:

> The longest journey
> Is the journey inwards.

Many psychologists operate within the 'biopsychosocial' perspective recognising that patients' problems are multifaceted and have biological, psychological and social aspects (Bakal 1999).

Williams (2006, p. 85) reminds us that Jung and Bion, amongst many others of course, "both thought of religious/mystical experiences, not just as instinctual sublimations or defences, but also as illustrating something central about the nature of psychic reality". Such psychic reality includes the spiritual and the numinous (see Casement & Tacy 2006). So Sulmasy (2002) has expanded the perspective into the 'biopsychosocial-spiritual', which, according to Moss and Dobson (2006, p. 285), "does not take a dualistic approach to mind and body, but proposes that the biological, the psychological, the social and spiritual cannot be disaggregated from the whole. Each factor interacts and affects other aspects of the person".

So, in this perspective, spirituality has been construed as a person's sense of meaning, values and life purpose (Daaleman & VandeCreek 2000). Frankl's experience in the Nazi concentration camps at Auschwitz and Dachau convinced him of the crucial importance of an existential sense of meaning in life, for survival. In 1946 he wrote that "a psychotherapy which not only recognises man's spirit, but actually starts from it, may be termed *logotherapy*. In this connection *logos* is intended to signify 'the spiritual' and, beyond that, 'the meaning'" (Frankl 1946,1973, p. xi). In a footnote at this point he makes it clear that 'spiritual' does not have a religious connotation but refers to the specifically human dimension.

Brady, Peterman, Fitchett, Mo and Cello (1999) investigated the quality of life of people with a life-threatening diagnosis of HIV or cancer, and found that people with higher levels of spirituality were better able to tolerate increased pain and fatigue. A particularly important finding was that spiritual well-being continued to be a significant predictor of overall quality of life, even when other domains of physical, emotional, social and family well-being were controlled. Another study by Yates, Chalmer, St James, Follansbee and McKegney (1981) with terminally ill cancer patients, also led to the conclusion that individuals who reported belief in a higher power, an afterlife and the value of prayer, indicated lower pain intensity than those who did not hold these spiritual beliefs. The difference occurred despite the fact that both groups were experiencing similar levels of pain, assessed as objectively as possible. So it is reasonable to argue *both* the significance of the body, mind, spirit continuum, *and* that spirituality may give meaning and help to support a person's sense of self, in such a way that "symptom distress and pain are not the defining features of a person's overall sense of well-being" (Moss & Dobson 2006, p. 287).

2.11.5 Trans-cultural and Ecumenical Spirituality

Ho and Ho (2007) identified two major traditions of spirituality in the west. One is essentially hedonistic, in which the key construct is *well-being*, defined in terms of pleasant emotions and high life satisfaction (Diener, Lucas & Oishi 2002, Kahneman, Diener & Schwartz 1999). The other is essentially a call for living in accordance with one's *true self* or *spirit*, as when actions are congruent with deeply held values, with the resulting experience of being intensely alive and authentic (Ryff & Keyes 1995). This involves valuing suffering, prayer or meditation, altruism and the importance of transformation. It is at this point that correspondences arise with spirituality in the East in terms of freedom from attachment, mindfulness, living in the present moment and enlightenment.

Defining spirituality in terms of ecumenicity and trans-cultural applicability is the main theme of Ho and Ho's article:

> By ecumenicity, we mean universality, more than merely transcending denominational or religious boundaries. We mean to identify core values and beliefs common to the world's main philosophical-religious traditions that promise to inform research on spirituality. These values and beliefs include the capacity to forbear, even accept, suffering or misfortune; to forgive; to construct and reconstruct meaning; to maintain peace of mind, spirit and sense of direction, even in the face of misfortune or harsh external circumstances; love of humanity; and so forth. (2007, p. 65)

This is a much broader definition of ecumenical than Richards and Bergin (1997) whose conception of ecumenicity essentially embraces a theistic or even a monotheistic world view as in Islam, Judaism and Christianity. Van Ness (1996) argues the case for including secular spirituality, without which any claim to universality would be incomplete. Kier and Davenport (2004) deplore the lack of understanding research of atheists and agnostics. Professed atheists such as Marx do not reject humanistic, action-orientated spirituality. Are there not many accounts of people of *all* persuasions having spiritual experiences as well as conversions?

In their quest to "measure" spirituality having trans-cultural applicability, Ho and Ho (2007) develop six main strategies:

(1) They include the concept of spiritual emptiness. So, for example, Marx's (1932/1964) classic statement of alienation is a diagnosis of spiritual emptiness and highlights the universal ideal of justice for all as inseparable from the individual's quest for meaning. Unfortunately Ho and Ho (2007) do not clearly distinguish this concept of spiritual emptiness from the spiritual virtue of emptiness, defined in Buddhist tradition as *sunyata* denoting a divine stillness, and in the Christian tradition in terms of *kenosis*, as when Christ emptied himself (Philippians 2:5-8).

(2) They extract commonalities of core values and precepts at a high level of abstraction across philosophical/religious traditions. The problem is that with the differences between the Buddhist belief that suffering ceases through selflessness, and the Christian understanding of the reality and redemptive power of the suffering of Christ on the cross, it is only possible to affirm the spiritual value of suffering in both traditions at such a high level of abstraction that it is hardly functional or meaningful in the lives of ordinary people.

(3) They maximise inclusiveness of core values or beliefs from one of the world's main philosophical-religious traditions provided it is not negated or denied in any other. So, for example, they affirm the important insight that "[u]niversal love is the lodestone of ecumenicity" (Ho & Ho 2007, p. 67). Unfortunately it is very difficult to apply love as the lodestone to Islam, for in the Qur'ân love is described by *mowadda* or *mahabba* and their derivatives. It is used in about 42 instances of God's love for human beings. But in "about 22 instances, it is used to describe those whom God <u>does not</u> love (transgressors, impious, guilty, disbelievers … etc.). Quite clearly the text aims at <u>the sinner</u>, and not merely <u>the sin</u>. God's lack of love is directed at people, and not just what they do" (Clohessy 2008, p. 3).

(4) They clarify constructs and formulate metatheoretical propositions. They enumerate three: (a) Spirituality addresses existential or transcendent questions, such as those concerning the meaning and purpose of life, so may be characterised by doubt and struggle. Transcendence defines one's relationships and means understanding oneself in a larger context (Ho, Peng, Lai & Chan 2001). (b) Spirituality belongs to the domain of cardinal values underlying all aspects of life, so is the wellspring from which selfhood and identity grow into maturity. (c) Spirituality is self-reflective, and hence metacognitive, in nature. A self so empowered is what Ho, Chang, Peng and Ng

(2001) term a dialogical self, enabling the spiritual self to be engaged in internal dialogue and thus to participate in its own re-creation.

(5) They recognise transcendent consciousness, achieved through negating the dichotomy between self-as-subject and self-as-object in different ways (Ho 1995, Ho et al. 2001, Paranjpe 1988). Something of this is illustrated in Merton's experience. "In the depths of contemplative prayer there seems to be no division between subject and object and there is no reason to make any statement about God or about oneself. He IS and this reality absorbs everything else" (Merton 1962, p. 266). So Ho and Ho (2007) differentiate levels of transcendent consciousness and their correlates, physiological, psychological and behavioural, which are to some extent measureable.

(6) They acknowledge the significance in spiritual experience of heightened aesthetic sensibilities that are deeply felt but defy verbal description - especially if they are experienced in non-linguistic modalities, visual, kinaesthetic or musical (Begbie 2000 a & b, Lewis 2002, Lipe 2002).

While recognising the value of these strategies for emphasising the importance of spirituality, and by implication the crucial factor of insight in spirituality, it is obvious that there are formidable challenges that they present to "measurement". So Ho and Ho conclude:

> We argue for relying more on (a) qualitative, open-ended, experience-near techniques … personal diaries, phenomenological accounts; (b) nonverbal, expressive measures (e.g. music appreciation, drawings, movement analysis); (c) life histories, clinical or observational data, peer reports by significant others; and (d) videotaped information, narrative analysis, thematic characterisation and coding for content analysis. (2007, pp. 71-72)

In the light of this call for "qualitative, open-ended, experience-near" material, it is important and appropriate to move to the next section, and proceed from meta-theoretical considerations to actual experiences of insight in spirituality.

2.11.6 Four Different Experiences of Insight in Spirituality

There are a number of problems and inadequacies that have been identified in Ho and Ho's (2007) theoretical approach above, so rather than pursuing that approach to insight in spirituality, it is appropriate to examine four very different but profound experiences of insight in spirituality.

2.11.6.1 An Individual's Experience

The *first* example is Andrei's experience. His family fled Russia, leaving behind all their possessions, during the Revolution. His father had been part of the Russian Imperial Diplomatic Mission. They were constantly on the move and experienced severe poverty, eventually settling in France. Andrei recollects:

> I had no contact with the Church or with the Gospels til I was fifteen years old … nothing drew me to God. I discovered a wonderful method to prevent myself ever being in Church. I was taken there once a year, on Good Friday, and I discovered at once that if I inhaled the incense and then held my breath, I fainted, and was immediately taken outside. I used this method for several years, and then they got tired of taking me … There was a time when émigré children were offered places in Catholic schools on condition that they became Catholic, and this put me off not only from Catholicism but from God Himself. (Bloom 2005, p. 115)

Andrei became a member of a Russian national youth organisation, which was on one occasion to be addressed by a priest. Andrei tried to "get away as far as possible from the all-seeing eye" but was told that despite his hostility he had to show loyalty, rather than bring disgrace on the organisation. Privately, Andrei's teacher told him "you don't need to listen, just go in and sit down". He thought he could do that, but records:

> It was difficult not to listen because … the priest spoke too loudly, interfering with one's thoughts … what he said to us made me so deeply angry, and brought on such indignation, that when he had finished I did not even contemplate staying with my friends, and decided immediately to try and find out if Christ was indeed what he [the priest] said he was, and whether Christianity was indeed that disgusting, loathsome, horrible thing, which he had described to us. I went home with a deep feeling of hatred towards everything. At home I asked my mother whether we had a copy of the Gospels, and she gave one to me. I went to my corner and, not expecting anything good to come from the Gospels, I decided to choose the shortest – so I began to read the Gospel according to Mark. I cannot explain to you

> what happened at this point. Anyone who knows will understand, and anyone who does not know will not understand anyway. It happened that, between the first and the third chapter of the Gospel according to Mark, it became absolutely and concretely clear to me, that at the other side of the table at which I sat reading, stood the living Christ (Bloom 2005, pp. 116-117).

As he read on Andrei was distressed by the way the religious authorities plotted against Jesus and gasped at the way His own disciples betrayed and denied Him. Andrei wept as he read about Jesus being flogged and crucified, yet all the time he knew this was not the end, because although he didn't know about the *doctrine* of the resurrection, he was *experiencing* the reality of the presence of the living Christ with him in the room.

After training as a doctor at the Sorbonne, Andrei was ordained priest in 1948 and was made Archbishop and Metropolitan Anthony of Sourozh in 1962. Because he felt "it is always awkward and even absurd to talk about oneself. I never spoke of it until two years ago", that is 1964 (in Bloom 2005, pp. 114-115). "It is simply a fact of my life, and what happened then has stayed with me to this day: an absolutely clear awareness that Christ is here, more real than this platform or anything else" (Bloom 2005, p. 117).

Metropolitan Anthony became one of the most sought after spiritual guides in the Western world as well as in Russian Orthodox circles, and wrote extremely influential books on prayer (Bloom 1966, 1973). His life and inspiration to others provide strong evidence that the importance and significance of a sudden and enduring spiritual insight does not depend on the ability to *explain* it, but on its *effect.*

2.11.6.2 Dialoguing for Spiritual Insight

A *second* example is from a Buddhist-Christian dialogue on the spiritual life held in July 1996, in which one of the major themes treated was that of suffering and compassion. One of the Cistercian monks told the story of the seven Cistercian monks who had been killed, just two months before, by a militant group of Muslin fundamentalists in Algeria. The tragedy, highlighted by the media, had touched people around the world and was still very fresh in the

hearts and minds of the participants in the dialogue, but raised very different reactions among Buddhists and Christians (Pierce 2005).

A highly respected Buddhist participant said:

> When I heard about your Algerian martyrs, I had a question about certain themes in Christianity – martyrdom, sacrifice, tragedy and transformation … I can understand the personal transformation that the Algerian monks went through in deciding to stay [in Algeria, despite previous threats of death], but my question is how did their staying express compassion for the aggressors who, from a Buddhist point of view, will reap the karma for lifetimes for murdering them? I find it very disturbing and troubling from a Buddhist point of view because compassion seems to be missing. (Mitchell & Wiseman 1997, p. 231)

A journalist who was present and remembers this particular exchange caught the response: "[f]or a shocked moment the Catholics looked blankly at one another, uncertain how to address this questioning of martyrdom, the supreme Christian gesture" (Johnson 2003, p. 19). To Christian ears familiar with the words of Jesus, "Love one another as I have loved you. No one has greater love than this, to lay down one's life for one's friends" (John 15:12-13), to hear "compassion seems to be missing" sounds baffling … but almost always being baffled is a prerequisite for deeper insight.

After an agonising moment one of the Christian monks responded: "[The monks] did not desire to be killed. They desired to live and loved life", and later added "Christ saved us by His life, not by His death. But His death is part of His life" (Mitchell & Wiseman 1997, p. 232).

Christianity's emphasis on love prompted the community of monks to stay in a war torn country as a gesture of loving solidarity with all their neighbours who were suffering, rather than abandon them in their time of need. What perhaps was not a sufficient part of their discernment, was that Buddhism's emphasis on the struggle to be free from suffering implies that any action that might allow suffering to happen, as in this case of the karmic effects of a murderer's actions, will be avoided at all costs. This is not easy to understand and appreciate from a Christian perspective; it requires profoundly empathic insight. It is not a question of *judging* and labelling one "right" and the other "wrong". What is vitally important for true *insight*, "is that we listen

deeply to one another and attempt to understand one another's spiritual motivations for, and consequences of, acting in one way or the other. Growing in mutual understanding is already a step towards healing and peace for our world" (Pierce 2005, p. 139).

Both Buddhism and Christianity break through the antagonism and demonisation of the *other* that separates us from our enemies. "Love your enemies, do good to those who hate you, bless those that curse you, pray for those who abuse you" (Luke 6:27-28). It is a call to a total transformation of body-mind-spirit in terms of spiritual insight and compassion. The Dalai Lama shrewdly comments:

> We have an attitude of distance from people we consider as unfriendly or enemies and a disproportionate sense of closeness or attachment towards those whom we consider to be our friends … until we overcome these prejudices we have no possibility of generating genuine compassion. (1996, p. 67)

Eckhart, the fourteenth century mystic, echoes a similar sentiment: "You must love all equally, respect and regard them equally…in the love that one gives there is no duality" (Walshe 1979, p. 110). Nhat Hanh (1995, p. 78) shows how the practice of *mindful seeing* leads to compassion: "When you look deeply into your anger, you will see that the person you call your enemy is also suffering". There are few insights that are more important than this for the conflict and violence that grips our world and indeed this country, South Africa.

Fr. Christian, the prior of the Algerian community and one of the seven monks killed, addressed his would-be assassin with these remarkable words:

> And also you, the friend of my final moment, who would not be aware of what you are doing, yes I also say this *thank you* and this *A-Dieu* to you *in whom I see the face of God.* (Mitchell & Wiseman 1997, p. 133)

Insight never gives 20:20 vision of the total situation; humility, *mindful seeing* leading to compassion, and honest dialogue are required for inter-faith understanding, but to see the face of God in your murderer is surely a profound spiritual insight, involving body-mind-spirit.

2.11.6.3 A Theologian's Experience of Insight through Music

The *third* example is taken from the experience of an academic theologian and musician, the director of a project entitled 'Theology Through the Arts', at Cambridge University (Begbie 2000a).

One of the classic and most famous statements of the early Church came from the Council of Chalcedon (AD 451), referring to the relationship between the divine and human in Jesus Christ. The intention was to affirm that He was fully human and fully divine without either being compromised. The key phrases are "made known in two *natures* without *confusion*, without *change*, without *division*, without *separation*" (italics added). It sounds a bit like a theological teaser or riddle. Begbie (2000b, p. 140) comments that "the overall impression given is somewhat static: two 'natures' – divine and human - sitting rather uneasily alongside each other, awkwardly juxtaposed in a single individual".
It is easy to fall into a form of dualism, assuming that God and humanity are essentially incompatible with one another. On a popular and personal level it is sometimes expressed in the fear that the *more* God is active among us, the *less* room we will have to be ourselves.

As a musician Begbie has acute insight into the difference between the spatial and visual world on the one hand, and the acoustic world, revealed particularly by music, on the other:

> If I play a note on the piano – say middle C – the note fills the whole of my heard 'space'. I cannot identify some zone where the note is and somewhere it is not … if I play a second note – say, the E above middle C – along with middle C, that second note also fills the whole of my heard space. Yet I hear it as distinct. The notes 'interpenetrate', occupy the same 'space' but I hear them as two notes … Suppose I play middle C and open up the string an octave above by silently depressing the appropriate key. The upper string will start vibrating even though it has not been struck. The lower string 'sets off' the upper. And the *more* the lower string sounds, the more the upper string sounds in its distinctiveness … the lower string enhances, brings to life the upper string, frees it to be itself, neither compromising its own integrity not that of the upper string. Moreover, when

> certain other strings are opened up alongside both these strings, they too will vibrate in sympathy. (2000b, pp. 144-146)

For Begbie this gives us valuable insight into the way God may interact with the world intimately, without violating it or merging with it, but liberating it to be more fully itself. Similarly, God's involvement with our lives neither pushes us out nor swallows us up, nor leads to some kind of fusion. God is active in a much more creative way; God's intimate interaction with us as human beings, is to free us to 'sound' as we were created to sound, enabling us to be more fully ourselves; "not de-humanised but re-humanised" (Begbie 2000b, p. 147). So in the person of Jesus Christ, "we witness the closest interaction of divine space and human space ('without division, without separation') without either being compromised ('without confusion, without change')" (Begbie 2000b, p. 147).

The purpose of including this example of insight is not to indulge in Christian apologetics, nor to 'explain away' mystery. The purpose is six-fold:
(1) It illustrates the importance of 'restructuring', in this case from visual to acoustic space, the *sine qua non* of insight in gestalt psychology.
(2) It exemplifies the way in which the experience of insight is so often an interdisciplinary one, in which analogical thinking is particularly valuable.
(3) It demonstrates both how easily a false dualism is set up, here in terms of the apparent incompatibility of the human and divine and how insight can enable us to see, or rather in this case to hear, how that limited understanding may be transcended or resolved.
(4) It makes plain the difference between cognitive understanding and musical appreciation; four voices speaking words at the same time can sound rather confusing, whereas four voices singing together can be completely clear and enhance one another with harmony and beauty.
(5) It is important to acknowledge the place of music in spiritual experience, and of heightened aesthetic sensibilities that are deeply felt, but often defy adequate verbal expression.
(6) Finally, it throws some light upon the way that insight in spirituality is not intended to 'explain away' the mystery or dilute the sense of awe, but is rather to preserve, and often to clarify, deepen and so enhance the beauty and wonder of the mystery as credible and worthy of reverence.

2.11.6.4 *Ubuntu*: A Crucial Insight in African Spirituality

The *fourth*, and final example, is taken from the Truth and Reconciliation Commission's (TRC) work in South Africa. It is one story out of hundreds that could be cited. It involves an apartheid sponsored covert murder operation.

Seven young black activists, who had been trained by Vlakplaas *askaris* (guerrillas who secretly changed loyalties and spied for the South African Police Force) in the use of fire-arms and explosives, were lured into a trap in Gugulethu in the Western Cape where they were all killed by the Security Police on 3rd March 1986. Some were shot in the head while surrendering with their hands up. Russian hand grenades and guns were placed on their dead bodies before a TV news crew of the state broadcaster, (SABC), was called to document the killing of the "terrorists". At the TRC hearing a video was shown of the scene of the killing. In reaction to seeing her dead brother's mutilated body, a sister of one of victims threw a shoe in the direction of the thirteen policemen who had been subpoenaed for questioning. They all walked out in protest, threatening not to return to the hearings as their lives were "in danger" (Gobodo-Madikizela 2003, p. 172).

In contrast one of the black perpetrators, the *askari* Mbele, requested a private meeting with the mothers of the Gugulethu Seven, with a view to asking for forgiveness. One of the mothers responded: "We still have this big lump in our throats. If … they can be put here in front of us, maybe that lump can go away" (Mrs Ngewu). So the emotionally charged meeting between one of the killers and the mothers of those who died was arranged and facilitated by the Human Rights Committee Member, heading up the hearing process in the Western Cape, Pumla Gobodo-Madikizela. Initially it was very tense; several mothers expressed their pain, anger and refusal to entertain the perpetrator's request. Then one of the mothers, Mrs Cynthia Ngewu, haltingly said:

> This thing called reconciliation … if I am understanding it correctly … if it means this perpetrator, this man who has killed Christopher Piet, if it means he becomes human again, this man, so that I, so that all of us, get our humanity back … then I agree, then I support it all. (Krog 1998, p. 109, translated from the Xhosa)

As Krog (2008a, p. 4) comments: “It affirms how somebody, who would be regarded by many as not effectively literate, let alone schooled in African philosophy, intimately understood her interconnectedness and could formulate it succinctly”. She adds “it was only years later that I realised what a perfect formulation these halting words provide for the term interconnectness-towards-wholeness or ubuntu” (Krog 2008b, p. 213). What Cynthia Ngewu says is astonishing:

> First, she makes it clear that she understands that the killer of her child could kill, because he has lost his humanity, he is no longer human. Second, she understands that to forgive him would open up the possibility for him to regain his humanity. Third, she understands that the loss of her son affected her own humanity; she herself has now an affected humanity. Fourth and most importantly, she understands that if indeed the perpetrator feels himself driven by her forgiveness to regain his humanity, then it would open up for her the possibility to become fully human again.
> This is a statement of remarkable insight. (Krog 2008b, p. 213)

All this is also in sharp contrast to the distorted Christian understanding of forgiveness, so common under ‘privatised’ apartheid expressions of faith denying human implications and consequences. It is succinctly expressed by General Tienie Groenewald who refused to appear before the TRC, saying in a radio interview: “This is between God and myself. I have nothing to say to Tutu” (Krog 1998, p. 17). Tutu responded, expressing both true Christian and *ubuntu* understanding of interconnectedness: “If you beat your wife, you can’t simply say this is between me and God. You also have to go to your wife and say: I’m sorry” (Krog 2008c, p. 357).

Ubuntu forgiveness says: I forgive you so that you can start to change/heal/recover humanity, then we can walk our interconnected paths towards healing and wholeness. It is, of course, difficult for those of us who are ‘white’ Africans, whose early formation has been primarily influenced by a western world view, to have more than a theoretical *understanding* of the interconnectedness-towards-wholeness of *ubuntu*. But two significant insights flow from this.

The first insight, as Krog points out (2008a, p. 25), is that “an alternative way of dealing with a crime against humanity has been put forward. It is not necessarily a *better* way than the post-holocaust way, but it is a *different* way”. The Nürnberg Trials essentially embodied retributive

rather than restorative justice. The essence of *ubuntu* spirituality is restorative. It is an authentic African way of becoming and being human. In the TRC process Christian vocabulary and a human rights culture are in danger of obscuring the fact that "a radically new way of dealing with gross injustice and cycles of violence had been put on the table by the indigenous inhabitants of South Africa" (Krog 2008a, p. 25).

The second important insight, mentioned by Krog (2008a, p. 26) would be evident in "the way we read the current anger and frustration of victims that seemed to have forgiven during the TRC process itself. Their anger is used as proof that the TRC pressurised them … to forgive and in so doing suppressed their anger". Krog argues:

> The anger that people display today about the TRC process, is not purely and simply a sign that they had been intimidated by Tutu or the Christian redemptive ethos. It is, again, a sign that in terms of *ubuntu*, they feel that the perpetrators had simply washed their hands at the forgiveness and now continue as unperturbed as before. In other words: they DID forgive, but NOW that no sign of change is expressed, they are angry. The current swell of TRC resentment has more to do with thwarted *ubuntu* beliefs NOW, than with the use of Christianity to suppress anger THEN. (2008a, p. 26)

Perhaps that last line should read "*abuse* of Christianity to suppress anger THEN". From my own experience of *giving* evidence to the TRC and *receiving* confessions relating to the burning and murders in Crossroads and KTC in May and June 1986, I regard Krog's insight as very important. It is also significant that Anjtie Krog is a poet of great sensitivity, spirituality and feeling, who has a close working relationship with African linguists at the University of the Western Cape; empathy is a very frequent, perhaps essential, component of insight.

This African spirituality, known as *ubuntu,* is expressed in the condensed insight of the Xhosa proverb "*ubuntu* ungammntu ngabanye abantu" which translates roughly as "a person is (or becomes) a person through other persons". Therefore this interconnectedness-towards-wholeness opens the potential for insight into a rich indigenous African *authentic way of becoming and being human.*

It is generally accepted that this spirituality, under-girding solidarity in resistance, proved fundamental to the success of the struggle for justice against apartheid. Krog (2008d, p. 2) goes

further and argues that "this world view played THE major role in making the TRC possible and guiding the execution of its mandate". In addition this interconnectedness-towards-wholeness "not only enabled the TRC to do its work without incidences of revenge, but also imbued politically trapped concepts with new possibilities" (Krog 2008c, p. 1).

The South African TRC is credited for being "the first such Commission to: hold victim hearings in public; individualise amnesty [so that people could admit that they had done wrong] and allow victims fighting against and for apartheid to testify on the same forum" (Krog 2008d, p. 12). There is a single crucial insight underlying all three of these innovations. That insight "can be traced back to attempts to restore the interconnectedness of a community" (Krog 2008d, p. 12). So it is clear, as Krog (2008a, p. 6) argues, that "*ubuntu* was not simply a wrapping of the TRC process, but in fact the *foundation* of it".

2.11.7 An Evaluation of the Contribution of the Mind-Body-Spirit Approach of Spirituality

As in previous evaluations, the strengths of the approach of spirituality for the understanding will first be considered and then the weaknesses will be enumerated.

The Strengths

Eight aspects of the strengths of the approach of spirituality to insight are worthy of consideration:

(1) The fact that this body-mind-spirit continuum of spirituality is a non-dualistic approach is of fundamental importance for at least three reasons. *Firstly*, because the 'Aha!' experience of insight itself is non-dualistic. Merton (1962,1985) describes it as an experience of 'oneness' and Nhat Hanh (1995) as 'interbeing'. *Secondly*, because a number of other approaches, such as cognitive psychology, representational models, and the approach of great minds experiencing insight, have a tendency to emphasise the intellectual component, at the expense of body and spirit, in the experience of insight. *Thirdly*, because this approach of spirituality involves the call and invitation to live in accordance with the person's true self, or spirit, it promotes a holistic

sense of aliveness, authenticity and awareness which is arguably, (see also point 5), conducive to experiencing insight.

(2) This approach of spirituality, defined as a person's sense of meaning, values and purpose in life, is more accessible, more experience-near and therefore more inclusive of the ordinary person's experience of insight than several other approaches. This is evident in the remarkable expression of Cynthia Ngewu's insight in the TRC process (**2.11.6.4**) and the opportunity it provides for broadening and deepening the understanding of insight. It is very different from the Western tendency to individualise and intellectualise conceptions of insight. It is also noteworthy that spirituality is universal in the sense that it is central to all philosophical-religious traditions that have informed conceptions of the good life, since ancient times, the world over.

(3) This approach of spirituality extends the depth and breadth of human experience beyond the biological, psychological and sociological framework, into transpersonal and transcendent consciousness. Spirituality is acutely aware of different levels of transcendent consciousness. Without this dimension it is not possible to begin to appreciate, let alone understand, the sudden and sustained experience of insight of Andrei, to whom "it became absolutely and concretely clear…that at the other side of the table at which I sat reading, stood the living Christ" (**2.11.6.1**).

(4) This mind-body-spirit continuum approach of spirituality at its best emphasises the cardinal value of respect or reverence for the *other*; whether it be physical status, intellectual ability, religious traditions, human values, different interpretations, and even in the face of an inability to understand or empathise. This respect and reverence of the *other* is expressed in the Buddhist-Christian dialogue in **2.11.6.2**. It is supremely illustrated in the astonishing spiritual insight involving mind-body-spirit, expressed in the words of the Prior of the Algerian community of monks, who addressed his would-be assassin as "the friend of my final moment, who would not be aware of what you are doing, yes I also say this *thank you* and this *A-Dieu* to you *in whom I see the face of God"* (Mitchell & Wiseman 1997, p. 133). As in section **2.11.6.2**.

(5) This approach of spirituality to insight is under-girded *firstly* by regular individual disciplines, such as mindfulness meditation (e.g. Cane 2000, Kabat-Zinn 1991,1994, Nairn 1998, Thynn 1995), prayer and contemplation (e.g. Arico 2002, Gibbard 1976, Green 1982, Johnson 1974, Merton 1985), breathing as an aid to living in the present moment (e.g. Kabat-Zinn 1994, Nairn 1998), recognising the connection between darkness and spiritual growth (e.g. May 2004) and visualisation (e.g. Cane 2000). *Secondly* by occasional shared activities such as inter-faith

dialogue (e.g. Nhat Hanh 1995, Pierce 2005), groups for centring prayer (e.g. Bloom 1966, Bryant 1978, Gibbard 1976, Green 1979, Keating 1994), spiritual direction (e.g. Dyckman & Carroll 1981), contextualised spirituality (e.g. Ackermann 2003, Elliott 1985, Merton 1985, Nolan 2006), imagery in movement and dance (e.g. Schneier 1989) and storytelling stimulating imagination and faith (e.g. Bausch 1984). *Thirdly* spirituality is under-girded by cherishing values such as seeking enlightenment and compassion (e.g. Goldstein 1976), a sense of mystery, awe and wonder (e.g. Matthews 2000, Otto 1923/1958, Suggit 2007), intuition and imagination (Myss 1997), These disciplines enable documented medical evidence (e.g. Kabat-Zinn 1991) of physical alertness, mental awareness, reduced anxiety and empathic acceptance which support a healthy sense of self-worth in empowering spiritual insight.

(6) The methodological implication of including the concept of spiritual emptiness (Ho & Ho 2007) involves using construct pairs (e.g. Existential quest versus Alienation, Transcendence versus Self-encapsulation). This is valuable for ensuring that spirituality is contextualised and applied to such vital issues as justice, poverty, violence and so forth, which are in fact inseparable from the individual's quest for meaning. Including the concept of spiritual emptiness and ensuring that spirituality is contextualised and applied in this way, may also serve to enable Westerners to discover an appreciation and fuller acceptance of the spirituality of African *ubuntu* (Section **2.11.6.4**).

(7) The approach of spirituality to insight enables a better appreciation of heightened aesthetic experience of goodness, truth and beauty than any of the other eight approaches to insight that have been explored. This aesthetic appreciation is not limited solely to the arts, but is often part of the experience of scientists *both* in the elegance, simplicity or beauty of a theory *and* in the sense of wonder of what is revealed in a discovery. For example President Clinton, in announcing and paying tribute to the extraordinary scientific feat of the completion of the first draft of the Human Genome project of over three billion letters in length, in the year 2000, adds "[t]oday we are learning the language in which God created life. We are gaining evermore awe for the complexity, the beauty, and the wonder of God's most divine and sacred gift" (Collins 2006, p. 2). The scientist who headed up the project comments that it is "awe inspiring to realise that we have caught the first glimpse of our own instruction book, previously known only to God" (Collins 2006, p. 3).

(8) The approach of spirituality to the appreciation of music itself, as in Begbie's insight in section **2.11.6.3** for example, can have a particular fascination for mathematicians in its structuring of time as argued convincingly by Begbie (2000a). At the same time it is equally clear that music appeals to, and sometimes inspires insight in a huge variety of people precisely because of the way it communicates to the mind-body-spirit continuum, which is the defining characteristic of this approach to insight.

(9) The significance of faith in true spirituality is described by Tillich (1979, p. 167) as "the state of being grasped by the power of being itself". This is a non-dualistic understanding of faith since "Non-being belongs to being, it cannot be separated from it" (Tillich 1979, p. 171), in which: "the Yes includes itself and the No which it takes into itself" (Tillich 1979, p. 175). Tillich's (1979, p. 183) striking conclusion in defining God as "being itself" is *"the courage to be is rooted in the God who appears when God has disappeared in the anxiety of doubt"*.

The Weaknesses

Three potential weaknesses of spirituality for insight will be noted:

(1) One tradition of spirituality in the West, according to the analysis of Ho and Ho (2007), is essentially hedonistic, in which the key construct is *well-being*, defined in terms of pleasant emotions and high life satisfaction. This often involves a process of minimising the value of doubt, struggle and suffering. It is perhaps the shadow side of the New Age Movement. This type of spirituality is usually bankrupt in terms of genuine insight because it does not support the acceptance of doubt, the struggle to stay with unresolved issues, and the willingness to suffer for true understanding; all of which may be necessary for insight.

(2) Another related weakness of spirituality is when it becomes a privatised, pietistic, self-absorbed exercise, unrelated to and de-contextualised from social, political or economic issues and a fundamental concern about justice for all. In South Africa this was a major challenge for churches, synagogues and mosques under apartheid, and continues to be a key issue under the African National Congress government today. A constructive and critical conscience arising from a high level of engaged consciousness, insightful comment and courageous non-violent direct action, appears to be in short supply, apart from lone figures like Archbishop Emeritus Desmond Tutu. In his case it comes from a lifetime of many hours of both 'centred' and 'contextualised' prayer every day.

(3) Sadly, a final weakness has to be mentioned. It is the tendency by an element in most religions towards fundamentalism and even fanaticism, which may involve violence in words and deeds, extinguishing all insight except that governed by their ideology. In terms of spirituality as distinguished from religion, in section **2.11.3**, this tendency is limited because of the propensity towards humility, contemplation, non-violence and self-reflection.

2.12 A Summary of the Significance of Each Approach for this Study

At this point of the literature review, in terms of this study of the *experience of insight,* it is both appropriate and necessary to focus more specifically on a summary of the positive contributions of each approach for the understanding of the experience of insight.

2.12.1 The Significance of the Holistic Approach of Gestalt Psychology

It will be essential that the methodology adopted for exploring the instantly recognisable gestalt of insight, illustrated in terms of *Frère Jacques* and *Three BlindMice*, is able to do justice to this characteristic feature of the *structure* of the experience of insight. This will be addressed in Chapter **3** on the methodology.

2.12.2 The Significance of the Existential Approach of Phenomenology

Despite the omission of this approach from Sternberg and Davidson's distinguished collection of scholars investigating *The Nature of Insight* (1995), it is arguable that this approach specifically has the capacity to do justice to the *structure* of the gestalt experience of insight, and also values the importance of philosophical underpinnings and understanding of *being*, as well as *experience.* The experience of insight cannot be understood just as a mechanism, but only on the deeper level of the insightful self, sponsoring meaning as partner to the formation of meaning in an existential space of possibility. So this approach particularly values psychological descriptions that are near and faithful to the experience of insight.

The criteria for exploring such descriptions has been examined and enriched by a number of details in the representational approach of models of insight (**2.7**) and also in the case-study

approach of great minds experiencing insight (**2.8**). Chapter **3**, on the methodology, provides further evidence for the approach of existential phenomenology as the most appropriate methodology for this particular study.

So the main body of the original research in this thesis will focus on the richly detailed descriptions, by the four research participants, of their experiences of insight in Chapters **4** and **5**, with particular reference to the *holistic structure* of their experience (**4.7, 5.3.2, 5.4.2, 5.5.2**).

2.12.3 The Significance of the Puzzle-Problem Approach of Cognitive Psychology

The breadth and detail of research work on specific areas and components of cognitive functioning in insight has contributed a number of significant theories, models and metaphors for insight. There is also increasing recognition of affective and behavioural aspects and the possibility exists for fruitful cooperation with neurobiological research; yet three factors severely limit the value of this approach for this particular study in terms of appreciating the holistic and human experience of insight. *Firstly*, focus on the mechanism rather than the person and the meaning of the insight. *Secondly*, laboratory studies divorced from life-world experiences frequently resulting in comparatively trivial experiences of insight. *Thirdly*, lack of clarity and agreement about what constitutes an insight problem.

2.12.4 The Significance of the Creative Approach of Genius, Dreams, Design and Invention

This approach to the experience of insight has the advantage of being open to, and inclusive of, the experience of most people even when they would hesitate to describe themselves as ‘creative’. It is also of significance for this study, that the ‘impact’ and ‘interpretation’ of a dream, or dreamlike experience, may include not only visual images, but also auditory experiences as well as involving powerful affective responses requiring empathic interpretation. So it is essential that the methodology employed is capable of encompassing all these different modalities. Hence the significance as seen of the existential-phenomenological approach and the inclusion of the inter-subjective approach of psychotherapy and the body-mind-spirit approach of spirituality to the experience of insight which is clearly *not* a purely cognitive phenomenon.

2.12.5 The Significance of the Representational Approach of Models

This approach includes not just the isolated individual's mental processes, but also the social, cultural and environmental influences as well as the element of chance in the experience of insight. It is recognised that socio-political and cultural factors are going to be particularly significant for all three of the South African research participants. Gruber's (1995) evolving systems approach demonstrates that insights, whether small steps or great leaps, are part of a coherent life expressing organised affect and purpose as well as organisation of knowledge. This is also highly relevant for this study, as is Gruber's (1995, p. 400) significant conclusion that: "insights express and are part of the functioning of the creative system rather than its rupture". This corresponds at a deep level with the existential-phenomenological approach and the methodology developed by Giorgi (1975 and further developed in 1983, 1985, 1989a, 1989b, 1994,2003,2004), for the investigation of experience from a psychological perspective (see Chapter **3**), and is particularly important in the light of the tendency to isolate startling phenomena like insight, as well as cognitive psychology's tendency to separate processes.

2.12.6 The Significance of the Approach of Great Minds and Dedicated Lives

This approach reveals the value of detailed descriptions of actual experiences of insight which is the *sine qua non* of the existential-phenomenological approach. It also underlines the significance of Gruber's (1995) evolving systems approach, integrating the organisation of knowledge, purpose and affect in the many moments of insight in a creative life. In this way, the inner temporal structure of the experience of insight may be revealed, and the connection of its multiple relations with other processes clarified, resulting in a more coherent, holistic, contextual and structural understanding of the experience of insight.

In the lives of these 'great minds', there is a concentration of energy, a focused sense of purpose and a dedication not just of thought, feeling and behaviour, but often of life itself to the chosen issues. The result is not just a great mind but a dedicated life which is an expression of, a cooperation with, and an *indirect direction* of semi-conscious and even unconscious processes applied to problems in parallel with, and eventually in concert with, conscious processes, resulting in substantial and significant insights, as well as many small insights along the way.

This approach of great minds and dedicated lives also influenced the choice of research participants chosen for this study (see **5.2**), as it seemed worthwhile to include significant experiences of insight which have had substantial results in scientific and socio-political fields, as well as more everyday experiences of insight in personal and professional life, in order to explicate their essential situated structures and examine whether there are essential structural differences between significant insights and the smaller insights along the way.

2.12.7 The Significance of the Approach of Metaphors-of-Mind

Metaphors and analogies may usefully serve as a guide for elucidating the elusive nature of insight. Indeed it may well be that analogy is the core of cognition as Hofstadter (2000) has argued. Certainly at the current stage of insight research, which lacks natural scientific rigour, analogies focussing on deeper and more structural features of insight are particularly valuable, and may contribute towards a fuller human scientific understanding of insight.

In life-world situations these more profound structural features are also more common, compared with psychology experiments, in which subjects tend to focus on more superficial features (Dunbar 2000). This finding is both significant and encouraging for the use that will be made in this research of the detailed descriptions of the research participant's life-world experiences of insight. It is also highly relevant with respect to the question of what methodology is employed. It is significant that the existential-phenomenological approach developed by Giorgi (see Chapter **3**) seeks to elucidate and explicate precisely these *structural* features of the gestalt of the experience; in this case, of insight.

The metaphor of haptic or 'touching' sight for insight, suggests a more intimate way of seeing things, and is a valuable way of critiquing the prevailing Cartesian myth of a detached, disembodied and unitary way of seeing things. This may prove particularly important in sensitively and empathically exploring the research participants' personal experiences of insight.

The evolutionary model, currently conceived as much smarter than Darwin imagined, is particularly fruitful as a metaphor for insight in which "[a]ctual moments of human insight are conceived as the tips of a much larger iceberg of insightfulness" (Perkins 1995, p. 527); a

metaphor delightfully suggestive of the connection between the *experience* of insight, and the underlying conscious and unconscious *processes* of insightfulness. So this study needs to be approached with appropriate humility. It is important to explore and expand consciousness as far as possible; but we see tips of the iceberg, not the whole.

2.12.8 The Significance of the Inter-subjective Approach of Psychotherapy

There is a substantial body of literature in this approach to insight which is potentially very valuable. But it is important to recognise that the use of the term "insight" has changed because the basic premises of the psychoanalytic frame has moved from a more intrapsychic model to a relational model incorporating object relations thinking and the analytic third (e.g. Ogden 1994). It is in this context that it is possible to consider *insight* in terms of intuitive thinking and awareness (the art of psychotherapy) as opposed to purely interpreting and applying psychoanalytic theory (the science of psychotherapy), because inter-subjective space creates 'clues', 'links' and opportunities for insight which could not have occurred in isolation.

Although only one of the research participants was in a therapeutic relationship, the significance of this approach is not limited to helping to understand the experience of that one person, since free association, relaxed reflection and implicit knowledge, which help to 'soften' fixed links, patterns and organisation of conscious mental activity, may occur outside of the therapeutic relationship and open up opportunities for fresh and intuitive thinking, awareness and insight. So for example Feldman's recurring dream remained opaque to him because he was fixed in the idea that it was an internal neurophysical metaphor. In the shower, in a flash of insight, he exclaimed: "The ride is not inside, it's outside" (section **2.6.2**). Although he was alone in the shower at the time there are clear inter-subjective influences in terms of his relationship with Gruber the previous day, and it was to Gruber that he rushed straight from the shower to share his insight.

Self-insight is usually related to finding meaning and making sense of the person's own life and frequently involves an increased awareness of hidden feeling, wishes, defences, comprises and conflicts, but, again as Feldman's dream and insight reveal, this is not invariably so; it points to "being as possibility", as Todres (2002, p. 9) expresses it, and links parts into wholes.

In terms of sensitively obtaining and faithfully interrogating the first-person description of an experience of insight, this inter-subjective approach of psychotherapy is of particular value for explicating all forms and experiences of insight; not just self-insight with which psychotherapy is usually associated. The lack of this approach together with the oversight of the contribution of the existential approach of phenomenology, is in this researcher's view, a significant and serious omission in the otherwise remarkably comprehensive work of *The Nature of Insight* (Sternberg & Davidson 1995).

2.12.9 The Significance of the Body-Mind-Spirit Continuum Approach of Spirituality

It is not so surprising that the body-mind-spirit continuum approach of spirituality to the experience of insight is also lacking amongst the distinguished contributions of many of the most significant researchers in the field of insight, for example those represented in the influential volume of Sternberg and Davidson (1995). In the foreword, Metcalfe (1995, p. x) writes, "the persistent lack of a mechanism for insight, linked with the charge that the notion of insight is somehow supernatural, has shackled researchers who would explore this most important of cognitive processes".

Introducing the body-mind-spirit continuum approach of spirituality to insight is *not* a direct claim that "insight is somehow supernatural" as a *deus ex machina* substitute for the mechanism of insight. It *is* a plea for openness to experience; it *is* an appeal to the body-mind-spirit continuum rather than a purely cognitive process; it *is* an invitation to recognise the place of spirituality, defined as a person's sense of meaning, values and purpose in life, enabling or inhibiting the experience of insight.

The famous Afrikaans poet, NP van Wyk Louw (1962, p. 12), expressed this pertinently and poetically:

> My brein die kry die waan,
> Dat ek, omdat ek altyd sirkels sien,
> Die sfeer-self kan verstaan.

This is translated by CN van der Merwe (2008, p. 173) as:

> My brain is deluded –
> Finding circles everywhere,

I believe I comprehend the sphere itself.

It is very natural to discover “circles”; that is meaningful patterns. Such patterns are essential guides through the complexities of life. The analogy of Schooler et al. (1995) relating insight to recognising patterns or out-of-focus pictures is highly relevant here (**2.9.5**). The problem arises when, in arrogance, the “circle” is mistaken for the “sphere” and the conclusion is drawn that the *whole* meaning of human experience has been grasped. It is easy to overlook the fact that the “sphere” has an extra dimension to it, beyond the proof of natural science. This confusion between “circles” and “spheres” is particularly problematic when relative truth is either not recognised as such or is credited with an absolute value, as van der Merwe (2008, p. 174) comments: “The pattern created by the intellect so easily destroys the charity of the heart”.

The fact that this body-mind-spirit continuum of spirituality is a non-dualistic approach to insight is of fundamental importance; firstly, because the ‘Aha!’ experience of insight is itself non-dualistic; secondly, because a number of the other approaches have a tendency to emphasise one component at the expense of the others, so this continuum, with an emphasis on spirit, acts as a corrective balance; thirdly, because this approach involves the call and invitation to live in accordance with the person’s true self or spirit, such authenticity and awareness is arguably conducive to experiencing insight.

The approach of spirituality, defined as a person’s sense of meaning, values and purpose in life, makes it more universally accessible than a particular religion, and more experience-near than several other approaches. So this approach will be essential for an adequate understanding of all the research participants and arguably a *sine qua non* for two of the four, precisely because it extends the depth and breadth of human experience beyond the biological, psychological and sociological framework, into transpersonal and transcendent consciousness, illustrated by the difference between visual and acoustic *space* (**2.11.5.2**). Without this transpersonal and transcendent *space* from which, Valle argues, our “felt sense emerges, … a noumenal, unitive *space* within which the phenomenal world and intentional consciousness manifest” (Valle & Halling 1989, pp. 258-9), it is not possible to appreciate or begin to understand the sudden and sustained experience of insight of Andrei, of the presence of the living Christ (**2.11.6.1**). For the same reason it would not be possible to begin to understand the Prior of the Algerian Community

of monks addressing his would-be assassin as "the friend of my final moment … in whom I see the face of God". This is perhaps the ultimate reverence for the *other* (**2.11.6.2**). These extra-ordinary experiences and expressions of insight illustrate both the totally unexpected initiative of God and the human 'response-ability' and disciplines under-girding the practice of spirituality.

The methodological implication of including the concept of spiritual emptiness (provided it is clearly defined and distinguished from 'emptiness' as humility or stillness, as in **2.11.5**) involves using construct pairs, for example, existential quest versus alienation, transcendence versus Self-encapsulation. This implication is valuable for ensuring spirituality is contextualised and applied to vital issues such as justice, poverty, violence and so forth, which requires considerable insight and are crucial existential and systemic issues for any research conducted in South Africa. These macro issues are also, of course, inseparable from the individual's quest for meaning and *ubuntu* (**2.11.6.4**). This approach of spirituality to insight enables a better appreciation of heightened aesthetic experience of goodness, truth and beauty than any of the other eight approaches explored. That is why President Clinton, announcing the completion of the Human Genome project, did not express himself solely in the language of science, but included the language of spirituality and insight: "Today we are learning the language in which God created life. We are gaining evermore awe for the complexity, the beauty, and the wonder of God's most divine and sacred gift" (Collins 2006, p. 2). It was a true Eureka moment. This is why the philosopher Lonergan (1983, p. 668) concludes in his monumental study of *Insight: A Study of Human Understanding,* that: "God is the unrestricted act of understanding, the eternal rapture glimpsed in every Archimedian cry of Eureka".

2.13 Conclusion

The Literature Review has provided *both* a 'wide lens' perspective in terms of an overview of the approaches of scholarship, *and* an opportunity to 'focus' the study through successive steps of clearer definition and clarification in terms of understanding the nature and experience of insight.

In terms of this qualitative study of the experience of insight, three issues emerge with particular clarity:

First, it is not possible to explore qualitative experience using quantitative methods. The underlying philosophical approach is crucial; a human scientific approach, rather than a natural scientific approach, is required for studying the experience of insight. "No one puts new wine into old wine skins; if it is, the skins burst and the wine is spilled, and the skins are destroyed; but new wine is put into fresh wineskins and so both are preserved" (Matthew 9:17).

Second, qualitative research is needed "not to close the subject, but to open it further" (Sardello 1975). So this study attempts to expand the field, seeking not definitive numerical certainty, but integrated, holistic and comprehensive understanding of the experience. This does not, of course, imply the exclusion of findings from quantitative studies that help to illuminate the experience of insight.

Third, it is helpful to clarify the distinction between "research design" and "research methodology" following Mouton (2001, p. 55). The research design focuses on the end product, the research question and the evidence required to address the question of the experience of insight adequately. The research methodology focuses on the research process, the specific tasks and steps in the process, and the best procedures to be employed.

It is to this task that the next chapter is devoted.