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**A PSYCHOLOGICAL MAP  
OF  
ORIGINAL ENTERPRISE**

**CODING INNOVATOR  
BEHAVIOUR**

**By**

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# A PSYCHOLOGICAL MAP OF ORIGINAL ENTERPRISE

## ABSTRACT

This study explores the concept of original enterprise as a fundamental dimension of human behaviour. Based on biographical case histories, the thesis seeks to map innovative behaviour displayed by 100 cases of male and female outstanding creative personalities in the domains of commerce, literature, music, science and creative arts.

A code scoring system identifies innovative behaviour from selected biographical cases including their soci-economic antecedents, childhood experiences, basic personality traits, the process of achievement, eight forms of obsessive behaviour, emotions, actions and finally pathologies of varying degrees of severity.

A complex statistical analysis explored the basic dimensions of original enterprise as a congruence or synthesis of all dimensions, quite independent of the original particular domain investigated. In other words, this study was involved in a search for basic dimensions behind the particular emanation of enterprise – a behavioural map.

Mapping as a central construct in this study led to the deduction of three research objectives and a consequential observation which were examined at known levels of statistical significance and consequent proofs.

It must be observed the thesis is a description only of original innovator behaviour. It does not satisfactorily explain this phenomenon. Such a complex enquiry would not be possible based solely on biographical information.

To date, to the author's knowledge, no comprehensive explanation of original enterprise is available to social science. This study is the beginning of a search for fundamental behavioural constructs which may exist behind the singular events which exhibit original creative enterprise.

A post-doctoral enquiry is planned to follow this exploratory study, of possible importance both to commerce and future creative endeavours.

## STATEMENT OF ORIGINAL AUTHORSHIP

This study was principally and primarily produced by Malcolm Campbell Sheffield, Wellington and currently at 3 Sunpointe Street, Maroochydore, Queensland 4558 between 1996 and 2001.

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Dr Paul Toulson encouraged me to enrol at Massey and guided the writing and thesis presentation stage.

Signed: .....  .....

Dated: ..... 25 : 07 : 01 .....

# A PSYCHOLOGICAL MAP OF ORIGINAL ENTERPRISE

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## CHAPTER 1

### INTRODUCTION

#### 1.1 BACKGROUND TO THE RESEARCH

This thesis is concerned with samples of original creative human innovative behaviour biographies occurring in 19<sup>th</sup> and 20<sup>th</sup> century cultures in Europe, the Americas, Australasia, South Africa and greater Asia.

Numerous scientific studies have been conducted to explain and theorise about the occurrence of singularly rare creative enterprise events that have both intrigued popular imagination and accounted for milestones along the path to civilisation and the introduction of new cultural eras.

Some prior theories of genius would include Sir Francis Galton in his 1869 book *Hereditary Genius*, Sigmund Freud in his 1913 paper *Creative Writers and Day Dreaming*, C Cox and her 1926 classic thesis *The Early Mental Traits of 300 Geniuses*, Abraham Maslow's 1959 study *Creativity in Self-actualising People*, and finally Hans Eysenck's 1995 book, *Genius: The Natural History of Creativity*.

There are several problems of approach and interpretation in a critical review of this very extensive literature.

The first is the question of definition. The second is the lack of an overall 'mapping' approach to creative actions and products contrasted with a concentration on single issues and limited explanations.

Regarding definition, few words in the English language have acquired a greater variety of meaning than the word 'genius'. Most of the confusion arises from loose, popular usage of terms such as outstanding creativity, supreme talent, giftedness, mystical powers, superior intelligence, entrepreneurial genius and similar expressions. In fact, whereas the word genius has become largely obsolete and of little practical value, the term entrepreneur is now well accepted in modern

commercial nomenclature and is regarded as an important element of current economic activity (Sexton & Kasarda, 1992).

This thesis proposes to avoid such confusion and to adopt the term 'original enterprise' to define both the concepts of genius and entrepreneurial behaviour. More specifically, the author refers to exceptional original creativity in music, science, the arts, literature and commerce, producing independent works of a highly original nature.

The second research problem is a more serious fault in previous scientific literature and is a major justification behind this thesis study. The very popularity of this subject matter has tended to encourage single-cause 'magic bullet' levels of explanation rather than seeking an overall, comprehensive picture or map of original creative enterprise.

For example, McClelland (1953) proposed a commercial-specific form of creativity, based on measures of achievement imagery using Thematic Apperception Test measures as a prime achievement indicator of business enterprise. De Groot (1975) saw the success of the chess master in outwitting his opponents as a form of 'chunking' – an ability to foresee numerous moves ahead – with an advancement of long-term over short-term cognition providing the chess master with a definite tactical advantage.

Storr (1988) pictured the isolated schizoid personality as a prime condition of sustained creative endeavour and Eysenck (1995) concentrated his final explanation of original enterprise as a dimension of psychoticism. By 'psychoticism' he refers to "psychopathological deviation without psychosis". He writes, "It appears that psychoticism in the absence of psychosis is the vital element in translating the trait of creative (originality) from potential into actual achievement." (p.236)

This thesis deviates significantly from these previous behavioural approaches. There is no commitment to any *a priori* explanations or theories. The approach is multi-faceted. Included are the domains of most significant sources of creative endeavour including music, science, literature and the creative arts. Commercial sources of original creativity are considered by this thesis to be of no greater potential value than are any other domains of endeavour. It is proposed to map most possible variances of behaviour and compare these occurrences with the emergence of unique personality traits we describe loosely as genius or more specifically as exhibiting exceptionally high levels of original enterprise.

Hall claims that "maps hold up a quantitative picture of data that can be compared with the predictions of a theory. They can be seen as diagrams showing the

evolution of our collective thought about a particular spatial domain". He continues, "The map animates every quadrant of modern scientific enterprise. Maps might not provide ultimate answers, but they almost surely suggest where to look for those answers." (Hall, 1992, p.22).

The main theme behind this thesis is, that to the author's knowledge, no previous scientific or biographical study of creativity has attempted to synthesise most major known elements of human behaviour into one comprehensive network or map, nor has it sought meaningful correlations across a significant variety of domains in music, creative arts, literature and commerce.

This thesis methodology includes:

- The identification and selection of some 100 biographies as the participating sample involved. This selection process is outlined in Chapter 3.
- Scoring each biography involving a method of axial coding to ensure a comprehensive identification of factors likely to influence the final outcome of behaviour loosely described as 'genius'.
- Using standardised statistical methodology to produce a psychological 'map' designed to provide a more comprehensive picture of original enterprise behaviour than had previously been attempted in social science research.

As the 1953 solution of the DNA code by Watson, Crick and Wilkins systematized a whole range of interpretations and research directions in biology, so too, it is hoped that this thesis of a fundamental behavioural map behind creative output will stimulate new directions in this complex subject for many years to come.

## 1.2 SAMPLING METHODOLOGY

The concept of mapping most known dimensions of human behaviour and their antecedent conditions led the researcher to assemble a comprehensive library of some 200 biographies of persons of outstanding original creative enterprise.

One hundred cases were selected whose domains of novel expertise included music, science, creative art, literature and commerce. Each biography was coded using eight axial code summaries and subjected to various statistical multivariate comparative analyses.

The principal hypothesis behind this endeavour was the proposition that the emergence of original works of art, music, works of literature, scientific discoveries and commercial achievements, illustrated in the Bibliography Section, provide the

study program with a coded behavioural schema that this thesis describes in terms of 'maps' of original creative behaviour.

Mapping technology as a scientific procedure has gained increasing value in recent years, with the Watson/Crick (1953) DNA formulation regarded as the most noteworthy. Mapping is "a graphic representation of the milieu" according to Robinson and Petchenik (1976) and is as applicable in the modern era of social science as was cartography to the ancient world of sailing ships and undiscovered continents.

"Those who explore an unknown world are travellers without a map. The map is the result of the exploration. The position of their destination is not known to them, and the direct path that leads to it is not yet made." (Hideki Yukawa, Japanese Physicist, 1992).

### 1.3 JUSTIFICATION FOR THIS RESEARCH

Mapping the relative importance of socio-economic antecedents behind original creative innovation, childhood experiences, personality traits, the achievement process, obsessive behaviour, actions, emotions and pathologies was a major procedure of this research program.

It is time now to lay to rest some of the numerous psychoanalytical theories concerning original creative behaviour. The popular press and the media repeatedly associate the concept of genius with forms of insanity, exceptional cognitive skills, genetic 'magic bullets' and similar concepts which purport to explain the unique emergence of exceptional creative proclivity.

In accounts of scientific progress, popular journalism would like to see evidence of simple stories, told with clarity, of great men spontaneously solving the long-standing puzzles of the natural world.

A creativity theory that attempts to map most elements of relevant human behaviour is now required by social science. A methodology is needed that combines the scientific respectability of the psychometric and experimental approach with the richness and authenticity of biographical data.

Secondly, the need for an adequate behavioural theory of creativity must be seen as a prime need of our modern world. Rogers describes this need currently as 'desperate'. He points out that in the sciences, for example, we "have an ample supply of technicians, but the number who can creatively formulate fruitful

hypotheses and theories is small indeed. In industry, creation is reserved for the few – the manager, the designer, the head of the research department – while for many, life appears devoid of original creative endeavour.” (Rogers, 1961, p.348).

To be original or different is felt to be dangerous. “Unless man can make new and original adaptations to his environment as rapidly as his science can change the environment, our culture will perish.” (Rogers, 1961, p.348) (author’s emphasis).

International competitiveness may be the final price we pay for a lack of creativity.

#### 1.4 OVERVIEW OF METHODOLOGY

The methodology involved was firstly to code relevant forms of socio-economic antecedents, childhood experiences, personality traits, the achievement process, forms of obsessive behaviour, actions, emotions and pathologies. Coding represents the operation by which data is broken down, conceptualised and assembled in new ways. It is the central process by which theories are built from data. The final behavioural code, called axial coding, is described in detail in Chapter 4.

One hundred biographies, selected from a library of 200 works were individually scored with these codes.

Actual mapping technology consisted of cluster analyses of all data, counting the number of occurrences of each factor in the source material and seeking for varying levels of statistical significance. Both Correspondence Analysis and Discriminant Analysis were used and although the different assumptions and approaches produced different results, some common features emerged from the various analyses.

#### 1.5 OUTLINE OF THE THESIS

Chapter 1 introduces the thesis, and proposes that a comprehensive map of factors that lie behind original creative behaviour may produce a more comprehensive level of enquiry than those focussed on single levels of explanation. Definitions of terms are discussed in detail in this chapter.

Chapter 2 is concerned with a literature review and generation of research objectives both from scientific and biographical sources. Three prime research objectives are subsumed from this review together with one consequential

observation inference concerning the possible relationship between self-actualisation and the emergence of a creative personality.

Chapter 3 investigates biographical selection of the principle participant sample and is concerned with common flaws in such an analysis; together with the sources of information on the biographical sample. A summary of the 100 biographies actually used in the program appears in Appendix IV.

Chapter 4 examines axial coding as the method of scoring each biography. The sources of axial codes employed are examined. The completed coding system is summarised in Appendix V.

Chapter 5 provides examples of code groupings and discusses these codes and their sources in detail.

Chapter 6 deals with research methodology and procedures leading to the analysis of data in Chapter 7.

Chapter 8 deals with psychological interpretations of behavioural clusters, while Chapter 9 discusses conclusions and implications of this thesis.

## 1.6 DEFINITIONS OF ORIGINAL CREATIVE ENTERPRISE

Due to the complexity of the subject matter and the wide variety of meanings assigned by both popular and scientific authors, various definitions are suggested for original creative innovation. These range from simple, direct conceptual levels through to definitions of wider significance, including the social impact and civilising effects derived from the products of highly creative individuals.

### 1.61 SINGLE CONCEPT, SIMPLISTIC DEFINITIONS

- Creativity is “a talent for producing something for which no determinant rule can be given. The foremost property of genius must be originality” (Immanuel Kant c 1804)
- Creativity is the “ability to bring something new into existence” (Secker & Warburg reference, 1958)
- Creativity is “a separate primary ability” (Eysenck, 1995)

## 1.62 CREATIVITY INVOLVES NOVELTY RATHER THAN SOLELY COGNITIVE BEHAVIOUR

Rogers has widened these simplistic definitions to include the concept of novelty. He defines original enterprise as “the emergence in action of a novel product, growing out of the uniqueness of the individual on the one hand and the materials, events, people and circumstances of his life on the other.” (Rogers, 1961, p.350) (author’s emphasis).

More recently Lubart (1994, p.399) defines “novel work as original, not predicated and distinct from previous work.” (author’s emphasis). He points out that “creativity can occur in virtually any domain including visual arts, literature, music, business, science, education and everyday life.”

Gruber (1998, p.261) further widened this novelty dimension, defining genius as “human extraordinariness”, while Nickersen (1986, p.397) succinctly contrasts creative versus critical thinking, suggesting that novel creative thought is quite distinct from schoolroom logical-process thinking. Creative thought is “a process whereby the individual finds, defines and discovers an idea or problem, not predetermined by the situation or task.” (Kay, 1994, p.217)

## 1.63 SOCIAL AND NATIONAL SIGNIFICANCE OF CREATIVITY — THE ULTIMATE DIMENSION

In the final analysis, the passage of time itself may be the final determinant of the worthwhile nature of products of original enterprise. In a sense, most persons of outstanding original enterprise were born a century before their time, and it is only by looking back that the true significance of their creative activity becomes evident.

Wolfgang Amadeus Mozart, for example, was not regarded in his own time or by his peers as a significant musical genius. Numerous other composers could apparently produce works of similar virtuosity. Mozart died penniless at 35 years of age and was buried unheralded in a pauper’s grave. “His greatness was hidden behind a curtain his contemporaries could not lift. Neither the pleasure-loving aristocracy nor the bourgeoisie could grasp the innuendoes of his music; the fine characterisation, the in-between shades of mood, the dualistic juxtaposition of reality and illusion in his operas.” (Hertzmann, 1963, p.17).

Rozelli (1978, p.57), furthermore, defines original creative enterprise as one “who creates excellent, socially valued products”, while Haensley adds to this dimension the concept that a test of creativity should fulfil the criteria to “share the outcome of

this process with society in some temporal or permanent way.” (Haensley, 1986, p.132).

Finally, Eysenck (1995, p.46) completes his own definition of creativity as a “dispositional trait or ability which enables a person to put forward ideas and produce works of imagination having the appearance of novelty which are immediately or in due course accepted by experts and peers as a genuine contribution having social value” (Eysenck, 1995, p.46), (author’s emphasis).

#### 1.64 DEFINITION OF ORIGINAL ENTERPRISE

A definition of original enterprise combines two basic concepts, which are inextricably associated together.

Firstly there is the innovative process by which an individual produces novel products, processes or theories which are original and distinct from previous work. This innovative process represents the ability to bring new products into existence. Such creative products can occur in virtually any domain illustrated within this thesis.

Secondly the definition should include a purposeful network of motivated activities and produce a series of products that display evidence of divergent thinking. Purposeful activity thus represents the enterprise element in this definition. This thesis explores both elements of the original enterprise concept. On the one hand the codes of innovative behaviour include such events as the central trigger experience, the influence of nationalism, social revolt and family influences. On the other hand, purposeful ongoing original activity is explored by the existence of obsessive behaviour, emotional forces and actions. Both the purposeful network and obsessive elements of creative behaviour are detailed in Chapters 4 and 5 of this thesis.

Selected biographies portray persons who typically displayed both innovative, initiative behaviour as well as evidence of an ongoing network of their activities, which results in products of an outstanding original nature.

#### 1.7 LIMITATIONS AND KEY ASSUMPTIONS

This thesis is basically concerned with the ‘mapping’ of modes of creative behaviour which transcend the limitations of domain specificity and seek for fundamental clusters of dimensions we described as uniquely creative.

There are several key assumptions and limitations inherent in this level of enquiry.

Firstly this thesis seeks to describe, rather than explain these phenomena. In fact no student of human behaviour has yet been able to fully explain the unique singular phenomenon described as highly creative original enterprise. In keeping with many similar studies these statistical calculations deal principally with the nearest 'fit' that can be achieved using 100 sample biographies and describe results in terms of levels of probability only and never as proven certainties.

Secondly it has not been the task of this thesis to rank the sample cases in terms of higher or lower levels of originality. A number of researchers such as McKinnon (1962) with his study of creativity in architecture or Csikszentmihalyi (1976) in a longitudinal study of art, have sought such ranking distinctions. However, these studies have all been confined to single domain considerations and although several attempts have been made, no researcher (the author included) has successfully devised a completely reliable method of cross-domain comparisons.

#### 1.8 THESIS OBJECTIVES AND LINKS WITH CONTEMPORARY HUMAN RESOURCES MANAGEMENT

The prime objectives of this thesis are as follows:

1. To identify key research objectives designed to quantify and elaborate on the phenomenon of original creative enterprise.
2. To map the relevance of these research objectives towards a comprehensive theory of original enterprise.
3. To prepare the foundation for a future comprehensive study of original enterprise and to explore the practical usefulness of this system in the context of current human resources requirements.

With respect to the third objective, three major issues appear characteristic of contemporary human resource management and to a certain extent are foreshadowed by the content material of this thesis. These themes concern the following:

1. The consequences for human resources management on the current globalisation of markets and economies.

2. The increasing emphasis on strategic planning issues within modern organisations and finally,

3. The growth of innovation as an economic foundation of entrepreneurship.

The increased globalisation of world markets, combined with company mergers and acquisitions, has required modern executives to become as familiar with conditions within the 'world village' as they were previously within their own home territory. Communications through the worldwide web have now largely replaced earlier forms of interchange such as telephone, fax or written correspondence. Competence within emerging knowledge-based economies has become a prime requisite for the manager of our modern era. Executive talent search is now conducted on a global basis, providing localised organisations with competitive advantages utilising new technologies drawn from international human resource talent pools.

Human resources global transfer is certainly foreshadowed by examples from the biographies contained within this thesis. These examples include the following:

Ernest Rutherford from New Zealand to London  
Howard Florey from Adelaide to the United Kingdom  
Gucci from Italy to the United States of America  
Marie Curie from Poland to Paris, France; and,  
Albert Einstein from Switzerland to the United States of America

Whereas in earlier times, human resources scientific and cultural transfer was a spasmodic phenomenon through personal travel and individual effort, contemporary transfer has become a more rapid interchange – an explosion as it were of products, scientific data and cultural themes on a worldwide basis. Modern management requirements involve far greater knowledge and judgement on global trends than was necessary or required in earlier era.

A second human resource management issue relates to the needs for greater emphasis on strategic planning than was earlier required. World markets often involve larger organisation structures than smaller localised companies. Strategic planning in extended markets requires adaptations to greater cultural diversity characteristic of overseas markets; the acquisition of multivariate skills in packaging, national themes, slogans and cultural sensitivities not previously required by management. Larger organisations require greater capital resources and executive competence is now commonly evaluated on international share values.

This thesis records numerous biographical examples of personalities who experienced difficulties in evolving from smaller to larger organisation structures.

Examples include Henry Ford's insistence on black automobiles and King Gillette's capital difficulties after his initial invention of the razor safety blade. Pierre Cardin, Calvin Klein and Yves St Laurent, all regarded themselves as individual fashion couturier with consequent problems in larger organisations.

Finally innovation itself, as a central theme for this thesis has become a popular issue in management and entrepreneurial education. In the United States of America and to a lesser extent in Australia and New Zealand, innovation centres designed to provide incubator support for new industries have been established. In this thesis entrepreneurial action was limited to relatively few exceptions such as Matsushita, Morita, Branson and Gates – twenty per cent of the selective commercial domain examples. Recent Queensland innovation centre calculations suggest even lower figures of two per cent during the previous five years. The failure of ideals contrasted to actuality is of great concern to educators, economists and politicians seeking increased employment from successful entrepreneurial activity. This thesis was concerned with the identification of major dimensions of behaviour, which lie behind the phenomena of outstanding innovative creativity. A post-doctoral psychological measurement exercise which could be employed to identify and stimulate entrepreneurial activity within younger persons, is a future prospect designed to correct this imbalance between innovation and entrepreneurial action - to the advantage of human resources management

## 1.9 CONCLUSIONS

This chapter has laid the foundations for the thesis. It introduced the research problem in terms of the continuing search for a satisfactory scientific explanation of the singularly rare phenomena described in terms of original creative innovation. It identified relevant research objectives related to mapping that explored basic behavioural constructs which lie behind and beyond the emergence of novel works of art, music, science, literature and commerce.

The research was justified, definitions were presented and the methodology was briefly described. On these foundations, the thesis can proceed with a detailed description of the research program in the following chapters.

## CHAPTER 2

### SUMMARY : LITERATURE REVIEW & RESEARCH OBJECTIVES

#### 2.1 INTRODUCTORY CONCEPTS

Two introductory concepts are fundamental to an understanding of the contents of this thesis. These consist firstly of the original enterprise concept and secondly the concept of psychological mapping. It is proposed to briefly outline these introductory concepts in this chapter.

#### 2.11 THE CONCEPT OF ORIGINAL ENTERPRISE

"If I have seen further, it is by standing on ye shoulders of giants"

Newton, February 5 1676

It is understood that various interpretations have been placed on this famous statement. The first is that he presupposes that human knowledge is forever advancing. The second interpretation is that progress of knowledge is not simply a 'higher and higher' progression, but also a 'further and further' viewpoint where the eye discovers unseen valleys and new, higher ranges never seen before.

The origins of this study in part lay with the dissatisfaction felt by the author with the preponderance of scientific literature and research emphasis coming from the commercial domain with a lesser emphasis on the rich complementary insights in creative arts, music, literature and science.

The search for a more comprehensive enterprise dimension was also influenced by the Edward De Bono philosophy in seeking more lateral explanations than confining ideas to single-cause constructs.

Newton's career itself provides a fine example of lateral thinking in pursuits that encompassed gravitation, mathematics, alchemy, theology, mint coinage, light and colour.

There are indeed, numerous examples of the advantages in seeking a wider rather than a confined search for explanation in science. Alexander Graham Bell's interest in the deaf and the development of a phonetic alphabet led directly (and laterally) to his belief in the telegraphic transmission of speech and the invention of the telephone.

Charles Darwin's 'never failing' interest in geology led directly to his theories on evolution. Ernest Rutherford, always a pursuer of interesting sidelines commenced a series of side interests on radioactivity and then the atom. These led directly to his discovery of gamma radiation rays and the Nobel Prize for Chemistry in 1908.

Finally the single x-ray diffraction slide given by Maurice Wilkins to James Watson in May 1951 was one of the key 'lateral' elements that led to the discovery of the structure of DNA. (Friedman, 1998, p.210).

The concept of original enterprise in terms of a broad network derived from a wide variety of emanations of creative output including science, literature, arts and music as well as commerce, therefore constitutes an important dimension to this study and the consequent research objectives. The one hundred biographies selected for this thesis are summarised in Appendix IV and provide examples of persons of unquestioned eminence in each domain under consideration. As expressed by Newton, scientific and creative ideas are indeed stimulated by standing on "ye shoulders of giants".

One of the important advantages of investigating creative enterprise across numerous domains is the cross fertilisation of ideas that such an approach provides. Another way of expressing a similar idea has been proposed by Jardine.

"Great ideas are the product of collisions of minds and broken boundaries." (Jardine, 1999, p.39).

## 2.12 THE CONCEPT OF PSYCHOLOGICAL MAPPING

"Maps surprise. If there is a persistent theme that emerges from the chronicles of contemporary scientific cartography, it is that the creation of a map almost inevitably leads to unexpected revelations ..... In its gaps, as well as its details, a map focuses our thinking, incites our curiosities, tempts us to peek over that line dividing the known from the unknown."

Hall (1993, p.25 and p.27)

Hall wrote his book on *Mapping the Next Millennium* in 1993 well after the determination of the DNA genetic structure map was discovered in 1953 and well before the mapping of the entire set of a human organism molecular instruction or genome announced in 2000.

Biological science at present can map just one instruction or gene at a time. Beyond 2000 science will be able to read and assemble in the order of 3 billion – plus chemical letters that make up the 80 000 human genes. This map will provide researchers the full set of instructions for making, maintaining and reproducing human biology.

This thesis is primarily an attempt to define creativity in terms of the capacity to bring together in one construct (or map) previously unconnected dimensions of personality attributes, trigger experience, obsessions, childhood experiences, actions, emotions and pathologies as an assembled whole, rather than isolated one-to-one attributes. Psychological mapping, like genetic mapping, is a multivariate rather than a univariate analysis approach. It is expected that this approach may constitute an original contribution to the study of original enterprise.

## 2.13 CODING A PSYCHOLOGICAL MAP

Twenty-six letters of the alphabet enabled William Shakespeare to employ a vocabulary of some 35 000 different words in his plays and poems. Instead of letters, this study uses the word 'code' as an explanatory construct. Similarly the four base-pair sequences of the DNA formula carries the code for some 80 000 gene 'maps' that together make up human biology.

In a less dramatic manner, this study seeks coding items derived from biographical, scientific and personal data to develop a theoretical structure inductively derived from the study of the phenomenon it represents.

A summary definition of all codes employed is set out in Appendix V. In general terms these codes were derived from

- Personnel consulting and research experience in New Zealand 1958 – 1978.
- Consulting experience in New Zealand and Australia. Child clinics, mental hospitals and prisons.
- Standardisation of personality testing with the late Professor C J Adcock 1977.
- Publication of 15 books on national identification themes on New Zealand, Australia, Singapore and Malaysia.
- A survey of biographical and scientific literature which was a continuous study between 1996 and 1999 and continuing today in the expanding domains of politics and sport.

## 2.2 1998 EXPLORATORY PILOT STUDY

Chapter 7 summarises an exploratory pilot study involving 52 biographies and 24 individual codes.

Biographies selected were from science, creative arts, literature and commerce. Actual codes were drawn from a variety of sources. These include the biographical and scientific literature (see bibliography) previous consulting and research experience and a private library on creative arts.

### 2.2 1 SCIENTIFIC LITERATURE REVIEW

The current scientific overview owes a debt to Eissler's biographical sketch of Sigmund Freud (1976 introduction). He writes, (p.19) "Freud had come upon the problem of the dream through the remarkable observation that his patients regularly told him about their dreams and that there was an obvious connection between their dreams and symptoms. This necessitated a systematic investigation into the psychology of dreams, in the course of which Freud also studied his own dreams.

At the beginning of his book, Freud gives a survey of all the frequently contradictory statements that had been published about dreams up to that point. He subsequently shows that there is a place for almost all these findings in his comprehensive theory. On the foundation of his revolutionary insights, the accuracy of which had been confirmed by dream analysis, he then built up his new general theory of the emotional life of man. It is contained in the famous seventh chapter, and marks a radical turning point in psychology, comparable to the revolution of physics effected by Planck's quantum theory.

Modern scientists such as Eysenck (1995) would certainly not equate Sigmund Freud's interpretations of dreams at the same scientific level as Planck's quantum theory, regarding many of his propositions as untestable hypotheses.

However, the *modus operandi* of his thesis remains admirably sound and a similar procedure has been followed in now reviewing earlier partial explanations of creative behaviour and their contribution to the thesis proposed here.

### 2.2 2 PRIOR EXPLANATORY LEVELS

The scientific literature review is based on two levels of prior research endeavour as follows:

- Single cause explanations, such as unbalanced minds, hard work and exceptional intelligence.
- Explanations of increased complexity, such as social interaction, motivation and context dependent original enterprise.

## 2.2 2(A) CREATIVE ENTERPRISE AS A FUNCTION OF AN UNBALANCED MIND

“This illness we call genius”

Lamartine

“Great wits are sure to madness near ally’d  
and thin partitions do their bounds divide.”

John Dryden, from  
*Absalom and Achitophel*

Popular single-cause explanations of genius abound in psychoanalytic literature. Stravinsky’s music is attributed to his obsessive desire for order and conciseness in his personal habits and composing, while his *Rite of Spring* composition represent his intense desire to overcome the inhibition of his miserable childhood (Storr, 1972).

Wagner could not work unless surrounded by soft linens, colours and perfumes – exhibitions of fetishistic behaviour. He is said to need to stroke the folds of soft curtaining until the right mood came – obviously a wish to stroke female flesh (Sabor, 1989). Isaac Newton remained a solitary recluse at Cambridge, sleeping little, forgetting to eat or dress or take exercise – exhibiting depressive behaviour often bordering on paranoia (Brodetsky, 1927).

Obsessions, fetishes, paranoid and schizoid tendencies, neurotic behaviour, dreams, collecting mania and numerous similar observations frequently occur in a psychobiographical study of original enterprise. Eysenck (1995, p.236) has postulated that psychotic symptoms “without psychosis” as a primary dimension of creativity, and in fact is the “vital element in translating the trait of creativity from potential into actual achievement.” He proposed to reinterpret a century of clinical observations about pathological conditions such as schizophrenia, manic bi-polar disorder, neurosis, character disorder and neurasthenia into a single ‘psychoticism’ dimension which is purported to be the common genetic basis of great potential in creativity.

The Eysenck psychoticism dimension proposed to combine psychotic symptoms into one combined continuum was thoroughly analysed by the late C J Adcock, (1957). Adcock (1957) concludes his study by summarising “that it is not justifiable to conclude that a schizothymia-cyclothymia continuum does not exist” (p.51).

It may correctly be observed that pathological symptoms are sometimes associated with original enterprise activity. However, as detailed in Chapter 7 *Analysis of Data*, psychopathology is only one dimension of original enterprise and does not necessarily suggest a complete causal level of explanation.

Exaggeration and bias are common sources of error in psychoanalytic interpretations of creative behaviour. Isaac Newton did work as a solitary observer and inventor in his rooms at Cambridge, but his long absences from the University may be explained by his fear of plague rather than by his schizoid traits. In fact, as a twenty-four year old student, he created modern mathematics, mechanics and optics in sheer isolation on a remote Lincolnshire farm.

It is not necessary, as Nagara (1967) suggests, to explain Vincent van Gogh's explosion of art in his last years in terms of sexual deprivation. There are far simpler explanations available without such extremes and the principle of Occam's Razor (that entities are not to be multiplied beyond necessity) could well be applied to many other psychoanalytic interpretations.

The plain truth is that serious psychopathology occurs in only 8 to 10 per cent of case studies (as confirmed in this study) and although various minor forms of neurosis, character disorders, manic bi-polar disorders, neurasthenia and schizoid symptoms are fairly common, there is no solid evidence as postulated by Storr (1988), Eysenck (1995) and others that psychopathology and expressions of original creative behaviour of high order are synonymous conditions. The idea is currently a popular concept and provides more media speculation than the evidence really supports.

Post (1994) in his study of 291 world famous scientists, composers, politicians, artists and writers applied the widely accepted *Diagnostic and Statistical Manual of Mental Disorders London* and reported that severe psychopathology was found in 18 per cent of scientists, 31 per cent of composers, 1 per cent of politicians, 38 per cent of artists and 40 per cent of writers.

This thesis encodes most possible nuances of enterprise behaviour, including childhood experiences, family and socio-historical antecedents, personality traits, the achievement process, eight major obsessions, actions, emotions and pathologies of varying degrees of intensity.

Such a wide spectrum of data does not negate individual single observations; it simply places them in order of their relative importance for a total behavioural theory and seeks for mathematically-linked groups or clusters that lie behind these phenomena.

## 2.22(B) HARD WORK AND DISCIPLINE — A SIGNIFICANT EXPLANATION OF ORIGINAL ENTERPRISE

“Genius is ninety-nine per cent perspiration; one per cent inspiration”

Thomas Edison

In the absence of any other reasonable explanation of original creative behaviour, Edison's observation constitutes a very common, popular conclusion. Voluminous productivity is certainly the rule rather than the exception among individuals who have made noteworthy contributions to science, commerce or the arts. Total commitment to work, to the exclusion of all other interests, is also well documented in this research.

Sigmund Freud produced 330 publications in his 45-year career. Pablo Picasso created several thousand works of art in 75 years; Albert Einstein wrote 248 publications in 53 years and Charles Darwin 119 in 51 years as well as 14 000 letters.

In the literary area, Lewis Carroll wrote an estimated 104 000 letters to friends, children and acquaintances in his 37 years of life; Robert Louis Stephenson left more than 2500 letters in addition to his collected poems, novels and short stories. It took some three years to catalogue the letters and manuscripts of Arthur Conan Doyle. John Milton took 18 years to complete *Paradise Lost*; Charles Darwin took 21 years to write the *Origin of Species* and Sigmund Freud took 8 years to write *The Interpretation of Dreams*.

Five thousand letters from Thomas Hardy are recorded and Isambard Kingdom Brunel built 1046 miles of railway by 48 years of age. Obviously disciplined work is a common characteristic of outstanding personalities of original enterprise. The distinction between work as achievement and as an emotion has been thoroughly investigated in this report and is included in the result section, Chapter 5.6 2.

The work code is an important element in this study and takes its place alongside other multi-dimensional factors contributing to a total picture.

## 2.2 2 (C) EXCEPTIONAL INTELLIGENCE AS A SINGLE DETERMINANT OF CREATIVE ENTERPRISE

“Chance favours only the prepared mind.”

Louis Pasteur

Novel creative thinking of a highly original order is commonly attributed to intellectual brilliance. Luminaries such as Albert Einstein, Thomas Edison or

Stephen Hawking produced their revolutionary achievements from an exceptionally high general factor of intelligence and had intelligence quotients purportedly in excess of 150.

This 'magic bullet' single cause explanation may be properly traced to Sir Francis Galton (ca, 1869) whose studies of outstanding persons in art, science, literature and the law, sought to associate hereditary traits as the basic foundation behind high levels of intelligence and hence original creativity.

The concept of correlation is also attributed to Galton, leading the way to more precise measurements of intelligence by Binet (1905), Terman (1926), Weschler (1939) and Stoddard (1943).

Modern theorists now position outstanding creativity in more multivariate terms, but the popular concept linking this unique facility to high levels of intelligence still remains. For example, early New Zealand commercial testing programs, in the experience of the author, consisted almost entirely of intelligence measurements as a primary predictor of commercial or arts achievement.

Numerous modern studies have also succinctly demonstrated this limitation of intelligence as a predictor of outstanding talent.

Professor Howard Gardner (Harvard Graduate School of Education) concluded in a 1998 study that gifted children are not necessarily destined for glittering careers. He also quoted the school failures of Winston Churchill, Albert Einstein and Thomas Edison.

Professor Joan Freeman from Middlesex University quotes a study that traced 850 boy and 670 girl 'geniuses' from 1925 to the present. All had IQ's of at least 135, putting them in the top one per cent of the population. The latest review of this longitudinal study shows that these subjects have not been noticeably more 'successful' as adults than if they had been randomly selected from others of the same social backgrounds. (Freeman J, 1983, p.401-405)

Two fundamental observations have now laid to rest the concept linking high-intelligence to original enterprise.

The first relates to the proportion of people of high intelligence within any given population, compared to the proportion of persons of high creative output in a similar population. Taking the New Zealand population as an example, and one per cent of that population having IQ's in excess of 135, we would expect to find some 30 000 examples of outstanding original creativity within this country – an obvious absurdity.

There is no real relevance between high scores on intelligence tests and similar numbers of persons exhibiting the acme of high creativity. This discrepancy would be correct whichever culture is examined.

The second factor of 'regression to the mean' is reported by Eysenck (1979 and 1995) and rebuts Galton's original thesis almost completely. "According to the original notion, very dull parents have very dull children, average parents have average children and very bright parents have very bright children, thus presaging an endless caste system." But in reality, children of very dull or very bright parents regress to their mean. Variation is maintained by the children of average parents, some of whom are bright or dull with a few very bright or very dull. "There is no record in history of a genius begetting another genius; all history records is regression to the mean." (Eysenck, 1995, p.15).

The literature review and examples of single-cause explanations of original innovative behaviour suggested the second thesis research objective, dealing with the multivariate nature of domain specificity contrasted to single cause explanations of novel behaviour. This second research objective is summarised at the conclusion of this chapter. Storr's 1988 thesis was essentially schizoid-personality specific: Eysenck's (1995) thesis was 'psychoticism without psychosis' specific and the earlier Galton study was 'hereditary-intellect' specific.

By contrast, this thesis posits major, fundamental patterns across all behavioural and talent domains and seeks a mapping priority rather than a single explanation priority as outlined in the first research objective. This study seeks an outline map of a general rather than an *a priori* specific approach as the basis for reasonable explanations of high levels of original creative enterprise.

## 2.3 ORIGINAL ENTERPRISE DETERMINANTS OF INCREASED COMPLEXITY

### 2.3 1 EXPLANATIONS BASED ON SOCIAL INTERACTION

In considering the relationship between creative enterprise and social context, the wider issue must surely involve the subjective response of the audience toward novel creative works. According to Weisberg (1986, p.86) "Genius is a characteristic that is bestowed upon an individual through the subjective response of an audience. Possessing genius is much like possessing beauty — it depends on who is doing the judging." (author's emphasis).

There are numerous examples of the social forces which illustrate the transient variability of this concept of original creative enterprise. The revival of the music of Scott Joplin stimulated by the use of his music in the motion picture *The Sting* directly assisted to popularise this artist. His compositions were always available;

the perception of his originality waxed and waned in response to his popularity. For example, George Gershwin nominated Scott Joplin as one of his own role models at the same level as Al Jolson and Leonard Bernstein.

Beatrix Potter's biographer describes her early years as living an almost completely isolated life without going to school or having any opportunity of mixing with other children and one who began to weave fantasies around the lives of animals and her stuffed toy rabbit (Lane, 1946). She became accomplished as a watercolour artist and her desire to 'create something' found its outlet in recounting imaginary stories for a sick relative. *The Tale of Peter Rabbit*, *The Tale of Squirrel Nutkin* and *The Tale of Jemima Puddleduck* together with other stories were created over a ten-year creative period. Beatrix Potter subsequently met and married a solicitor, purchased a number of Lake District farms and became a successful cattle farmer, dropping her writing and illustrative activities altogether. Her need to 'create something' was transformed to large-scale farming that she thoroughly and successfully pursued for the rest of her long life.

The careers of Johann Sebastian Bach (1685 – 1750) and Charles Rennie Mackintosh (1868 – 1928) provide further examples of the direct relationship between social forces and the definition and direction of original creative enterprise.

Bach's claim to fame as a musical composer of undoubted superiority struck a responsive chord some 100 years after his death and coincided with the rise of German nationalism. A biography of Bach written by Forkel in 1862 makes this nationalistic aspect very clear. (Weisberg p.86). "This great man was a German. Be proud of him, but be worthy of him too ... His works are an invaluable national patrimony with which no other nation has anything to be compared." Weisberg points to the success of Bach as more that he was German, than that he was Bach.

Charles Rennie Mackintosh and his long-time collaborator and wife, Margaret MacDonald were virtually forgotten in Glasgow as an exponent and practitioner of his distinctive arts and crafts style of architecture. Here again the rise of Scottish nationalism is as much a contributor to his distinctive style as was his architectural craft.

He spent the last 10 years of his life working in the south of France, pursuing a second career in fine art, when his architectural career was faltering, and both he and Margaret were seeking a new artistic vocabulary to express their ideas and aims for the new century.

"Their watercolours were not just pastimes of retirement; they were both experiments in exploration and fulfilment. Their graphic style perhaps betrays the former architect, but their substance was new." (Crawford, 1995, p.189). The social

forces of rejection and despair found a completely new outlet in visual art of a new high order, and their national museum now (in hindsight) claims that Scotland “may have produced no finer architect and designer than Charles Rennie Mackintosh.” (Glasgow National Museum 2000 calendar).

The last illustration comes from experiences as a consulting psychologist working in Auckland for the Nestlé confectionery company. Around 1965, the author was assigned to examine the psychological qualities needed to market chocolates to the numerous small grocery retailers that characterised the New Zealand market. Using a base sample of some 50 staff rated on their ability to open new accounts, I defined their characteristics (using mainly R Cattell's Sixteen Personality Factor Test and Maslow's N Achievement measures) as high on dominance, (Factor E) high on trading ability (Factor L) self-sufficiency (Factor Q2) and low on intelligence (Factor B) – suggested as a measure of social acceptance by the author.

This method of selection proved highly successful until the advent of the supermarket around 1970. Numerous small grocery businesses closed down, and the decision-makers in the purchasing of products changed from small retailers to the better-educated buyer armed with a larger order book and more balanced, thoughtful marketing analysis.

The aggressive, competitive, highly emotive, not so bright salesman was no longer the 'right choice' for the supermarket buyer and the author was required to recruit more intelligent, college-educated graduates to meet these new conditions. The definition of commercial enterprise was not an absolute dimension but entirely dependant on the economic milieu of the situation in which he was required to perform.

## 2.32 MOTIVATION AND ACHIEVEMENT IMAGERY

An allied personality dimension of creative behaviour has been thoroughly canvassed by McClelland (1953). His proposal of an achievement-imagery as a mirror of creativity was based on Thematic Apperception projections purporting to measure the degree of achievement (the N. Ach concept) as an index of commercial entrepreneurial potential.

McClelland restricted his studies to economic activity as the main channel for achievement drive. This limited definition of creative enterprise behaviour is a common ideological flaw and was early rejected as a basis of a full theory of creativity by the author and by other investigators such as Brockhaus (1982) and Shapero (1983).

The Thematic Apperception Test does not appear to lead to a precise identification of major motivational dimensions or of their relatively unique distribution (Brockhaus 1982). If the outstanding characteristics of the entrepreneur are independence, desire for prestige and power, drive, high involvement, self-actualisation and risk-taking, then these traits are also obviously evident in other domain endeavours such as in the arts, sciences, religion or politics. The specificity and distinctive power of the concept is therefore largely lost.

Gruber (1989) pictures the process of enterprise as a "structure that organises a complex life," where a person is "not disoriented or dazzled by a bewildering miscellany of activities, but can readily map each activity onto one or another additional enterprise." (p.13). He defines the term enterprise as a somewhat more complex construct than does this study and sees it as "standing for a group of related projects and activities broadly enough defined so that the enterprise may continue when the creative person finds one path blocked, but another open towards the same goal." (p.11).

Gruber (1989) distinguishes the two different goals behind motivational activities, as task-oriented contrasted to ego-oriented behaviour. Ego-orientation or extrinsic motivation he categorises as a motivation for recognition, power, prizes, money and privilege. Task or intrinsic motivation refers to attitudes to work that is rewarding in itself without the need for external ego satisfaction.

In this research program, the self-adulation and narcissistic behaviour seen in the biographies of Noël Coward, Gustave Courbet, Elton John, Nellie Melba, Salvador Dali and Giacomo Puccini may be contrasted with the more task-oriented motivations of Claude Monet, Thomas Edison, Fred Hollows, Andrew Carnegie and Gustav Mahler. In the latter category are the obsessive perseveration traits that continue their chosen creative paths despite difficulties, old age and similar vicissitudes.

### 2.3 3 CONTEXT-DEPENDENT ORIGINAL ENTERPRISE

In the case of original creative thinkers it is commonly assumed that such actions are stable characteristics and not subject to significant change or fluctuation. A genius is a genius forever. His novel actions, like his intelligence, have an unvarying pattern that is readily recognisable. This point of view is largely unsubstantiated and both in this survey, and in history, there are numerous examples of the variable nature of original enterprise creators.

Albert Einstein's rejection of the statistical laws of quantum mechanics, now widely accepted as the basis of modern physicists' conception of the universe, provides a good example to illustrate the concept that even the greatest scientists are not

uniformly creative throughout their lives. His famous letter to Max Born, December 1926 that “God does not throw dice” suggests that although he actually commenced modern theorising about light particles, he was not able to see far enough into the future to predict where these observations would eventually lead.

Further examples illustrate the varying nature of original innovator behaviour in science. Isaac Newton, spent some 25 years in a fruitless study of alchemy, while Alfred Wallace, famous for his studies of evolution, also displayed an obsessive interest in spiritualism and obtaining ‘messages from the dead’.

Jean Sibelius wrote his first compositions at 10 years, and later wrote a number of outstanding Finnish compositions as poetry and in music (including the *Finlandia* hymn in 1940) but wrote nothing of any significance for the last 30 years of his life.

Linus Pauling, twice winner of the Nobel Prize for chemistry in 1954, and for peace in 1962 - the latter at 69 years of age - devoted most of his later years to writing about the virtues of Vitamin C as a cure for the common cold, cancer, measles, mumps, meningitis, chicken pox and HIV! This obsession continued despite the finding of the Mayo Clinic that there was no evidence of Vitamin C’s overwhelming value.

Finally, King Gillette invented the throw-away safety razor blade around 1890 and developed it into a world beating product with great success. Yet he spent many years on extreme economic theories, which were the basis of *Human Drift*. He attempted to found a ‘world corporation’ and to build a vast industrial metropolis at Niagara Falls. These aberrations provide a further example from the biographical collection (Russell Adam, 1978), of the wide variability of original enterprise activity.

## 2.4 RESEARCH PROTOCOL

The prime objective of this thesis was to engage in an exploratory investigation of the phenomena of original creative enterprise.

The basis of this investigation was to assemble coded behavioural data on one hundred persons of unquestioned creative proclivity in commerce, science, music, fine arts and literature. This assembled data was examined with reference to three research objectives and a consequential observation construct summarised herein.

A variety of multi-variate statistical procedures were employed to further investigate this assembled information. This technology is described as a form of mapping behavioural data.

Coding data was assembled by the author in consultation with Massey, Melbourne, Swinburne and Queensland Universities. Recording all codes so assembled constituted an important record for future investigators. As reliability checks were not available at the time of code identification, the assembled data needs to be treated with caution.

The justification for these procedures was that research on this subject has to date and especially in the popular press, produced a variety of single cause theories and largely unsubstantiated fallacies concerning original enterprise. It now seems timely to construct a more balanced explanation of this whole subject. Mapping out the most significant dimensions of creative proclivity to determine their relative importance was a prime objective of this study.

It was expected that the statistical content analysis would produce groupings or clusters of behaviour that would identify the style and degree of original creative enterprise.

One final objective was to describe the nature of the clusters so identified either in terms of an epistemological approach or alternatively to confine this identification to a solely statistical interpretation.

In either case this exploratory examination was designed to prepare the foundation for a future, more comprehensive study of original enterprise and to explore the practical usefulness of this system in the context of human resources requirements.

## 2.5 LITERATURE REVIEW AND RESEARCH OBJECTIVES

Chapter 2 has briefly reviewed both scientific and biographical literature, firstly as an introduction to this thesis search for a rational map of original creative human enterprise and secondly as the source of research objectives which will be examined by the subsequent analysis of data, Chapter 7. Each separate research objective is summarised below, together with its likely derivation from the literature search.

### 2.5 1. FIRST RESEARCH OBJECTIVE

The first research objective is to explore the concept that an original enterprise map clusters around specific behavioural traits and modes of behaviour.

This research objective was derived both from various biographical and scientific literature observations during the period of study, and from the author's many years of psychological consulting practice.

Relevant biographical sources include the observation that there appeared to be both common factors throughout the study, such as central trigger, self-actualisation, nationalism, work frenzy and independent mindedness, balanced by the observation of clusters of distinctive traits in the overall summary.

For example, serious pathological conditions were evident in the biography of Edgar Allan Poe, Virginia Woolf, Egon Schiele and Katherine Mansfield but not evident as a universal condition in the sample.

Again, high levels of insight are seen in the cases of Albert Einstein, Charles Darwin and Jules Verne, but are not universal attributes. Similarly isolated, schizoid traits are seen in Anthony Trollope, Beatrix Potter, Bela Bartok, Vaslav Nijinsky, Guiseppe Verdi, Maurice Ravel, Emile Zola and Isaac Newton. Competitive entrepreneurial characteristics are evident in the cases of Andrew Carnegie, Henry Ford, Lee Iacocca, Frank Beaurepaire and Emile Zola – none of which show evidence of universal attributes. These clusters of similar behavioural traits form strong threads throughout the biographical literature and to a lesser extent are commented on by scientific references.

Lubart's (1999), analysis of creativity across cultures suggests that creativity may be "context dependent" (p.347) on a particular culture or domain. This variability of behavioural dimensions of original enterprise is later summarised under the analysis of results Chapter 7.

Reisman (1950) illustrates the general proposition that social variability of personality traits or characters, as he terms them, are dependent on population growth (other-directed personality); transition periods (inner-directed) or stable population (tradition directed) societies. In other words, the direction of creative outputs has both social and personality determinants of behaviour.

Finally Rogers (1961) sees the creative process "emerging in action of a novel rational product growing out of the uniqueness of the individual on the one hand, and the materials, events, people or circumstances of his life on the other" (p.350) (author's emphasis). In other words, behavioural traits are typically exhibited in clusters of 'individual uniqueness', leading to this study's proposal of the first research objective.

The fundamental importance of the first objective is the proposal to transform a series of biographical examples of original creative enterprise, into the concept of

clusters of behaviour that lie behind these case histories. In simpler language the first objective removes data from its context. Behavioural clusters, as identified later in this study, constitute a new level of abstraction in the study of creative enterprise, and as such constitute a departure from earlier single-cause explanations.

Schmandt-Besserat's (1992) classic study of the possible origin of cuneiform script in ancient Iranian Susa follows a similar path of abstraction which provides a good example of scientific concept development. Commencing with the discovery of numerous clay counting tokens dating back to the southern Mesopotamian era, she also discovered the existence of clay envelopes to contain these tokens. This hollow clay, 'Rozetta Stone', discovered in Nuzi, Iran from the 2<sup>nd</sup> millennium B.C.E. contained on its outside surface in simplified form, the same coded data as found on those tokens contained in the enclosing envelope. The tokens were physically concrete data, while the clay envelope removed this data from its context and evolved into a simplified accounting system.

The possible origin of cuneiform script in ancient Susa is that the envelope code took over the need for the original token system. There was no need for both token and envelope. The latter simplified cuneiform script took over from the former. The accountants of Uruk, Mesopotamia impressed markings in a codified shape of the enclosed tokens on the outside of the envelope. This prehistoric token and envelope system provided Schmandt-Besserat with a convincing account of the subsequent chain of events that probably led to the world's first known script.

In a somewhat similar fashion, the first research objective proposes to abstract the behavioural codes itemised in this study, and to finally express these original enterprise constructs in terms of clusters of behavioural traits. The behavioural clusters are outlined in Chapter 8 of this thesis.

## 2.52 SECOND RESEARCH OBJECTIVE

The second research objective is to demonstrate evidence that an original enterprise map suggests domain variate characteristics.

From its inception, this thesis took the position that confining a mapping search to commercial creativity alone was too limiting. It was decided to include other domains such as music, science, literature and the creative arts, so enabling the study to view original enterprise in a more comprehensive context.

The primary source of the domain variate characteristic behind a map of original enterprise, was derived from reading and coding the wide range of similar antecedent conditions – childhood experiences, personality traits, the achievement

process, actions, emotions and pathologies, evident in 100 biographies of selected eminent personalities in music, literature, science, creative arts and commerce. Full details of these selected biographies and the codes involved are contained in Chapter 3 and 4.

The distinction between this multivariate mapping approach and comparative positions expressed in the scientific literature may be observed. For example:

- McClelland's single domain explanations of entrepreneurial behaviour (McClelland, 1953, Section 2.3.2).
- Storr's (1988) proposal of a highly reserved, schizoid personality level of explanation of original enterprise.
- Eysenck's (1995) concept of 'psychoticism without psychosis' level of explanation.

The prime difficulty with single, rather than multivariate explanations of original creative enterprise, is that there are inevitably 'exceptions' to the former that are difficult to explain unless the latter position is taken.

### 2.5 3 THIRD RESEARCH OBJECTIVE

The research objective is to observe significant distinctions between early and later original enterprise behaviour.

The initial sources of this objective were drawn from observation and from the biographical collections; secondly from a review of scientific literature.

Section 5.3 1(v) compares obvious behavioural differences based on the longevity of the subject. Some 'early developers' such as Picasso, Egon Schiele, Igor Stravinsky, Bill Gates and Stephen Hawking were compared with 'later developers' such as Paul Cezanne, Claude Monet, Giacomo Puccini, Lee Iacocca and Marie Curie.

This superficial level of observation and 'hunch' has been corrected somewhat by Gruber (1989) when he points out that although there are seemingly sudden appearances of great works, "no case of early achievement occurs without a long apprenticeship" (p.15). Gruber applies this reasoning to Pablo Picasso, Vincent van Gogh, Charles Darwin and even Albert Einstein.

Simonton (1999) states that as the result of his historiometric work, he concludes "with great confidence" that behavioural patterns are affected by longevity issues and that changes in creativity do appear in the very last years of a creator's life.

“Creators in their final years”, he claims “may be much more creative than less notable contributors who are at the zenith of their career paths!” (p.122).

Finally, Csikszentmihalyi (1986) discusses the question of proclivity as an element of giftedness. He points out that whereas there are young prodigies in music, chess, foreign languages, sport and mathematics, there are very few in morality, altruism, politics or poetry. His explanation appears to be that these children are able to develop precocious skills – easily recognised by western cultures – but not so readily appreciated elsewhere. He concludes that “there are vast areas of human action, in which precise qualification or even comparisons are difficult or impossible” (p.267).

A research objective that seeks to define and statistically measure the distinctions between early and later creative behaviour appears to the researcher to make a valuable contribution in mapping these variables.

#### 2.5 4 FOURTH RESEARCH OBJECTIVE — A CONSEQUENTIAL OBSERVATION

The fourth research objective, expressed as a consequential observation, suggests evidence that self-actualising complex personality dimensions exist in various original enterprise clusters.

Scientifically the possibility of such an objective by inference was strongly influenced by the writings of Maslow (1968). Maslow spends considerable time discussing what he describes as a ‘peak experience’ that was coded throughout the biographies as ‘self actualisation’. He defines this construct as “an episode or a spurt in which the powers of the person come together in particular efficient and intensely enjoyable way, and in which he is more integrated and less split, more open to experience, more idiosyncratic ... more truly himself” (p.97).

The key to Maslow’s concept is better expressed when he described the creative process which is ‘emitted’ or ‘radiated’ and “hits all of life regardless of problems” (Maslow, 1968, p.145).

In Chapter 5.5 1 (iii), this study defines this self-actualisation concept in more prosaic terms than that of Maslow, limiting this expression to ‘confidence in self, self-idealisation, making castles in the air, dreaming forward and reaching full personal potential’.

There are numerous references in the biographical summary to the occurrence of this self-actualisation experience and given as examples in 5.51-(iii). Based on Maslow’s writings, this consequential observation should be readily ‘recognised’ in

the eventual clusters of behaviour that appear from the collected summaries of data and consequent statistical analyses to follow.

## 2.6 CONCLUSIONS

This chapter briefly reviewed the biographical and scientific literature leading the study to propose three principle research objectives and a consequential observation that set the stage for the statistical analysis and interpretation of the assembled data. Research protocol and justification for this thesis approach is also briefly summarised.

Multivariate mapping of a wide variety of influences behind and beyond the eminence of original creative enterprise is favourably compared to earlier single-cause constructs in the reviewed scientific literature.

## CHAPTER 3

### SUMMARY: BIOGRAPHICAL SELECTION

#### 3.1 INTRODUCTION

Collecting and selecting 100 biographies from persons of acknowledged outstanding originality in science, literature, commerce, creative arts and music produced a substantial variety of rich detail which would not be appropriate to reproduce in its entirety in this thesis. Full biographical data on the original 200 biographies and the selected 100 are listed in the bibliography section.

#### 3.2 ALTERNATIVE METHODS OF RESEARCH

A survey of alternative approaches relevant to the study of original creative enterprise suggested four major methodologies applicable to this problem, viz:

Psychometric  
Experimental  
Biographical  
Computational

Briefly, psychometric methodology concentrates on the measurement of traits considered to measure creativity by use of various psychological tests. Guildford's (1950, 1967) tests of divergent thinking and the Torrance Tests of Creativity (1974) constitute the major milestones in this approach, having the advantage of precision and measurable variants.

On the negative side, however, the purely psychometric approach tends to restrict a fuller understanding of creative thinking as proposed by this study, and the evidence that divergent-thinking tests do really measure or predict creative thinking is not well proven. This approach in fact, has added little to either cognitive theory or educational practice.

Experimental methodologies approach this problem as a form of cognitive task analysis, attempting by brainstorming or other approaches to motivate and teach creative production. The technique is unbalanced in that although internal validity may be well controlled and valuable, there is no successful way of translating these methods to any measurable form of external validity. Lack of spontaneity and actual measurable results has limited this approach for extensive future use.

Biographical analysis as an approach to the study of creativity has a rich history, dating back to Galton's (1860) *Hereditary Genius* and continuing until the present time with documented writers such as Gruber and Wallace (1989), Storr (1972, 1988, 1992) and many other investigators. By examining those creative individuals whose status as creators is unquestionable, this approach hopes to reduce psychological descriptions and actions to a fixed set of measurable dimensions.

The weaknesses of a solely psycho-biographical approach are the obvious lack of control, representativeness and the ranking of creative personalities in some order of outstanding competence. Furthermore as has been demonstrated by Weisberg (1986) and others, the concept of 'unquestionable genius' is not a guaranteed lifetime trait, but rather a variable function of time, social acceptance and fashion.

Computational methodologies attempt to reduce creativity to a computer program as a type of 'artificial intelligence'. Creativity is seen as a computer code, allowing for solid levels of precision, by assuming that cognition and creative action may be reduced to a mathematical formula.

These classical approaches of psychometric, experimental, biographical and computational methodologies all have strengths and weaknesses. This study combines biographical with computational methodologies as a reasonable method of merging the best of both approaches into a balanced, productive result.

This position is best summarised by Mayer (1986) where he states "What is needed is a methodology that combines the scientific respectability of the psychometric and experimental approaches with the authenticity of the biological approach. Although no single approach may be able to provide a complete theory of creativity, what is also needed is a creative combination or amalgam that addresses the unique needs of creativity research" (p.459).

### 3.3 BASIS OF BIOGRAPHY SELECTION

The selection process for the 100 case history examples was based primarily on the following criteria:

1. They should reach a standard of unquestionable eminence in a wide variety of enterprise 'domains'.
2. They should be, as far as possible, persons whose eminence was the result of unusual achievement and not as a consequence of fortuitous circumstances such as incidence of birth.
3. They must be persons for whom adequate records were available, with records upon which reliable ratings might be based.
4. For cultural consistency they should represent examples from 19<sup>th</sup> and 20<sup>th</sup> century national and cultural groupings. This thesis includes cases from –

Asia

Australasia — Australia and New Zealand

Europe

South Africa

South America

United Kingdom

United States of America

U S S R

5. Both male and female biographies should ideally be represented. However, typical of most similar surveys, this selection was necessarily male dominated (93 per cent). The female cases were as follows:

Jacqueline Du Pré – Music

Marie Curie — Science

Nellie Melba — Music

Coco Chanel — Commerce

Helena Rubinstein — Commerce

Virginia Woolf — Literature

Katherine Mansfield — Literature

6. Present the most up-to-date and authoritative biographies possible. On occasions several sources of information were used to produce the best possible analysis.

### 3.4 RANKING RELATIVE SENIORITY OF ORIGINAL ENTERPRISE PERSONALITIES

There have been several well-documented attempts to rank musical composers, by Folgmann (1933), and Farnsworth (1969), and (although some attempts have been made) there appears no reasonable scientific procedure for ranking eminence

across all domains involved in this study, and any attempt to conclude that one particular personality is of greater significance than another is likely to fail.

It was felt that recourse to the widest range of creativity possible was the best method available to investigate the variety of experience that lies behind the original enterprise phenomena. As an example, this selection includes on the one hand such 'popular' figures as Albert Einstein, Sigmund Freud and Stephen Hawking, and on the other hand lesser-known but nevertheless original contributors such as Gustave Courbet (art), Albert Schnittke (music) and Egon Schiele (art) are also included.

This wide diversity of unique creative proclivity is considered to be an asset rather than a disadvantage for the consequential statistical analysis.

### 3.5 FLAWS IN BIOGRAPHICAL ANALYSIS

"The older I get, the more vivid are my memories of early events which never actually happened." — Mark Twain

"Biographical study is only a serious form of gossip." — E M Forster

#### 3.5 1 POLITICAL AND PSYCHOANALYTICAL BIAS

A very common flaw and source of bias. For example -

H G Wells' biography by Foot (1995) is written with a marked socialist political bias.

The biography of Jean Sibelius by Richards (1997) presents an entirely different modern presentation when contrasted to an earlier 1936 biography written when Sibelius was regarded as a Swedish national hero. (Ekman, 1936).

Alma Mahler's interpretation of her husband's obsessive behaviour as psychopathic and Sigmund Freud's analysis of the latter's Holy Mary (mother fixation) complex provides a further example of biased interpretations of this musical genius (Mahler, 1976).

Other examples would include psychoanalytic interpretations of the behaviour of Richard Wagner, Igor Stravinsky and even Ian Fleming reported by Storr (1972).

### 3.5 2 THE HERO EFFECT IN AUTOBIOGRAPHY

Most autobiographies and some biographies were eliminated because of the highly personalised interpretation of behaviour common to this form of self-analysis and writing. Some examples are -

Yehudi Menuhin *Unfinished Journey* (1976) – too self-adulatory to be used in this study.

“*Renoir My Father*” by his son Jean Renoir (1958) — a personal reminiscence not suitable for this study.

“*Findings*” Leonard Bernstein (1982) — personal reminiscence and a completely misleading account compared to the 1987 biography by Peyser (1987).

“*Stravinsky*” by Vera Stravinsky, his wife (1979) — the bias of this biography made it exceedingly difficult to code and so was replaced by a more balanced biography by Drobrin (1970).

### 3.5 3 POPULAR IMAGE VERSUS ACTUAL REALITY OF ENTERPRISE

“For all great men and women become legends. All become in history larger than their own lives.” Ranvell (1975) on Charles Chaplin.

Popular sentiment has idealised certain personalities and overemphasised their importance to social science, making it very difficult to remove this ‘hero effect’ and portray their achievements accurately. Personalities such as Isaac Newton, Galilei Galileo, Albert Einstein, Stephen Hawking, Charles Darwin and Ernest Rutherford are currently associated with the advance of our civilisation and provide us with images that have sanctified major concerns of humanity for over 200 years.

The legends of King Arthur, Merlin, the Round Table and the Quest for the Holy Grail are good examples of the ‘halo effect’ surrounding outstanding persons of eminence. Typical of hundreds of books surrounding these legends is that of Ashe (1968). “The story of Arthur and his Knights is far more than a medley of fireside tales. Only a theme answering some deep sense of national character and need could have flourished for so long, or exerted such an influence on literature, art and occasionally even politics” (p.257)

In contrast to far more authoritative French national history under Charlemagne, England at that time needed the moral and ethical credibility to support deep psychic/social national needs. “Arthur was what England stood for in many continental minds. Arthur’s Britain rooted itself in the national imagination. It was

destined to remain rooted there for a long time, not only through the Middle Ages, but afterwards” (Ashe, 1968, p.1).

Similar psychic/social needs in our society have deeply affected the biographies and autobiographies of the hero-genius in popular and pseudo-scientific literature. For this reason, each case history was read over several times. As much as possible it was determined to deal with fact rather than fantasy in assembling the 100 case histories.

It was found that the procedure of an independent reader scoring codes in the same manner, as compared to repeated re-reading and coding, is unworkable. An independent reader would in fact have to read whole biographies to accurately code any single item. It is not until the whole biography has been read and reviewed that the meaning of items becomes clear.

For example, the effect of early deafness on the creative career of Thomas Edison is not appreciated until the conclusion of his career and his acknowledgement of its importance in his concentration on difficult problems is fully understood. A second example would be that of Schnittke the Russian musician. His visit to Vienna triggered his appreciation of music and remained his model of musical appreciation throughout his career; a fact not appreciated until the second reading.

The Stephen Spender biography and many other examples reflect the inaccuracy of preliminary code decisions and would require independent reading of the entire biography. The author has available the completed codings of the 100 biographies studied, which would be available to a future investigator who may seek to replicate the original data base behind this thesis.

### 3.6 BIOGRAPHY SOURCE SUMMARY

The Bibliography summarises the total biographies read and coded for this study. In summary they total:-

Creative Arts	47 sources
Commerce	39 sources
Literature	52 sources
Music	36 sources
Science	<u>33</u> sources
Total Case Studies	<u>207</u>

There were sound reasons for the reduction of these 207 biographies to the selected 100 cases. These rejections included:-

- Evidence of poorly documented or seriously biased biographies
- Autobiographies with very limited sources of data and often too laudatory
- Documentation which was too dated or early to be of current value
- Biographies of dubious claim to the original enterprise concept, mainly simply 'popular' personalities
- Collections of letters rather than well documented biographical material
- Reference to personalities of original enterprise for which no biography could be found during the study

The author assimilated much value from those additional resources, but could not code or use these biographies in the final study. The final 100 biographies were selected with 20 subjects representing each domain (music, creative arts, science, literature and commerce). See Appendix IV for complete list.

## CHAPTER 4

### AXIAL CODING SYSTEM

#### 4.1 DISCUSSION & OVERVIEW

The research program required an innovative behaviour coding of most relevant forms of socio-economic antecedent behavioural constructs, actions and emotions in one overall pattern as the basis of later statistical analysis to define a map of original enterprise.

The proposal was to establish a theoretical construct which is 'behind and beyond' the flowering of original enterprise behaviour observed in the sample of 100 outstanding creative personalities.

"Coding represents the operations by which data are broken down, conceptualised and put together in new ways. It is the central process by which theories are built from data. Scientific knowledge is in large part an invention or development rather than an imitation. Constructs, hypotheses and theories are not found ready-made in reality, but must be 'constructed' " (Strauss, 1990, p.96).

Reality is not *per se*, works of music, paintings, literature, commercial success, or scientific discoveries. These marvellous and enjoyable results are merely the outgoings of deeper behavioural constructs whose templates or maps it is intended to explore in this thesis.

The first stage of the research consisted of raw observations of an informal random nature derived from a variety of sources including psychological consulting experience in Australia, New Zealand and Asia and from the observation of striking behavioural similarities between biographical data and 'real-life'. A significant source for concepts of behavioural codes was derived from historian, Ginzburg in his 1990 essay (quoted by Rudgley, 1998, p.107).

Ginzburg (1990) proposed an analytical investigation of seemingly trivial or unimportant details in a class of matter that on fuller investigation turned out to be of great importance. He quotes, for example, the method of identifying the authors of works of art by the Italian, Morelli in 1870 where unsigned paintings were successfully identified by the analysis of such apparently trivial details such as earlobes, fingernails and aureoles (haloes). By bypassing the more usually striking appearances of a painting and concentrating on the analysis of clues of such minor identification marks, he often was able to authenticate the identity of the painter.

Ginzburg (1990) quotes Sigmund Freud's analysis and psychoanalytic technique as a method that was derived partly from the analysis of seemingly trivial matter. He quotes as follows, "It seems to me that Morelli's method of enquiry is closely related to the technique of psychoanalysis. It too, is accustomed to divine secrets and concealed things from unconsidered or unnoticed details, from the rubbish heap, as it were, of our observations" (Rudgley, 1998, p.108).

A similar approach was followed by Sir Arthur Conan Doyle's *Sherlock Holmes* where seemingly irrelevant details such as cigarette ash or a packaging box led directly (in fiction) to the solution of the crime. In modern science, the 1823 observation by Purkyne of the uniqueness of individual fingerprints led directly to fingerprinting as a major method of crime detection - again the analysis of a seemingly trivial matter.

Tracing by aborigines in Australia and in the Kalahari Desert of southern Africa is replete with similar examples. The systematic analysis of broken twigs, footprints, excrement, tufts of hair and entangled feathers and even trails of spittle enables the tracker to follow and identify his prey - a human skill that goes back at least 40 000 years.

According to Liebenberg (1990) there are three stages to both art of tracking and the origins of science. Simple tracking is following animal footprints in ideal conditions. This method is referred to by Strauss, (1990) as "open coding", defined as the search for "raw" data, which involves labelling phenomena in a descriptive, non-analytical manner.

The second, more systematic tracking phase involves collecting data in more difficult conditions as a guide to future complex analysis of quarry objectives. This thesis names categories both from available scientific literature and from the total biographical library.

The third stage of scientific tracking requires the hunter (and the scientist) to develop a working hypothesis using the various kinds of data at his disposal –

knowledge of animal behaviour patterns, the terrain and so on. This thesis grouped open codes into life-style segments of behaviour and made connections between categories nominated as the 'axial' stage in our summary. Axial coding is carried out by utilising a paradigm, involving conditions, contexts, actions, emotions and consequences.

Hunting is usually considered primarily as a practical activity in which intellectual speculation would be not only out of place, but perhaps an actual liability. However, Liebenberg's (1990) studies of the Kalahari hunter asserts that the detailed knowledge of the terrain is as essential to hunting peoples as the analysis of historical documents, crimes or works of art are for modern man. Tracing codes of behaviour from biographical data has in some cases followed a similar direction.

Two areas of code analysis are especially relevant to the analysis of seemingly trivial information summarised in this thesis. The first is the identification of the Central Trigger experience as an important element in Code IV, the Achievement process; the second relates to the identification of emotional pathologies, Code VIII.

The Central Trigger concept is discussed in detail, together with examples 5.5 (i) onwards. It is interesting that the initial search of the scientific literature did not lead the author to this concept; rather it was the result of simple tracking (in hunter terminology) or open coding and scientific tracking that led to its inclusion in this study.

Once identified as an important observation, the author began to search through biographical data for further examples and collaborating evidence – often reading a biography several times to trace the influence of the Central Trigger experience on subsequent behaviour, especially of relevance to the Achievement process, Code IV.

The second illustration process involved the identification of levels of emotional pathologies as to their degree of psychiatric seriousness. Code VIII identified three levels of code, viz:- Mild (EML code), Minor (EMN code) and Major (EMJ code). A full identification of these codes is defined and discussed under 5.9.

Theoretical sensitivity of this nature has been analysed by Glaser (1978) referring to an awareness by the researcher of the subtleties of meaning of data as one of the foundations associated with grounded theory. The author worked as a student in the Royal Park Psychiatric Hospital Receiving Ward, Melbourne, and in New Zealand with the Prison Service of the Department of Justice. Additionally, he produced a draft booklet on techniques for understanding and handling abnormal people for the New Zealand Police.

Working as a consulting psychologist between 1962 and 1980 provided the author with a wealth of detailed experience, testing and reporting on executive positions and in vocational guidance.

Finally, reading and re-reading biographies, reviewing accounts of symptoms in letters and information from observers became an important area of research, especially where emotional psychopathology was clearly evident. The most revealing emotional pathological diagnosis originated from a 1969 previously unpublished series of letters concerning Toulouse-Lautrec by his biographer, Joyant, his mother and his personal maid. The diagnosis of Korsakof's psychosis (EMJ code) as an amnesic syndrome, often found in chronic alcoholics, is characterised by loss of memory for recent events, although memory for more remote events often remains intact.

Obviously Toulouse-Lautrec could not diagnose his own condition, but his personal maid describes his recent memory loss in such unequivocal terms that the diagnosis of his condition seems evident (Joyant, 1964, p.200).

The case histories of Vincent van Gogh, (letters from Gauguin about his unstable behaviour); Salvador Dali (correspondence from Pablo Picasso and his father's collection of letters), and Oskar Kokoschka (fetishistic-style correspondence with Alma Mahler) provide further examples of the style and content of the search for, and definition of, particular code items.

Sources of terms and concepts are briefly summarised at the commencement of each axial code grouping.

This early stage of raw observation, compilation and reflection is termed "open coding" by Strauss. Axial coding by comparison refers to making logical connections between categories, seeking for properties and dimensions in the raw observable data. Essentially, greater 'density' and 'precision' was sought than was originally observed. By logically grouping 44 code items in an 'axial' grouping of 8 major segments, the resulting schema now embraces most major forms of original enterprise dimensions in a coherent, logical form.

## 4.2 DEFINITION OF CODES & SOURCE SUMMARIES

### 4.21. DISCUSSION

From the total sample of some 207 persons of acknowledged original creative enterprise behaviour of high order, 100 biographies were selected. Each biography was scored in detail using the axial coding system.

The original observational code was termed an 'open' code, seeking for events, incidents or happenings in the recorded biography to enable connections to be made between a category or its antecedents. The summary of these open codes into the final 8 groupings was termed an 'axial' code.

#### 4.22 ORIGINAL ENTERPRISE – THE AXIAL CODING SYSTEM

The axial coding process focussed on delineating a category or phenomenon (such as obsessive behaviour), or a context (such as childhood experiences or socio-historic antecedents), or a consequence (such as psychopathology).

Intense discussions with university professionals in both New Zealand and Australia occurred in deciding on some particular code groupings. For example the distinction between PERS (perseveration as an obsession) and AP (normal persistence) required much debate and reference to scientific literature. It was eventually agreed that PERS or Perseveration is of an obsessive, habit-forming quality, often exhibited in later life long after its need still existed, while AP or persistence was simply the normal reaction to an obstacle and was essentially not habit-forming. Similarly humour as a Positive Emotion (E+), erraticness as a Mild Emotional response (EML) and restlessness as a Negative Emotion (E-) caused intense debate and literature search (see General Bibliography).

The completed Axial Coding system is now summarised in Appendix V.

## CHAPTER 5

### CODE GROUPING OVERVIEW

#### 5.1 INTRODUCTION TO CODE GROUPING

The plan for this chapter is to review the coded groupings individually and to justify their inclusion in the study from both scientific and biographical literature, together with perspectives drawn from the author's personal consulting experience.

In order to reflect the colour, variety and range of expression available from the biographical coding search, sample direct quotations were included from the personalities involved which give evidence for the psychological justification of codes. This simplified procedure appeared the only realistic action, given the large amount of data acquired over the three-year research program.

Clarity of reference suggests that code groupings be reviewed at the commencement of each section following the summary set out earlier in Appendix v.

#### 5.2 AXIAL CODE I - SOCIO-HISTORIC ANTECEDENTS

- I) N-FACT Nationalism factor
- II) REV Revolt against existing mores
- III) A-R Religious/Idealistic factor/Altruism/Philanthropy/Politics
- IV) SCH Schools of Literature/Arts/Science Movements

##### 5.21 (i) N-FACT – NATIONALISM FACTOR

EXAMPLES:

France in 1939 led the world in liberating atomic energy - Frédéric Joliot-Curie.  
Biquard (1965, p.56)

Forsythe fictional wealth and security represented British literature, science, religion and art - John Galsworthy. Du Pré (1976, p.115).

Braids, gilt and epaulettes represented her fascination for things English - Gabrielle Chanel, Charles-Roux (1976, p.15).

He represented Italian romantic nationalism - Arturo Toscanini, Sachs (1978, p.8).

The rise of Italian and Russian nationalism - Vaslav Nijinsky, Buckle (1975, p.10).

## 5.21 (II) CODE REV - REVOLT AGAINST EXISTING MORES

### EXAMPLES:

"Developments in information theory suggest a revolution in the human way of life more profound than atomic theory" - Arthur C Clarke, McAleer (1992, p.113).

"I left my homeland because there were no opportunities in physiology in Australia" - Howard Florey, Bickel (1972, p.4)

"Glitter was a reaction to childhood restraint. Mentally I'm 25; but half of me is still 13!" - Elton John, Norman (1991, p.206).

"A hatred of all that was false or pretentious" - Egon Schiele, Whitford (1981, p.10).

### DISCUSSION

Nationalism and Revolt have been linked as a single related entity. There is reasonable observational historical evidence that nationalistic and idealistic factors prompt a direct influence on the emergence of original creative enterprise. Furthermore revolt against established social order and the establishment of new themes is not uncommon in most significant domains of science, music, the arts, literature and commerce.

The influence of economic, political and social events on the rates of creative production is commented on by Gruber (1988), Harrington (1990) and Magyari-Beck (1988). Csikszentmihalyi also comments, "It has become increasingly clear that variables external to the individual must be taken into account if one wishes to explain why and when new ideas or products arise from and become established in a culture" (Csikszentmihalyi and Getzels, 1988, p.313, as reported Sternberg Handbook on Creativity 1999.) A further striking example of the relationship between the influence of nationalistic forces and revolt is reported by Whitford (1981) in the case history of successionist artist, Egon Schiele. Whitford suggests that members of turn-of-the-century Vienna coffee-houses included Adolf Hitler, Josef Stalin and Leon Trotsky at the same time planning their political revolutions and theories in different cafés.

Other examples include Sigmund Freud in psychoanalysis, Arnold Schoenberg and Gustav Mahler in music, and Gustav Klimt in art; all members of the Vienna coffee house fraternity who were directly affected by the imminent collapse of the comfortable, self-satisfied Austro-Hungarian world.

The most recent study of Vienna's coffee-houses as the seed-bed of revolt and the resurgence of various nationalistic ideals, is by Hamann (1999), entitled "*Hitler's Vienna – A Dictator's Apprenticeship*" where she describes the unglamorous anti-modernist underside of Vienna – the unemployed, the disadvantaged and the marginalised, whose ranks from 1908 – 1913 included the young drop-out and social nonentity, Adolf Hitler.

The attraction of the coffee-house as both an entertainment centre and a facilitator of social and cultural revolt spread throughout Europe but was particularly strong in Vienna and Paris during this period. The writer, Gustave Coquiot (as reported by Jane Kinsman, 1997, p.24) wrote that this form of social contact and entertainment struck a particular chord with the French. He wrote in 1896 that the café was a feature of everyday life that appeared everywhere to satisfy everyone's needs and to so fulfil their social role with a truly rare degree of suitability. The café required neither etiquette nor elegance in attire or appearance, and appealed to partisans of those special delights enjoyed between a pipe and a tankard.

Numerous other examples of the nationalism/revolt synergy exist in the biographical literature. Tchaikovsky's musical background was directly influenced by his revolt against Russian repression of the liberal arts: Alexander Solzhenitsyn in literature and Dmitri Shostakovich, Alfred Schnittke and Bela Bartok in music were all directly influenced to produce their creative outpourings by the Russian revolution and the subsequent communist era.

You may finally ask how strongly the present French military justice ethos would appear without *J'Accuse* by Emile Zola, or Victorian social distress would be recorded for posterity without Charles Dickens, *Oliver Twist* or *Hard Times*. Biographical evidence suggests that socio-economic history, revolution and creative enterprise are inextricably bound together in both history and psychobiography.

#### 5.21-(III) CODE A-R RELIGIOUS / IDEALISTIC FACTOR / ALTRUISM / PHILANTHROPY

##### EXAMPLES:

"My parents were strong supporters of communism" - Alfred Schnittke, Ivashkin (1996, p.18)

"An intense interest in popular religion" - Jesse Boot. Chapman (1974, p.32)

"I have a certain political view of the world " - Jules Verne, Chesneaux (1972, p.19)

"Business is a holy enterprise" - Konosuke Matsushita, PHP Institute (1998, p.200)

## DISCUSSION

Idealistic and religious factors are similarly allied with original creative enterprise in the summarised coded antecedents. There exist numerous examples of this crucial relationship, especially in science and commerce.

Australian ophthalmologist, Fred Hollows, shocked at the prevalence of aboriginal eye disease, founded the National Trachoma and Eye Health Program serving over 400 needy aboriginal communities.

Louis Pasteur's control of animal anthrax was motivated by the loss of some 30 million Francs per annum due to the prevalence of this disease in France. Linus Pauling, famous for his molecular theories and winner of the Nobel Prize for Chemistry in 1954, redirected his motivations to preventing the spread of nuclear armaments and gained a second Nobel Prize for Peace in 1962.

Commercial enterprise has also witnessed similar national and idealistic relationships between the emergence of novel concepts and personalities involved in this thesis.

Japanese entrepreneur Konosuke Matsushita regarded the development of his electronic business as a sacred duty for Japan and saw national prosperity as an economic battlefield. Kokichi Mikimoto dedicated his search for the perfect cultured pearl to the people of Japan. It is reported that he took 850 000 oysters apart until he discovered the perfect pearl and the technology behind its production around January 1908.

In his subsequent meeting with the Emperor he promised "I will produce round pearls and I will give Japan a great industry, growing enough pearls to sell to all the rest of the world". (Eunson, 1956, p.138).

From Great Britain the biographies of Andrew Carnegie and Jesse Boot continue to illustrate the relationship between idealism and original creative enterprise. Andrew Carnegie, as the son of a poverty-stricken weaver in Dunfermline, Scotland, resolved to "cure poverty when he became man", and after successfully founding and selling his Carnegie Steel Company for US\$480 million continued his basic philanthropic theme by the donation and administration of his wealth to universities,

free libraries, hospitals and the promotion of young achievers. In total he donated US\$125 million to such causes (Wall, 1970, p.1041).

Jesse Boot regarded religion as an essential part of his life and believed in folk medicines, the foundation of his proprietary chemist enterprise, as a Christian service (Chapman, 1974).

Finally, Albert Einstein's search for the laws relating energy to mass, reported that he wished to know "God's Thoughts" (Brian, 1996).

#### 5.21-(IV) CODE SCH - SCHOOLS OF LITERATURE / ARTS / SCIENCE MOVEMENTS

##### EXAMPLES:

The beginning of the Bloomsbury Period (1907) - Virginia Woolf, Bell (1973, p.123)

A member of young intellectuals at University - Alexander Solzhenitsyn, Burg (1973, p.51)

Decadence is a restless curiosity; an ever-subtle refinement and moral perversity - Aubrey Beardsley, Sturgis (1998, p.166)

He was the foremost Impressionist and laid the foundation of Cubism -Paul Cezanne, Kendall (1988, p.8)

##### DISCUSSION

Grouping literature, arts and sciences together in 'schools' is the final antecedent condition in the review of factors influencing the emanation of works of original enterprise productions.

This thesis could either interpret the grouping together of arts and literature schools as antecedent conditions behind creative output, or alternatively regard the dominant personalities recorded as the originators of such schools.

A symbiotic relationship between antecedents and the personalities involved is the correct position in this quandary. However, the role of influences in arts on each other and their social intertwining does suggest supportive evidence for the antecedent conditions which stimulated styles of art and directly influenced their creative production. Briefly summarised are firstly role influences as recorded on ten

*fin-de-siecle* artists and secondly evidence for close social interchange.

## SOCIAL INFLUENCES ON NOTED ARTISTS

ARTIST	DIRECTLY INFLUENCED BY
Pablo Picasso	Paul Cezanne
Oskar Kokoschka	Van Gogh, Matisse, Klimt and Egon Schiele
Toulouse Lautrec	Henry van de Velde, Degas
Edouard Manet	Gustave Courbet
Gustave Courbet	Pissaro, Cezanne, Manet, Van Gogh
Claude Monet	Van Gogh
Amedeo Modigliani	Picasso, Cezanne, Toulouse Lautrec
Egon Schiele	Klimt, Oskar Kokoschka, Van Gogh
Vincent Van Gogh	Gauguin, Degas, Pissaro, Toulouse Lautrec
Gauguin	Monet and Mucha.

## VEHICLES OF ARTISTIC INFLUENCE EXAMPLES

Common European locations especially Vienna and Paris –

Egon Schiele (Whitford, 1981, p.17)

Artistic Friendships –

Van Gogh (Whitford, 1981, p.17)

Manet (Schneider, 1972, p.8)

Picasso (Elgar, 1972, p.181)

Attending Art Exhibitions –

Kokoschka (Whitford, 1986, p.34)

Political Turmoil

Klimt (Whitford, 1981, p.16)

Shared Painting Expeditions –

Cezanne (Kendall, 1988, p.10)

The most common examples of the relationship between schools and participants occurred in art and literature.

In our summary, the impressionist art school is well represented with such personalities as Claude Monet, Camille Pissaro, Pierre-Auguste Renoir, Edgar Degas and Alfred Sisley who drew encouragement and inspiration from the cafés and nightlife of Montmartre and similar Parisian localities. Pablo Picasso in a later period singled out Paul Cezanne as the originator of his cubist interpretation of the art of modern life, stimulating a distinctive art school of his own interpretation and the flowering of the Cubist movement.

The Viennese Successionist school is well represented in the biographies of Gustav Klimt, Egon Schiele and Oskar Kokoschka.

In literature, the Bloomsbury school is illustrated by the biographies of Virginia Woolf, Katherine Mansfield and E M Forster, while in the Arts and Crafts movement the biography of William Morris is the outstanding example – a man who was motivated to commence his own business in decorative arts.

Finally, the exaggerated, stylised languor, subtle posing and mannerisms exhibited by Oscar Wilde, Aubrey Beardsley, Gustave Courbet and much later by Noël Coward represent the school of decadence in this thesis.

### 5.3 AXIAL CODE II - CHILDHOOD EXPERIENCE:

- (i) RM \_\_\_\_\_ Strong Mother role  
FM \_\_\_\_\_ Strong Father role  
FG \_\_\_\_\_ Family Group influence
- (ii) CB \_\_\_\_\_ Early childhood bereavement, conflict trauma,  
severe fright
- (iii) CIM \_\_\_\_\_ Childhood hobbies, pastimes, play, reading, inventiveness  
CST \_\_\_\_\_ Childhood Storytelling  
CAP \_\_\_\_\_ Childhood attention-seeking behaviour, manipulation
- (iv) SP \_\_\_\_\_ Sibling Position – Eldest : Middle : Last : Only
- (v) CP \_\_\_\_\_ Child Prodigy / Early outstanding talent
- (vi) RI \_\_\_\_\_ Role Influences (in childhood and adulthood)
- (vii) INQ \_\_\_\_\_ Inferential Intelligence code

#### 5.31(i) CODES RM, FM & FG : STRONG MOTHER / STRONG FATHER ROLES / FAMILY GROUP INFLUENCE

EXAMPLES:

RM \_\_\_\_\_ STRONG MOTHER ROLE

“My mother was the making of me” - Thomas Edison (Baldwin , 1995, p.20)

“Mother Rose was the dominating force in the family” - George Gershwin  
(Greenberg, 1937, p.15)

“An abandoned woman transferred all her affections to her child” - Victor Hugo  
(Robb, 1997, p.12)

“Very much his mother's boy” -Pierre Cardin (Morais, 1991, p.16)

“A mutual bond between Noël and his mother” - Noël Coward (Fisher, 1992, p.14)

FM: \_\_\_\_\_ STRONG FATHER ROLE

Julius Morgan (his father) was the most important banker in America - Pierpont Morgan (Muller, 1968, p.65)

Arthur Beauchamp, the Pa Man - a constant spout of poetry - Katherine Mansfield (Alpers, 1982, p.6)

"All my life, an old man has stood in my way!" - Leonard Bernstein (Peyser, 1987, p.14)

"My father was a teacher of speech elocution" - Alexander Graham Bell (Grosvenor, 1997, p.15)

FG \_\_\_\_\_ FAMILY GROUP INFLUENCE

An eccentric family - Stephen Hawking (White, 1992, p.12)

The sweet hospitality of his mother and family at home - George Gershwin (Greenberg, 1937, p.67)

Sisters joined her in Australia - a family business - Helena Rubinstein (Head, 1965, p.29)

His whole family drew - Henri Toulouse-Lautrec (Fermigier, 1969, p.19)

DISCUSSION

The biographical data indicates strong direct family support especially in musical proclivity and in craft interest.

Michael Howe (Sternberg, 1999) reports that among the autobiographical accounts of musical composers, in the vast majority of instances, substantial early support and encouragement was largely provided by the child's own family. He cites Mozart and Menuhin as examples, to which can be added the cases of Jacqueline du Pré, Nellie Melba, Pyotr Tchaikovsky, Arturo Toscanini, Giuseppe Verdi, Dmitri Shostakovich, Maurice Ravel, Alfred Schnittke, Bela Bartok, George Gershwin, and Hector Berlioz. "The picture that emerges from research into the progress of musicians, is one of close dependencies, with the exceptional early expertise that might lead to an individual being labelled a prodigy, depending on the stimulation provided by opportunities to learn and the support offered by conscientious parents who take seriously their responsibility to help their child and with the high degree of early progress that may be signified by the prodigy label being a necessary if not sufficient precondition for becoming a creative adult musician." (Sternberg, p.435).

De Groot (1975) reports on the relationship between Russian chess masters whose national and family support enabled them to produce superior coding systems for

the game. What they 'see' must be something quite different from what lesser players 'see'. Babbage (1995) describes this cognitive learning skill as 'chunking' which enabled the skilled operator to assemble and predict paths of behaviour more rapidly and accurately than the 'average' performer.

Other examples of family influences in crafts and the arts are easily found. The Moorcroft pottery family in Burslem, England, commenced in 1872 and is still influencing pottery style and decorative art from family influences. In New Zealand, the Hodgkins family of artists, including the celebrated Frances Hodgkins and her sister Isobel Field, provide good examples of creative enterprise in art being supported and encouraged by direct family influences.

A second family group influence example came from the Richmond family where C W and brother J C Richmond, both competent artists in early New Zealand, were a direct influence on the latter's daughter Dorothy Kate Richmond – all well represented in private and public galleries.

#### 5.31-(II) CODE CB — EARLY CHILDHOOD BEREAVEMENT/ CONFLICT/ TRAUMA AND SEVERE FRIGHT

##### EXAMPLES

"Our family was very poor. Once our Christmas stocking contained a single marble!"  
– Charles Schwab (Hessen, 1975, p.7)

At the blacking factory – "Utterly neglected and hopeless –a secret agony of the soul" – Charles Dickens (Mankowitz, 1976, p.21)

He heard a boy being beaten at school - Benjamin Britten (Carpenter, 1992, p.10)

Sent to a workhouse for children - a terrible stigma – Charles Chaplin (Manvell , 1974, p.44)

##### DISCUSSION

The biography of creative personalities whose childhood was scarred by early bereavement, conflict, traumas and severe fright is a significant dimension of consequent creative behaviour for this thesis.

The most celebrated of these cases must surely include Charles Dickens and Edgar Allan Poe. However, other biographies such as those of Pyotr Tchaikovsky, Anthony Trollope, Rudyard Kipling and Charles Chaplin are equally arresting in both the horror of their childhood experiences and their effects on consequent behaviour.

It is obvious that in hindsight some of these experiences have elements of exaggeration. However, the reported impression of loss, misery and deprivation are so strongly portrayed that it is not possible to deny the deep personal impressions left on these children.

In the case of Charles Dickens, "The well-known blacking warehouse episode lasted only a few months." In fact Dickens never mentioned it; not even to his wife and children, and his close friend and biographer John Forster discovered it later only by accident. However, the "deep remembrance of the sense I had of being utterly neglected and hopeless, of the shame I felt in my position .... Was never to be brought back any more; cannot be written" (Mankowitz, 1976, p.21).

An additional bereavement occurred when Dicken's parents were committed to a debtor's prison. Charles wandered the streets of London, solitary and alone. It is obvious that *Oliver Twist* the boy who asked for more, *Hard Times* and the subsequent school cruelties he suffered as reflected in *Nicholas Nickleby* are directly autobiographical in content.

Edgar Allan Poe's loss of his actress mother, Elizabeth, when she was 24 and the beatings he endured at the hand of his stepfather, Allan, triggered both the first detective stories in American literature in the *Fall of the House of Usher* and *Tales of Mystery and Imagination*, and to his fully developed symptoms of paranoid schizophrenia.

Given Poe's severe emotional problems which included necrophilia, paranoia, impotency, alcohol and drug abuse, the influence of his frankly escapist stories such as *The Gold Bug* and the poem *Al Aaraaf* seems quite incredible. Arthur Conan Doyle (*Sherlock Holmes*) and Ian Fleming (*James Bond*) both give credit to Poe as having directly influenced their own detective story themes.

Pyotr Tchaikovsky's separation from his ailing mother Alexandra Andrayevna left an indelible impression on the young hypersensitive child that he remembered to the day of his death, forever noting it in his diary. At the crucial moment of parting he flung himself at the carriage wheels claiming for the rest of his life to be left with the feeling of a lost happy past and a future threatened by a horrible fate.

Rudyard Kipling's separation from his parents, which led him to live with foster parents in the "House of Desolation" where he was regularly beaten, recalled these scenes of hell for the rest of his days, claiming the experience made him into a pathological introvert.

Isolative and schizoid tendencies are a common reaction to severe childhood bereavement that the biography of Charles Chaplin amply illustrates. Separated from his alcoholic father, he was sent to a workhouse for children and flogged on a whipping block – events he interpreted as a terrible stigma. In similar circumstances to Charles Dickens he was left without food to wander the streets alone. Finally his mother went insane and he stood by her outside the hospital weeping hysterically while his father lay dying inside.

At 12 years of age he had experienced every strong emotion which would illuminate his art of the future. Prior to his chance borrowing of Fatty Arbuckle's bowler, large shoes, cane and baggy pants — the trigger experience that in part launched his career as a tramp with genteel habits, Charlie Chaplin was a silent, depressed, melancholy figure with only a white rabbit as a friend.

5.31 (III) CODES CIM, CST & CAP - CHILDHOOD HOBBIES, PASTIMES,  
PLAY-READING, INVENTIVENESS / CHILDHOOD STORY  
TELLING / CHILDHOOD ATTENTION-SEEKING BEHAVIOUR

#### EXAMPLES

ET and Poltergeist films were all based on childhood experiences — Steven Spielberg (Yule , 1996, p.126)

Hobby was repairing watches – a direct antecedent to mechanical auto skills — Henry Ford (Lacey, 1986, p.24)

Helicopter gift from father – an impression on the brothers that “never faded” — Wright Brothers (Kelly, 1989, p.8)

Reading *Amazing Stories* (science fiction) when 11 years old. — Arthur Clarke (McAleer, 1992, p.5)

The map from *Treasure Island* came from an amateur map he had printed himself. At 17 he was still building houses with toy bricks in his study, and still playing avidly with toy soldiers. — Robert Louis Stevenson (Hennessy, 1974, p.155)

His father read Victor Hugo's book *Travailleurs de la Mer* to him, leaving a deep impression that directed his imagination to the sea. — Joseph Conrad, (Jean-Aubrey, 1927, p.14)

Discovered the ASR33 Teletype – a time sharing computer at High School – and an obsession was born. — Bill Gates (Manes, 1993, p.25)

#### DISCUSSION

These codes have added considerably to the richness of biographical material derived from childhood hobbies, pastimes, play, story telling and inventiveness.

The varied influence of these biographical cases on subsequent original creative behaviour is well illustrated above and in subsequent thesis references.

#### 5.31-(IV) SP CODE – SIBLING POSITION, ELDEST/ MIDDLE/ LAST/ ONLY

##### EXAMPLES

The study found the following percentages of sibling family position

Eldest	43 per cent
Middle	25 per cent
Last	14 per cent
Only	18 per cent

##### DISCUSSION

The relationship between eldest sibling and creative proclivity is well known in scientific and biographical literature. Lewin (1951) explains these observations in terms of his field theory construct, especially with reference to adolescent behaviour.

A more recent study by Feldman (1991) examines the child prodigy phenomena using a study of six American children who exhibited outstanding proclivity in a family setting points out that "First born children have the benefit at least for a time, of exclusive parental attention. Until other siblings appear on the scene, parents are free, if so inclined, to devote their child rearing efforts exclusively to the identification and encouragement of their child's proclivities." (p.157).

In common with Hertzman's (1963) study of the creative world of Amadeus Mozart, Feldman points out that in addition to the strict tutorage organised by his father, Leopold, Amadeus was trained with his sister, Nannerl until he was about 15, at which point her career as a piano prodigy declined and her brother's prospered.

Similarly Yehudi Menuhin had two sisters, Hephzibah and Yalta, also highly accomplished musicians, but whose careers were never as accomplished or seriously nurtured as was their older brother. The career of Jacqueline du Pré and her sister, Hilary, further exemplifies the socio-psychological apparent advantage of the eldest sibling.

Of course there are exceptions to this apparent role. Although strictly not in the same category, Andrew Lloyd-Webber and his brother Julian both remain outstanding composers and cellists in their respective domains.

## 5.31-(V) CODE CP – CHILD PRODIGY / EARLY OUTSTANDING TALENT

### EXAMPLES

The following psycho-biographies were used as examples of early childhood proclivity in its widest sense:

Dmitri Shostakovich	Richard Wagner
Pyotr Tchaikovsky	Jean Sibelius
Igor Stravinsky	Maurice Ravel
Elton John	Bela Bartok
Hector Berlioz	Leonard Bernstein
Benjamin Britten	André Previn
Guiseppe Verdi	Gustav Mahler
Arturo Toscanini	Alfred Schnittke
Jacqueline du Pré	Egon Schiele
Pablo Picasso	Henri Toulouse-Lautrec
Isambard Kingdom Brunel	Alexander Graham Bell
Stephen Hawking	Paul Getty
Vaslav Nijinsky	Salvador Dali
Gustav Klimt	

### DISCUSSION

Twenty-seven per cent of the biographical sample would be considered to be gifted child prodigies using the wider context of this definition, and the evidence accumulated from the biographical library.

Music	16 cases
Creative Arts	7 cases
Science	3 cases
Commerce	1 case
Literature	<u>- case</u>
	27 per cent

Broadly speaking, child prodigies are children whose intellectual aptitude and performance dramatically exceed the norms for his or her age.

This code overlaps between its position in Code II, (Childhood experiences) and that of Code III, (Personality traits). However, these observations have been retained in Code II because of the significance of family supportive behaviour behind the emanation of a child prodigy, and the importance of this code in comparing early to later original enterprise behaviour (third Research Objective).

In this thesis, as in other similar research, musical proclivity accounts for the major proportion of the biographical examples with approximately 60 per cent occurring within this category.

By age 10, Benjamin Britten was pouring out reams of musical compositions. André Previn at 5 years took to piano like a maestro, and Jacqueline du Pré could play the tune and words of *Away in a Manger* at 4 years. This well-known phenomenon was common to the major proportion of the selected biographical music examples.

In the modern era, this definition has been widened to refer to excellent performance in any area of human behaviour in a young person that is important to society. Thus the prodigy examples have been widened to include artists such as Pablo Picasso who was drawing in an accomplished manner from the age of seven Egon Schiele who was sketching pictures with obvious competence before he was two, and Salvador Dali drawing birds and animals from very early childhood.

With this wider definition in mind, Vaslav Nijinsky whose prodigious leaping marked him out as a Russian prodigy in his early teens; Paul Getty who became a millionaire when 23; and Stephen Hawking who at 14 displayed feats of incredible instinctive insight, and just knew the answers to school mathematics problems, have been included.

Mathematics, literature and music historically, provide many other similar examples. Terman (1947), in his monumental study of *Gifted Children*, discussed the child prodigy phenomenon, quoting McAuley who began his career as a historian at 6 years of age and Pascal, who at 11 years wrote a paper on sound and constructed a geometry of his own involving 32 propositions of Euclid.

The study of early child proclivity raises two important issues for this thesis; Firstly, the preponderance of musical prodigies in such samples of outstanding creativity; and secondly, behavioural distinctions between the early and the later development of original creative enterprise.

#### EARLY MUSICAL PROCLIVITY

There is no completely valid explanation of musical proclivity. The various levels of explanation offered by informed literature may be summarised below.

The first level of explanation arises from the easy recognition of both musical and mathematical proclivity in our western culture. Csikszentmihalyi (1986) offers the following explanation "Musical and mathematical talent can be easily recognised, because western culture long ago developed a fairly clear and unanimous

agreement as to what these domains are ..... Thus accuracy and excellence in these domains are easy to assess.” (Sternberg, 1986, p.265) Educational as well as musical excellence has also been developed to a noteworthy level by the Suzuki method.

In other words, there may be many other potential prodigies in existence but we are not readily able to recognise such behaviour compared to musical or mathematical proclivities.

The second level of explanation is proposed by Gallagher (1960), who suggests a neurological model. He points out that networks of neuro-transmitted facilitations could provide us with a “neuro-chemical template” which transmits genetic transmission of ability on behalf of the childish recipient. Such levels of explanation are well beyond the scope or expertise of this particular study.

A third level of explanation which suggests strong family support as the key to musical proclivity in the vast majority of cases have already been noted by Howe (1999). In this thesis, the psycho-biographies of Leonard Bernstein, Benjamin Britten, André Previn, Jacqueline du Pré, Pyotr Tchaikovsky, Arturo Toscanini, Giuseppe Verdi, Jean Sibelius, Maurice Ravel, Elton John, Bela Bartok and Hector Berlioz certainly seem to support such an observation.

#### EARLY/LATER ORIGINAL ENTERPRISE DOMAIN DISTINCTIONS

Reading 200 biographies and autobiographies listed in the bibliography of this thesis, one can observe the quite distinctive behavioural differences between creative personalities whose talent and achievements occur early in life, contrasted to those cases who do not display novel creative output until much later. In the particular 100 biographies selected, the ratio is 11 early to 15 later developers.

For example, Picasso was an early developer, and from the age of 7 was never without a pencil in his hands. By aged 20 his output of caricatures and drawings was enormous.

By contrast Paul Cezanne, who is credited as the artistic forerunner of Picasso, developed his art forms in later life, persevering with his pre-cubist ideas until his death. Days before he died, for example, he took his watercolours up a steep hill to paint. Closely linked in art history, the contrast between the impulsive flamboyant Picasso and the solitary obscure Cezanne, both belonging to the same domain but widely different in behavioural patterns, could not be more distinct.

The contrast between Egon Schiele, an early developer and child prodigy who began to draw competently when he was two, and Claude Monet (a slower developer), who worked as an artist for 70 years and reached the pinnacle of his impressionist style with the Grande Decoration for Clemenceau at 85 years of age, again illustrates this distinctive path to a similar objective.

Further examples occur in commerce, with early developer Andrew Carnegie contrasted with later developer Charles Schwab; and in science comparing Albert Einstein with Stephen Hawking.

Based on the biographical library a brief summary follows, comparing early and later creative emanation. The consequences and research objectives that arise from these observations are outlined more fully in the literature review in Chapter 2 and the Analysis of Data, Chapter 7.

SAMPLE OF DOMAIN DISTINCTIONS BETWEEN EARLY & LATER EMANATION  
OF ORIGINAL ENTERPRISE

EARLY DEVELOPERS

MUSIC

Leonard Bernstein  
Benjamin Britten  
André Previn

COMMERCE

Paul Getty  
Bill Gates

ART

Egon Schiele  
Salvador Dali  
Pablo Picasso

LITERATURE

SCIENCE

Alexander Graham Bell  
Stephen Hawking  
Isambard Kingdom Brunel

11 cases

LATER DEVELOPERS

MUSIC

Nellie Melba  
Giacomo Puccini  
George Gershwin

COMMERCE

William Morris  
Henry Ford  
Gabrielle Chanel

ART

Steven Spielberg  
Vincent van Gogh  
Auguste Rodin

LITERATURE

Boris Pasternak  
Virginia Woolf  
Arthur C Clarke

SCIENCE

Christiaan Barnard  
Howard Florey  
Thomas Edison

15 cases

## 5.31(vi) CODE RI – SAMPLE ROLE INFLUENCES BY DOMAIN

### EXAMPLES

From a search through the biographies an attempt has been made to identify the principal rôle influences for selected subjects by domain. Most of these role influences were by other personalities, but it may also be observed that situations and themes also highlight rôle influences in subsequent personality development.

As set out below, there are numerous examples of the direct influence of role models both as historic figures and as close acquaintances,.

#### MUSIC

Leonard Bernstein  
Benjamin Britten  
André Previn  
Nellie Melba

influenced by

#### MUSIC

Aaron Copland  
Maurice Ravel  
Arturo Toscanini  
Pietro Cecchi (Italian Tenor)

#### SCIENCE

Alexander Graham Bell  
Howard Florey  
Thomas Edison  
Frédéric Joliot-Curie

influenced by

#### SCIENCE

Gardiner Hubbard  
Thompson – chemistry teacher  
Michael Faraday  
Paul Langevin

#### LITERATURE

Boris Pasternak  
Arthur C Clarke  
Charles Dickens  
Rudyard Kipling

influenced by

#### LITERATURE

Mayakovksy  
Jules Verne and H G Wells  
Isambard Kingdom Brunel  
Burne-Jones

#### CREATIVE ARTS

Noel Coward  
Vincent van Gogh  
Steven Spielberg  
Egon Schiele

influenced by

#### CREATIVE ARTS

George Bernard Shaw & Oscar Wilde  
Paul Gauguin, Seurat & Toulouse Lautrec  
Whoopi Goldberg “Colour Purple”  
Gustav Klimt

#### COMMERCE

William Morris  
Paul Getty  
Henry Ford  
Gabrielle Chanel

influenced by

#### COMMERCE

Edward Burne-Jones  
Employer Hadrian  
Thomas Edison  
Pablo Picasso

### DISCUSSION

In social-learning theory and in actual practice the rôle model plays an important part in socialisation and is considered to take place through the imitation of the behaviour of the admired model.

## 5.31(vi) CODE INQ - INFERENTIAL INTELLIGENCE

### DISCUSSION

Biographical data does not allow the investigator to draw any precise conclusions concerning the level of intelligence possessed by his subjects. The study of school and academic records, where these are available in a biography, suggests an approximation only of intellectual facilities. In many cases however, even conjectural inferences are very sketchy.

This finding is not confined to biographical information alone. Even serious academic studies find scant relationships between intelligence and original creative eminence.

In 1926, Cox (p.187) for example carried out extensive studies of the intelligence of 300 'geniuses' at Stamford University using a range of some fourteen criteria including the earliest period of instruction, the first reading, first mathematical performance, school standing etc. She finally decided "there was serious doubt that a precise IQ measurement could be given, even with this level of thoroughness." Eysenck (1995) also doubts that any great accuracy can be assigned to such studies.

One interesting observation suggesting the inaccuracies inherent in this whole area is that biography cases that displayed childhood scholastic achievements of lower order were:

Albert Einstein  
Thomas Edison  
Orville Wright  
Pierpont Morgan

All creative original thinkers of world class.

By contrast some scientific achievers who displayed childhood proclivity of high order and who used their cognitive potential to good effect were –

Isambard Kingdom Brunel — Engineering  
Stephen Hawking — Physical Astronomy  
Alexander Graham Bell — Inventor

This thesis will demonstrate that intelligence is one only of a complex arrangement of factors that lie behind the flowering of original enterprise. It is certainly not the 'magic bullet' that substantially explains behaviour of this novel form.

## 5.4 AXIAL CODE III - PERSONALITY TRAITS

- i) D Dominance, Aggression, Arrogance, Anger
- ii) IND Independent Mindedness, Decisiveness
- iii) ENTH Enthusiasm, Energy
- iv) L Competitiveness, Commercial Trading, Rivalry
- v) ISO Isolated, Schizoid withdrawn personality, Inward thinking
- vi) EXB Exhibitionism, Self Adulation, Narcissism, Eccentricity

### 5.41 (I) CODE D - DOMINANCE, AGGRESSION, ARROGANCE, ANGER

#### EXAMPLES

“He became a monster. Something in him would snap. He would break his baton, scream obscenities, tear up scores, throw music stands into the auditorium” — Arturo Toscanini: (Sachs, 1978, p.35)

“His combative self assurance could be devastating” — Louis Pasteur (Geison, 1995, p.38)

“His colleagues feared his rough anger” — Howard Florey (Bickel, 1972, p.47)

#### DISCUSSION

The factor D trait embraces a wide variety of associated nuances of meanings which are perhaps best illustrated with biographical examples than by attempting actual precise definitions.

Generally speaking, dominance refers to a personality trait characterised by the tendency to seek and maintain control over other people. Aggression is a closely linked concept inferring vigorous self-assertiveness and a desire to produce fear or flight in others. The term also infers anger, hostility and emotional superiority of viewpoint.

In scientific literature the importance of dominance as a personality trait was established by Cattell and Butcher (1968) in their work *Prediction of Achievement and Creativity*.

Feist (1999) reports on significant correlations between scientific productivity and Cattell's dominance, arrogance, hostility dimensions using R B Cattell's 'Factor D' as one of his study dimensions in 1993 involving 146 women scientists. Studies in New Zealand by Adcock and Sheffield (1977) and a series of subsequent standardisation studies (1978 – 1980) involving various commercial organisations also illustrate the

importance and central factor of dominance in a total picture of novel creative endeavour and commercial superiority.

#### 5.41(II) CODE IND - INDEPENDENT MINDEDNESS / DECISIVENESS

##### EXAMPLES

“No person will rule my life, nor will I make myself a slave” — Guiseppe Verdi (Autobiography, 1965, p.124)

“I have the strongest will for good or evil; turning neither to the right hand nor the left till it was done” — William Morris (Harvey, 1991, p.33)

“The subject is difficult but ‘I want to conquer’” — Vincent van Gogh (Bailey, 1992, p.63)

##### DISCUSSION

The cluster of traits referred to as independent mindedness and its corollary concept, decisiveness, refers to an autonomous attitude that is relatively free of the influence of the judgements, opinions or beliefs of others. The behavioural examples from our biography illustrate non-conforming, rebellious traits, independent frames of thinking and self-sufficiency.

Vernon (1970 p.316) refers to this cluster of personality traits as having a “Rich supply of inner resources and interests” while Cattell links this dimension to three trait clusters, radicalism (Q1) self sufficiency (Q2) and strong self sentiment (Q3) (Cattell & Butcher, 1968).

Feist (1999, p.278) suggests that “artists perhaps more than almost any other members of society tend to question and rebel against established norms suggesting that challenging and pushing the limits of what is acceptable may be one of the defining traits of being an artist in modern society.” He points out that in architecture for example, impulsive, non conformist, role doubting, sceptical behaviour are common characteristics of competence in this professional group.

#### 5.41(III) CODE ENTH - ENTHUSIASM / ENERGY

##### EXAMPLES

“We wish to share the joy of machines in the world” — Henry Ford (Lacey, 1986, p.87)

“His prodigious energy was in full spate” — Charles Dickens (Mankowitz, 1976, p.50)

“Commenced modelling in clay. I was in ecstasy!” — Auguste Rodin (Grunfeld, 1987, p.20)

## DISCUSSION

This code is considered as an integral dimension of motivation in this thesis. In general terms, enthusiasm and its associated meaning of energy are regarded as a stimulation dimension produced by some form of external means, such as commercial, craft or social perceived success. More specifically it may be defined in terms of an action-specific arousal or stimulation.

The biographical literature illustrates this code in a variety of ways. Many, but not all, illustrative case histories are drawn from commercial examples such as Carnegie, Ford, Gillette, Iacocca, Beaurepaire and Boot. A similar dimension is seen less frequently in science cases illustrated by Hollows, Florey, Hawking and Pasteur.

For example, Collins (1999, p.297) comments cogently that “a popular stereotype of creative people is that they approach their work with a kind of ‘crazed intensity’, often foregoing sleep, food and other seeming necessities of life in order to advance their creative work.” She adds “there is considerable anecdotal and empirical evidence that creative production does require a high level of motivation.”

Several levels of explanation are commonly advanced. Firstly, Rogers (1954, p.351) maintains that the motivation for creativity from psychotherapeutic sources is “man’s tendency to actualise himself, to become his potentialities”. The creative person acts as he does with energy and enthusiasm “because his behaviour is felt to be self-actualising” (Rogers, 1954, p.352).

Finally, humanist Maslow (1968) suggests that self-actualising creativity was a “defence arising out of fears of forbidden impulses ... in a kind of total indiscriminating panicky war on all the depths” (p.144).

This thesis is not qualified to discuss these deeper psychoanalytical interpretations and is more comfortable with the direct phenomenological levels of illustration.

### 5.41(IV) CODE L - COMPETITIVE / COMMERCIAL TRADING / RIVALRY

#### EXAMPLES

“His money-making schemes began at school” — Richard Branson (Brown, 1988, p.23)

“Skilled at developing dealer networks” — Claude Monet (Kendall, 1989, p.98)

“Trading repaid money he owed” — Frank Lloyd Wright (Pfeiffer, 1992, p.89)

## DISCUSSION

The Factor L Trait is a direct derivative from Cattell's 16PF Questionnaire and the further analysis of this important dimension by Adcock in his 1952 Scientific Study of Personality and Sheffield in his commercial studies in Auckland, New Zealand 1968-1980.

Originally defined as competitiveness and suspiciousness by Cattell, the Adcock studies suggested three, rather than one, dimension from his validation factor analysis on a large New Zealand sample, namely hostility, competitiveness and a commercial trading factor. The Sheffield commercial studies suggested a significantly high variance in separating successful from non-successful commercial personalities in a 'trading' sense – the trading dimension.

The illustrative biography references following suggest that this factor, although common in the commercial domain as with Bill Gates and Richard Branson, is by no means confined to this domain.

### 5.41(v) CODE ISO - ISOLATED/SCHIZOID/WITHDRAWN PERSONALITY/INWARD THINKING

#### EXAMPLES

“He cut himself off, declining engagements and even installed a mirror to spy on visitors” — Charles Darwin (Joseph, 1991, p.19)

“Never made a close friend” — Vaslav Nijinsky (Buckle, 1975, p.8)

“He was heroically alone” — Thomas Huxley (Desmond, 1994, p.5)

## DISCUSSION

The most elaborate explanatory construct involving a single personality trait was proposed by Storr in 1998. He takes his theme from Edward Gibbon with his observation that “Conversation enriches the understanding, but solitude is the school of Genius; and the uniformity of a work denotes the hand of a single artist” (Storr, 1998, p.ix).

Based on his observation of the solitary nature of many great philosophers, writers and men of science, Storr engages on a psycho-biographical summary of a great

number of interesting personalities who displayed marked social reserve and solitary, schizoid-type behaviour. He makes a direct observational linkage between this trait and creative behaviour.

Some of the cases such as Anthony Trollope, Noël Coward, Edgar Allan Poe and Rudyard Kipling are well known and are included in this analysis. Others like Immanuel Kant, Isaac Newton, William Wordsworth, Samuel Coleridge, Michelangelo, John Keats, P G Wodehouse, Beatrix Potter and Mozart are also well-known personalities that were read but not specifically included in this thesis.

Two comments are pertinent here:

Although rich in observation and background, there is really no compelling scientific evidence that this personality trait is a necessary and sufficient explanation of creative behaviour. There is probably an important correlational relationship as part of a total map of behaviour, as will be more fully explored in the statistical analysis in Chapter 7.

Freudian-based psychoanalytic analyses of creative behaviour is, in common with many psycho-biographies, often seeking evidence of preconceived ideas. In a word, these opinions are often seriously biased.

This 'after the fact' distorted interpretation of biographical material is well documented by Weisberg (1986) whose analysis concludes that there "is not a very strong case to be made for the role of unconscious processes in creative thinking" (p.19). Later evidence contained in this current thesis appears to support his conclusion.

#### 5.41(VI) CODE EXB - EXHIBITIONISM / SELF ADULATION / NARCISSISTIC / ECCENTRICITY

##### EXAMPLES

"I will be ultimately recognised as a real work of art!" — Oscar Wilde

"I'll be the genius the whole world will admire." — Salvador Dali

"His celebrity quotient soared" — Calvin Klein

##### DISCUSSION

The narcissistic trait in its most general sense refers to an exaggerated self-love, or more precisely ego-eroticism. Despite the number of cases who exhibited this form of self-adulation, there appears very little reference to its importance in scientific literature.

This thesis included Oscar Wilde, Gustave Courbet, Noël Coward, Elton John, Salvador Dali, Nellie Melba and Giacomo Puccini all of whom displayed this trait to a degree.

## 5.5 AXIAL CODE IV – THE ACHIEVEMENT PROCESS

- i) CT \_\_\_\_\_ Central Trigger experience, mindstorm
- ii) ST \_\_\_\_\_ Standard Trigger – curiosity value
- iii) SA \_\_\_\_\_ Self Actualisation, confidence in self, self idealised, castles in the air, dreaming forward, full personal potential
- iv) INS \_\_\_\_\_ Insight, sensing truth intuitively
- v) AHA \_\_\_\_\_ Feeling that accompanies the moment of insight, pieces fitting together
- vi) NACH \_\_\_\_\_ Actual major achievement

### 5.51(i) CODE CT - CENTRAL TRIGGER EXPERIENCE, MINDSTORM

#### EXAMPLES

Saw a steam engine propelled by its own power – “I remember that engine 47 years later as though I had seen it yesterday!” - Henry Ford (Lacey, 1986, p.12)

(The engine was his “road to Damascus experience.” – author’s comment.)

“On the floor of the Monastery bell tower, Gabrielle Chanel saw No. 5 in the mosaic design. On that number her fortune was built - Chanel No 5”. - Gabrielle Chanel (Charles-Roux, 1976, p.42)

“His father gave him a spinet to repair when he was 8 years old, which he kept all his life and is still in the museum in Milan”. - Guiseppe Verdi (Martin, 1965, p.5)

“His father gave him a magnetic compass. We grappled with this enigma for a long time.” - Albert Einstein (Brian, 1996, p.3)

“His father gave him a tiny collection of minerals, and he became an ardent collector. Fascinated by minerals he became a member of the New York Mineralogical Club and commenced a science career.” - Robert Oppenheimer (Weiner, 1980, p.3)

“A helicopter gift from his father made an impression on the brothers that never faded” (author’s emphasis). - Wilbur and Orville Wright (Kelly, 1989, p.8)

“Charles Chaplin discovered Fatty Arbuckle’s baggy pants, bowler hat, large shoes and cane as a make-up suggestion which became the foundation of his career” (Manville, 1974, p.77)

Feynman (1994) reports an exceptionally strong trigger experience dating back to 1933 when he was discussing the physical law or principle of least action when a

Ph D student at MIT. He wrote: "They discussed the topic only once but the whole scene stuck in Feynman's mind for the rest of his life. He was so excited by the idea that he remembered everything about the occasion - exactly where the blackboard was, where he was standing, where Mr Bader (the Ph D tutor) was standing and the room they were in. He just explained, he didn't prove anything. There was nothing complicated; he just explained that such a principle exists. I reacted to it then and there, that this was a miraculous and marvellous thing to be able to express the laws in such a fashion! Least difference in tracing the path of a trajectory (such as a thrown ball) which is always the one for which the different kinetic energy minus potential energy added up all along the trajectory is the least." (Mehra, 1994, p.55).

## DISCUSSION

The earliest reference to the Central Trigger experience comes from St Paul and his "road to Damascus" experience (Acts 22:6 – 12) purported to completely change his behaviour from aggressive persecution of early Christians to one of evangelising zeal for the New Faith.

Other famous examples must surely include – Sir Isaac Newton's observation from his Cambridge window of an apple falling to the ground, triggering his theory of universal gravitation; the chance discovery of the anti-bacterial power of penicillin by Sir Alexander Fleming in 1928; and Galileo's astronomical observations of earth's rotation based initially on the precession of a swinging chandelier in the Cathedral at Padua, Italy.

In the modern era, Papert (1993) uses the term 'mindstorms', and Sternberg (1986, p.308) uses the term "crystallising experience" to reflect a memorable contact between a person with unusual talent or potential, and the materials of the field in which that talent will be manifested.

He refers to "their dramatic nature which focuses the attention of the individual on a specific kind of material, experience or problem. Moreover the individual is motivated to mentally revisit these occasions for the indefinite future and to reshape his self-concept on the basis of these experiences" (author's emphasis).

Feldman (1980, p.309) who originally coined the term "crystallising experience" refers to "the overt reaction of an individual ...yielding an immediate but long-term change in that individual's concept of a domain, his performance in it and his views about himself" (author's emphasis).

Maslow (1968, p.97) also used the term 'peak experience' which he describes as "an episode, or a spurt, in which the powers of the person come together in a

particularly efficient and intensely enjoyable way, in which he is more integrated and less split, more open for experience, more idiosyncratic, more perfectly expressive or spontaneous.”

This thesis proposes that this process towards achievement or complete integration continues with a self-actualisation phase. The subject of the study tends to actualise his desires and to realise as far as he is able, all of his potential. Initially proposed by psychotherapist Maslow (1959) self-actualisation refers to the final level of psychological development that can be achieved when all basic needs are fulfilled.

Finally, Rogers (1961) refers to this concept of self-actualisation as the “urge to expand, develop, mature and overcome deep buried psychological defences buried under layer on layer of encrusted defences” (p.351).

The concept of Trigger, suggesting the commencement and crystallising of an embryonic process of creative emanation, is an appropriate and logical explanation of the singular rare combination of factors that produce original enterprise behaviour. Furthermore, the antecedent correlations such as isolated, reserved behaviour which make an individual more susceptible to such a trigger experience may be measured and observed in a rigorous scientific manner by the statistical analyses of this study.

Such theory construction is not confined to observation and intuition alone. The relative importance of these factors is examined in Chapter 7.

The physical and role-influenced origins of the Trigger experience produces an interesting summary – on the basis of 83 per cent of the total sample experiencing this crystallising experience, we record the following results:

Actual objects (compass, crystals, etc)	32 per cent
Role Influences	25 per cent
No Central Trigger experience recorded	17 per cent
Internal (sounds, dreams, physical disabilities)	11 per cent
Situation (travel, events etc)	10 per cent
Idealisations (mottos, ideals etc)	<u>5 per cent</u>
	100 per cent

## 5.51(II) CODE ST - STANDARD TRIGGER – CURIOSITY VALUE

### EXAMPLES

"I was educated in violin by a local bandmaster." - Jean Sibelius (Richards, 1997, p.23)

"Excited over his discovery of a mouth organ." - Alfred Schnittke (Ivashkin, 1996, p.23)

"I admired a collection of great master paintings." – Salvador Dali (Gibson, 1997, p.41)

### DISCUSSION

The Standard Trigger experience possesses far less emotional or cognitive intensity than does the Central Trigger – more of a curiosity value.

It must be noted that these Trigger experiences are something akin to cognitive and emotional hooks on which personalities receive early experiences and draw on these images to stimulate their own creative resources. In coding terms, poet Stephen Spender's experience in developing creative imagery out of seemingly inconsequential events provides a good example of this Standard Trigger code.

In an article on *The Making of a Poem* (1946, p.70) he reports cogently on this creative factor in his own literary career. "I have a perfect memory for the sensation of certain experiences, which are crystallised for me around certain associations .....I could demonstrate this from my own life by the overwhelming nature of associations, which, suddenly aroused, have carried me back so completely into the past, particularly into my childhood, that I have lost all sense of the present time and place."

"That memory is not exactly a memory. It is more like one prong upon which a whole calendar of similar experiences happening throughout years, collect." (p.71) (author's emphasis).

Spender quotes similar experiences from Wystan Auden, Walter de la Mare, Mozart, Beethoven, William Wordsworth and the brief meeting of Dante with Beatrice when the former was only nine years old.

In other words, it is probable that many of these Trigger experiences of a minor nature are creations of memory and imagination and in fact may be in themselves quite inconsequential events – if they in fact actually happened.

5.51(III) CODE SA - SELF ACTUALISATION / CONFIDENCE IN SELF / CASTLES-IN-THE-AIR / DREAMING FORWARD / FULL PERSONAL POTENTIAL

EXAMPLES

'He constructed his own daydream. Kept stories continually in his mind.' - Anthony Trollope (Snow, 1975, p.32)

'Liberty was symbolised by the sea' - Joseph Conrad (Jean-Aubry, 1927, p.28)

"Self development is a process of self surrender." - Wystan Auden (Davenport-Hines, 1995, p.13)

'He had an unshakeable belief in the reality of his own image'. - Victor Hugo (Robb, 1997, p.16)

"I am a vagabond with a mission." - Oscar Wilde (Hart-Davis, 1979, p.64)

"I believe that a marriage of acoustic theory and electricity will produce a telephone!" - Alexander Graham Bell (Abrams, 1997, p.44)

"A huge map of the universe outlined itself in one clear vision. It came to me as a dream." - Albert Einstein (Brian, 1996, p.159)

DISCUSSION

This trait was originally proposed by Goldstein (1959) as the motive to realise all of one's potential, and has of course found its major proponent and champion in the writings of Maslow (1968) in his theme of creativity in self-actualising people.

Maslow's theory places this concept in a central position, as the final level of psychological development that can be achieved when all basic needs are fulfilled. To quote "Self actualisation as I have used it, stresses full-humanness, the development of the biologically-based nature of man and the normative for the whole species rather than for particular times and places" (Maslow, 1968, p.vi).

Maslow's concept is very close conceptually to the thesis of this report in that he sees creativity as a symptom, emitted or radiated by the personality, and not as a separate unique event.

This thesis also seeks clusters or groups of "networks" of behaviour behind and beyond the production of original creative enterprise – a multi-faceted examination of a concept closely similar to that of Maslow. The self-actualisation concept is seen as an inward realisation of personal potential that may or may not be triggered by a crystallising experience or similar event.

## 5.51 (IV) CODE INS - INSIGHT / SENSING TRUTH INTUITIVELY

### EXAMPLES

“A knowledge of the angle of attack is essential to the success of a flying machine.” - Wilbur Wright (Kelly, 1989, p.71)

“In the next 30 years, the world will be a pretty restless, tormented place.” - Robert Oppenheimer (Kimball Smith, 1980, p.28)

“There is no absolute time/space-time hypothesis.” - Albert Einstein (Brian, 1996, p.53)

“Mass is frozen energy.” - Albert Einstein (Brian, 1996, p.71)

“We can bring about a chain reaction of nuclear power of enormous power.” - Frédéric Joliot-Curie (Biquard, 1965, p.16)

“The study of black holes marries relativity and quantum theories.” - Stephen Hawking (White, 1992, p.22)

“Painting is a concrete art representing real and actual things.” - Gustave Courbet (Mack, 1951, p.101)

### DISCUSSION

Insight refers generally to an act of sensing intuitively the inner nature of something. Closely related to the concepts of self-awareness or self-understanding – a novel, clear compelling apprehension of the truth of something occurring in a spontaneous manner. The word “intuition” suggests greater depth of insight and a mode of understanding or knowledge derived without conscious thought or judgement.

The most famous historical reference to this insight phenomena is that of mathematician Poincaré reported having made his “sudden” discovery of a new expression for Fuchsian functions while stepping on to a bus, after working for some 15 days trying to prove that these functions could not exist.

Other famous examples include Mozart’s spontaneous and constant creation of virtually complete compositions and the writing of the poem *Kubla Khan* by Samuel Taylor Coleridge.

Weisberg (1986, p.15), has sought to prove that such “after the event” reconstructions are largely mythical in his opinion, and Simonton (1997, p.116 quoted by Sternberg 1999) has written authoritatively about “multiple discoveries” basically suggesting, especially in science, that originality and insight are the result of successive antecedents rather than the work of one supremely creative individual.

Despite these cautions, numerous revealing personal references were found to provide both insight and intuition in the biographical illustrations.

5.51(v) CODE AHA - THE FEELING THAT ACCOMPANIES THE MOMENT OF  
INSIGHT / PIECES FITTING TOGETHER

EXAMPLES

"My car is aimed at basic simplicity." - Henry Ford (Lacey, 1986, p.54)

(The advantage of assembly-line mass produced car versus more costly single unit manufacture – author's comment)

"There is money in California!" - Paul Getty (Joseph, 1985, p.60)

(Oil wealth best acquired in California – author's comment)

"The only way to make money is ready to wear."- Pierre Cardin (Morais, 1991, p.123) (i.e. cheaper, mass produced garments – author's comment)

"We can calculate the exact temperature of the big bang." - Stephen Hawking (White, 1992, p.112)

"Penicillin extract from ether into a neutral buffer shows results of near purity." - Howard Florey (Bickel, 1972, p.92)

"Ruthless competition was the norm; it guaranteed the progress of life." - Charles Darwin (Joseph, 1991, p.265)

"A few things about eye surgery came together." - Fred Hollows (Kerr, 1994, p.54)

DISCUSSION

Traditionally Code AHA describes that instant when the various disparate aspects of a problem-solving situation "suddenly" fit together to produce a solution.

Storr (1972, p.152) suggested that AHA has a deeper meaning in fact than merely "fitting pieces together". He feels that "a considerable part of the satisfaction we so obtain is derived from our appreciation of order and balance. The contemplation of symmetry and order in the external world brings us a sense of peace and fulfilment."

In scientific literature Gestalt psychologists have proposed the concept that such problem solving and creative thinking is in fact closely related to perception. They see the AHA experience as a "spontaneous restructuring" in a problem solving situation and a realignment of previously "fixed" solutions to problems.

Weisberg (1986) has challenged these interpretations and sees the AHA concept as somewhat of a myth, with very little reason to believe that solutions to novel problems come about in leaps of insight"(pp.34-50). This viewpoint however, is not well supported by other current research opinion.

## 5.51(VI) CODE N ACH - ACTUAL MAJOR ACHIEVEMENT

### EXAMPLES

"A clear -cut result for the curative power of penicillin." - Howard Florey (Bickell, 1972, p.97)

Nobel Prizes for chemistry and peace. - Linus Pauling (Goertzel, 1995, p.88)

"Rutherford's discovery of the Neutron was his great discovery"- Ernest Rutherford (Wilson, 1983, p.547)

*Dr Zhivago* wins the Nobel Prize for Literature. - Boris Pasternak (Hingley, 1983, p.186)

"Graham's magazine with Poe as Editor had a circulation of 32 000 - the largest circulation of an American magazine in the world". -Edgar Allan Poe (Mankowitz, 1978, p.134)

"Prodigious success of Aida" - Guiseppe Verdi (Martin, 1965, p.387)

"Awarded the Order of Lenin and Hero of Socialist Labour" – Dmitri initri Shostakovich (Jackson, 1997, p.78)

"*Les Noces* regarded as the most perfect evocation of genuine Russian Folk Life." - Igor Stravinsky (Dobrin, 1970, p.112)

"Copying a moving frieze to imitate Greek and Egyptian reliefs was his original breakthrough". -Vaslav Nijinsky (Buckle, 1975, p.187)

### DISCUSSION

This code must be divided into two separate dimensions, both of which suffer from errors of bias.

The first dimension is that of domain-specific achievement in science, literature and art for example. The supposedly 'unique' achievements of Ernest Rutherford in his discovery of the neutron, Howard Florey in his work on the curative power of penicillin, Albert Einstein in his special theory of relativity or Watson and Crick and the DNA construct in physiology are acknowledged.

Simonton (1997) has pioneered what are termed historiometric enquiries, searching for the multiple antecedents to individual achievement. Weisberg (1986) has applied this concept of the serial antecedents to original creative output reviewing the DNA discoveries of Watson and Crick, and Charles Darwin in particular.

The second dimension refers to the world achievement acknowledged by the Nobel Prize. A person who has earned a Nobel Prize for literary or scientific accomplishment would certainly qualify for our N ACH code even if that individual were still alive.

Even in this dimension, the bias of committee decisions becomes obvious. Stephen Hawking, for example, was given the Albert Einstein Award rather than the Nobel Prize because of Nobel's bias against astronomers in earlier history.

## 5.6 AXIAL CODE V - OBSESSIVE BEHAVIOUR

- i) OBS General obsessive behaviour / Phobias
- ii) WW Work frenzy obsession / Total absorption / Speed of work
- iii) PERS Perseveration / obsession into later life
- iv) OS Sexual obsessions / voyeurism / fantasy / erotomania
- v) OC Collective acquisition actions / Trophies
- vi) CA Consumption obsessions – drugs, alcohol, smoking, overeating, clothing
- vii) RI Ritual obsessions
- viii) OTH Thanatophobia / morbid fear of human corpses / death obsessions, sex-death linkage, sado-necrophiliac

### 5.61(i) CODE OBS - GENERAL OBSESSIVE BEHAVIOUR / PHOBIAS

#### EXAMPLES

"Music took possession of my mind": "He was driven to compose" Pyotr Tchaikovsky (Dobrin, 1970, p.78)

"I'm fated to work to the last gasp" Guiseppe Verdi (Martin, 1965, p.466)

"Without luxury, Wagner cannot work, cannot live!" : "His desire for luxury extends beyond his own needs." Richard Wagner (Millington, 1984, p.171)

"Had a morbid need to suffer and be rejected – a compulsive loser" Edgar Allan Poe (Mankowitz, 1978, p.49)

"The house where he was born was rubble. The sense of loss never left him" EM Forster (Beanman, 1993, p.6)

"Obsessive work and play habits! An exact timetable. Wrote 250 words every quarter hour." Anthony Trollope (Snow, 1975, p.86)

"He was more sex-obsessed than anyone I know" Wystan Auden (Davenport-Hines, 1995, p.88)

#### DISCUSSION

Obsessive behaviour originally related to a haunting idea that constantly invades the consciousness of a subject, resulting in actions and ideas which appear to be beyond the will of a person to control.

The concept has now widened in scope to mean the more inclusive, obsessive-compulsive disorder term, with recurrent and persistent thoughts, ideas and feelings and ritualised behaviour. Relief from internal tensions through excessive drinking, gambling, eating and drug consumption, are also closely associated behaviours.

There are numerous classical examples of obsessional behaviour in history. These include Charles Dickens, Jonathan Swift, Dr Johnson, Stravinsky, Rossini and Immanuel Kant.

In this thesis, although a wide range of obsessions is documented, only WW work frenzy (Code 5.6-ii) and perseveration obsessions (Code 5.61-iii) appeared to have a significant relationship with original creative enterprise, with phobias, collecting, sexual, consumption and thanatophobia obsessions playing a minor, less frequent role. These latter obsessions were therefore not included for comment in this section.

Biographical examples are provided especially from music and literature and the creative arts to a lesser extent, illustrating numerous forms of obsessions recorded by the thesis.

#### 5.61(II) CODE WW - WORK FRENZY OBSESSION, TOTAL ABSORPTION, SPEED OF WORK

##### EXAMPLES

"Drowned himself in his work" Bela Bartok (Chalmers, 1995, p.188)

"A phenomenally fast worker" Leonard Bernstein (Peyser, 1987, p.346)

"Wholly committed to whatever she plays" Jacqueline Du Pré (Easaton, 1989, p.67)

"Never gets up from the piano - even to eat" Arturo Toscanini (Sachs, 1978, p.150)

"I am in a state of work frenzy" Richard Wagner (Millington, 1984, p.132)

"A day is misused if she hadn't written something" Katherine Mansfield (Alpers, 1982, p.31)

"Wants to write out the pain" Virginia Woolf (Bell, 1973, p.45)

##### DISCUSSION

Work frenzy is obviously a significant element in original creative enterprise, and combined with other behavioural dimensions is an important element in this thesis. It was observed that work frenzy alone is a common behavioural dimension and as such does not discriminate between original creativity of high order and normal less creative dimensions. It is the network or synergy that is of importance, not a single isolated dimension.

The distinction between work as an experience and actual accomplishment may be illustrated by the following summary of work emotion references.

WORK EMOTIONS	RECORDED BY DOMAIN	
Music	161	References
Creative Arts	150	References
Literature	135	References
Science	128	References
Commerce	97	References

Common emotions expressed were:

- Speed of work
- Total immersion in work
- Work as psychological relief
- Work frenzy
- Need for perfection
- Work perseverance

It is plainly incorrect to assume that musical composers work harder or produce a greater amount of original creations than those in science or commerce. All that may be assumed is that the emotions associated with musical composition are more prominent than in other disciplines in this sample of 100 personalities.

#### 5.61 (III) CODE PERS – PERSEVERATION / OBSESSIONS IN LATER LIFE

##### EXAMPLES

At 60 years of age, Marie Curie is dying of radiation sickness and comments – “I ought to stop working and live in the country, but I am held by a thousand bonds and could not live without the laboratory.” (Quinn, 1995, p.417)

Thomas Edison at 84 years of age – “I have no intention of quitting until the day before the funeral.” (Baldwin, 1995, p.387)

Giacomo Puccini - Only death prevented him completing the last 15 minutes of his masterpiece (Turandot). (Wilson, 1997, p.215)

Benjamin Britten – “I must keep writing music!” (Carpenter, 1992, p.366)

Dame Nellie Melba - At 66 years of age, refused to retire and gave 50 farewell performances. She needed adulation “like a drug.” (Cheshire, 1967, p.262)

Giuseppe Verdi - Forever composing. It was the habit of a lifetime. (Martin, 1965, p.466)

Igor Stravinsky - At 80, still marking up work. (Dobrin, 1970, p.175)

Claude Monet - Is 85 years old. He is in constant pain. All his old friends - Renoir, Sisley, Manet and his wife are dead. His sight is failing and needed operations to

enable him to see the true colour spectrum. He has promised Prime Minister Georges Clemenceau to complete his enormous Water Lily decorations for the state. His last letters are dated September 1926. –“I'm getting the upper hand, and working passionately. I'm not giving up hope and am occupying myself with some major alterations in my studio and plans to perfect the garden. All this to show you that, with courage, I will overcome.” Monet died about two months after this letter was written. (Kendall, 1989, p.265)

## DISCUSSION

One of the most penetrating insights of this dimension is provided by Riesman (1950). He pictures behavioural conformity and consequently the relatively unalterable behaviour of the “inner directed” personality as a “psychological gyroscope” keeping this individual “on course” throughout life (pp.15,16).

The importance of this behavioural dimension will be referred to again as the “clusters” of original creative behaviour are examined in Chapter 8.

5.61 IV CODES OS, OC, CA, RI & OTH

5.61 V CODE OS \_\_\_\_\_ SEXUAL OBSESSIONS, VOYEURISM, FANTASY,  
EROTOMANIA

5.61 VI CODE OC \_\_\_\_\_ COLLECTIVE ACQUISITION ACTIONS, TROPHIES

5.61 VII CODE CA \_\_\_\_\_ CONSUMPTION OBSESSIONS – DRUGS, ALCOHOL,  
SMOKING, OVEREATING, CLOTHING

5.61 VIII CODE RI \_\_\_\_\_ RITUAL OBSESSIONS

5.61 IX CODE OTH \_\_\_\_\_ THANATOPHOBIA , MORBID FEAR OF HUMAN CORPSES,  
DEATH OBSESSIONS, SEX-DEATH LINKAGE, SADO-  
NECROPHILIAC

## 5.7 AXIAL CODE VI - ACTION CATEGORIES

The samples were derived from the Bibliography documentation.

A+ \_\_\_\_\_ A POSITIVE ACTION, NOT NECESSARILY A MAJOR ACHIEVEMENT,  
ATTENTION TO DETAIL, MEMORY, FOCUS BRANDING, NEW INNOVATIVE

#### EXAMPLES

Charles Darwin	Kept scrupulous accounts
Ernest Rutherford	Good concentration skills and attention to detail
Elton John	Delivered his first virtuoso performance – <i>Lady Samantha</i>
E M Forster	Began to write his first novel ( <i>Nottingham</i> ) at 21 years of age

#### DISCUSSION

In this thesis an Action Code (A+) refers to the actual performance of some function or the occurrence of a process.

The usage of this code is fairly broad and may either denote an overt action such as writing, keeping accounts or composing a musical score where the action is conscious and purposive or may be more covert and internalised.

The concept of attention to detail, memory (an internalised action) focus branding (a commercial action) and innovation (a further internalised action) has been added into the A+ Code.

#### A- \_\_\_\_\_NEGATIVE OCCURRENCE OR ACTION, LOSS, ILL HEALTH

#### EXAMPLES

Boris Pasternak	Poor living conditions in Moscow. Marriage in decline
Rudyard Kipling	Death of his daughter, Josephine
Joseph Conrad	A long, long illness and a dreary convalescence
Edgar Allan Poe	John Allan whipped Poe

#### DISCUSSION

The A- Code refers to personal loss, ill-health or death – the cessation of all actions.

The scientific literature stresses the protracted process that is characteristic of original creative enterprise, which may appear surprising to a casual observer.

For example Albert Einstein's relativity theories commenced when he was around 16 years of age, but did not reach maturity until some 10 years later. Sigmund Freud as a promising neurologist visited Charcot in Paris, commencing around that time his interest in unconscious forces, and did not propose his psychoanalytic theory again for many years.

It obviously takes a period of devoted time to produce the outstanding creative products that may have evolved more or less suddenly as the work of a single creative genius. Simonton has pointed out (Sternberg, 1999 p.116) with his historiometric perspective that longevity of creative enterprise (or of kingship as a similar example) produces superior recognition and commonly more mature creative products.

During the biography search the 28 cases who exhibited early childhood proclivity (mostly but not exclusively in music) were compared with those 72 cases who developed creative products and skills in later life.

It came as no real surprise to observe that, over an extended period of time, there were negative occurrences such as losses, ill-health and similar; whereas the early developer should experience the freshness, innovativeness and positive memories we would witness in early proclivity examples.

AS \_\_\_\_\_ NORMAL SEXUAL REACTION, HOMOSEXUALITY, LOVE

#### EXAMPLES

John Galsworthy	Galsworthy and Ada lovers for 6 years
Alex Graham Bell	In love with (deaf) Mabel Hubbard
Frédéric Joliot Curie	In love with Irene Curie, daughter of Marie Curie
Thomas Huxley	Met Henrietta Heathorn in Australia and engaged

#### DISCUSSION

The AS Code denotes normal sexual reactions with its associated connotations of love and affection. Homosexuality is treated in a similar manner suggesting a sexual preference.

AP \_\_\_\_\_ PERSISTENCE, DETERMINATION, SEARCHING

#### EXAMPLES

Arthur Clarke	The conquest of space is only a matter of time, experiment and money – it may take 100 years; it may take less
Christiaan Barnard	My marks are not good enough. I must improve
Thomas Edison	Focussed on finding a durable filament that would not melt down
Stephen Hawking	Sought to combine Einstein's general theory of relativity and quantum theory into one mathematical package

## DISCUSSION

The AP Code suggests a striving against an opposition and is regarded as a positive attempt to overcome resistance and reach a desired goal. Code AP is to be contrasted to the more negative PERS Code indicating a pathological tendency to repeat persistence behaviour past the point where this behaviour is appropriate or required.

### 5.8 AXIAL CODE VII - EMOTIONAL DIMENSIONS

E+ \_\_\_\_\_ POSITIVE EMOTION; PASSION, SELF CONFIDENCE, ECSTASY, CONTENTMENT, GENEROSITY, ATAVISMS, HUMOUR

#### EXAMPLES

"The music stirred me to the depths of my being." - George Gershwin (Greenberg , 1937, p.184)

"How glad I was when the sacks of pitchblende arrived!" - Marie Curie (Quinn, 1995, p.155)

"He loved his piano." - Leonard Bernstein (Peyser, 1987, p.36)

"A lifelong habit of covering miserable situations with a bright smile." - Frank Lloyd Wright (Knopf, 1992, p.136)

"Manet loved Paris and loved life." - Edouard Manet (Schneider, 1972, p.18)

## DISCUSSION

Positive emotional codes (E+) may be viewed as an umbrella category referring to affect-loaded states commonly defined as to excite, to move, to stir-up or to agitate.

In coding items for this study we have widened the E+ code to include concepts of ecstasy, contentment, generosity and humour.

E- \_\_\_\_\_ NEGATIVE EMOTION; FEAR, ANXIETY, INSECURITY, PESSIMISM, SUPPRESSION, RESTLESSNESS

#### EXAMPLES

"I was tortured by my homosexuality." - Benjamin Britten (Carpenter, 1992, p.178)

"The strongest forces in life are destructive." - Wystan Auden (Davenport-Hines, 1995, p.116)

"I well know the privations of a painter who is unable to paint. " - Paul Cezanne (Orbis, 1988, p.57)

“Going to college I was afraid of leaving something known for the unknown.” -

Christiaan Barnard (Pepper, 1969, p.58)

“He ignored whatever bored him making no attempt to master it at school.” - Albert Einstein (Brian, 1996, p.4)

## DISCUSSION

Negative emotional codes (E-) commonly refer to the emotions of fear, hate, terror, insecurity and pessimism.

For the E- code suppression and restlessness have been added as additional meanings.

## 5.9 AXIAL CODE VIII - EMOTIONAL PATHOLOGIES

Measures of the degree of emotional pathology severity were largely drawn from the author's previous consulting and institutional experiences (summary in Chapter 4.1).

EML MILD EMOTIONAL RESPONSE – HYPOCHONDRIASIS, DEPRESSION, PREMONITIONS, ERRATICITY, FETISH, HIGHLY STRUNG, IDEE FIXEE, IMPOTENCY, NIGHTMARES, HEADACHES, RAGES, EREUTHROPHOBIA (FEAR OF BLUSHING) MASTURBATION

## EXAMPLES

“Every day fills me with a terror, a horrible depression I cannot shake off.” -

Katherine Mansfield (Alpers, 1987, p.74)

“I am in the valley of despair and no gold coins are dropping down from heaven to gladden me.” - Oscar Wilde (Hart-Davis, 1979, p.177)

“A basic unhappiness - bouts of melancholy and depression.” - Robert Oppenheimer (Smith, 1980, p.3)

“Suffered from unnatural dreaming activity and nightmares.” - Robert Louis Stevenson (Hennessy, 1974, p.89)

EMN MINOR EMOTIONAL BREAKDOWNS- NEUROTIC BEHAVIOUR, CHARACTER DISORDER, NEURASTHENIA,, PAEDOPHILIA, DELIRIUM TREMENS, SADO-MASOCHISM, SAD SEASONAL EFFECTIVE DISORDER

#### EXAMPLES

"He suffered from a neurotic reaction, common to the artist" - Wystan Auden (Devonport-Hines, 1995, p.33)

"Over-exertion and under-nourishment made him highly strung, talking loudly and gesticulating." - Gustav Mahler (Blaukoff, 1976, p.156)

"Anxiety about everything gets me down."- Jean Sibelius (Rickards, 1997, p.183)

"Massive tantrum and walked out of the room" - Elton John (Norman, 1991, p.389)

"Quivering of nerves racked by a creative urge." - Vaslav Nijinsky (Buckle, 1975, p.334)

#### EMJ \_\_\_\_\_ MAJOR EMOTIONAL PATHOLOGY – SCHIZOPHRENIA, MANIC BI-POLAR, KORSAKOF'S PSYCHOSIS

#### EXAMPLES

"The horrors are beginning. For three months I have been on the edge of a precipice" -Virginia Woolf (Bell, 1973, p.217)

"Hallucination, amnesia and loss of memory." - Toulouse-Lautrec (Fermigier, 1969, p.200)

"Depressions alternated with manic excitement." - Edgar Allan Poe (Mankowitz, 1978, p.99)

"My life is threatened at the very root" - Vincent van Gogh (Bailey, 1992, p.147)

#### DISCUSSION

The separation of these emotional states from the mild to serious emotional pathologies is worth noting. E+ and E- codes reflect short-lived levels of arousal and desire, which are typically non-habitual and result from particular constraints of the environment and how it is personally appraised.

By contrast the EMN and EMJ pathologies reflect basic neurotic and schizophrenia symptoms respectively and represent abnormal conditions or biological states in which 'normal' functioning is prevented. The word 'psychopathology' reflects the concept that, at this stage of medical knowledge, no known biological components are involved.

The EML code represents a half-way state between standard emotional codes and severe emotional pathologies. It is acknowledged that the wide range of items listed are scattered non-specific items where definitions cover a very wide spectrum of meaning.

Eysenck (1995) has grouped together all these latter emotional pathologies under one dimension classified as 'psychoticism' on the grounds that there appears to be little consistency in psychiatric nosology which clearly distinguishes between the symptoms, say of schizophrenia as contrasted with psychoneurosis or manic bipolar disorder.

Adcock (1957, pp.47-51) has closely examined this single-dimension construct of psychoticism and although he disagrees fundamentally with the validity of the concept, concludes "it is not justifiable to conclude from Eysenck's evidence that a schizothymia-cyclothemia continuum does not exist."

Nevertheless, the number of serious pathology cases was limited to around eight per cent of the biographical library and it was decided to group the EMN and EMJ cases into one pathological dimension.

The volume of data assembled suggests that randomly selected real life biographical examples should be used to illustrate actual code items, a procedure followed throughout this thesis.

A certain degree of emotional and neurotic behaviour is certainly common in the samples studied. A study by Boyd & Gumpert (1983) reported by Long (1990, p.229) based their research findings on 249 company founders and demonstrated the high level of stress commonly experienced. Eighty four per cent of their sample demonstrated Type A coronary-prone behaviour patterns; 63 per cent suffered from insomnia; 62 per cent headaches; 58 per cent back problems and 55 per cent impaired digestion.

This thesis codes most forms of emotional reactions from common fears, anxieties and restlessness, all the way to neurotic behaviour and extreme conditions such as schizophrenia and manic bi-polar reactions.

It is to be noted that whereas neurotic and similar reactions allow the subject to continue creative activities, severe breakdown tends to extinguish such original creative behaviour.

Storr (1972, p.214) comments adroitly on this issue. "For creative work, access to the inner realm of the psyche is essential. But so also is a strongly functioning ego, capable of judgement, inhibition, impulse persistence and control."

Storr believes that severe mental illness interferes with creativity in less than 5 per cent of a sample of persons of original creativity. This thesis would suggest a slightly higher figure of 8-10 per cent and include such personalities as –

Vaslav Nijinsky –	Russian dancer
Virginia Woolf –	Novelist
Edgar Allan Poe –	Novelist
Vincent van Gogh –	Artist
Yves St Laurent –	Couturier
Jean Sibelius –	Music composer
Paul Gauguin –	Artist
Toulouse-Lautrec –	Artist

## 5.10 CONCLUSIONS

The groundwork has been laid for a subsequent mapping of important behavioural and antecedent coded dimensions and the search for future research objectives behind the flowering of original creative enterprise.

The relevant literature that lay behind the choice of behavioural codes was reviewed and the advantages and disadvantages of biography as a source of information on creativity were observed.

In the justification of code selection, some discretion was exercised regarding the prime importance of some codes, as contrasted to codes which appeared to offer very limited biographical examples, and which could not be substantiated with subsequent statistical analysis.

The main implication of this study was the observation that the combination of the colour, vitality and expressiveness of biography, combined with subsequent statistical methodology could produce the required balanced original approach that was sought in this thesis concerning original creative enterprise.

## CHAPTER 6

### METHODOLOGY AND PROCEDURES

#### 6.1 INTRODUCTION

“The important thing in science is not so much to obtain new facts, as to discover new ways of thinking about them.” — W L Bragg

“Theory is the mother of practice.” — Louis Pasteur

In general terms, the combination of personal psychological consulting experience, reading both biographical case histories and relevant scientific literature led the investigator to assemble a behavioural and socio-economic coding system that could ‘score out’ or enumerate biographical statements and events in a meaningful manner.

Precise definition of codes was derived from several sources:

1. The author’s experience as a consulting psychologist between 1962 and 1980, including numerous behavioural research projects.
2. Reading and coding some 200 biographies (listed in the bibliography), and revising code definitions for the final selected 100 biographies.
3. Consultation with professional staff at Melbourne, Swinburne and Queensland Universities.

The search for essential elements behind the concept of original creative enterprise was an evolutionary process, rather than a sudden ‘insight’. Once a code was agreed, scoring became speedier and more accurate. Full records were retained of the source of each code, the identifying page and the actual code itself. These records are available should a future researcher wish to replicate this data.

Appendix I illustrates this process with coded biographies of Steven Spielberg (creative arts), Henry Ford (commerce) and Edward M Forster (literature).

The domains involved in this search drew on biographical cases from music, creative arts, literature, commerce and science. As a follow-on study we report briefly in Chapter 9 on the extension of these domains into politics and sport to determine whether biographical data portrays similar characteristic codes to this original domain grouping.

#### 6.11 JUSTIFICATION FOR THIS STUDY

The justification for embarking on this study is:-

1. The subject of original creative enterprise is an intriguing, challenging and confusing search requiring better precision in methodology and content than has previously been envisaged.
2. Maslow's thesis that the production of original creativity is nothing less than an "emanation" of a self-actualising personality is an intriguing suggestion and deserves further consideration, possibly in the form of a consequential observation.
3. To our knowledge, few previous investigations have attempted to 'map out' the total dimensions of original enterprise to determine the relative importance of most possible factors that impinge on this unique behaviour.
4. Finally the pilot 1998 study on 52 rather than the 100 cases ultimately selected gave this investigation valuable insights into possible dimensions behind a network congruence of original enterprise behaviour.
5. The research objective sought to review previously conflicting and confusing explanations of original enterprise behaviour and to bring about a new, reasonably balanced viewpoint for a future, more embracing, study program.

#### 6.12 PROCEDURES INVOLVED IN PILOT 1998 STUDY

During 1998, a pilot study was conducted to test the coding procedures on a sample of 52 biographical cases and to select the most appropriate multivariate statistical methods to be employed in their analysis.

It should be pointed out that the author was aware of the limitations of his knowledge both of codes and the extent of the biographical data available, but felt the pilot study would presage a later more extensive investigation.

Both codes and biographies of the pilot study are summarised over.

## 6.12 (i) PILOT STUDY AXIAL CODES

Code I	Antecedent conditions to genius
Code II	Achievement orientation
Code III	Action categories
Code IV	Personality traits
Code V	Emotional dimensions

### CODE I ANTECEDENT CONDITIONS

- AF — General family events
- RM — Strong role models
- AN — Nationalism
- AR — Religious / idealistic antecedents
- REV — Revolt against existing mores
- SCH — Schools of literature or arts

### CODE II ACHIEVEMENT ORIENTATION

- T — Trigger experience
- SA — Self actualisation
- INS — Insight
- NACH - Actual achievement

### CODE III ACTION CATEGORY

- A+ — Positive action but not necessarily an achievement
- A- — Negative occurrence or action
- AS— Sexual response or consequence
- A COLL-Collection or acquisition actions

### CODE IV PERSONALITY TRAITS

- PER — Perseveration into later life
- D — Dominance
- IND — Independent mindedness
- ENTH - Enthusiasm
- L — Competitiveness

### CODE V EMOTIONAL DIMENSIONS

- E+ — Positive emotion
- E- — Negative emotion
- OBS — Obsession
- WW — Work Frenzy
- OED — Oedipus emotional reaction

## 6.12 (II) PILOT STUDY BIOGRAPHY SUMMARY

Fifty-two biographies were coded for this study as follows

Science 9 cases

- Christiaan Barnard
- Alexander Graham Bell
- Marie Curie
- Albert Einstein
- Howard Florey
- Sigmund Freud
- Konrad Lorenz
- Robert Oppenheimer
- Louis Pasteur

Art 10 cases

- Paul Cezanne
- Paul Gauguin
- Edouard Manet
- Henri Matisse
- Claude Monet
- William Morris
- Pablo Picasso
- Henri Toulouse Lautrec
- Vincent Van Gogh
- Frank Lloyd Wright

Literature 11 cases

- Wystan Auden
- Arthur Clarke
- Joseph Conrad
- Charles Dickens
- Victor Hugo
- Katherine Mansfield
- Stephen Spender
- Jules Verne
- Oscar Wilde
- Virginia Woolf
- Emile Zola

Music 11 cases

- Hector Berlioz
- Leonard Bernstein
- Claude Debussy
- Gustav Mahler
- Arnold Schoenberg

Stockhausen  
Igor Stravinsky  
Pyotr Tchaikovsky  
Arturo Toscanini  
Guiseppe Verdi  
Richard Wagner

Commerce 10 cases     Richard Branson  
                                 Pierre Cardin  
                                 Coco Chanel  
                                 Henry Ford  
                                 Paul Getty  
                                 Calvin Klein  
                                 Konosuke Matsushita  
                                 Akio Morita  
                                 William Morris  
                                 Yves St Laurent

## 6.2 PROCEDURES INVOLVED IN MAIN 1999 STUDY

The pilot study was completed in July 1998 and the main study was completed by September 1999. The reasons for this second, more extensive, investigation lay in the 'evolutionary' nature of psychological investigation and the realisation of serious limitations in the 1998 concept formations which may be behind a network explanation of original creative enterprise.

Too few cases were investigated in the pilot study. It was decided to increase biographies from 52 to 100 with the consequent widening of the psychological origins and the additional nuances of meanings behind code items.

Secondly, the pilot study had left out (or minimised) code groupings of great importance to the final study and its statistical interpretation. Child experiences of obvious importance to a final interpretation of original creative enterprise were not included in the pilot study, while the pervasive influence of obsessive behaviour was noted but not extended in meaning.

These were deemed serious deficiencies by the investigator, requiring the re-reading and re-coding of the original 52 cases and the inclusion of the final axial code system in all 100 cases.

A summary of results obtained in the 1998 exploratory study is set out in Chapter 7.2.

## 6.21 STATISTICAL METHODS INVOLVED IN MAIN STUDY

Given the complexity of data involved in this study, the most appropriate statistical method was decided as a multivariate analysis approach. The data theory behind this study was based on varieties of multivariate analyses, specifically Cluster, Discriminate and Correspondence analyses.

Cluster Analysis consists of a set of techniques designed to accomplish the task of partitioning a set of objects into relatively homogenous subsets based on inter-object similarities.

“The ultimate goal is to arrive at clusters of objects which display small within-cluster variations, but large between-cluster variations.” (Kachigan 1986, p.403).

The technique begins with undifferentiated groups and attempts to form subgroups, which differ on selected variables. The 1999 main study for example commenced with 100 coded biographical case histories and sought clusters of similar behavioural characteristics from the total biographical library. Kachigan observes that the wide variety of calculation technologies available today make cluster analysis interpretations as much an “art as a science” (p.405)

By contrast Discriminate Analysis begins with an *a priori* well-defined group in an attempt to identify the variables which distinguish or discriminate between these groups.

This study sought to identify boundaries between groups of objects and to describe relationships between qualitative criterion variables and quantitative predictor variables. In the main study for example, the interest was to identify the behavioural traits, which discriminated between cluster groups in the biographical cases.

The basic idea behind Correspondence Analysis was to scale or map individuals or objects into low dimensional Euclidean spaces in such a way that individuals with similar response profiles were clearly close together, while individuals with different response profiles were relatively far apart. This homogeneity is defined explicitly in terms of Euclidean distances (Rijevorsel & de Leeuw, 1988, p.xi).

Correspondence Analysis is in fact a very early technique, dating back to Pearson (1907) and has experienced several rediscoveries by Burt (1950) and Hayashi

(1952). The current popularity of the technique is attributed to the 1960s introduction of the mainframe computer. The technique was unthinkable before computer analysis because its constructs were defined mainly in algorithmic terms.

In both the pilot and main studies, the author was searching for significant behavioural traits associated with cluster groups from biographically originated data.

## 6.22 LIMITATIONS TO THIS STUDY PROGRAM

There appear four principle limitations to this study program, viz:

- Study limited to behavioural and statistical considerations
- Little attention given to child prodigy phenomenon
- Biographical case source limitations
- Limitation in coding concepts

### 6.22 (i) STUDY LIMITED TO BEHAVIOURAL AND STATISTICAL ISSUES

This study was limited to a behavioural interpretation of the antecedent origins and behavioural traits of original enterprise. As such it ignores explanations based on neurological or genetic interpretations and other biological bases of creativity.

Martindale (1999) has summarised many alternative venues of research excluding any reference to behavioural origins. He examines the relationship between creativity and cortical activation for example, concluding that creative inspiration is most likely in low-arousal, reverie-like states. Cortical arousal studies are quoted suggesting creative people typically exhibit de-focussed attention accompanied by low levels of cortical activation, and, that most interestingly, creativity appears to be an almost effortless activity, not based so much on will power as on withdrawal from many sensory stimulations and the induction of dreamlike states of mind.

Studies on the relationship between cortical hemispheric asymmetry have been carried out by numerous researchers suggesting right-hand dominance for the production of mental and verbal images and left-hand dominance for critical, analytical activity.

Martindale (1999) summarises “that creative inspiration occurs in mental states where attention is de-focussed, thought is associative, and a large number of mental representations are simultaneously actuated” (p.149). This study concludes that

although physical observations of this nature are of scientific interest, they fall outside the scope of this particular research programme.

## 6.22 (II) THE CHILD PRODIGY PHENOMENON

A second limitation in this study was the scarce attention given to the child prodigy phenomenon and its relationship to original creative enterprise.

This study has already commented on the preponderance of musical proclivity and originality in Chapter 5.31 (v). It may be, however, that domain-specific prodigy examples are wider than music and that chess playing, mathematics, dance and literature should also be searched for neurological or family-linked historic strands behind prodigious behaviour.

Feldman (1986, p.91) has commented on the typical age-ranges in various domains where a child prodigy is observed to occur. He comments “in mathematics, prodigies are virtually never found before age ten or twelve, whereas in chess they are not rare by age five or six, and in music performance by three or four.”

The Menuhin history and tradition of prodigiousness evidently can be traced back to the early sixteenth century and is studded with numerous examples of religious and cultural proclivities of high order — an observation which echoes the findings of Sir Francis Galton in his *Hereditary Genius* study of 1892.

## 6.22 (III) BIOGRAPHICAL LIMITATIONS

In hindsight, the inclusion of several biographies in this study may be queried. They exhibit degrees of technical proficiency, but would not be classified of a genius order.

Diva - Dame Nellie Melba

Science fiction author - Arthur C Clark

Detective writer - Arthur Conan Doyle

American entrepreneur - Lee Iacocca

Inventor - King Gillette

In that all behaviour is creative to some degree, and there is no scientific basis for grading the degree of creativity across all domains, this limitation would not be considered very serious. Alternatively, there are biographical cases that exhibited

such classic cases of the acme of original creative enterprise that they should have possibly been included. Examples are:

Arnold Schoenberg -	very limited biographies available. Most recent to be published 2001
Sir Isaac Newton -	not in our 19 <sup>th</sup> , 20 <sup>th</sup> century cultural framework
Max Planck -	could not find biography
John Stuart Mill -	could not find biography
Samuel Taylor Coleridge -	could not find biography
The Beatles -	studied but could not score four persons as one
Friedrich August von Kekule (The Benzene Ring) -	no biography available

Finally, the concept of biographies that were creative productive precursors in a serial discovery chain were not thoroughly canvassed or acknowledged. Wilkins for example, who must be considered an important contributor to the DNA molecule concept by Watson and Crick, should possibly have been included in this study.

Some biographies such as those of William Morris in art, Matisse, Stockhausen, Debussy and Schoenberg in the pilot study were omitted from the main study.

William Morris's commercial history is well documented, but his very wide artistic biographies are difficult to isolate from one another. Matisse, Stockhausen and Debussy were more commentaries than documented biographies. Schoenberg's biography was a collection of his letters, rather than a full biography. The complete biography of Schoenberg is not expected until 2001. As Igor Stravinsky points out, Schoenberg is a "much neglected" composer (Dobrin 1970, p.160).

## 6.22 (IV) LIMITATIONS IN CODING CONCEPTS

The search for major codes likely to be of significance in this study was based on the author's own experience in psychological practice, on reading some 200 biographies of outstanding creative examples and a review of the relevant scientific literature.

Some codes of personal interest such as the collecting obsession, childhood play and isolated examples of sexual perversions obviously occurred too rarely to play a significant role in this study. Other codes, which could have been relevant, were not scored because biographical case histories do not provide sufficient evidence of the dimension, one way or the other.

Included in these missing dimensions would have been:

- Family sibling rivalry data
- Cognitive dimensions such as the “geneplore model” contrasting the initial generation of ideas with their extensive exploration
- The role of memory as an associated cognitive trigger to original performance
- The synthesis or merging of previously separate concepts into single ideas or paths of action.
- The existence of a broad creative skill which may be applied to numerous types of problems and situations – the ‘core genius concept’.
- The serial creativity concept – where original creative enterprise may be traced back to earlier studies rather than confined to solely ‘popular’ examples.

### 6.3 CONCLUSIONS

This chapter has laid the foundation for a subsequent detailed analysis of coded biographical data. Summaries have been carried out on the scientific, observational and biographical justifications for the subject matter. Brief reviews on the data theory behind the choice of the statistical analyses which appear in Chapter 7 have been carried out.

To prepare for the major study of 100 selected biographies, it was necessary to arrange a pilot study of approximately half the biographies finally involved. This pilot review suggested some serious omissions that were corrected prior to embarking on the major analysis.

Chapter 7 presents the results of the data analysis while the psychological interpretation of this data is presented in Chapter 8.

## CHAPTER 7

### ANALYSIS OF DATA

#### 7.1 INTRODUCTION AND OVERVIEW

The main requirement of this thesis was to explore the concept that specific traits and modes of behaviour would provide this study with a coherent network map of original creative enterprise behaviour.

Based on biographical coding of innovative behaviour, the method involved was to propose three research objectives and an observation that may be inferred or deduced from the scientific and biographical review outlined in Chapter 2. As an introduction to Chapter 7 and for reasons of clarity, these objectives and the consequential observation are summarised below. As the thesis proposals were of an exploratory nature, research objectives and a consequential observation were proposed, as distinct from an alternative hypothetical construct format and a subsequent corollary statement.

##### FIRST RESEARCH OBJECTIVE

An original creative enterprise map clusters around specific traits and modes of behaviour.

##### SECOND RESEARCH OBJECTIVE

Maps of original creative enterprise provide evidence of domain variate characteristics.

##### THIRD RESEARCH OBJECTIVE

An original enterprise map reveals significant distinctions between early and later creative behaviour.

##### CONSEQUENTIAL OBSERVATION

Creativity maps provide evidence of self-actualising complex personality dimensions in various original enterprise clusters.

The analysis of data is divided into two major and several subsidiary sections in this chapter as follows:

- 7.2 The 1998 Exploratory Pilot Study
  - 7.21 Pilot Study summary of evidence
- 7.3 Introduction : The 1999 Main Study
  - 7.31 General presentation of major 1999 findings
- 7.4 First Research Objective : Creative behaviour occurs in clusters
  - 7.42 Summary of Cluster Analysis Evidence
  - 7.43 Discussion: Statistical Methodology
  - 7.44 Illustrated Cluster Analysis Evidence
- 7.5 Second Research Objective : Grouping of biographical cases provide evidence of the domain variate nature of behavioural clusters.
  - 7.51 Discussion
  - 7.52 Summary of Evidence: Domain Variability Research Objective
  - 7.53 Statistical Commentary on Table V Results
- 7.6 Third Research Objective : Significant distinctions between early and later original enterprise behaviour
  - 7.61 Discussion & Implications
  - 7.62 Summary of Evidence
- 7.7 Consequential observation suggesting evidence of self-actualising personality dimensions in various clusters of original creative enterprise.

## 7.2 THE 1998 EXPLORATORY PILOT STUDY

The purpose of the 1998 Pilot Study was to explore the possibility of using the axial coding method with a limited number of biographical cases (ie.52) to determine whether it was possible to establish the existence of behavioural clusters and whether these clusters were domain specific or variable in character.

The existence of behavioural clusters operating across most domains of specific creative emanation has been suggested by several commentators. Long, for example has suggested that creativity studies should be positioned across all reasonable domains (author's emphasis) rather than confine such endeavour to a single domain. "The decision to abandon one-dimensional notions of the entrepreneurial personality in favour of the concept of the creative individual is a decision to trade simplicity and elegance for richness and depth." (McMullan & Long, 1990, p.228).

Contrary to the position taken by McClelland (1952) for example, and other similar theorists, it now seems inappropriate to look for explanations of original creative

enterprise within a single domain. To the contrary, this report seeks to position clusters of behavioural traits across rather than within domains of original creative proclivity.

Social science literature, as it applies to entrepreneurial research, provides examples of the search to confine such enquiries to a single domain context. Brockhaus (1982) for example, reviewed 13 empirical studies between 1961 and 1980 using achievement need, internalising loci of control and risk-taking to narrowly focus on these measurements, and to develop a picture of the entrepreneurial personality. It is important to note that these single-dimensional studies failed to distinguish successful entrepreneurs from the unsuccessful.

The 1999 exploratory pilot study sought to establish the existence of fundamental behavioural clusters that may exist between all domain groupings including the commercial, entrepreneurial dimension.

## 7.21 PILOT STUDY SUMMARY OF EVIDENCE

Data summarised from the 1998 exploratory pilot study are summarised below. It is important to note that probability values equal to or less than 0.5 ( $p < 0.5$ ) are adopted by this thesis to indicate a significant result.

### A. CLUSTER ANALYSIS RESULTS

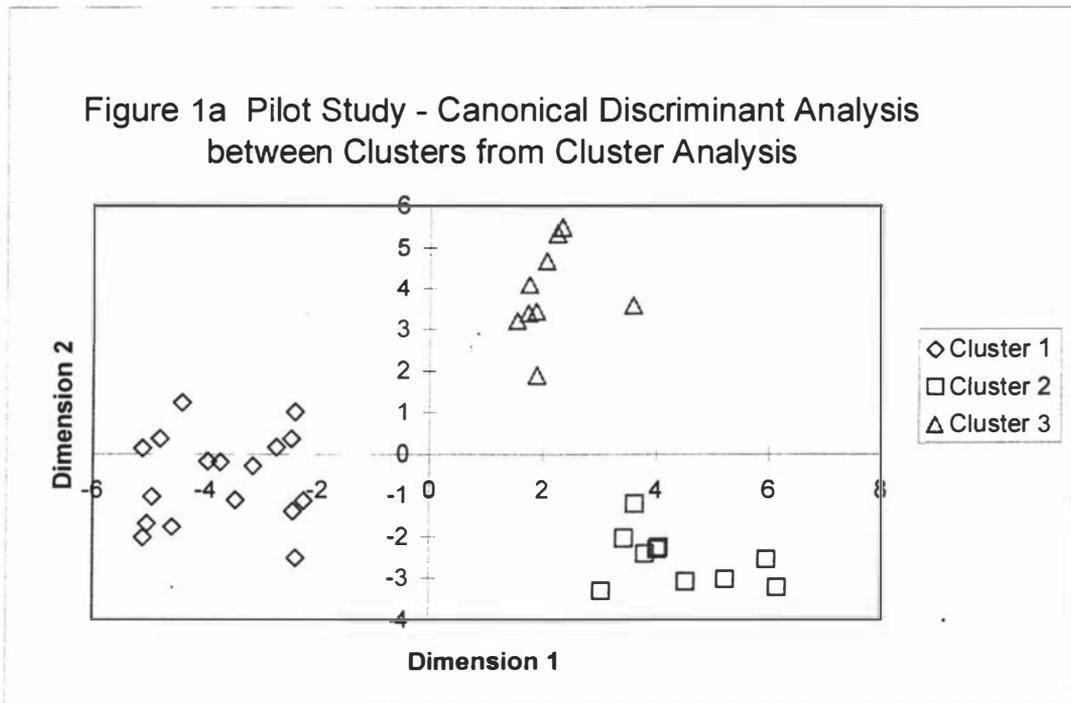
The cluster analysis of 52 biographies indicated the existence of three major clusters, while 14 biographies did not fit into any of these groups. Personalities included in these cluster groups are identified as follows:-

- Cluster 1 Lloyd Wright, Klein, St Laurent, Cézanne, Bernard, Dickens, Debussy, Mansfield, Woolf, Gauguin, Oppenheimer, Monet, Verdi, Lautrec, Cardin, Berlioz, Tchaikovsky, van Gogh
- Cluster 2 Picasso, Einstein, Matisse, Curie, Stravinsky, Zola, Wagner, Spender, Verne, Wilde
- Cluster 3 Branson, Chanel, Matsushita, Morris, Ford, Morita, Lorenz, Florey, Pasteur, Bell

### B. PILOT STUDY RESULTS: CANONICAL DISCRIMINANT ANALYSIS

Figure 1a displays Cluster groupings identified for Clusters 1, 2, and 3. Cluster 3, included a mixture of science and commercial personalities that significantly discriminated between the other cluster groups ( $p < 0.05$ ). Plotting

this, it was clear that there was no significant discrimination between music, the creative arts, or literature.



**C. ATTRIBUTES WHICH DISTINGUISH THE THREE CLUSTERS.**

A discriminant analysis to identify the attributes which are strongly present in the three clusters, was performed and the results are summarised as follows:-

Cluster 1 is characterised by high levels of Negative Actions, Sexual Activity, Work Frenzy, and Mild emotional Problems, and low levels of Insight, Dominance and Revolt;

Cluster 2 has high levels of Insight, Dominance, Independent Mindedness, and Emotions (Positive and Negative), and low levels of N Ach, Competitiveness, Trigger and Enthusiasm.

Cluster 3 has high levels of N Ach, Positive Actions, Persistence, Insight, Trigger and Competitiveness, and low levels of Emotion, Work Frenzy and Sexual Activity.

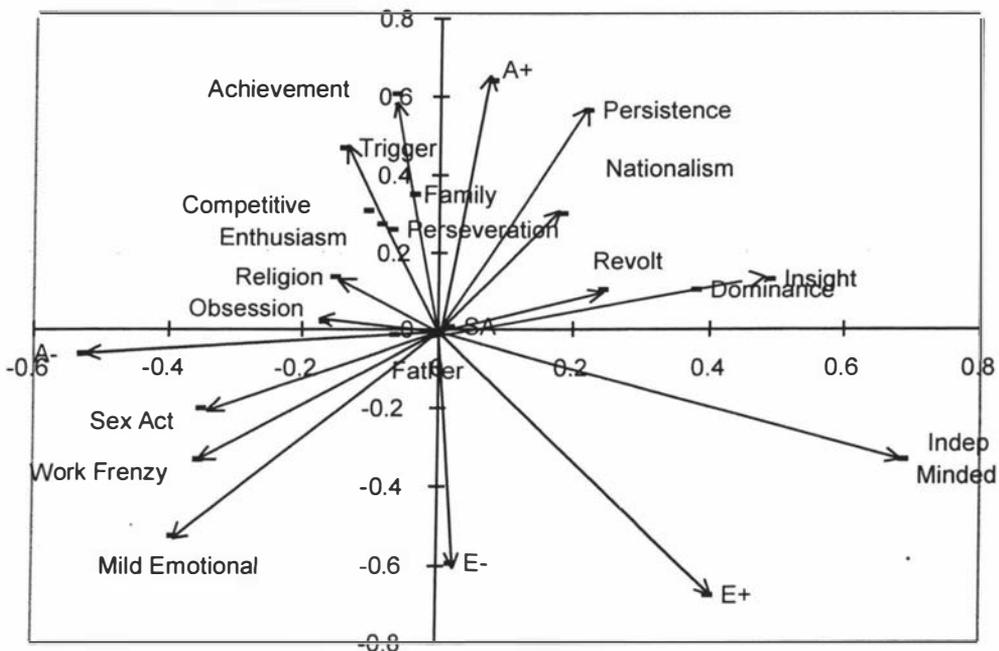
Cluster 3 results are clearly identified in Table 1, Correlations of Variables with Discriminant Function, and Figure 1b Pilot Study, indicating how these attributes relate to dimensions of discriminant analysis.

TABLE 1 CORRELATION OF VARIABLES WITH DISCRIMINANT FUNCTION

Attribute	Correlation
Family	0.23
Father	-0.10
Nationalism	0.11
Religion	0.04
Revolt	-0.04
Dominance	-0.13
Indep' Minded	0.09
Enthusiasm	0.26
<b>Competitiveness</b>	<b>0.44</b>
<b>Trigger Exp'</b>	<b>0.37</b>
Self Actualisation	-0.08
Insight	-0.13
<b>Achievement</b>	<b>0.30</b>
<b>Obsession</b>	<b>0.29</b>
Work Frenzy	-0.23
Perseveration	0.20
<b>A+</b>	<b>0.51</b>
A-	-0.10
Sexual Activity	-0.14
<b>Persistence</b>	<b>0.30</b>
<b>E+</b>	<b>-0.40</b>
<b>E-</b>	<b>-0.45</b>
<b>Mild Emotional</b>	<b>-0.27</b>

(Variables in bold are significantly correlated ( $p < 0.05$ ) with the discriminant function)

Figure 1b Pilot Study - How Attributes Relate to DIMENSIONS OF DISCRIMINANT ANALYSIS



#### D. PSYCHOLOGICAL INTERPRETATION

The combination of commerce and science personalities into one significant cluster suggests common factors of competitive trading characteristics, together with obsessive personality traits, high levels of persistence and positive action. The central trigger experience, common to both domains of science and commerce is a most interesting result and is referred to in greater detail in Chapters 5 and 8.

#### 7.3 INTRODUCTION : THE 1999 MAIN STUDY :

The 1999 study widened the scope of this enquiry extensively. 100 biographies in creative arts, literature, music, commerce and arts were included. The coding system was extended to 44 behavioural and antecedent factors and new code dimensions such as childhood experiences and obsessive dimensions were added. The new data set, expanded and re-coded was analysed using much the same techniques as used in the Pilot 1998 explanatory analysis. Refinement of variables was also undertaken as summarised below.

Several of the characteristics in the original axial coding occurred very infrequently, specifically Child Prodigy, Standard Trigger, Childhood Applause-seeking, Inferential Intelligence Levels, Influence of Schools and Movements, Family Influence which was not parental, Childhood Storytelling, Sexual Obsessions, Obsessive Collecting, Consumption Obsessions, Thanatophobia and Major Mental Illness. The low frequency means that if they are included in the analysis, they may distort it. However, excluding them from the analysis entirely would mean losing valuable information, so some of the categories were combined.

Child Prodigy (CP) was retained as it was an important element that did not obviously group with others.

#### 7.31 GENERAL PRESENTATION OF MAJOR 1999 FINDINGS

- a. Table II indicates that four major biographical clusters account for 73 of the 100 cases studied.
- b. Similarly, Table II indicates that clusters 5 – 10 contain most (24) of the remaining cases.
- c. Bar graphs following, indicate the average level of attributes in each cluster group (Bar graphs 3a, b; 4a, b).

- d. The statistical evidence suggests modification of some minor codes, viz:  
Standard Trigger (ST), Childhood Applause-seeking (CAP) and Childhood Storytelling (CST) were dropped as they occurred rarely and did not obviously group with others. Inferential Intelligence (INQ) was dropped.  
School (SCH) was retained as it appeared to be an important factor in the fine arts field, even if not in others.  
Family Influence (FG) was combined with Parental influence and Maternal influence to form a general family influence factor (AFAM)  
Sexual Obsessions (OS) Obsessive Collecting (OC) Consumption Obsessions (CA) and Thanatophobia (OH) were combined with the obsession category (OBS) to form a general Obsessions category.  
Major Mental Illness was combined with the Lesser Mental illness category, to form an Emotional Disturbance category (EMOTDIS)
- e. Three biographical cases did not 'fit' into any of the major or minor behavioural clusters. These cases were Konrad Lorenz, Leonard Bernstein and Virginia Woolf. These cases and their distinctive characteristics are discussed under Section 8.3, psychological summaries of all clusters.
- f. Throughout this thesis, although the search for, and definition of, meaningful clusters of behaviour (as defined in first Research Objective) was the prime requirement, there is of necessity an overlapping relationship between the domains out of which these clusters evolved and the actual illustrative personalities. As discussed under second Research Objective, our study is concerned with networks that suggest interlocking relationships between clusters of behaviour and the domains out of which they evolved.

#### 7.4 FIRST RESEARCH OBJECTIVE : AN ORIGINAL CREATIVE ENTERPRISE MAP CLUSTERS AROUND SPECIFIC TRAITS AND MODES OF BEHAVIOUR.

##### 7.41 DISCUSSION

The task of this research objective is firstly to demonstrate that behaviour in creative people occurs in clusters that are drawn out of all five domains by various statistical analyses such as cluster and discriminant analysis. Secondly, it is proposed to clarify the composition of these behavioural differences between these clusters or groups.

Given that these behavioural characteristics are multivariate in nature, the focus of the thesis lies in both a statistical description of these cluster traits and secondarily in a psychological or epistemological description. In the latter level of explanation,

there is a need to be aware that attempts to place labels on clusters of behaviour is beset with numerous classification problems and may finally lead to “looser” explanations than would be ideally desired. To quote from Aristotle in this respect – “It is the mark of an educated man that he does not seek to ascribe precision on that class of matter which may not clearly support such precision.”

A detailed interpretation of statistical and psychological meanings of clusters is set out separately in Chapter 8.

#### 7.42 SUMMARY OF CLUSTER ANALYSIS EVIDENCE

The 1999 Cluster Analysis groups 1– 4, as set out below in Table II, accounted for 73 of the 100 cases. This result together with the remaining clusters 5 – 13 clearly suggest the confirmation of first Research Objective: that creative enterprise clusters around specific traits and modes of behaviour.

TABLE II FIRST RESEARCH OBJECTIVE SUMMARY OF CLUSTER ANALYSIS EVIDENCE

Cluster 1	Bartok, Bell, Conan Doyle, Gucci, Matsushita, Mikimoto, Morris, Nijinsky, Ravel, Schnittke, Solzhenitsyn, Wright Bros	N=12
Cluster 2	Beardsley, Berlioz, Branson, Britten, Brunel, Cardin, Cezanne, Clarke, Dickens, Du Pre, Frank Lloyd Wright, Galsworthy, Gates, Gershwin, Huxley, Klein, Mahler, Marie Curie, Monet, Picasso, Previn, Rodin, Rubinstein, Rutherford, Shostakovich, Stravinsky, Toulouse-Lautrec, Verdi, Zola	N=29
Cluster 3	Barnard, Beaurepaire, Boot, Carnegie, Florey, Ford, Gillette, Hawking, Hollows, Iacocca, Pasteur, Spielberg	N=12
Cluster 4	Chanel, Chaplin, Courbet, Coward, Dali, Elton John, Gauguin, Kipling, Klimt, Kokoschka, Modigliani, Morgan, Nellie Melba, Pauling, Puccini, R L Stevenson, Schwab, Sibelius, Toscanini, Trollope	N=20
Cluster 5	Conrad, Oppenheimer, Saint Laurent, Van Gogh	N=4
Cluster 6	Darwin, Einstein, Verne, Wilde	N=4
Cluster 7	Freud, Manet, Pasternak	N=3
Cluster 8	Getty, Poe, Schiele	N=3
Cluster 9	Auden, Forster, Hugo, Mansfield, Spender, Tchaikovsky, Wagner	N=7
Cluster 10	Edison, Joliot – Curie, Morita	N=3
Cluster 11	Lorenz	N=1
Cluster 12	Bernstein	N=1
Cluster 13	Woolf	N=1

## 7.43 DISCUSSION: STATISTICAL METHODOLOGY

An initial cluster analysis produced disappointing results. However, splitting the variables into two categories – those which most biographical codes displayed, but in different amounts (summarised under point 1 below) and those that were either present or absent (summarised under 2 below) produced a more distinct set of clusters.

For clarity of discussion, the author has identified the first category as the Qualitative value and the second as the Quantitative value, identified below.

### 1. QUALITATIVE VALUE CODE

Family influence, Childhood activities, influence of Role Models, Independence, Enthusiasm, Self Actualisation, Insight, AHA, Achievement Orientation, Obsessions, Work Frenzy, Perseveration, Positive and Negative actions and emotions, Sexual Activity, Persistence and Mild and Severe Emotional Problems.

### 2. QUANTITATIVE VALUE CODE

Child Prodigy, Central Trigger, Dominance, Isolation, Competitiveness, Nationalism, Ideals, Revolution, Influence of Schools, Childhood bereavement and Exhibitionism

Qualitative values are summarised in the top half of the tables appearing in Appendix II. Expressed in terms of the average proportion of cases occurring in each cluster, they are multiplied by 20 which was adopted as a convenient round number resulting in major events having counts above one.

Quantitative items are expressed as percentages in the cluster analysis and are summarised in the lower half of the tables appearing in Appendix II. In these tables, the three highest figures for each code are marked in bold; the three lowest are marked in italics.

The present/absent variables were converted to indicator variables with a 1 for present and a 0 for absent. The other variables were scaled for each individual: the number of instances of each category was divided by the average number of instances of all categories for that individual. This corrects for any differences in the total number of events in each biography. Thus a person who had the same number of instances of each of the categories would have a score of 1 for each category which gives a measure of relative intensity or importance of impact.

Figures 3 a-d (over) set out the canonical discriminant analysis between clusters and how the main attributes relate to dimensions of discriminant analysis. To clarify the meaning behind these four dimensions we summarise as follows:- .

Dimensions 1 and 3 are clearly bipolar in character.

Dimension 1 : (figure 3a) Action versus Emotion

Dimension 3 : (figure 3c) Competitive versus Obsessive, Exhibitionism dimension

The second and fourth dimensions indicate the degree of intensity that occurs in a biography.

Dimension 2 : (figure 3b) High versus Low Insight

Dimension 4 : (figure 3d) High versus Low Emotional Disturbance

Table III indicates positive and negative attributes in the four major clusters.

TABLE III MAIN STUDY POSITIVE AND NEGATIVE ATTRIBUTES IN FOUR CLUSTERS

Dimension	Attributes At Positive End	Clusters at Positive End	Attributes At Negative End	Clusters at Negative End
1	<b>A+</b> A- Achievement Orientation Competitive Central Trigger Perseveration Role Influences	C 1	<b>E-</b> E+ Sexual Activity Mild Emotional Problems Obsession Work Frenzy	C 6 C 9
2	Work Frenzy Role Influences Sexual Activity Perseverance Hobbies Revolt	C 2 (weakly) C 4 (weakly)	<b>Insight</b> Ah-Ha Ideals E-	C 3 C 6
3	<b>Work Frenzy</b> Enthusiasm Central Trigger	C 2 (weakly)	<b>Sexual Activity</b> Competitive Obsession Perseveration Exhibitionism	C 4
4	Self Actualisation		<b>Major Emotional Problems</b> Mild Emotional Problems	C 5

## 7.44 ILLUSTRATED CLUSTER ANALYSIS EVIDENCE

### 1. TABLE IV – CLUSTER ANALYSIS – DENDOGRAM

The Dendogram displayed on 7.44 (1) is a graphic summary of the cluster analysis processes indicating which individuals are similar to which other individuals, and how groups join together as we allow less-similar individuals or groups to join in.

The dendogram can be read either horizontally (left to right), or vertically (bottom to top).

### 2. FIGURE 3A – CANONICAL DISCRIMINANT ANALYSIS BETWEEN

Action versus Emotion dimension and  
High versus Low Insight  
(Clusters 1 – 6 and 9).

### 3. FIGURE 3B – CORRELATION OF ATTRIBUTES

Action versus Emotion dimension and  
High versus Low Insight

### 4 FIGURE 3C – CANONICAL DISCRIMINANT ANALYSIS BETWEEN

Competitive versus Obsessive Exhibitionism dimension  
High versus Low Emotional disturbance  
(Clusters 1 – 6 and 9)

### 5. FIGURE 3D – CORRELATION OF ATTRIBUTES

Competitive versus Obsessive exhibitionism  
High versus Low emotional disturbance

### 6. FIGURE 4A BAR GRAPH (CLUSTERS 1 – 6 AND 9)

Codes expressed as qualitative values

### 7. FIGURE 4B BAR GRAPHS (CLUSTERS 1 – 6 AND 9)

Codes expressed as quantitative values.

### 8. FIGURE 5A BAR GRAPHS (CLUSTERS 7, 8, 10 – LORENZ, BERNSTEIN AND WOOLF)

Codes expressed qualitative values

### 9. FIGURES 5B BAR GRAPHS (CLUSTERS 7, 8, 10 – LORENZ, BERNSTEIN & WOOLF).

Code expressed as quantitative values.

TABLE IV CLUSTER ANALYSIS DENDROGRAM

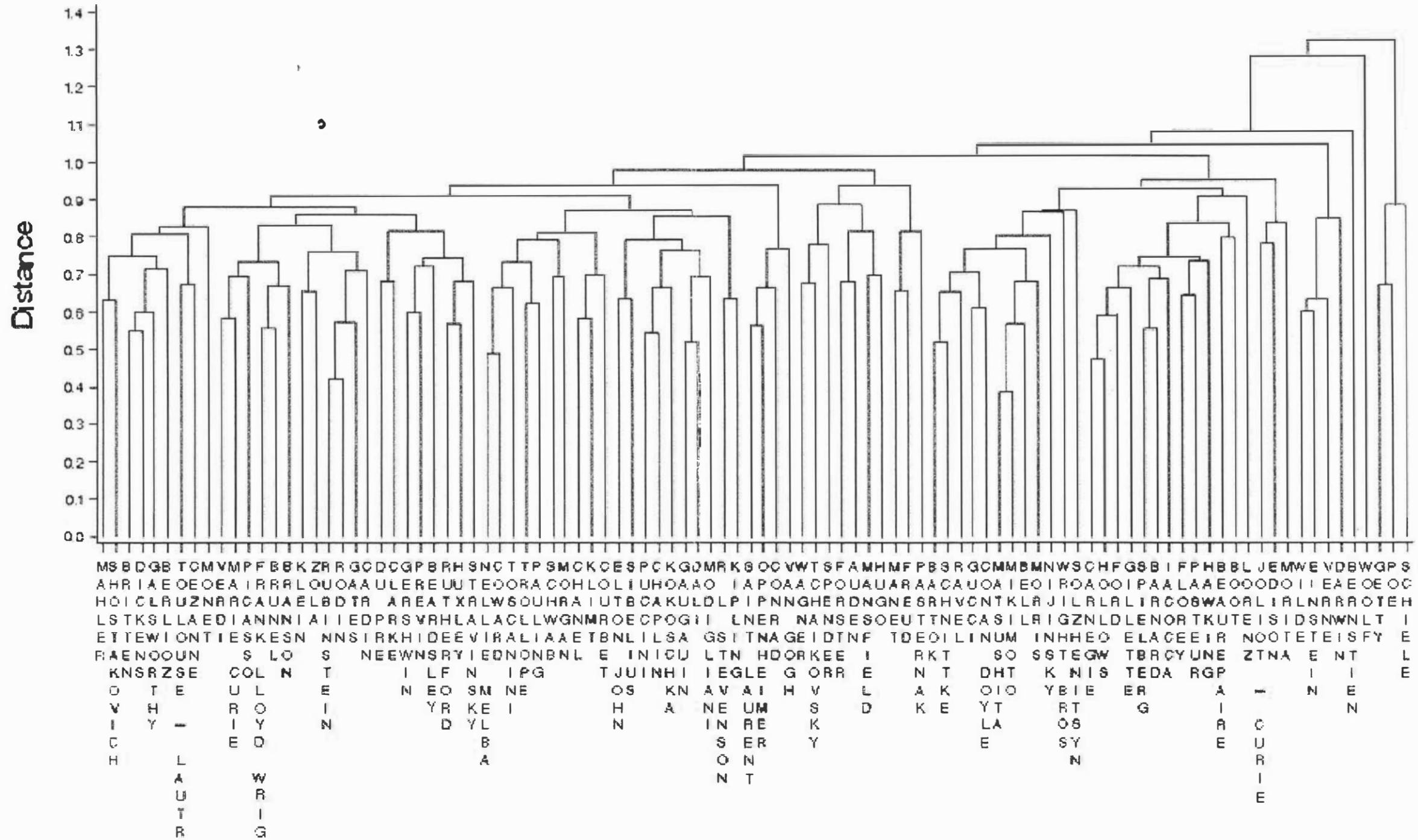
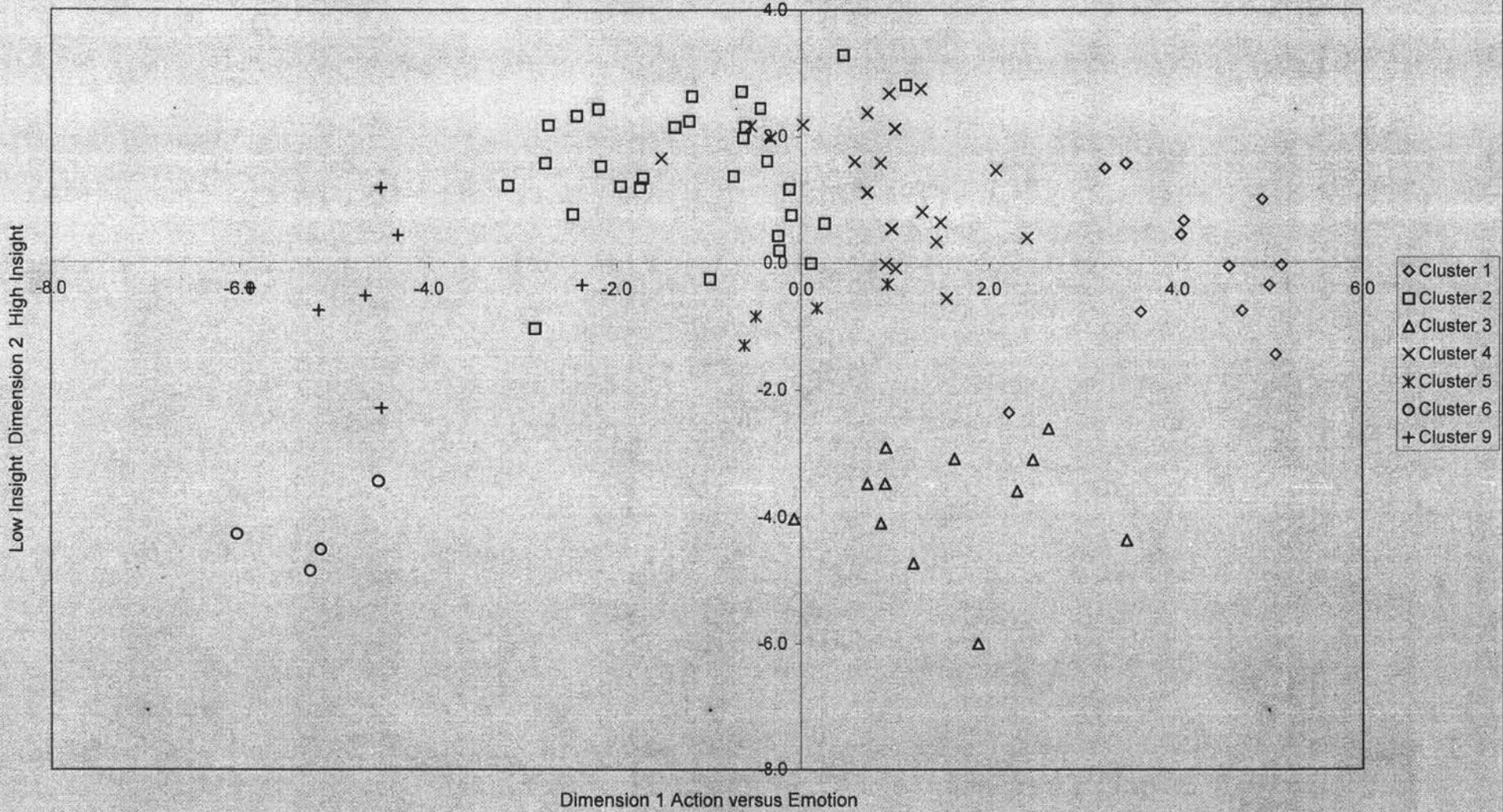
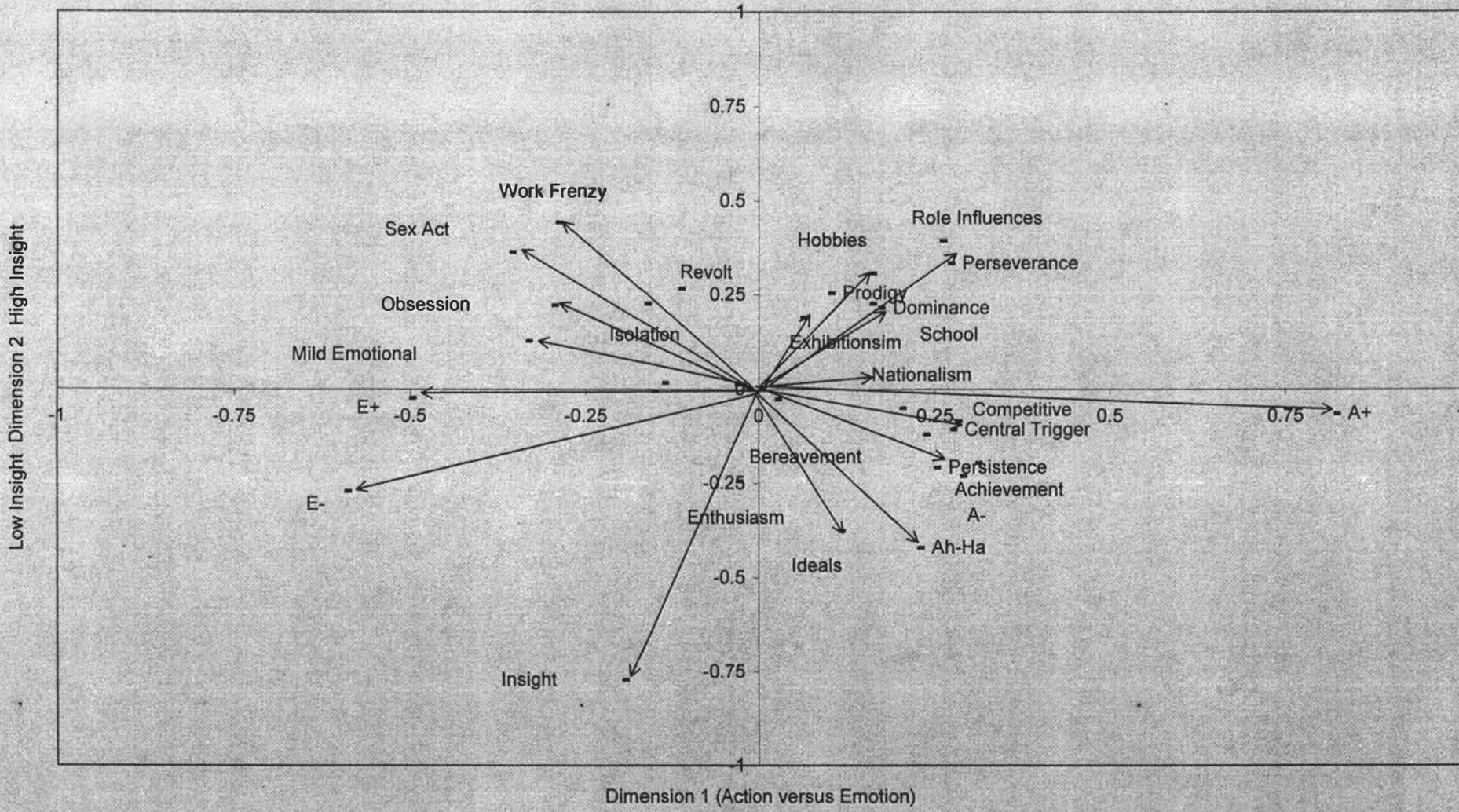


Figure 3a 1999 Major Study: Canonical Discriminant Analysis between Clusters (Dimensions 1 and 2)



7.44. (ii) FIGURE 3a 1999 MAJOR STUDY : CANONICAL DISCRIMINANT ANALYSIS BETWEEN CLUSTERS (DIMENSIONS 1 & 2)

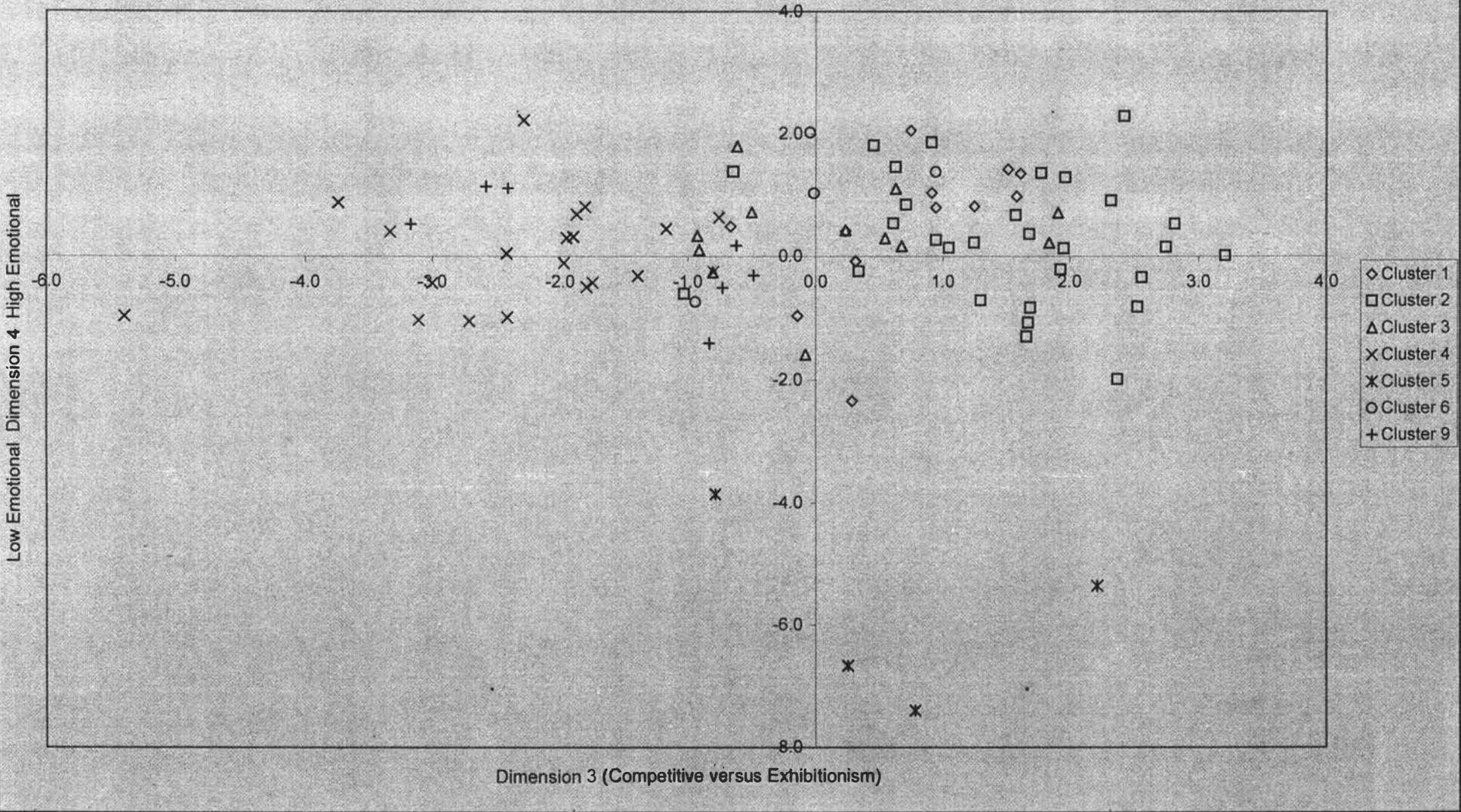
Figure 3b 1999 Major Study: Correlation of Attributes with Dimensions of Discriminant Analysis (Dimensions 1 and 2)



7.44 (iii)

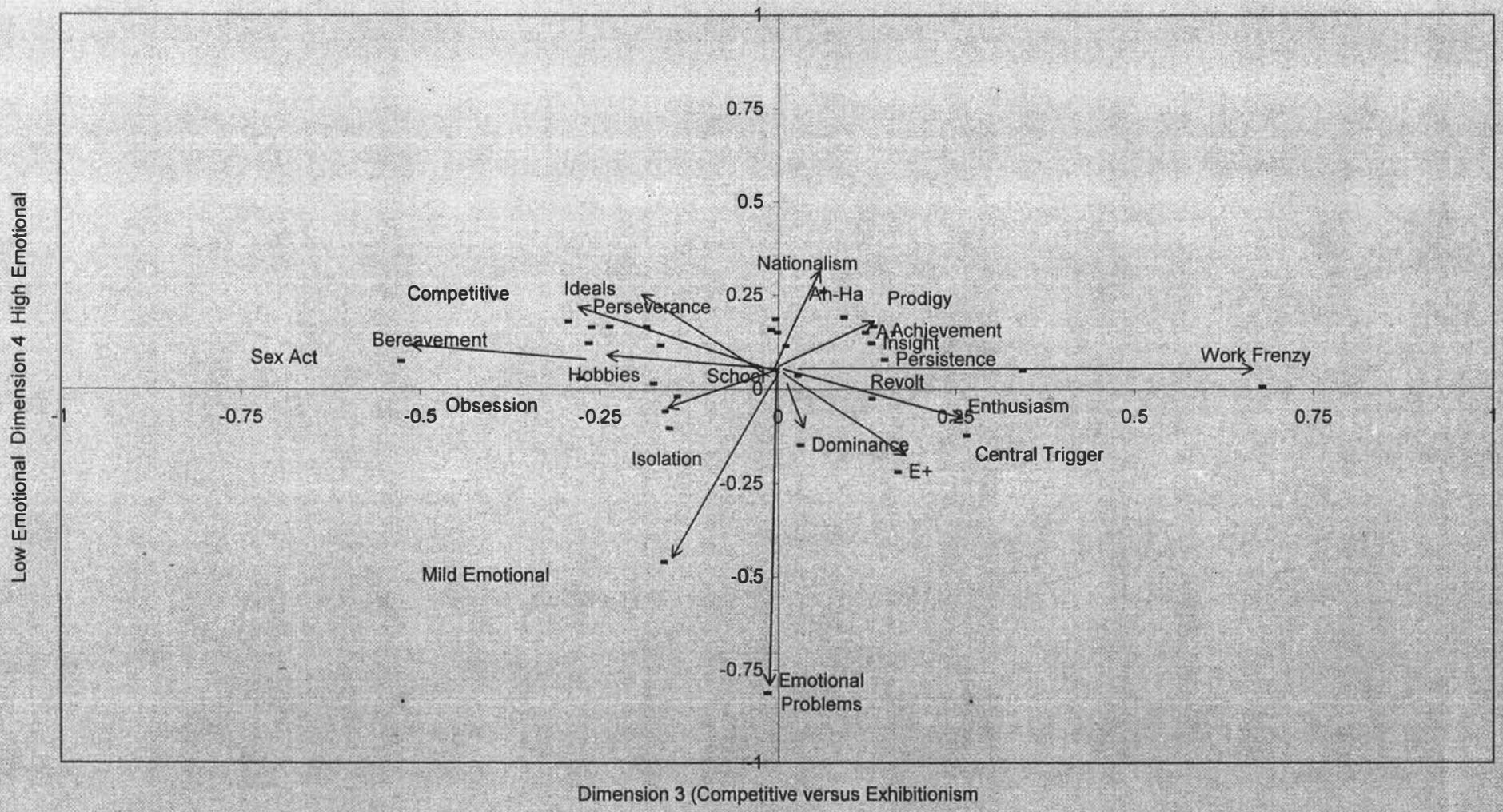
FIGURE 3b 1999 MAJOR STUDY : CORRELATION OF ATTRIBUTES WITH DIMENSIONS OF DISCRIMINANT ANALYSIS (DIMENSIONS 1 AND 2)

Figure 3c 1999 Major Study: Canonical Discriminant Analysis between Clusters (Dimensions 3 and 4)

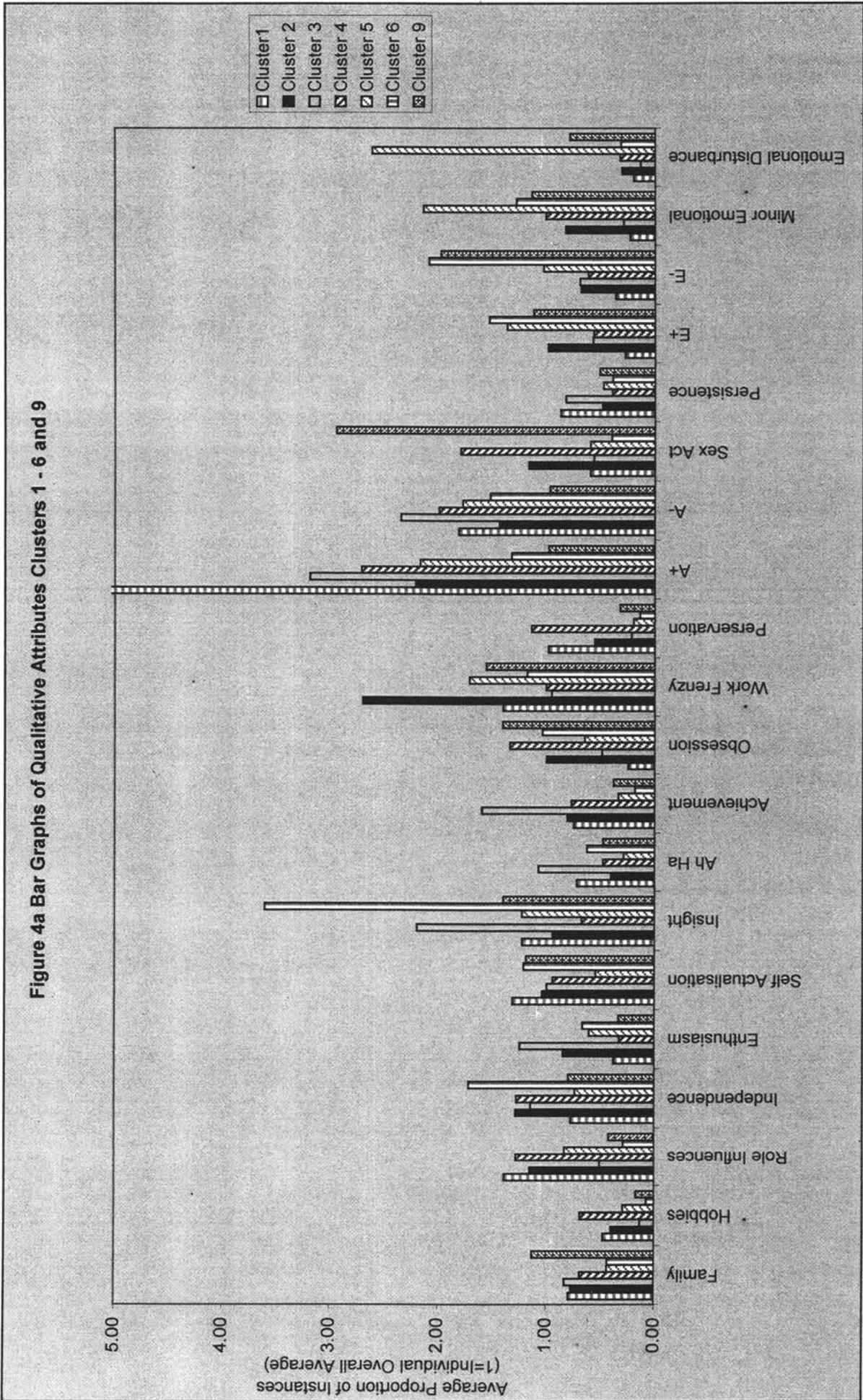


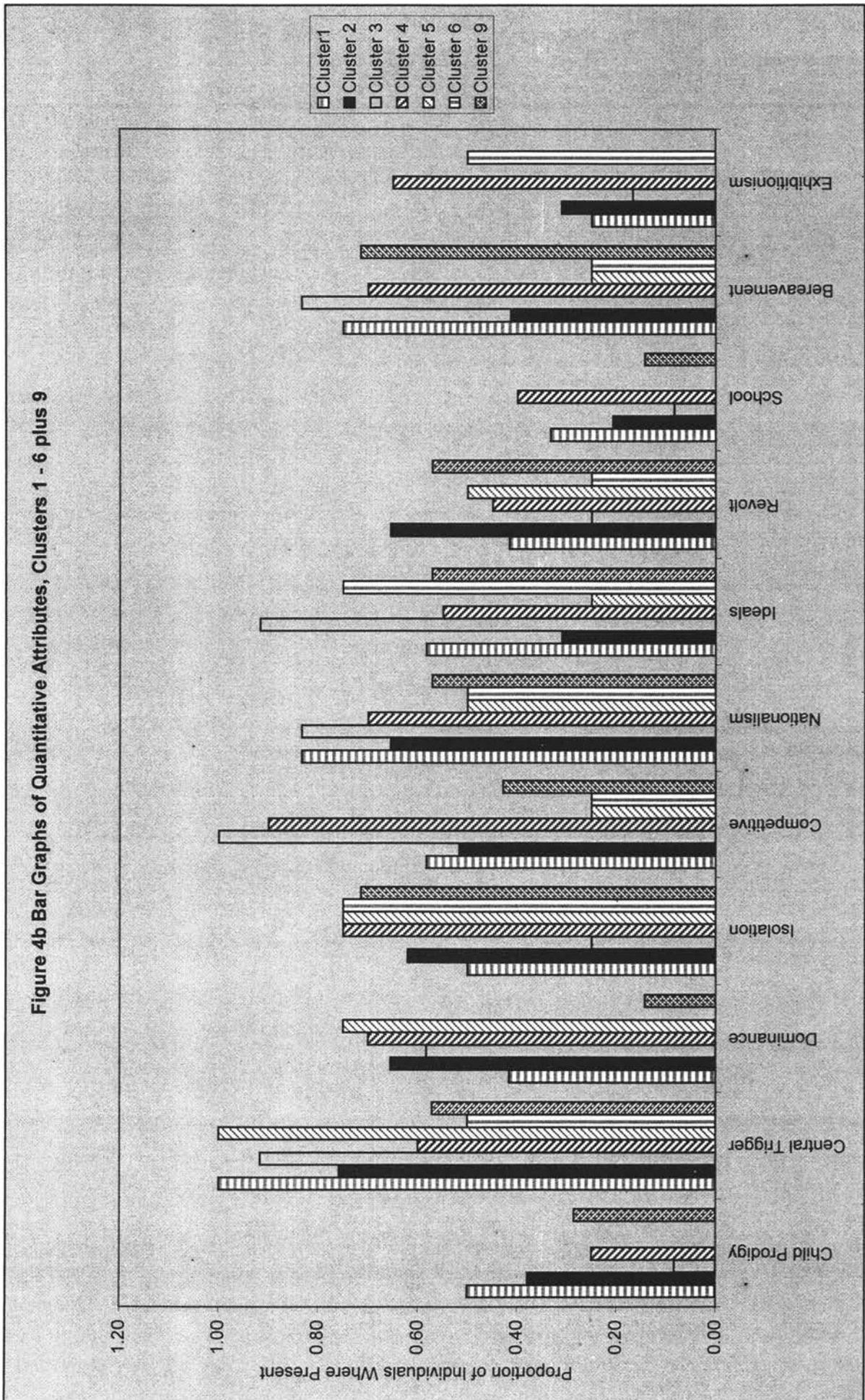
7.44 (iv) FIGURE 3c 1999 MAJOR STUDY : CANONICAL DISCRIMINANT ANALYSIS BETWEEN CLUSTERS (DIMENSIONS 3 & 4)

Figure 3d 1999 Major Study: Correlation of Attributes with Dimensions of Discriminant Analysis (Dimensions 3 and 4)



7.44. (v) FIGURE 3d 1999 MAJOR STUDY : CORRELATION OF ATTRIBUTES WITH DIMENSIONS OF DISCRIMINANT ANALYSIS (DIMENSIONS 3 & 4)





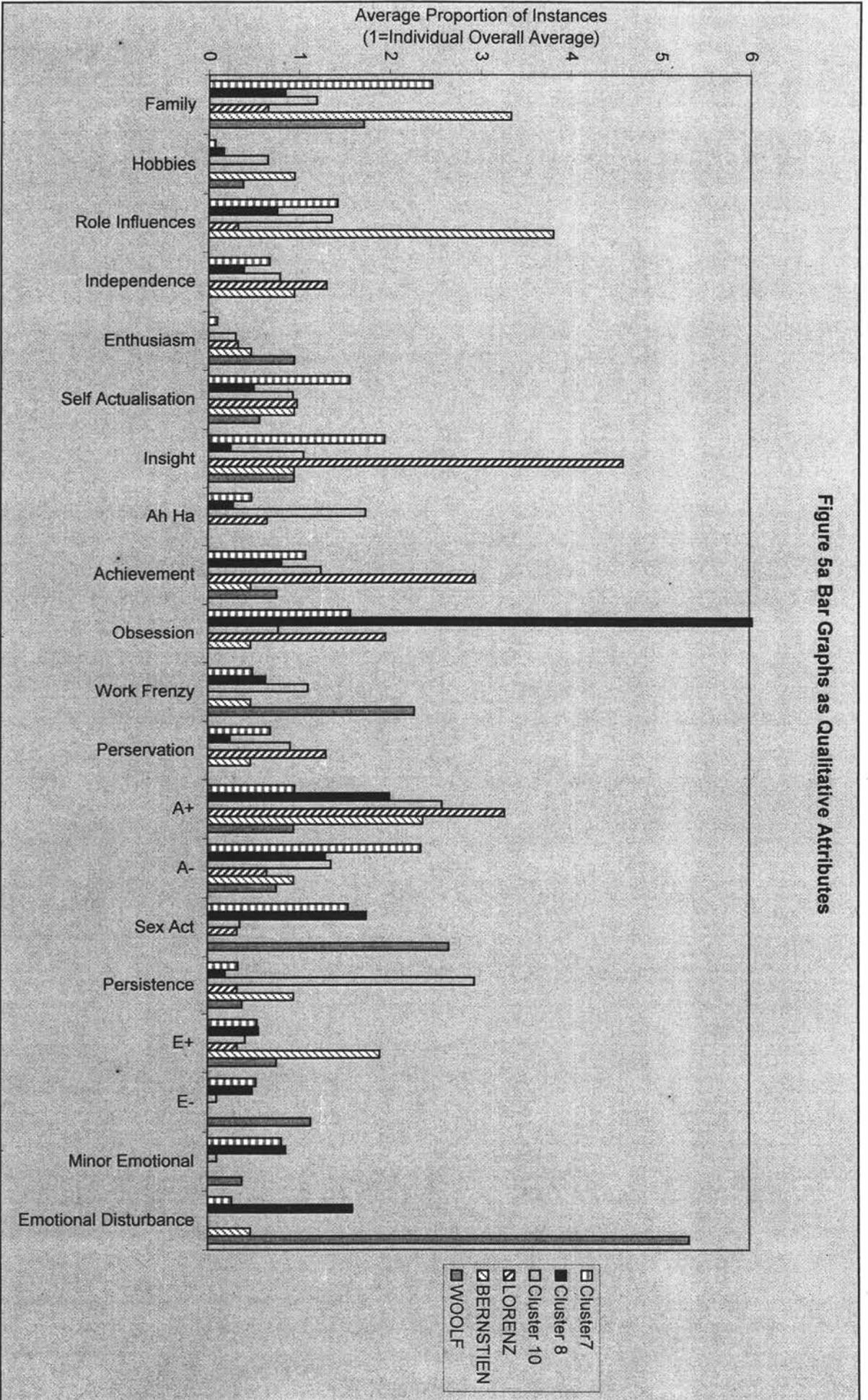
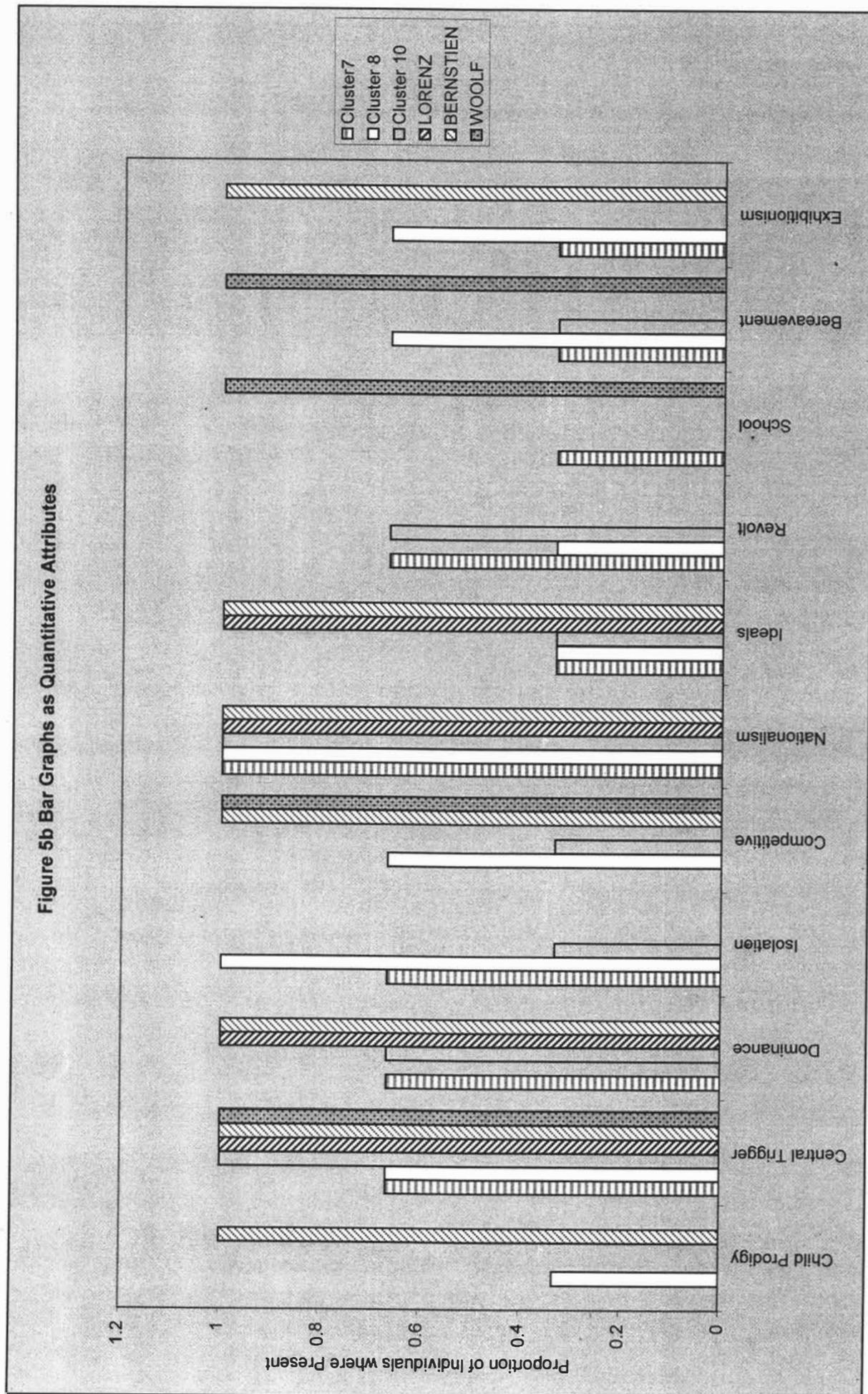


Figure 5a Bar Graphs as Qualitative Attributes



## 7.5 SECOND RESEARCH OBJECTIVE : MAPS OF ORIGINAL CREATIVE ENTERPRISE PROVIDE EVIDENCE OF DOMAIN VARIATE CHARACTERISTICS

### 7.51 DISCUSSION

This thesis has sought to explain emanations of creative enterprise in terms of general, rather than domain specific behaviour in commerce, music, artistic, literary or scientific proclivities.

It is true that domain specific studies have widened scientific knowledge of high order original creativity. However, the second research objective suggests that researchers have become overly biased in searching for specific rather than general explanations of original enterprise. Specificity has tended to exclude references to an overall map of this unique phenomenon, tending to add confusion to this already complex subject.

This study envisages original creative behaviour as a network of enterprise based largely on behavioural traits which lie behind and beyond a complex creative life.

Emanations of commercial skills, products of fine and performance art, literature, science and successful musical compositions are seen to be the final outcomes of these behavioural forces, rather than ends in themselves. They are 'symptoms' of a basic coded behavioural schema that this study describes in terms of an original map of creative behaviour, in the similar way that the DNA code produces unending 'emanations' of biological life forms.

It may be inferred that if the origin of creative behaviour shifts from domain specificity to more general behavioural traits, it is possible to conjecture that there may be numerous other emanations of creative behaviour which the history of science and the arts generally have failed to recognise. These unique creative expressions may be a segment only of a serial novel concept of which the acknowledged 'genius' is simply the final outcome and historically-noted recipient.

### 7.52 SUMMARY OF EVIDENCE : DOMAIN VARIABILITY RESEARCH OBJECTIVE

Table V (over) indicates the number of domains occurring in each statistical cluster.

TABLE V DOMAIN VARIABILITY WITHIN BEHAVIOURAL CLUSTERS

	Commerce	Fine Arts	Literature	Music	Science
Cluster 1	3	1	2	3	3
Cluster 2	5	7	4	9	4
Cluster 3	6	1	0	0	5
Cluster 4	3	8	3	5	1
Cluster 5	1	1	1	0	1
Cluster 6	0	0	2	0	2
Cluster 7	0	1	1	0	1
Cluster 8	1	1	1	0	0
Cluster 9	0	0	5	2	0
Cluster 10	1	0	0	0	2
Cluster 11	0	0	0	0	1
Cluster 12	0	0	0	1	0
Cluster 13	0	0	1	0	0

#### 7.53 STATISTICAL COMMENTARY ON TABLE V RESULTS

Given that most of the domain numbers in each cluster are small, there is a limit on the validity of statistical analysis for Table V.

A chi-squared test on the whole table would be inappropriate, since many of the cells would have expected values below 1.5. However we may briefly summarise conclusions from Table V as follows:-

- a. The four largest clusters (1-4) indicate a statistically significant chi-square result of  $p < 0.0387$  on 12 degrees of freedom.
- b. In greater detail clusters 1 and 2 have approximately the same mix of domains as the sample as a whole.
- c. Cluster 3 contains a higher proportion of commercial and scientific biographies and a lower proportion of musicians than the sample as a whole.
- d. Approximately half the literary subjects occur in the first 4 clusters.
- e. Cluster 4 has a higher proportion of fine arts biographies than the sample as a whole.

In greater detail, although there is some association between domains and clusters, this association is far from perfect, and the generality of the second research objective appears largely confirmed.

## 7.6 THIRD RESEARCH OBJECTIVE

An original enterprise map reveals significant distinctions between early and later creative behaviour.

### 7.61 DISCUSSION AND IMPLICATIONS

This objective was originally outlined fully in Chapter 5.31 (v) as part of a discussion of the child prodigy phenomena appearing especially in music. In this study, 16 cases of music out of a total of 27 prodigy cases were identified. Of this total, seven biographies came from the creative arts, three from science and one from commerce.

Fuller details of this observation are detailed in Chapter 5. The later emergence of original enterprise as a later phenomenon has currently assumed a greater importance than the apparently limited scientific literature on this phenomena actually implies. The numerous social and economic disruptions arising from 21<sup>st</sup> century mergers and consequent redundancies suggest that the emergence of creative enterprise arising later in life is indeed an important modern issue.

### 7.62 SUMMARY OF EVIDENCE

Observational differences between early and later biographical examples of original creative enterprise was set out in Chapter 5.31(v). These attributes included:

- Schizoid-isolated personality traits
- Revolt
- Central trigger experience
- Competitiveness
- Religious/idealistic influences
- Role influences
- Positive actions
- Negative actions
- Insight, and
- Achievement orientation

Using a combination of discriminant analysis and chi-squared tests, these major behaviour differences were examined and are set out below. The 0.5 level of statistical significance was accepted as the thesis measure of acceptance or rejection for each separate investigation. Marginal results are also commented on.

The tables below are counts of actual numbers out of the 100 biographies investigated. Tables 7.6 (1) – (v) constitute attributes derived from percentages occurring within the biographical sample (quantitative values), while Tables 7.62 (vi) – (x) are drawn from proportions also occurring in the biographical sample (qualitative values).

FOR QUANTITATIVE VALUES:

Present/Absent Attributes

7.62 (I) Isolation

Isolation

	Not Isolated	Isolated	Total
Early	7	20	27
Not Early	34	39	73
Total	41	59	100

Statistic	DF	Value	Prob
Chi-Square	1	3.474	0.062
Likelihood Ratio Chi-Squ	1	3.612	0.057
Continuity Adj. Chi-Squ	1	2.673	0.102

7.62 (ii)

Revolt

	No Revolt	Revolt	Total
Early	10	17	27
Not Early	42	31	73
Total	52	48	100

Statistic	DF	Value	Prob
Chi-Square	1	3.318	0.069
Likelihood Ratio Chi-Squ	1	3.34	0.068
Continuity Adj. Chi-Squ	1	2.547	0.110

7.62 (iii)

Central Trigger

	No CT	CT	Total
Early	11	16	27
Not Early	12	61	73
Total	23	77	100

Statistic	DF	Value	Prob
Chi-Square	1	6.573	0.010
Likelihood Ratio Chi-Squ	1	6.114	0.013
Continuity Adj. Chi-Squ	1	5.272	0.022

7.62 (iv)  
Competitiveness

	Not Competitive	Competitive	Total
Early	14	13	27
Not Early	24	49	73
Total	38	62	100

Statistic	DF	Value	Prob
Chi-Square	1	3.012	0.083
Likelihood Ratio Chi-Squ	1	2.958	0.085
Continuity Adj. Chi-Squ	1	2.261	0.133

7.62 (v)  
Religious/Idealistic Influence

	No Religious / Idealistic Influence	Religious / Idealistic Influence	Total
Early	18	9	27
Not Early	31	42	73
Total	49	51	100

Statistic	DF	Value	Prob
Chi-Square	1	4.619	0.032
Likelihood Ratio Chi-Squ	1	4.682	0.030
Continuity Adj. Chi-Squ	1	3.702	0.054

Based on quantitative values, the later developer is characterised by significant central trigger and religious idealistic influences. Arising from the same quantitative dimension, the prodigy or early developer illustrates a marginal result for revolt.

FOR THE QUALITATIVE VALUES:

7.62 (vi)  
Role Influence

(p=0.0166)	Max	Upper Quartile	Median	Lower Quartile	Min
Early	3.81	2.13	1.07	0.42	0.00
Not Early	2.53	1.33	0.83	0.33	0.00

7.62 (vii)  
E+

(p=0.0484)	Max	Upper Quartile	Median	Lower Quartile	Min
Early	2.92	1.60	0.95	0.27	0.00
Not Early	2.68	0.98	0.59	0.28	0.00

7.62(viii)  
A-

(p=0.0237)	Max	Upper Quartile	Median	Lower Quartile	Min
Early	2.70	1.95	1.27	0.80	0.24
Not Early	4.31	2.15	1.78	1.16	0.00

7.6 2 (ix)  
Insight

(p=0.0666)	Max	Upper Quartile	Median	Lower Quartile	Min
Early	3.13	1.30	1.00	0.47	0.00
Not Early	4.59	1.86	1.20	0.63	0.00

7.6 2 (x)

Achievement Orientation

(p=0.0781)	Max	Upper Quartile	Median	Lower Quartile	Min
Early	1.88	1.04	0.54	0.23	0.00
Not Early	2.95	1.38	0.80	0.36	0.00

Based on the qualitative values, prodigies are influenced by roles and positive emotions, while the later creative developer illustrates negative actions to a significant degree with marginal results for insight.

### 7.63 MAJOR CONCLUSIONS

Both the behavioural cluster data outlined in first Research Objective and its associated second Research Objective illustrating the variability of domains exhibiting original creative enterprise, led this study to investigate observed differences between early and later creative enterprise.

The psychological conclusions indicated by results as displayed in Tables 7.62 (i) – (x) follow the main theme of this report quite closely. Some marginal statistical results for both early and later developers must be acknowledged, but the research

objective that some statistically significant differences do exist between these two groups appears generally confirmed.

The earlier developer is clearly more influenced by role models than the later, more mature developer, and possesses greater overt emotions, passions and self confidence. This observation closely resembled the biographical literature and is discussed more fully in Chapter 5 where the role model influence for numerous domain are identified.

The statistical significance of revolt and isolated performers produces marginal results in this early developer schema but is well supported in the Cluster analysis (clusters 7 and 10) and in the scientific and biographical literature.

Seventy two per cent of the biographical sample are later developers typically with the A- code characteristic of the vicissitudes, trials and stresses that longevity typically brings. Their creative path has been markedly influenced by the central trigger experience (see Chapter 5.5 (i)) while idealistic factors including religion and philanthropy are also significant dimensions. It takes time to develop an idealistic philosophy, so that this later developing structure is not too surprising.

The significant relationship between later developers and the central trigger is especially interesting. It may be asked why this should be so and there is conjecture that the earlier developer, typically the child prodigy, does not need such an event to trigger his/her later creative behaviour. He or she is perhaps 'wired to go' from early childhood. By contrast the greater bulk of the later creative personalities typically experience a central trigger or start-up experience as an essential element of their behaviour.

Achievement and competitiveness produced marginal statistical results. However, both these attributes are well documented in the literature. Competitiveness is seen as a survival mechanism, while achievement would naturally be associated with longevity of creative proclivity. In fact these latter characteristics follow fairly closely the historiometric thesis of Simonton (1999).

## 7.7 SELF ACTUALISATION CONSEQUENTIAL OBSERVATION

### CREATIVITY MAPS PROVIDE EVIDENCE OF SELF-ACTUALISING COMPLEX PERSONALITY DIMENSIONS IN VARIOUS ORIGINAL ENTERPRISE CLUSTERS

#### 7.71. DISCUSSION AND IMPLICATIONS

Maslow's observation of the proposed relationship between self-actualisation and the emergence of a creative personality is fully detailed in Chapter 5.51 (iii) of this thesis.

A consequential observation is obviously of less scientific significance than is a major research objective which may be investigated by recognisable statistical analysis and either rejected or accepted at known levels of probability. In an investigation of Maslow's thesis as an observation, a phenomenological, qualitative interpretive approach is suggested in contrast to the positivistic quantitative approach which formed the basis of the three main objectives.

The Maslow self-actualisation concept is illustrated in Cluster 1 and accounts for significant self-actualisation factors for twelve personalities in this group, while Cluster 7 is represented by a smaller group of three personalities. Biographical identification of these personalities is set out earlier in Chapter 7.42.

Chapter 5.51 (iii) defines the self-actualisation code to include confidence in self, constructing castles in the air, dreaming forward and the achievement of full personal potential. Maslow (1968, p.157) produces a somewhat more wide-ranging interpretation, including concepts of greater openness to experience, increased spontaneity, expressiveness, autonomy, uniqueness and 'aliveness'.

Coding these traits for Cluster 1, we arrived at the following proportionate and percentage values:

Positive Actions	5.22 proportion value
Work Frenzy	1.40 proportion value
Self-Actualisation	1.31 proportion value
Perseveration	0.98 proportion value
Persistence	0.87 proportion value
AHA	0.72 proportion value
Nationalism	83 per cent
Idealism	58 per cent

Examples of this behavioural dimension are Alexander Graham Bell (science), Konosuke Matsushita (commerce), Alexander Solzhenitsyn (literature) and Bela

Bartok (music). These biographies illustrate the most commonly occurring expressions of self-actualisation, demonstrating -

- New initiatives
- Dreaming forward (ambition)
- Persistence
- Nationalism
- Work Frenzy

Bell's inventiveness and new initiatives for example, involved a far wider range of innovative activities than the invention of the telephone. He was also closely involved in the development of the Iron Lung, helicopters, flying boats and the gyroscope. Close to death, his wife Mabel, urged him to "take it easy". He replied "that he must keep working to the very end - a clear work frenzy observation "- (Grosvenor & Weston, 1997, p.288).

Nationalistic sentiments are well exemplified in the biography of Bela Bartok, whose prime objective was the good of Hungary and the recording of Hungarian folk music (Chalmers, 1995). Similarly Konosuke Matsushita channelled his electrical manufacturing genius into a striving for commercial success, closely allied to Japanese national prosperity (PHP Institute, 1998).

Finally Alexander Solzhenitsyn's Russian prison experience crystallised his self-actualisation experience in his desire to understand the cultural essence of Russian authoritarianism as he understood it through the novel "Day in the Life of Ivan Denisovich" (Burg & Feifer, 1973).

Cluster 7 adds new dimensions to this self-actualisation concept with the following code proportion and percentage analyses

Family	2.47 proportionate value
Negative actions	2.36 proportionate value
Self-actualisation	1.57 proportionate value
Role influences	1.43 proportionate value
Nationalism	100 per cent (common factor with Cluster1)
Revolt	67 per cent

This Cluster involves three biographies, Sigmund Freud, Edouard Manet and Boris Pasternak.

This Cluster is described in terms of social revolution – Freud because of his analysis of unconscious forces inherent in family relationships, Manet because of his

realistic portrayal of family social life and Pasternak for his literary-inspired apologetic stance for freedom in Russia.

Freud's self-actualisation sentiments are especially strongly illustrated. "The key to my life is to be spurred on by great hopes" he claims (Freud, 1978 p.94). "I will cure all the incurable nervous cases," he asserts (p.112) "And shall certainly leave behind something which will justify my experience." (p.61).

Manet's family-inspired art is associated with his direct representation of interpersonal relationships. His new initiative in art was to portray direct discourse with his subjects – an unheard of immediacy of impression. (Schneider, 1972, p.8).

Boris Pasternak's avant-garde poetry and the "Dr Zhivago" novel expressed revolt as his self-actualisation theme and a desire for personal freedom as a potent nationalistic ideal (Hingley, 1983).

All three Cluster 7 biographies represent later as contrasted to early expressions of creative innovation. Given the long period of creative activity involved, illness, losses and negative actions are not surprising: hence the high (2.36 proportionate) incidence of negative actions reported in this Cluster 7.

The Cluster 7 self-actualisation construct is characterised as the soft-edge of revolution. In actual fact the emergence of art realism (Manet) family originating conflict (Freud) and freedom of expression (Pasternak) does presage modern thinking to a marked degree. Cluster 7 may be viewed as an introduction from 20<sup>th</sup> century to the 21<sup>st</sup> century with common concerns and creative expression in medicine, science, creative art and literature.

A consequential observation cannot be confirmed in the strict scientific sense, but there is suggestive evidence to support the Maslow thesis in this cluster analysis report.

## 7.72 CONCLUSIONS AND IMPLICATIONS

It has thus been established that :

- Original enterprise clusters do appear to cluster around specific traits and modes of behaviour which clearly suggest confirmation of the first research objective.
- Domain variability within behavioural clusters, show that the second research objective also appears to be generally confirmed.

- Key behavioural traits such as the central trigger experience and religious/idealistic influences have been confirmed as characteristic of the later as contrasted to earlier prodigy experience.
- In general terms the Maslow thesis, linking self-actualising complex personality characteristic with original enterprise clusters 1 and 7, is confirmed as a consequential observation in this thesis.

These observations and conclusions have laid the foundation for Chapter 8, which examines the psychological and epistemological interpretation that appear to be characteristic of each behavioural cluster.

## CHAPTER 8

### PSYCHOLOGICAL INTERPRETATION OF BEHAVIOURAL CLUSTERS

#### 8.1 DISCUSSION

Chapter 7 reviewed the results of the three research objectives, while Chapter 8 now examines the psychological and epistemological interpretations of the behavioural clusters identified from the statistical analysis.

Behavioural characteristics of clusters 1 –10 are set out in Figures 4 a,b and 5 a,b. Their psychological interpretations are derived from both the statistical analysis proportions and percentages and from earlier biographical and scientific literature review. Section 7.42 also presents biographical examples grouped in each cluster.

This chapter seeks to merge the strictly positivistic approach of quantitative research with a more phenomenological interpretation characteristic of main stream psychological theory.

Because the results of the cluster analysis for Leonard Bernstein, Konrad Lorenz and Virginia Woolf indicated distinctive and unique psychological characteristics these biographical codes are summarised separately for each cluster and also appear in Appendix I.

#### 8.2 ALTERNATIVE METHODS OF STATISTICAL INTERPRETATION

Two alternative methods of statistical interpretation and reporting are available:

##### 8.2 1 VERTICAL STATISTICAL OBSERVATIONS

The Appendix II Table illustrates composite statistical observations for Cluster 1 – 4 (the largest cluster), Cluster 5 – 10 (the secondary group) and finally the individual results for Bernstein, Lorenz and Woolf.

Bold figures in these Tables have not been identified by any formal statistical test. The vertically-expressed clusters highlight larger percentages occurring in each cluster row in bold type. Figures in italics represent lesser percentages within each cluster.

It should be emphasised that proportions and percentages summarised in the vertical tables are not comparable values. Chapter 7.4 3 indicates that the proportionate (qualitative) values of each cluster indicate behaviour traits which most individuals display but in different amounts, while the percentage (quantitative) values indicate indices that are either present or absent in each cluster.

## 8.2 2 HORIZONTAL STATISTICAL COMPARISONS

The second method compared behavioural trait codes horizontally across the whole range of clusters from bar charts (7.4a – 5b) where comparisons between all clusters are indicated. For ease of identification, personalities represented in each cluster are also named.

This thesis was seeking an epistemological interpretation of each cluster, designed to compose a psychologically meaningful construct using both horizontal comparisons and biological data in the statistical review.

This horizontal method of interpretation and accompanying descriptions should be treated with caution, as such labels may be misleading where too literal a meaning may be inferred.

## 8.2 3 MAJOR CLUSTER COHERENCE : CROSS VALIDATION EVIDENCE

The following Table VI indicates that the discriminant analysis supporting this thesis was able to distinguish significantly between the major clusters reported. All these allocations are substantially higher than would be expected by chance alone, giving evidence of the coherence of these reported summarised clusters.

TABLE VI CROSS-VALIDATION SUMMARY USING LINEAR DISCRIMINANT FUNCTION

Number of Observations and Percent Classified into Cluster:

		Into Cluster							Total
		1	2	3	4	5	6	9	
From Cluster	1	9 (75%)	0 (0%)	1 (8%)	1 (8%)	1 (8%)	0 (0%)	0 (0%)	12
	2	0 (0%)	24 (83%)	1 (3%)	2 (7%)	0 (0%)	1 (3%)	1 (3%)	29
	3	1 (8%)	0 (0%)	11 (92%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	12
	4	1 (5%)	2 (10%)	2 (10%)	14 (70%)	0 (0%)	0 (0%)	1 (5%)	20
	5	0 (0%)	0 (0%)	0 (0%)	1 (25%)	3 (75%)	0 (0%)	0 (0%)	4
	6	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4 (100%)	0 (0%)	4
	9	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (14%)	6 (86%)	7

### 8.3 BEHAVIOURAL CLUSTERS : CODE COMPARISON AND PSYCHOLOGICAL INTERPRETATION

#### 8.3. 1 CLUSTER 1: INNER DIRECTED

##### A CONSTRUCT OVERVIEW

The nearest psychological equivalent of Cluster 1 would probably be the inner-directed psycho-social dimension of behaviour proposed by Reisman in which he defined this construct as:

“The source of direction for the individual is ‘inner’ in the sense that it is implanted early in life by the elders and directed towards generalised, but nevertheless inescapable goals.” (Reisman, 1950, p.15).

##### B TWELVE PERSONALITIES INVOLVED IN CLUSTER 1

Bartok, Bell, Conan Doyle, Gucci, Matsushita, Mikimoto, Morris, Nijinsky, Ravel, Schnittke, Solzhenitsyn, Wright Bros

##### C HORIZONTAL IDENTIFICATION OF CLUSTER 1 CODES

###### PROMINANT CODES (BY COMPARISON ALL CLUSTERS)

###### QUALITATIVE VALUES (x 20)

POSITIVE ACTION	5.22
SELF-ACTUALISATION	1.31
PERSISTENCE	0.87

###### QUANTITATIVE VALUES (%)

CENTRAL TRIGGER	100%
-----------------	------

#### D PSYCHOLOGICAL INTERPRETATION

The 12 personalities included in Cluster 1 illustrate a mixture of all domains included in this thesis – music, creative arts, literature and science. Horizontal identification of outstanding behavioural codes appears to recognise a central focus on positive action (5.22 proportion) and persistence (0.87) originating from either a central trigger (100%) or self-actualising experience (1.31).

The Wright brothers were intrigued by a toy helicopter, Maurice Ravel with the steady beating noise of his father's steel factory and Bela Bartok's self actualising awareness on first hearing Hungarian folk music are good examples of the central personal or physical experience in this cluster.

Kokichi Mikimoto's search for the perfect pearl may also be added to this list of notable inner-directed personalities. "A dreamer of impossible dreams." (Euson, 1956, p.60). Mikimoto is purported to have personally opened 850,000 oysters in his search for the perfect pearl. Even at 87 years of age, Mikimoto continued to pursue his dream of pearl culture as a major Japanese industry (p.195).

These creative personalities are predominantly characterised by persistent action as a principle focus for their behaviour. Their actions are not characterised by major achievements. Rather they picture steady attention to the details in their chosen course of task oriented action.

The Reisman inner directed psycho-social dimension has been discussed previously in this thesis (2.41) and will be referred to again in the consequential observation (Chapter 7.7) by Maslow (1968).

### 8.3.2 CLUSTER 2: WORKAHOLIC

#### A CLUSTER 2 CONSTRUCT OVERVIEW

Cluster 2 may be characterised with the identification of a workaholic – as common today as in the biographical examples summarised below.

#### B TWENTY NINE PERSONALITIES INCLUDED IN CLUSTER 2

Beardsley, Berlioz, Branson, Britten, Brunel, Cardin, Cezanne, Clarke, Dickens, Du Pré, Frank Lloyd Wright, Galsworthy, Gates, Gershwin, Huxley, Klein, Mahler, Marie Curie, Monet, Picasso, Previn, Rodin, Rubinstein, Rutherford, Shostakovich, Stravinsky, Toulouse–Lautrec, Verdi, Zola

## C HORIZONTAL IDENTIFICATION OF CLUSTER 2 CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (X 20)</u>	
WORK FRENZY	2.70
INDEPENDENCE	1.28
ENTHUSIASM	0.84
<u>QUANTITATIVE VALUES (%)</u>	
REVOLUTION	66%

## D PSYCHOLOGICAL INTERPRETATION

All domains are represented in Cluster 2 – music, literature, science, art and commerce. The psychological interpretation of Cluster 2 is that it represents the workaholic independent revolutionary while, by contrast, Cluster 3 represents the ideas revolutionary and Cluster 4 the loner entrepreneurial construct.

The workaholic focus concentrates on total absorption with work, speed and enthusiasm. This behavioural theme is that of an energetic, work-oriented response which has been documented in Chapter 5.61 (ii) in this study.

Seventeen of these personalities are also characteristic of later rather than earlier creative proclivity that was discussed earlier in Chapter 5.31 (v).

Major entrepreneurial examples include Verdi, Isambard Kingdom Brunel, Pierre Cardin, and Bill Gates. Guiseppi Verdi, for example, worked 12 – 14 hours a day on music composition and was reported to be “fated to work to the last gasp” (Martin, 1965, p.466). A similar example may be observed in the biography of Pierre Cardin (Morais, 1991) who displayed a hunger for hard work, toiling days on end without sleep (p.116).

Bill Gates (Manes, 1993) worked on an around the clock basis, while Isambard Kingdom Brunel (Pelican, 1957) scarcely ever went to bed and “utterly disregarded his health” (p.363) leading to his early death.

### 8.3.3 CLUSTER 3: COGNITIVE CAPITAL ENTREPRENEUR

#### A CONSTRUCT OVERVIEW

The most relevant interpretation of this term pictures entrepreneurial behaviour as a construct founded on beliefs, ideals and mental events. The personalities involved have developed and are motivated by a ‘cognitive map’ of these ideals which have become the mainsprings of their distinctive behavioural traits.

B TWELVE PERSONALITIES INCLUDED IN CLUSTER 3

Barnard, Beaurepaire, Boot, Carnegie, Florey, Ford, Gillette, Hawking, Hollows, Iacocca, Pasteur, Spielberg

C HORIZONTAL IDENTIFICATION OF CLUSTER 3 CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (X 20)</u>	
MAJOR ACHIEVEMENT	1.60
ENTHUSIASM	1.24
<u>QUANTITATIVE VALUES (%)</u>	
COMPETITIVE	100%
IDEAL	92%

D PSYCHOLOGICAL INTERPRETATION

In the 1998 pilot study Chapter 7.21 (1) Ford, Florey and Pasteur were also included in the commercial explanatory dimension. This entrepreneurial personality is again portrayed, although on this occasion the 'cognitive capital' they employ is more in the region of ideas – religious in the case of Jesse Boot, altruistic in the case of Hollows, philanthropic in the case of Carnegie and scientific in the case of Barnard and Pasteur.

This entrepreneurial construct is focussed on an enthusiasm for the ideas that motivate individual performance. In contrast to Cluster 1, these personalities illustrate major achievements (1.60 proportion) in their careers. Knighthoods for Beaurepaire and Howard Florey, the Einstein prize for Hawking, and the establishment of a worldwide automotive empire for Ford, are significant examples.

Howard Florey is an exceptionally appropriate example of an entrepreneur driven by the 'cognitive capital' of his search for the chemical formulation behind penicillin. He is described as being 'avaricious' in his toil for new understanding of the processes involved, working day after day, night after night for the correct scientific solution (Brickel, 1972, p.104).

### 8.3.4 CLUSTER 4: LONER-FOCUSSED ENTREPRENEUR

#### A CONSTRUCT OVERVIEW

The capacity to be alone and to work in a self-contained isolated manner is the key concept behind this cluster. Schizoid-style behaviour is a common observation throughout the biographical cases studied.

#### B TWENTY PERSONALITIES INCLUDED IN CLUSTER 4

Chanel, Chaplin, Courbet, Coward, Dali, Elton John, Gauguin, Kipling, Klimt, Kokoschka, Modigliani, Morgan, Nellie Melba, Pauling, Puccini, R L Stevenson, Schwab, Sibelius, Toscanini, Trollope

#### C HORIZONTAL IDENTIFICATION OF CLUSTER 4 CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (x 20)</u>	
PERSEVERATION	1.14
<u>QUANTITATIVE VALUES (%)</u>	
COMPETITIVE	90%
ISOLATION	75%
DOMINANCE	70%
EXHIBITIONISM	65%

#### D PSYCHOLOGICAL INTERPRETATION

This mixed cluster of mostly music, creative artists and to a lesser extent commerce and literature, are interpreted as the isolated, competitive entrepreneurial personality group. Dominance is also a fairly common observation. The combination illustrates an isolated, loner creative personality who perseverates actions, thoughts, utterances and activities to a prolonged, sometimes pathological degree. These personalities just carry on and on (rather than being marked out by Persistence in the face of set-backs as are Cluster 1) for a long period despite difficulties and vicissitudes. They are well illustrated by the careers of Courbet and Gauguin as artists, Kipling and Trollope in literature, Pauling in science and Melba and Sibelius and Elton John in music.

The lesser but important exhibitionism dimension is more pronounced in Cluster 8 but is, of course, also well observed in Courbet, Puccini, Coward and Dali as an essential element in their character.

The overall psychological factor of an isolated style entrepreneur is, on the whole, the most general characterisation that could be assigned to this cluster.

Fuller details of the isolated, schizoid personality are detailed in Chapter 5.41 (v) including examples of this construct in literature, science, music and the creative arts.

Rudyard Kipling (Birkenhead, 1978) may be presented as a prime example of this type of personality. Affected by his childhood horror experience in the “house of desolation” (p.27) to the end of his days, this experience turned him into a pathological introvert. “I am a lonely man in my life”. (p.125) he declared, despite his journalistic success with the *Just So Stories* and the *Jungle Books*.

### 8.3.5 CLUSTER 5: CONTROLLED PSYCHOTICISM

#### A CONSTRUCT OVERVIEW

Eysenck (1995) has suggested that psychotic symptoms without actual psychosis constitute a possible primary dimension of creativity. Chapter 2.22 (1) in this thesis has also commented on this hypothetical construct.

By contrast, the evidence of this study indicates that only four biographical examples are included in this controlled psychoticism cluster – a much reduced level of significance than that suggested by Eysenck.

#### B FOUR PERSONALITIES INCLUDED IN CLUSTER 5

Conrad, Oppenheimer, Saint Laurent, Van Gogh

#### C HORIZONTAL IDENTIFICATION OF CLUSTER 5 CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (X 20)</u>	
EMOTIONAL PATHOLOGY	2.62
MINOR EMOTIONAL DISTURBANCE	2.14
WORK FRENZY	1.71
<u>QUANTITATIVE VALUES (%)</u>	
CENTRAL TRIGGER	100%
DOMINANCE	75%

#### D PSYCHOLOGICAL INTERPRETATION

There are minor and some more serious emotional disturbances illustrated in this cluster. The biographical cases of Van Gogh, St Laurent and Oppenheimer in his early life appear to provide evidence of psychopathological conditions of varying degrees of intensity. Joseph Conrad’s black depression moods may also be added to this observation.

Studying such examples of creative behaviour, observers commonly experience difficulty in separating causation from contiguity. Did Van Gogh's emotional problems result in the creative outlet of his vivid art forms, or did his restless search for a distinctive art result in his emotional breakdown? A symbiotic relationship between these two dimensions appears the most likely explanation.

The second research objective, that original creative behaviour is of a domain variate nature also appears confirmed in this cluster. St Laurent belongs to the commercial domain, Oppenheimer to science, Conrad to literature and Van Gogh to the creative arts – four distinct domains grouped together under one classification as psychoticism.

### 8.3.6 CLUSTER 6: INDEPENDENT INSIGHT

#### A CONSTRUCT OVERVIEW

The term independence refers to an autonomous attitude in which a person is relatively free from the influence, judgement, opinions or beliefs of others. High levels of insight and the tendency to act in an isolated, reserved manner are also characteristic of the well-known personalities included in this cluster.

#### B FOUR PERSONALITIES INCLUDED IN CLUSTER 6

Darwin, Einstein, Verne, Wilde

#### C HORIZONTAL IDENTIFICATION OF CLUSTER 6 CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (X 20)</u>	
INSIGHT	3.61
NEGATIVE EMOTIONS	2.09
INDEPENDENCE	1.71
<u>QUANTITATIVE VALUES (%)</u>	
ISOLATION	75%
IDEALS	75%

#### D PSYCHOLOGICAL INTERPRETATION

The interpretation of both our biographical and statistical information for these personalities, grouped together in Cluster 6, is of isolated, independent personalities, showing numerous emotional symptoms but certainly not at a pathological level. The outstanding single trait is that of insight which is discussed in Chapter 5.51 (iv).

Independent autonomous attributes are certainly confirmed in the case histories of Charles Darwin and Albert Einstein. It may be observed that these personalities also exhibit a significant degree of anxiety, insecurity and depression as recorded in the high level of negative emotions (2.09 qualitative value).

The case history of Charles Darwin (Desmond & Moore, 1991) characterised this cluster to a marked degree. Darwin was markedly stressed by the conflict between his scientific evidence for the evolutionary process and the 'sacred truths' held by his Victorian society peers. He became sick with worry over this conflict and suffered a life of inner turmoil as a consequence.

These isolated, schizoid traits are summarised by Storr (1998) in Chapter 5.41 (v) and are also to be noted in Clusters 5, 8 and 9.

Reisman's concept of the 'inside dopestier' hardly does justice to the significance of these cases, but is a similar concept (Reisman, 1950, p.208).

### 8.3.7 CLUSTER 7: SOCIAL REVOLUTIONARY

#### A CONSTRUCT OVERVIEW

Cluster 7 illustrates the symbiotic relationship between social revolt and the influence of role models within these disturbed periods of cultural history. It is virtually impossible to separate cause and effect in reviewing the small but significant biographical examples which make up this cluster. Certainly, social revolution is a fairly central factor in many of these clusters.

#### B THREE PERSONALITIES INCLUDED IN CLUSTER 7

Freud, Manet, Pasternak

#### C HORIZONTAL IDENTIFICATION OF CLUSTER 7 CODES

<b>PROMINANT CODES (BY COMPARISON ALL CLUSTERS)</b>	
<u>QUALITATIVE VALUES (X 20)</u>	
FAMILY	2.47
NEGATIVE ACTIONS	2.36
SELF ACTUALISATION	1.57
ROLE INFLUENCES	1.43
<u>QUANTITATIVE VALUES (%)</u>	
NATIONALISM	100%
REVOLT	67%

#### D PSYCHOLOGICAL INTERPRETATION

Reported fully under 7.71 (the Maslow self-actualisation construct), this small unique cluster has been interpreted in terms of a revolutionary focus arising from and influenced by family social and role influences. This high occurrence of a family – related focus is of course well represented by Sigmund Freud and his interpretation of the role of unconscious forces derived from his own and his patients' families; and in Boris Pasternak with his reaffirmation of the need for freedom in Russian literary and family life. *Dr Zhivago* was a self portrait illustrating his compassion for family life and especially women. Manet's city-oriented family art is also represented.

The cluster has several elements which are hard to combine in one construct. These elements combine nationalism with family values and revolution with the negative (A –) characteristic of later developers who tend to experience negative occurrences over long periods of original creative enterprise.

The concept of social revolutionary is fairly similar in this group to the more national revolutionaries illustrated in Cluster 10. Cluster 7 represents the soft edge of revolution while Cluster 10 is the more nationalistic, cutting edge of a similar revolt.

#### 8.3.8 CLUSTER 8 OBSESSIVE NARCISSISTIC

##### A CONSTRUCT OVERVIEW

Chapter 5.41 (vi) defines Code EXB – Exhibitionism in terms of self-adulation, narcissistic and eccentricity traits. In more precise terms, the narcissistic trait refers to exaggerated self-love and ego-eroticism.

Self-love and obsessive behaviour are linked together in this cluster. On the one hand these personalities exhibit the obsessive behaviour of repeating themes and actions in a compulsive, self-perpetuating manner; on the other hand their behaviour suggests exaggerated self-love.

##### B THREE PERSONALITIES INCLUDED IN CLUSTER 8

Getty, Poe, Schiele

##### C HORIZONTAL IDENTIFICATION OF CLUSTER 8 CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (X 20)</u>	
OBSESSION	6.28
EMOTIONAL PATHOLOGY	1.61
<u>QUANTITATIVE VALUES (%)</u>	
NATIONALISM	100%
ISOLATION	100%
EXHIBITIONISM	67%

## D PSYCHOLOGICAL INTERPRETATION

This cluster is relatively easy to interpret. Based largely on biographical inspection, the author has sought linkages between the marked narcissistic tendencies of Egon Schiele, Paul Getty and Edgar Allan Poe and their obsessive, self-perpetuating traits to suggest a single obsessive, narcissistic behaviour cluster.

Whereas Cluster 5 links emotional disturbances with dominance and aggression, in cluster 8 the emotional pathology dimension is associated with exhibitionism and narcissistic traits.

Artist Egon Schiele (Whitford, 1981) best typifies this obsessive, narcissistic cluster in action. Originally obsessed with the image of his father, his self-absorption is characterised by his over concern with his own appearance, constantly gazing at himself in the mirror and by his assiduous cultivation of his studio furnishing surroundings.

Edgar Allan Poe's narcissistic traits led to his marked delusions of grandeur (Mankowitz, 1978) while Paul Getty's obsessions and self-image eccentricities are well illustrated in the biography by Miller (1985).

### 8.3.9 CLUSTER 9: SEXUAL PROFLIGACY

#### A CONSTRUCT OVERVIEW

Sexual activity may be viewed as the foundation motive for pleasure-seeking behaviour. The biographical examples summarised below illustrate this profligacy construct either in terms of homosexual, heterosexual or wildly exaggerated sexual activity.

#### B SEVEN PERSONALITIES INCLUDED IN CLUSTER 9

Auden, Forster, Hugo, Mansfield, Spender, Tchaikovsky, Wagner

#### C HORIZONTAL IDENTIFICATION OF CLUSTER 9 CODES

<b>PROMINANT CODES (BY COMPARISON ALL CLUSTERS)</b>	
<u>QUALITATIVE VALUES (X 20)</u>	
SEXUAL ACTIVITY	2.95
NEGATIVE EMOTIONS	1.98
OBSESSION	1.40

#### D PSYCHOLOGICAL INTERPRETATIONS

Sexual relationships associated with original creative enterprise is well illustrated in this cluster. Tchaikovsky, Spender, Forster and Auden were known homosexuals, Wagner's case illustrated marked sexual fetishistic behaviour and Victor Hugo' case is clearly associated with exaggerated sexual proclivity.

The cluster group combines the domains of music, creative arts and literature, further confirming the substance of our second Research Objective relating to domain variation in this study. Of greater importance, this cluster defines sexual issues as a behavioural dimension rather than a single cause explanation as outlined in Chapter 2.22. Negative emotions characteristic of this cluster refer to the restlessness and anxieties we believe to be associated with constant sexual profligacy.

### 8.3.10 CLUSTER 10 NATIONAL REVOLUTIONARY

#### A CONSTRUCT OVERVIEW

This construct refers to biographical examples whose creative enterprise is clearly associated with nationalistic aspirations. Devotion to the interests of a particular nation and strong desire for national independence characterises the cultural, scientific and political enterprise illustrated in the cases under consideration.

#### B THREE PERSONALITIES INCLUDED IN CLUSTER 10

Edison, Joliot-Curie, Morita

#### C HORIZONTAL IDENTIFICATION OF CLUSTER 10 CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (X 20)</u>	
PERSISTENCE	2.95
AHA	1.74
<u>QUANTITATIVE VALUES (%)</u>	
CENTRAL TRIGGER	100%
NATIONALISM	100%
REVOLT	67%

#### D PSYCHOLOGICAL INTERPRETATION

All the personalities in this group were proud national revolutionaries. Morita for Japan, Edison for America and Joliot-Curie for France.

Their unique contribution to the national welfare was characterised by persistence and their AHA experiences expressed by the largely physical sciences they developed for personal and nationalistic objectives

Morita was originally grouped in our commerce category with Edison and Joliot-Curie in science, indicating how arbitrary these domain classifications tend to be – and strengthening the second research objective which more accurately characterise into original creative enterprise psychological group clusters rather than in any specific domain.

In all three cases the central trigger experience is evident from our biographical files although in the case of Edison his deafness as a central trigger concept is difficult to judge until several accounts of his life are read and studied. The relationship between physical disability and original creative enterprise is discussed further in Chapter 9.2 onwards.

“National revolutionaries” is the best definition of this important cluster.

### 8.3.11 CLUSTERS 11, 12 AND 13 KONRAD LORENZ, LEONARD BERNSTEIN & VIRGINIA WOOLF

These three creative personalities did not ‘fit’ any cluster in this study, revealing such unique combinations of characteristics that they have been separated from all other groups.

Appendix III summarises the biographical codes involved. Statistical values and psychological interpretations are summarised below.

### 8.3.12 KONRAD LORENZ - ANIMAL ETHOLOGIST

#### A HORIZONTAL IDENTIFICATION OF CODES

<b>PROMINANT CODES (BY COMPARISON ALL CLUSTERS)</b>	
<u>QUALITATIVE VALUES (x 20)</u>	
INSIGHT	4.59
ACHIEVEMENT	2.95
OBSESSION	1.97
PERSEVERATION	1.31
AHA	0.66
<u>QUANTITATIVE VALUES (%)</u>	
CENTRAL TRIGGER	100%
DOMINANCE	100%
NATIONALISM	100%
IDEALS	100%

## B PSYCHOLOGICAL INTERPRETATION

Biographer Nisbett (1976) has documented Lorenz' life as an animal ethologist for this study. The biographical coding (Appendix III) may be more revealing than any psychological summary of Konrad's contributions to science.

The codes illustrate Konrad's obsessions as an animal collector with fish, ducklings, geese, waterfowl, jackdaws, herons and bees (Nisbett pages 19,20,23,26,32 and 108). The trigger experience that commenced his imprinting interests is documented in Nisbett, (1976), when at six years of age he observed the behaviour of a duckling. Lorenz was a vigorous, assertive, dominating personality (pages 39, 69, 74) who was awarded his Ph D with a study of only thirty-two pages and later awarded the Nobel Prize in 1973. His AHA experience is well illustrated on page 193 when he "suddenly" saw the emergence of his full theory of animal imprinting.

Finally his perseveration characteristics leading him to continue this line of research to the very end of his life is illustrated Nisbett (1976). Konrad Lorenz is a classic example of a task oriented obsessive achiever of world class and unique to this study.

### 8.3.13 LEONARD BERNSTEIN - MUSICAL COMPOSER & CONDUCTOR

#### A HORIZONTAL IDENTIFICATION OF CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (X 20)</u>	
ROLE INFLUENCE	3.81
FAMILY	3.33
POSITIVE EMOTIONS	1.9
<u>QUANTITATIVE VALUES (%)</u>	
CHILD PRODIGY	100%
CENTRAL TRIGGER	100%
DOMINANCE	100%
COMPETITIVE	100%
IDEALISM	100%
EXHIBITIONISM	100%

## B PSYCHOLOGICAL INTERPRETATION

The case history of Leonard Bernstein is basically the story of layer upon layer of complex psychological conflict. In the sense of the origins of creative enterprise, Bernstein truly stands alone. It is to be hoped that further research in this area will provide more examples that may provide us with a new novel cluster in its own right on this fascinating subject.

Bernstein's conflicts commence with his relationship with his family, especially his father and his "Jewishness". A child prodigy who discovered and fell in love with the piano in very early life, Bernstein was a dominant brash personality whose ideal was a true expression of American music, best exemplified in the creation of *West Side Story*. Bernstein is closely identified by Peyser (1987) as the spokesman of American power and influence adamant in the twin role of being both Jewish and American.

In sexual matters, Bernstein is at his most complex. He is both a pseudo and a practising homosexual. He is in love and married to Felicia Montralegre while continuing to be unfaithful to men rather than to women.

The coded biography (Appendix III) suggests marked elements of narcissistic exhibitionism, and above all an intense desire to be the centre of attention enjoying the adoration of his many fans (Peyser, 1987). It is interesting to note that his musical failures were commonly associated with his steady moves towards personal aggrandisement and pontification (Appendix III).

### 8.3.14 VIRGINIA WOOLF - AUTHOR OF ENGLISH MASTERPIECES

#### A HORIZONTAL IDENTIFICATION OF CODES

PROMINANT CODES (BY COMPARISON ALL CLUSTERS)	
<u>QUALITATIVE VALUES (x 20)</u>	
EMOTIONAL PATHOLOGY	5.33
SEX ACTIONS	2.67
WORK FRENZY	2.29
<u>QUANTITATIVE VALUES (%)</u>	
NATIONALISM	100%
SCHOOL	100%
BEREAVEMENT	100%
SUSPICIOUS & COMPETITIVE	100%

#### B PSYCHOLOGICAL INTERPRETATION

Virginia Woolf provides the penetrating example of a seriously disturbed personality who "writes out" the pain of her schizophrenic tendencies (Biography appendix III) and produced a number of masterpieces of English literature such as *The Voyage Out*, *Orlando*, *To the Lighthouse*, *Jacob's Room*, *The Years*, and *Mrs Dalloway*.

Her own family had a long history of insanity including her father, her sister Laura and her uncle. Sexually molested as a child by her half brother George, she suffered

her first breakdown at 13 years old soon after her mother's death and developed lesbian characteristics in later life.

Her entire biography is a picture of a talented writer struggling to express her aspirations against a background of insomnia, nervous irritation, and manic bi-polar symptoms.

The high scores for 'school' reflect her involvement with the Bloomsbury movement and the suspicious, competitive dimension over her antagonism toward Katherine Mansfield, Violet Dickinson and others.

Her uniqueness in literature must surely be her possession of a strong ego-mechanism which allowed her periods of sanity and security especially after her marriage to the devoted Leonard Woolf. This ego-strength is reflected in the literature especially by Anthony Storr and Hans Eysenck. Finally the emotional stresses of her life completely overcame her, tragically ending her life as a suicide.

#### 8.3.15 CONCLUSIONS AND IMPLICATIONS

Additional conclusions and implications for human resource management may also be deduced from this chapter. The first conclusion emphasises the coherent integrity of behavioural clusters identified; the second identifies these clusters in terms of lifestyle.

The importance of cluster coherence, identified in Table VI requires further comment. It may be argued that the four major clusters could overlap, so reducing their precision and rendering them of little practical value in defining elements of human resources requirements.

However, Table VI clearly identified the statistically significant coherence or integrity of clusters 1 – 4, 5, 6 and 9. These behavioural clusters indicate very limited overlapping characteristics, and although their epistemological identification may be open to debate, the overall integrity of these constructs is clearly sustained.

Additionally, Adler (1964) employed the term 'style of life' to picture the unique, pervasive manner of a person. He considered this term to be composed of the totality of one's motives, traits, interests and values, manifesting itself in all behaviour. Whereas the concept of behavioural clusters is a relatively rare term in human resources, the term 'style' is a more familiar term to describe the consistent mind-set a person tends to exhibit, especially in management or similar senior positions.

Chapter 7 finally discusses the implications of the four major cluster results as styles of behaviour, especially in relation to human resource management.

### 8.3.16 FOUR MAJOR LIFE STYLES IDENTIFIED FOR HUMAN RESOURCE MANAGEMENT

#### A THE INNER-DIRECTED STYLE

This concept pictures the conservative, self-perpetuating creative style, born basically out of past models of activity, with little desire to reform or initiate radical change.

The business models of the past have been perpetuated into the present. Respect for founding principles of business have been internalised into symbols, logos and themes which reinforce past successes. In other words, we are picturing a conservative, non-varying style model, occurring in numerous older commercial organisations and institutions.

#### B WORKAHOLIC URGENT ACTION STYLE

This commonly occurring style model pictures the need for urgent action as the solution to all organisation needs. Most problems can be solved by vigorous, sustained activity. Complacency is seen as the enemy of ultimate success.

The urge to reorganise and change direction; the need to globalise; to conduct action-oriented conferences and similar are fundamental aspects of this style model. The actions need not be revolutionary, but they are essentially continuous and vigorous.

#### C COGNITIVE CAPITAL STYLE MODEL

This concept is centred on intellectual and capital rights, as a prime strategy for future developments. In commerce, cognitive capital models are commonly linked to the taxation advantages of acquisitions, the formalisation of intellectual rights, on new image formulations and similar.

The relative value placed on this style may only be judged at some 'distance' from the decision-making process, and be judged by long-term as opposed to short-term objectives.

#### D SCHIZOID LONER ENTREPRENEURIAL STYLE

A significant number of outstanding achievers in science, commerce and the arts have been initiated in association with an inward-looking, intellectual approach we have described as 'loners'. This style is in direct opposition to conservatism (the

inner-directed style), action for the sake of action (workaholic style) or yet the cognitive styles typically formulating intellectual solutions to organisation problems.

## CHAPTER 9

### CONCLUSIONS AND IMPLICATIONS

#### 9.1 INTRODUCTION

“Creativity is the capacity to make connections and to bring together previously unconnected frames of reference” — Koestler (1964).

This thesis sets out to explore five major interrelated issues concerning original creative behaviour. Whereas the objectives outlined in Chapter 1.8 were of a general exploratory nature, the following constitutes a more precise summary of thesis objectives:

- A. To explore some of the major behavioural clusters which would provide future studies in social science with a preliminary, exploratory map of original creative enterprise.
- B. To confirm the concept that a map of original creative enterprise was better identified between domains of proclivity rather than explanations confined to any particular, single domain.
- C. To compare behavioural characteristics of early creative proclivity with examples of ‘later’ original enterprise.
- D. To seek for confirmation of the Maslow thesis that the self-actualisation experience was linked to various behavioural characteristics examined in this study.
- E. To link this thesis to the needs of modern Human Resources Management. Chapter 1.8 identified these issues as those related to globalisation, greater emphasis on strategic planning and innovation – all three involving modern Human Resources Management with increased demands for the acquisition of new skills, worldwide economic and social perspectives and innovative, entrepreneurial skills.

The crucial question to be discussed in this final chapter is whether or not this thesis has provided a distinct, original contribution to scientific knowledge in terms of the research questions proposed at the outset.

It can be affirmed that the inclusion of commercial enterprise within a more comprehensive examination of original creativity in the arts, music, science and literature does constitute an important, original perspective to entrepreneurial literature and does bring together “previously unconnected frames of reference.” (Koestler, 1964).

This thesis presumes that entrepreneurial creativity may not be successfully studied in isolation from other significant creative domains and should be approached in a holistic rather than domain specific, scientific context. In broad terms, this thesis may be considered as exploratory, rather than as a definitive statement on the subject of original creative enterprise.

Two concepts outlined in this thesis do however, appear to have made a unique contribution to behavioural science.

The first concept relates to the importance of widely dispersed behavioural traits rather than domain specific explanations of creative behaviour which provide a better understanding behind a map of creative proclivity.

The second unique concept concerns the clear distinction between early versus later behaviour in biographies of persons exhibiting outstanding creativity.

High levels of significance have not been reached in all cases. It is also virtually impossible in some cases to remove biased data from biography material, especially in reporting long past events which according to Mark Twain’s opinion “may have never happened.”

The complexities of this subject matter and the difficulty of matching theory with fact has led some observers to the conclusion that the concept of creative genius is largely unproven and lacking any solid evidence of uniquely original behaviour. Weisberg (1986) for example denigrates such subjects as concepts of the unconscious, AHA, divergent thinking and the whole ‘genius’ concept of original scientific or artistic creativity to the category of myth.

He writes, “if one accepts the basic principle that the environment is constantly changing, then much of the mystery surrounding creativity is removed in a single stroke. It follows from this assumption that all behaviour involves novelty at its core,

which renders meaningless any distinction between the creative and the non creative.” (Weisberg, 1986, p.148).

In the sense therefore that, to the author’s knowledge, no previous study has examined most possible major behavioural antecedents known to the investigator, such as childhood experiences, emotions, obsessions and modes of behaviour in one coded network, then this study does in fact constitute an original contribution to the study of original creative enterprise.

The psychological analyses outlined in Chapter 7 appear to have confirmed all three research objectives to some degree and found observational support linking the self-actualisation concept to various complex personality constructs.

In hindsight the exploratory approach initiated may prove to be of greater importance than the actual scientific results achieved. Furthermore, the likely advance in data collecting and statistical refinement in the 21<sup>st</sup> century may ensure greater precision in this approach to creative enterprise than was possible in this exploratory study.

Again quoting Weisberg (1986) “given the large increases in our knowledge over the past decade or so, and the general consensus that seems to have developed among cognitive psychologists, a theory of creative thinking may not be too far away” (p.148). This thesis then may well be positioned at the beginning of a new approach to the study of creativity rather than at its conclusion.

## 9.2 FIRST RESEARCH OBJECTIVE CONCLUSION:

### A CREATIVE ENTERPRISE MAP CLUSTERS AROUND SPECIFIC TRAITS AND MODES OF BEHAVIOUR

This research objective seeks for associations or connections between clusters of behaviour and biographical participant examples. Unlike the 1998 pilot study where 14 biographies failed to group into any cluster, the more comprehensive 1999 study grouped all subjects into 10 clusters with only three single biographies detailed in Chapter 8.3 xi, xii, xiii, which deserved special treatment.

There was very limited similarity between the two studies as far as the clustering concept is concerned. Cluster 3, the ‘commercial’ science group pilot study also contained three biographies (Ford, Florey and Pasteur) in common with the main study third cluster. Generally speaking however, widening the obsessive dimension, including childhood experiences and an increase from 52 to 100 biographies radically altered the results achieved.

That clusters of behaviour do exist is certainly illustrated in Chapter 7.2 onwards. That the behavioural clusters fully explain the creative behaviour of biographical subjects is certainly not proven.

The commonly observed conflict between contiguity and causation is well exemplified in this study. It is true that some core characteristics are reported in a high proportion of cases, but those occurrences are simply observations and in no way assist to link a causative construct to the cluster groupings.

These observations would include self-actualisation (reported 98 percent), work frenzy (reported 95 per cent), insight (reported 93 per cent), family influence (91 per cent) and achievement orientation (91 per cent).

The sample of 100 biographies would not be sufficiently extensive to uncover other important code definitions which may be additionally discovered in a future, more comprehensive study. For example the question of the relationship between physical limitations and creative output was not addressed. The deafness of Thomas Edison and the Stephen Hawking's motor neurone disease were briefly mentioned. Many more cases could be added to this interesting dimension such as the deafness of Beethoven and other similar cases.

In the history of science, there have been many examples of relationships between variables being observed without a compensatory explanation of these phenomena. For example, Isaac Newton's universal laws of gravity existed long before any explanation of this phenomenon could be offered. William Harvey's construct of the existence of blood capillaries was a hypothesis without proof until the discovery of the microscope. In the same way, an association between variables as has been demonstrated in this study while not producing evidence of causality, does not necessarily invalidate these objectives altogether.

Creative achievement is multi-faceted, multi-disciplined and a far wider historic subject than can be comfortably included in a study limited to psychological dimensions alone.

For example, to understand the *Iliad*, we would need knowledge of the Arcado-Cypriot dialect, the Attic variety of Ionic, comparative religion, anthropology, mythology and several other disciplines. To completely understand the complex subject of original creativity we would need to acquire a far more comprehensive historic and scientific data background than would be possible, given the constraints of a single study.

In its truest perspective therefore, it would be required to position this study as exploratory only, designed to synthesise most major elements of creative behaviour as we now understand them, and to open the way to far more comprehensive future methods of widening these concepts in a more historically-focussed, all-embracing future study.

### 9.3 SECOND RESEARCH OBJECTIVE : CONCLUSION MAPS OF ORIGINAL CREATIVE BEHAVIOUR PROVIDE EVIDENCE OF DOMAIN VARIABLE CHARACTERISTICS

The proposal that different components of creative enterprise embrace all domains involved in this study appears to be confirmed, both by the observation of such variability from all cluster analyses summarised in Chapter 8 and from the crucial evidence of variability summarised in the psychopathology cluster in 8.2 (v).

Four personalities are identified within this cluster; Yves St Laurent, Robert Oppenheimer, Joseph Conrad and Vincent Van Gogh. Although these personalities are grouped together within the single behavioural cluster 5, their domains are different, suggesting observational evidence for the second research objective of domain variability in clusters.

Yves St Laurent, for example, is represented in the commercial domain, Robert Oppenheimer in science, Joseph Conrad in literature and Vincent Van Gogh in art.

It may be observed that some clusters do appear to have a unique 'flavour' or character. For example, as can be seen from Table 1, Clusters 2 and 4 have more fine and musical artists, Cluster 3 is composed of predominantly scientists and commercial individuals and Cluster 9 mostly of literary personalities.

However, none of these clusters display completely unitary domain characters; they all exhibit mixed domains, mostly representing a complete cross-section of all groups.

The significance of this finding is hard to over-emphasise. This observation has significance both for education and the development of future creative enhancement, the human resources movement and many similar fields of endeavour.

Commercial educational programs especially have concentrated on single domain research and, where applicable, on behavioural constructs that are presumed to lead to improved future business performance. In fact texts on behavioural

improvement in leadership, strategic planning, employee motivation and personal sales and marketing skills have become a major modern industry. The finding that there is little if any evidence of the efficiency of brainstorming and similar quasi-educational methods has certainly not slowed this virile commercial educational industry.

The second research objective basically proposes that domain specific explanatory constructs of creativity have little if any scientific substance. To the contrary the behavioural traits this study sought to understand and emulate, are to be discovered across all domains of creative endeavour rather than within the confines of a single skill area.

The notion that commerce alone can provide any substantial evidence of unique creative enterprise has a second important consequence. In fact, due to a blinkered focus on single domain proclivity, there may be many more unrecognised persons with high levels of original creative enterprise than have so far been discovered, both in history and today.

Although lesser-known examples of original creative enterprise have been coded, together with well-known examples, a more comprehensive knowledge of history, sociology and comparative studies from other cultures is likely to identify many other significant original thinkers than this or similar studies have discussed. Not enough is known concerning this complex subject.

Gjertsen (1986) elaborates this position. Asked by Richard Bentley in 1691 as to how to understand his 1687 *Principia*, Newton is claimed to have required Bentley to master *Euclid's elements* and the *Elements of ye Conic Sections*, to consult von Schooten's *Commentaries*, Gassendus's *Astronomy* and Hugenius's *Horologium Oscillatorium* before being "ready" to understand the *Principia* work.

A more extensive search of the concept of serial creative discoveries would very probably discover in historical and scientific literature numerous early origins of outstanding, landmark events, not honoured by history, but in fact merely the final acme of many earlier original contributors. Antecedent investigations that contributed to Darwin's *Origins of Species* for example may be traced back to Charles Lyell's *Principles of Geology* and even earlier to Comte de Buffon's (1707 – 1788) *Histoire Naturelle* 1749. We honour Darwin but we have largely forgotten Comte de Buffon. Numerous other examples of forgotten persons of outstanding originality do certainly exist.

Finally, the second research objective of domain variability raises the possibility of a central core concept of original enterprise which may exist behind and beyond the data presented in this thesis.

To date all analyses have been searching for variations between individuals so that if there is a common 'genius' factor, this dimension has already been removed. Unlike the studies of intelligence which arrived at a common 'g factor', this research did not set out specifically to quantify this hypothetical dimension, and in fact several theorists have denied its existence altogether.

By observation however some factors do appear frequently which are intriguing and possibly the basis of further study. For example the central trigger event, Nationalism and Perseveration occur in 67 per cent to approximately 75per cent of all biographical subjects. Their incidence is not overwhelming but simply suggestive of an underlying dimension. Central trigger occurs 77 per cent; Nationalism 72 per cent; Perseveration 67 per cent in the main study sample.

#### 9.4. THIRD RESEARCH OBJECTIVE : CONCLUSION AN ORIGINAL ENTERPRISE MAP REVEALS SIGNIFICANT DISTINCTIONS BETWEEN EARLY AND LATER CREATIVE BEHAVIOUR

##### 9.41 INTRODUCTION

Childhood proclivity, especially in music is well documented in this thesis and in the literature. Sixteen cases of the twenty-seven early developers belong in the music domain. Widening the proclivity classification somewhat, indicates seven cases in art, three in science and one in commerce.

By contrast, the later developer, who typically requires a long, disciplined developmental apprenticeship before original creative works appear, accounts for seventy two cases.

The association of early development with significant role influences, isolated personality traits, emotional positivism and to a lesser degree revolt from established mores has already been commented on in Chapter 7.6. These are hardly surprising results and are consistent with both the biographical literature and other social science observers.

The career path of the later developer, although less 'exciting' than the more dramatic incidence of early proclivity, does however hold up the promise of superior practical relevance for the modern world.

The greater percentage of the sample biographies are characterised as later developers in this study where significant behavioural modes appear quite distinct from earlier developers.

The evidence suggests significant relationships for –

A– : negative occurrences or actions, loss, ill health

CT : central trigger experience, mind storm

Ideals: religious, idealistic factor, altruism, philanthropy, politics etc

and more marginal relationships for –

Insight: sensing truth intuitively and related closely to the AHA experience

Achievement: of a relatively significant manner

Competitiveness: commercial trading, rivalry

It may be accepted that the A- relationship picturing losses, illnesses and negative occurrences would be a 'natural' occurrence of longer creative activity. Again achievement and longevity are likely concomitant associations as has been so amply illustrated by Simonton in his historiometric studies. Finally, competitiveness may be logically connected to longevity as a survival mechanism. Without trading, competitive skills, the creative personality is not likely to survive as is well illustrated in the biographies of artists such as Claude Monet or Van Gogh trying to survive commercially and artistically.

The most significant and practical observation is the positive, statistically significant relationship between the central trigger experience and later, rather than earlier, creative enterprise. There are at least three possible explanations behind this result, as well as some practical outcomes.

The first level of explanation is that the central trigger is an actual 'crystallising' experience that sets the path for consequent behavioural patterns. This conclusion could hardly be avoided with Guiseppe Verdi's harpsichord, which still exists in Milan, or the toy helicopter trigger present for the Wright brothers, the experience of Henry Ford with the steam engine or yet Albert Einstein's observations over the magnetic compass.

A second level of explanation however is that in hindsight and in their search for creative meaning, a number of the biographical subjects conveniently 'recover' this central experience.

No biographical analysis would be able to accurately tell whether Gabrielle Chanel actually did see her lucky 'number 5' on the monastery floor or whether the event was a happy recollection that answered her need to 'create something different'. In literature, Stephen Spender tells us that he deliberately searched his childhood recollections to create his own trigger experiences and a similar explanation is directly attributed to Steven Spielberg's recollection of early family life to create his film themes. In music Dmitri Shostakovich dreamt of toyshops in Vienna, typifying his search for the colour and security he could not find in his own Russian homeland.

Maurice Ravel was certainly aware of the beating sounds of his father's steel factory in the creation of *Bolero* but we cannot know whether the creation of this famous music was a central dispositional factor or a much later product of his subsequent memory recovery.

The third level of explanation involves the mythical elaboration of actual events to which biographies appear especially prone. This phenomenon, in relation to King Arthur and the Legends of the Round Table and Holy Grail, has already been commented on.

The most famous example, however, must surely be the apple trigger experience attributed to Sir Isaac Newton. The story of Newton and the falling apple is undoubtedly the best known anecdote in the entire history of science.

The first reference to this event was recorded on the 15<sup>th</sup> April 1726 when Newton in a contemplative manner saw an apple fall to the ground and wondered "why should the apple always descend perpendicularly to the ground. Why should it not go sideways or upwards, but constantly to the earth's centre?" (Cjertsen, 1986, p.29)

"Whilst he was musing in the garden it came to his thoughts that the power of gravity was not limited to a certain distance from the earth, but that this power must extend much further .... why not as high as the moon?" said he to himself.

The actual story finally descended to the status of a vulgar myth when it became elaborated into an account where the "apple struck him a smart blow to the head!" (p.30).

There are undoubtedly numerous other examples where the recounting of past significant events have acquired legendary status and which unfortunately have been carried forward by numerous biographers to embellish a 'good story'.

#### 9.5 CONSEQUENTIAL OBSERVATION DISCUSSION CREATIVITY MAPS PROVIDE EVIDENCE OF SELF ACTUALISING COMPLEX PERSONALITY DIMENSIONS IN VARIOUS ORIGINAL ENTERPRISE CLUSTERS

The observation under discussion is the Maslow thesis that personal development and self-actualisation are the prime objectives of human kind, out of which creative health and original enterprise "emanate." Details of Clusters 1 and 7 are summarised in Chapter 7.71.

As a general observation, the biographical relevance of this concept would include both role influences and nationalistic forces that have exerted considerable influence on the self-actualisation process.

For example the Appendix II summary indicates nationalism and role influence recording the second highest values at 83 per cent and 1.39 proportionate values respectively for cluster 1, while for cluster 7, nationalism reports the highest value at 100 per cent and role influence at 1.43.

The Italian Renaissance is perhaps the most celebrated example of the association between nationalistic fervour and role influences in the creative arts. The flowering of arts in Renaissance Italy producing such enterprising giants as Filippo Brunelleschi; Donatello; Gentile de Fabriano; Fra Angelico; Botticelli; Léonardo da Vinci; Michelangelo; Caravaggio; Hugo van der Goes; Albrecht Dürer and Jan van Eyck. Confined to a very narrow time band of human history these personalities became the cultural and economic engines of the new pre-modern era. They stimulated each other, competing in an exciting milieu of city state pride and creative skills.

In other words, the self-actualisation process, stimulated a wide spectrum of original creative behaviour which was exhibited in many notable domains with dramatic and long lasting results.

## 9.6 THE ORIGINAL CREATIVE ENTERPRISE CONSTRUCT: LIMITATIONS AND FURTHER RESEARCH

### 9.61 MAJOR LIMITATIONS OF THIS THESIS

These consist of:

- Study limited to five only widely differentiated domains of proclivity
- Fundamental bias of numerous biographies as sources of scientific information
- Emphasis on popular rather than actual original enterprise in numerous cases
- Practical difficulty of ranking personalities of original enterprise
- Relevance to entrepreneurial, economic and human resources applications

### 9.62 LIMITATIONS OF FIVE ONLY WIDELY DIFFERENTIATED DOMAINS

This thesis was limited to biographical examples of original creative enterprise in music, literature, science, commerce and creative arts only. Other possible domains such as sport and politics could have been included.

More significantly, the investigation of biographical examples was more 'broad-brushed' than discriminatory in its approach.

The creative arts domain is especially relevant here. There may well be finer distinctions available for investigation in fine arts, for example, when such luminaries as Claude Monet, Vincent van Gogh and Pablo Picasso are compared to architects such as Frank Lloyd Wright. Performance in the arts would allow further discrimination illustrated by the careers of Noël Coward, and Charles Chaplin compared to the art of ballet illustrated by the career of Vaslav Nijinsky.

A similar division of proclivity would be found in the science domain where such 'physical' scientific endeavour including Marie Curie, Robert Oppenheimer, Isambard Brunel and Konrad Lorenz are grouped together with the 'cognitive' sciences of Sigmund Freud, Thomas Huxley or Stephen Hawking.

In music a similar lack of code differentiation may also be observed. Singers such as Nellie Melba and Elton John are assumed to have similar behavioural characteristics as musical composers such as Benjamin Britten, George Gershwin and Jean Sibelius, or yet again, conductors such as Arturo Toscanini or Leonard Bernstein.

The prime importance of the first Research Objective in this thesis is that clusters of behavioural characteristics lie behind the diversity of domain proclivity, and that such behavioural clusters are domain variate, does remove this variable biography objection to some degree. It simply suggests a more precise biographical grouping in the future.

The thesis is investigating fundamental behavioural clusters behind proclivity of domain varieties and specific domain labels themselves are consequently of lesser importance than individual behavioural characteristics.

### 9.63 BIOGRAPHY BIAS LIMITATIONS

This problem has already been referred to in Chapter 3.5. Poorly researched biographies tend to add to and glamorise events to gain a 'good story'. Furthermore, biographies and autobiographies tend to distort occurrences often long after the event is claimed to have occurred.

An excellent example of this glamorisation of events, is the oft-told account of the poem *Kubla Khan* reported in 1816 by Samuel Taylor Coleridge. According to Coleridge's report, he had been in ill-health and living alone in a secluded country farmhouse in southern England. One afternoon he took a dose of opium (2 grams). After taking the drug he fell asleep in a chair while reading a passage from *Purcha's Pilgrimage*, a well-known book of the time, containing tales of exotic places.

The poem occurred to him in its final form "without any sensation or conscious effort" until he was disturbed by a visitor, leaving us, purportedly, with this poem fragment alone.

Sneider (1953) has carefully examined this whole Coleridge story and declared it to be more fallacy than fact. The poem did not occur in a dream, nor did opium, to which he was certainly addicted, have much connection with *Kubla Khan*. She has discovered several other earlier versions of the poem, as well as evidence that Coleridge was notorious for not telling the truth. Coleridge had tried but been unable to complete the poem and so was left with an unpublishable fragment – and a good story to go with it!

### 9.64 POPULAR VERSUS ACTUAL ORIGINAL ENTERPRISE CONSTRUCTS

The author is interested in widening original enterprise knowledge with the inclusion of original thinkers, who were significant in the serial discoveries that lie behind final,

well-attested seminal discoveries. Picasso probably conceived his notable early inspiration from African art, Darwin from earlier biological insights, and Newton from earlier mathematical concepts such as from the Frenchman, Marat. An excellent recent illustration has been reported by rocket visionary Arthur C Clarke. He acknowledged a debt to both Potocnik, a 1932 German rocket scientist and Herman Obert who invented liquid fuel rockets and wrote a famous essay *The Rocket into Interplanetary Space* - at about the same time. In effect, Clarke states that although he 'invented' the concept of inter-terrestrial satellite communications, Potocnik and Obert co-invented domestic communication satellites (Potocnik, 1932).

A recent book by Lomas (1999) on Nikola Tesla is an excellent example of a forgotten genius of electricity who should certainly be included in the science domain as inventor of AC electric current, and numerous other patents in radio and electric generation. In fact, Tesla may now rank above Faraday as the 'father of modern electricity' in the eyes of modern historians.

Recent evidence concerning this question of serial creativity is supplied by Edmund Robertson, Professor of Mathematics, at St Andrew's University, Scotland. He reports that Olinto De Pretto (an industrialist from Vicenza), published the equation  $E=mc^2$  in a scientific magazine *Aite* in 1903. "Einstein may have got the idea from someone else, as ideas come from all sorts of places. De Pretto deserves credit, if his contribution can be proven. Even so, it should not detract from Einstein." (*The Age* newspaper, Melbourne 12 November 1999). Many other examples of this type certainly exist in the history of science and other creative endeavours.

Biographical examples should be widened considerably to include not only well-documented original thinkers from previous centuries but also include a greater variety of modern living examples. As an illustration, Meyer Friedman (1998) listed the ten greatest medical advances and the discoverers:

Andreas Vesalius	modern anatomy
William Harvey	circulation of the blood
Anthony Leeuwenhoek	bacteria
Edward Jenner	vaccination
Crawford Long	surgical anaesthesia
Wilhelm Roentgen	X-Ray beam
Ross Harrison	tissue culture
Nikolai Anichkov	cholesterol
Alexander Fleming	antibiotics
Maurice Wilkins	DNA

Concentrating on seminal creative enterprise personalities of undoubted eminence would need to add Isaac Newton, Lavoisier, Leibnitz, Gauss, George Stephenson and many others for a fully comprehensive future research paper.

#### 9.65 RANKING PERSONALITIES EVIDENCING ORIGINAL ENTERPRISE EMINENCE

That there are any discernible differences between creative and non-creative personalities has been examined carefully by this thesis with the conclusion that our methodology is not at fault in our procedural methods.

Studies by McKinnon (1962) and Csikszentmihalyi are relevant to this matter. McKinnon's comparative study between creative and non-creative architects involving the personality characteristics of 40 of the most creative architects in the United States with non-creative architectural personalities, failed to find any unique traits distinguishing these groups.

The 1976 studies of Getzel and Csikszentmihalyi involved a longitudinal study of thirty-one art students over a period of seven years using a wide variety of predictive psychological tests. None of the measures used were related significantly to future career success in art.

A comparison between the cases of Albert Einstein and Isaac Newton may illustrate the absurdity of such an objection to the methodology of this study. Sir Isaac Newton was a 24-year-old student at Cambridge when he created his theories of modern mathematics, mechanics and optics around 1666. Albert Einstein was twenty-six in 1905 when he published three papers in which he laid the foundations for the special theory of relativity and successfully analysed the photoelectric effects in terms of the new quantum theory. Neither were child prodigies in any sense of this word.

Much of Newton's work was carried out in a remote Lincolnshire farm with little or no scientific source than his own creative will. Einstein by contrast had available from the Zurich Polytechnic the writings of Maxwell, Mach, Helmholtz and others.

Einstein promptly published his findings. Newton for the most part clung to them obsessively for twenty years or more. Indeed many of his mathematical results remained undiscovered until they were finally revealed some forty years later as appendices to the *Opticks* (1704).

How does one rank these scientists? Which is the superior in a grading of original enterprise? The plain answer is, it is not possible to achieve either a grading or a

comparison of the degrees of human originality. The approach is a form of *non-sequitur* and with a high probability of failure.

#### 9.66 THESIS RELEVANCE TO ENTREPRENEURIAL APPLICATIONS

In 1999, Reuters reported a study by the London based *Global Entrepreneurship Monitor* suggesting that “no countries with low levels of economic growth and high entrepreneurial activity exist”. This report suggests evidence that promoting entrepreneurial dynamics of a country should be an integral element of any government commitment to lasting economic well being.

There is a large body of literature centred on this particular topic. Therefore, wider implications for this thesis of original enterprise must therefore surely impinge upon economic and cultural health of a nation state.

It suggests five distinctive behavioural clusters related to consequent entrepreneurial activity. In a sense these clusters may be seen as ‘styles’ of innovative behaviour commencing the process later recognised as entrepreneurial.

Cluster 1 pictures the inner-directed, perseverative focus of numerous entrepreneurial personalities in the past and certainly in the present. Although the cluster examples (8.3) are not confined to commerce, there are a number of outstanding entrepreneurs involved, such as Akio Morita, Kokichi Mikimoto and Guccio Gucci.

Morita recently died at 78 years of age and was described by Prime Minister Keizo Obuchi as “a traditionalist who had to embrace the world”. His strong Japanese nationalism and his traditionalist approach to marketing Sony internationally are close to David Reisman’s description of the inner direction focus. He defines as the source of direction for the individual as “inner” in the sense that it is implanted early in life by the elders and directed toward generalised but “none-the-less inescapable destined goals” (Reisman 1970 p15). Morita’s family were regarded as ‘living national treasures of Japan’ – and the privileged origin of his subsequent inner-directed career.

Kokichi Mikimoto took 15 years to produce a perfect cultured pearl, and even at 96 years of age and employing some 117 000 persons in the industry, was seeking to perfect pink pearls just before his death in 1965. It does not require extraordinary insight to see the strong relationship between perseveration and the inner-directed focus of Cluster 1.

Finally, stern, authoritarian Italian Guccio Gucci and his family repeated the theme of quality Italian leatherwork into the United States and finally in Paris and Milan, not always with harmonious results. He died in 1953, "assertive and hard working to the last" (McKnight, 1987, p.79).

The workaholic Cluster 2 contains Richard Branson, Isambard Brunel, Pierre Cardin, Bill Gates and Calvin Klein in this cluster. The frenzied work pattern of entrepreneurial activity is a well-recognised behavioural construct.

By contrast, the cognitive capitalist exhibited in Cluster 3, (8.3.3) achieved his pre-eminence as an intellectual tour de force, out of which entrepreneurial activity ensued. Frank Beaurepaire (Australian tyre manufacturer), Jesse Boot (medicinal herbalist of proprietary medicine), Andrew Carnegie (financial investment in American Steel), Henry Ford (the mass-produced cheap automobile) and King Gillette (the throw-away razor blade) are all examples in this cluster of the primary of concepts in developing new ventures.

Cluster 4 (8.3.4) pictures the personality whose development is primarily directed by loner-focussed activity. Coco Chanel is the prime biographical example of this, a remarkable clothes designer and creator of Chanel No 5, while Charles Schwab (American Steel) is of a similar behavioural mode.

Finally, entrepreneurial activity may be traced in Cluster 10 to the national revolutionary. Revolt refers to the common need for creative people to rebel against the past. This rebellion is often more impersonal than personal. That is, it is against ideas, techniques and points of view rather than against people. Berenson (1959, p201) once defined genius as, "the capacity for productive reaction against one's training."

In the biographical examples Akio Morita, (Sony founder and Japan's engine), Marie Curie (discovery of radium), Frédéric Joliot-Curie (French atomic energy) and Thomas Edison (American entrepreneur) best illustrate this important dimension of creative enterprise behaviour.

There appears to be good evidence that there is a 'cross fertilisation' effect between creativity and nationalism. The entrepreneur who strikes out on a new path boldly voyaging beyond the bounds of accepted standards commonly evolves in a fertile nationalistic environment.

The wide interpretation of revolt from this cluster analysis includes all domains of activity covering commerce, the arts and science suggests that economic and

cultural health of a nation is enhanced rather than inhibited by encouraging actual living examples of revolt-style personalities.

## 9.7 AREAS OF ORIGINAL ENTERPRISE THESIS EXTENSION

Major areas for extension of original enterprise mapping concepts include –

- Development of the Central Trigger concept as cognitive capital
- Code and domain extension and refinement
- Code items as a predictive model for individual performance

### 9.71 CENTRAL TRIGGER EXPERIENCE AS ‘COGNITIVE CAPITAL’

Understanding where ideas come from must surely be one of the urgent needs of human endeavour. In commerce, we need to create new strategically important approaches to world market conditions. In music the composer is seeking novel combinations of original themes and appropriate modern structures. In literature it is more the central idea of originality that baffles the writer than the actual construction of the work itself. In science we have had to learn to operate across the boundaries of established ventures to create original new programmes and in art the modern world is obviously seeking artistic themes which will capture the mood of today rather than echoes of the past.

The central trigger experience may be considered to be the ‘cognitive capital’ of original ideas. Evidence has been provided from poet Stephen Spender and filmmaker Steven Spielberg to illustrate the usage of trigger as a resource. There are obviously many more from Joseph Conrad’s reading by his father of *Travailleurs de la mer*, Robert Louis Stevenson’s childhood discovery of the *Treasure Island* and the destruction of E M Forster’s family home – all of which directly or in subsequent imagination provided the stimulus that directly aided and abetted their creative output.

Research suggests (Chapter 6.22 (i)) that most creativity appears to occur in a state of reverie or day dreaming where ideas and concepts freely associate to suggest new connections and associations. Probably the most important dream – reverie – in scientific history is August Kekulé’s discovery of the benzene ring. This incident occurred after Kekulé had been working on the problem of the structure of benzene for some time. He later wrote: “I turned my chair to the fire and dozed. Again the atoms were gambolling before my eyes. This time the smaller groups kept modestly in the background. My mental eye, rendered more acute by repeated visions of this kind,

could now distinguish larger structures of manifold conformation; long rows, sometimes more closely fitted together; all twisting and turning in snake-like motion. But look! What was that? One of the snakes had seized hold of its own tail, and the form whirled mockingly before my eyes. As if by flash of lightning I woke ....I spent the rest of the night working out the consequences of the hypothesis. Let us learn to dream, gentlemen, and then perhaps we shall learn the truth." (Koestler, 1964, p.118).

It is suggested that idea creation could readily be stimulated by the search of personal previous trigger experiences in an individual subject. The process of free-association made so famous in Sigmund Freud's psychoanalysis techniques, could also possibly be employed to encourage idea creation using this commonly occurring central trigger experience.

Between 1995 and 1997 the author of this thesis worked with the Singapore Science Centre, to reproduce this trigger experience in young persons encouraging hands on problem solving situations as a start up experience in science and technology. "Statistics show that a genius appears once in a population of two million. What is needed is a large pool of talented young people who see a strong correlation between a nation's prosperity and its commitment to a scientific education." (Singapore Beyond 2000, p.119)

Thinking laterally in conducive conditions is a practical way of imitating the largely 'chance' occurrence observed in so many biographical case histories. Singapore is a far-sighted example of a successful Republic with a positive attitude towards future developments.

#### 9.72 CODE AND DOMAIN EXTENSION AND REFINEMENT

This thesis has brought an extension of domains to include those of politics and sport, as separate original enterprise categories to consider whether similar behavioural characteristics exist between these new domains and those already included in this report.

Up to the current time, the following biographies have been scored using the same axial coding system as for the main 1999 study.

For the political domain the following have been coded:

Kemal Ataturk- Patrick Kinross 1999

Adolf Hilter – Brigitte Haman 1999

Abraham Lincoln – Jan Morris 1999

Karl Marx – Francis Wheen 1999

Charles de Gaulle – Aidan Crawley 1969

For the sports domain these will be included

Don Bradman – Charles Williams 1996

Greg Norman – Lauren St John 1966

Dawn Fraser – Harry Gordon 1979

Muhammad Ali – David Remnick 1998

Polly Farmer – Steve Hawke 1994

Some preliminary observations recorded from this extended investigation are given in the following sub sections.

### 9.73 SIMILARITIES BETWEEN MAIN 1999 DOMAIN CODING AND NEW DOMAINS

Close similarity and familiar codes in the new political and sports domains as discovered in music, creative arts, commerce, literature and science domains was observed as were different events, but once familiarity of these newer domains was achieved, similar coded dimensions were readily discerned.

Under different circumstances, Central Trigger experiences, exhibitionism, obsessive behaviour, isolated schizoid traits, personality dimensions of independence, enthusiasm, self-actualisation and nationalistic antecedents are readily identified.

The strongly egotistical behaviour of Charles de Gaulle would be scored as a further extension of exhibitionism (EXB), illustrating the similarity of codes in politics compared to the main body of the study involved in the 1999 study.

These observations which obviously require further research and validation are an important future direction for the study of original enterprise. Not being required to add new codes and constructs to this body of data suggests that we may now be able to produce a comprehensive, generally useful 'map'.

### 9.74 ROLE INFLUENCE CODE EXTENSION

The role influence code appears as a more extensive dimension in politics than was originally envisaged in this study. Chapter 5.31 (vi) identified numerous role influences identified by domain. The great preponderance of these role influences is complementary personalities who exerted direct influence on our biographical personalities.

Haman's (1999) well-documented biography of Adolf Hitler as a young man in Vienna illustrates the wider range of role influences than a focus on personality dimensions alone. For example she identified the direct influences on Adolf Hitler to include:

- German architecture (p.69)
- Elaborate State uniforms and processions (p.92,93)
- Social democratic press and similar literature (p.179)
- Theories of evolution where strong survive and weak succumb (p.203)
- National icons such as the eagle, swastika and Heil as a term of address (p.262)
- Anti-semitic literature (p.351)

It appears obvious that the original limitations of role influence dimensions need extension to the mapping of original enterprise dimensions. The basic code remains intact, but with an extended range of meaning.

#### 9.75 EMERGENCE OF MULTIPLE SELF-ACTUALISING CODES

During the main 1999 study the self-actualisation experience (SA) was considered to consist of a unitary self-determining code which was closely related to the psychological foundations of original enterprise behaviour. This singularity of experience may not be sustainable in the political and perhaps other new domains of original creative behaviour.

In the case of Kemal Ataturk, for example, the original self-actualising experience reported by Kinross (1999, p.22) related to his determination to be a "man of tomorrow" rather than of today. This and similar experiences determined his future as a military officer, his victories as "the hero of the Dardanelles and Gallipoli".

"The man of today stood for incompetence and corruption of an Empire in decline" (Kinross, 1999, p.23). "The man of the future rested on practical conceptions, translated into political and religious reform." (p.45).

Ataturk's second career and self-actualisation experience occurred when he 'changed course' from a soldier to a politician, culminating in his achievement as President of the Turkish Republic on 29<sup>th</sup> October 1923. "I'm not going to be Sultan, but am certainly to be head of this country" (Kinross, 1999, p.295). He claimed this constituting a second self-actualisation determination of his future objectives, and the 'resetting' of a new achievement path.

This change of direction and second self-actualisation coding also occurred in the case of Abraham Lincoln (lawyer to politician), Eisenhower (soldier to politician), Charles de Gaulle and numerous other cases to be studied in the second phase of the study of original creative enterprise.

Once again the code itself remains basically unchanged, but the singularity of this event in a new domain may be altered to encompass multiple SA experiences portraying a fundamental change of occupational direction.

#### 9.76 NEW DIRECTIONS FOR ORIGINAL ENTERPRISE STUDY

Extending coded biographical information into questionnaire format as a future post-doctoral project is designed to bridge the gap between what was essentially a study of previous original enterprise behaviour into the modern life of the 21<sup>st</sup> century.

In general terms there is now available –

- A large rich library of coded behavioural data as a databank of original creative enterprise.
- The prospect of further code definition refinements and extensions into new domains as reasonable achievable additions to this current study.

New research directions would include

- A factor analysis program which would refine code items and indicate both congruence and item reliability within this databank
- Questionnaire construction using factored items recast in indirect question form – similar to Cattell's (1968) 16PF test

Using both the author's previous experience in the design and validation of psychological tests in New Zealand and the behavioural clustering results of this present thesis, it is proposed to examine an original enterprise 'positioning' schema as the foundation for individual and corporate psychological guidance.

The core meaning of a psychological 'position' is a place or location of a behavioural construct. In social psychology, for example, position refers to a social class in a system of social relationships. In Lewin's field theory, a position is in 'life-space' where an event takes place. The psychological field is defined as a space construct in which descriptions of psychological behaviour may be ordered.

In a multiple-choice questionnaire, such as this future study proposes, a position is the tendency to select one choice area over another. It must be observed that such individual positioning factors need to be carefully controlled by randomising test items involved. It is also essential that the accumulated data be factored through computer-modelling analysis and subsequent interpretation.

Three dimensions are suggested as the reference points out of which an individual positioning guidance system could be determined. These dimensions are described in the following sections:

#### A DETAILED BIOGRAPHICAL ANALYSIS

Future biographical analysis could be constructed out of the axial coding system provided by this thesis. The most important biographical elements appear to be data derived from nationalism, childhood experiences and family influences. There is adequate data on the relative importance of each of these dimensions. Strong relationship between nationalistic themes, revolution, religious idealism and various schools of literature, science and creative art for example have already been well documented within this study. Childhood experiences especially the rare child prodigy phenomena, the more common central trigger experience of childhood bereavement, conflicts and trauma, as well as various role influences are also well documented.

From the original position of 'observers' of original enterprise behaviour it is now proposed to reassemble this data as a predictive positioning instrument. The final axial code grouping will involve the positive and negative role of mother and father on subsequent behaviour and their overall family influence. In this code grouping the author has had extensive experience in a Melbourne child guidance system and the practical application of Lewin's field theory as those apply to child behaviour. The questionnaire items here would be far more detailed and predictive than data arrived at from biographical information.

#### B ORIGINAL ENTERPRISE CLUSTERS

The second reference point would constitute the re-capitalisation of the four main behaviour cluster groups, using this data to reconstitute questionnaire items as briefly outlined in Chapter 8.2 onwards. The author's experience as a consulting psychologist and test constructor would be the original base of this questionnaire but would require more thorough analysis than has been entered into for this current study.

## C INTROVERT-EXTROVERT DIMENSION

Originally conceived by Jung (1921), this well-known behavioural dichotomy has been extensively documented by Eysenck (1952) using his own personality questionnaire and others. A study by Hammond and Edelmann (1991), for example, applied this dimension to a study of performing artists, Jung conceived the extroverted person as moving towards objects, while the introverted person was primarily moving away from objects in psychological terms.

The more common dichotomy revolves around reserve, schizoid characteristics for introversion and sociable, outgoing characteristics for extroversion traits. Sheffield 's (1982) studies with Databank Systems, Wellington, New Zealand identified high levels of deductive reasoning for introversion and superior verbal skills for the extroversion trait.

There is little doubt that occupational positioning and subsequent vocational choice have a close relationship with this introvert-extrovert dimension and should be included in this extended study program.

A future vocational guidance system would involve the collection of data summarised as A, B and C and extending this current study into new human resources dimensions

## 9.8 PROBLEMS IN STUDY EXTENSION

### 9.81 CODED BIOGRAPHIES NOT A REPRESENTATIVE SAMPLE

Even allowing for previous extensive consulting psychology experience, translating general principles of original enterprise clusters into real life scorable items is fraught with serious technical problems.

- The coded biographies do not represent a random or representative sample of original enterprise.
- The four largest groups in the sample may not be the four most common groups among exceptional people in general.

A comprehensive post-graduate study would require extensive additional research item construction and validation experience before this essentially academic study could be translated into a practical future form. In cooperation with the Department of Psychology, University of Melbourne, a two-year validation study is currently under consideration. The purposes of this extended study is to -

- Validate the concepts outlined in this study using a sample of commercial executives whose performance and enterprise skills are known by a variety of independent judges.
- Define an enterprise model and construct indices of variables
- Using a small sample of some 200 executives, program a pilot study with persons suggesting various levels of enterprise.
- Develop an appropriate computer programme based both on the results of this study and the experience of the author in executive selection and development.

The author of this thesis is optimistic that given adequate professional support from Massey and Melbourne Universities, practical and useful executive selection results may be achieved in mapping the concepts behind individual original enterprise.

## 9.9 DIRECT THESIS APPLICATIONS IN HUMAN RESOURCES MANAGEMENT

One of the primary visions of this thesis and its practical applications to human resources management is to identify and develop managers who can create and formulate fruitful commercial hypotheses and who can subsequently energise a succession of increased performances. To accomplish this objective it is necessary to develop a body of knowledge that will enable the improved selection and management of creative leaders. This thesis is of direct value to this prime objective.

A further objective is to effect a paradigm change in management thinking about creativity and its importance to our knowledge-based economy. The commercialisation of practical methods of achieving the selection and development of creative leaders is also envisaged as a consequence to this research programme. The need for an adequate scientific theory concerning original creativity is a prime requirement in our modern world, especially given the background of the new e-commerce revolution and the obsolescence of many previous established points of competitive advantage. Innovation is a key element in our evolving knowledge-based society and failure to recognise this trend may lead to obsolescence of organisations and their local communities.

This thesis is also directly concerned with providing a framework or map for superior performance and to develop better tools for performance management – seeking to select and develop exceptional people who can lead their organisation's evolution towards such outstanding outcomes.

The subject of creative enterprise has never been dealt with directly in executive selection. Current selection methods have been largely confined to measures of intelligence, personality and motivation.

By contrast creative enterprise is not a unitary dimension, but requires an integrated, holistic approach. Original enterprise data is derived from a collection of persons of significant innovative accomplishment whose original achievements have been coded and recorded.

Two streams of future research on innovation are proposed as follows:

- The development, testing and refinement of future creativity selection instruments.
- The development of an internet site for access by corporative human resources practitioners and professional clients alike.

Human resources management and our search for behavioural clusters that lie behind the phenomena of original enterprise are interlocking concepts. It has been the burden of this thesis to further define the latter as a complementary support framework for the former.

The thesis has opened the way for further expansion of original enterprise technology that is designed to enrich and expand the field of human resources itself.

## APPENDICES

### APPENDIX I

#### BIOGRAPHICAL CODE EXAMPLES

Steven Spielberg

Henry Ford

E M Forster

### APPENDIX II

#### CLUSTER ANALYSIS OF ALL CODES

### APPENDIX III

#### INDIVIDUAL CODED BIOGRAPHIES

Konrad Lorenz

Leonard Bernstein

Virginia Woolf

### APPENDIX IV

#### SUMMARY OF 100 BIOGRAPHIES SELECTED

### APPENDIX V

#### SUMMARY OF AXIAL CODES

APPENDIX I BIOGRAPHICAL CODE EXAMPLES

STEVEN SPIELBERG : 1946 -  
 SOURCE : ANDREW YULE 1996 : LITTLE BROWN COMPANY LONDON .  
 ISBN 0 316 91363 4

Page		
	"I use my childhood in all my pictures. My childhood was the most fruitful part of my entire life" Steven Spielberg	INS
2	Born 1946. Eldest of 4 children	SP Eldest
2.	At 7 years saw film <i>The Greatest Show on Earth</i>	CIM
3	<i>Snow White and Seven Dwarfs</i> film. Anxiety attack. Also on <i>Bambi</i> film	EMN
3	A walking basket of phobias and nerves! Terror of elevators	EMN CB
3	He enjoyed being scared. Creaking door, sense of dread. Imagination ran riot.	EMN
4	Failure at school, vomited over dissection	EMN
5	The Spielbergs are dirty Jews	N FACT
5	Poor school record	INQ 3
5	Inferiority complex over his nose	E-
6	Learning about Holocaust horrors	E-
7	Pranks to scare sisters	CST
8	Home movie with 8mm Kodak from father	CT
9	Felt a great release in Jules Verne's <i>20,000 Leagues Under the Sea</i>	SA
9	Became an applause junkie	CAP
9	Turned family home into miniature studio	CT
10	We are working for him. A little bully	IND
10	Earned money "tree de-bugging" for equipment	L
12	Divorce of parents – frightening	E-
13	Made UFO film <i>Firelight</i> from students at Arizona State University	A+
13	Made \$100 profit!	L
14	At High School, anti-Semitism drove him from school. I haven't forgiven any of them	CB
14	C average grades at school	INQ 3
14	Resented parents divorce	CB
20	Apprenticeship at Universal Studios	A+
23	<i>Night Gallery</i> film under his direction a failure	A-
22	He would be a serious film maker or nothing	IND
27	Spielberg was slowly learning his craft	AP

Page		
28	Spielberg never stopped looking for that special subject that would catapult him into features	AP
29	Film <i>Duel</i> was his ticket to the big screen	AHA
30	<i>Duel</i> one of the highest rated features in movies of 1971	A+
34	Second film success <i>California Split</i>	A+
35	I wanted to do something more personal	SA
40	Filming <i>Sugarland Express</i> with complete confidence! He was born with cinema knowledge	SA
41	<i>Sugarland</i> a flop.	A-
44	I'm not interested in making small critical successes!	IND
45	Origin of film success. Parents divorce and watching films etc	CB
47	<i>Jaws</i> terrified me, and I wanted to fight back	E-
48	Zanuck/Bronn team and Spielberg filmed <i>Jaws</i>	A+
54	Out of his mind with fear!	E-
55	<i>Jaws</i> would make or break him!	API
56	Filming my movie ( <i>Jaws</i> ) I became celibate, and a mad Dr Frankenstein	WW
61	Spielberg scares his sisters at home. Now he's scaring masses	INS
62	<i>Jaws</i> a \$260 million film. Better than <i>Godfather</i> and <i>Sting</i> !!	N ACH
71	<i>Close Encounters of the Third Kind</i> based on actual experience of meteor shower!	AHA
78	Saw <i>Close Encounters</i> as a child dream sequence!	INS
81	Nervous crying attack.	E-
82	Spielberg had a second huge hit.	N ACH
85	Affair with Amy Irving	AS
100	Failure of 1941 film	A-
104	With every film I find out a little more about myself	AHA
106	<i>Raiders of the Lost Ark</i> idea	INS
112	Never worked so hard in his life on <i>Raiders</i>	WW
119	<i>Poltergeist</i> also a childish fearful experience	CST
120	I wrote <i>Poltergeist</i> film in 5 days, 20 pages per day	WW
126	Idea of <i>ET</i> . The lost extra terrestrial from childhood - Winnie the Pooh	CST
127	<i>ET</i> was reaction to father walking out of family home!	CT
127	Relationship with Kathleen Carey	AS
129	Films drawn from painful childhood memories	CB

Page		
133	<i>ET</i> born from father he lost	INS
136	<i>ET</i> a tumultuous success	N ACH
154	Death on location film <i>Twilight Zone</i>	A-
169	Kate Clapshaw	AS
171	Steve Ross a role model in films and business manager	RI
187	<i>Temple of Doom</i> , <i>Mrs Doubtfire</i> films, and 9 months	A+
188	Marries Ami Irving	AS
196	Failure of <i>Amazing Stories</i> films	A-
203	<i>The Colour Purple</i> - a black story - by Whoopi Goldberg	A+ RI
211	Children always slay our dragons (in films), wake up from nightmares and its easy to tell the good guys from the bad guys	INS
222	Arrival of his son changed Spielberg's working habits	E+
226	<i>Empire of the Sun</i> film not successful as others ( <i>ET</i> )	A-
231	Re-emergence of Kate Clapshaw	AS
236	Sean Connery plays <i>Indiana Jone's</i> father	A+
255	I always played to adult audiences who were able to remember their childhood!	INS
271	Pre-nuptial agreement with Clapshaw = \$2m+	L
273	<i>Schindler's List</i> based on parents "great murder" references	INS
275	I had to "grow into" the idea of <i>Schindler's List</i>	INS
275	<i>S.List</i> a real strong wake up call	E+
276	Spielberg discovered his Jewish heritage	N FACT
278	Filming <i>Jurassic Park</i>	A+
280	I don't look at sad, ugly things often	E-
281	Death of Steve Ross, his business manager	A-
282	Modelled Oskar Schindler on Ross	RI
283	Ben Kingsley OS's accountant	RI
284	Spent 5 months filming <i>Schindler's List</i> - sick in my stomach	WW
285	Filmed <i>Schindler's List</i> in a state of rage!	EML
285	I haven't laughed in seven weeks!	INS
287	<i>Schindler's List</i> was the "defining experience"	SA
288	<i>Schindler's List</i> will be the most important movie ever made - remind us about the dark side and the green monster lurking somewhere!	SA
292	My problem is that my imagination won't turn off. I wake up so excited, I won't eat breakfast.	ENTH

Page		
293	Filmed <i>Casper</i>	A+
298	Established The Jewish Survivors Foundation	A-R
303	I want to start something great - a brand-new motion picture animation television and multi-media entertainment company	SA
303	Dreaming of starting a brand new studio from scratch	SA
304	Happy marriage to Kate Clapshaw	AS
305	I want to be a co-owner	IND
308	Needed to find \$100 million for the studio	L
313	After initial stage-fright, Spielberg was proceeding with these grand schemes like some super-confident colossus	N ACH
320	Walk out on the Japanese [Matsushita]	IND
340	Sued by Denis Hoffman	A-
360	My best films are yet to come!	AP

APPENDIX I BIOGRAPHICAL CODE EXAMPLES

HENRY FORD : 1863 – 1947  
 SOURCE : FORD. THE MEN AND THE MACHINE : ROBERT LACEY  
 HEINEMANN : LONDON 1986

PAGE		
4	Family came from Ireland in 1832	FG
4	Settled in Dearbornville, near Dearborn	FG
5	Built a log cabin	FG
6	Born June 30 1863 eldest child	SP eldest
6	William Ford, a man of substance (farmer): several hundred acres	FM
6	HF went through life as a loner	ISO
8	Idolised his mother	RM
10	Became a passionate watch repairer	ST
11	Penchant for tinkering	ST
11	Mother died at 37: childbirth: great shock	CB
11	Revered his mother's memory as a fixation	OBS
12	Clean factories due to mother's memory	.ST
12	I have tried to live my life as my mother wished	RM
12	Steam engine propelled by own power, I remember that engine 47 years later as though I had seen it yesterday	CT
13	Engine was his Road to Damascus experience	CT
14	Father wanted Henry to go on to Farm. Conflict. Henry worked with tools	FM
15	Farm workshops best in neighbourhood	ST
15	Father's hostility drove HF from home (Oedipus)	FM
16	Apprenticeship in machine shop	A+
17	Father supportive of HF	FM
23	Chicago centre of inventiveness, Buick etc	N FACT
23	Nothing could beat the right machine	INS
24	Repaired watches. No work with interest is ever hard	AHA
25	Returned to farm until 30 years old - a farmer with a bent for mechanics	A+
26	Built his own steam engine	N ACH
26	You can take the boy out of the country, but you can't take the country out of the boy	INS
26	The old steam engine constructed in honour of his mother's image – his Rosebud CIM	
30	Met and married Clara Bryant	AS

Page		
34	Although a farmer, it was his machines he loved	E+
36	Fords achievements built on work of others – Wright Bros, Edison etc	RI
38	Built his first petrol engine	A+
39	Contacts with King and others crystallised his thinking - inventiveness an undying essence	SA
40	Bursting with enthusiastic ideas	.ENTH
40	His ambition is to reduce work on farms	SA
41	I want to build a gasoline engine	AP
48	First auto running through Detroit @ 25 mph	N ACH
50	Withdrew from backers because could not get his way	IND
54	HF loved gadgets and showed Edsel how to do it	E+
53	Built a racing car	A+
54	Car aimed at basic simplicity	AHA
57	Won car race	A+
58	Believed in incarnation	AR
58	His great gift was to make complex things simple	AHA
62	500 US Coys formed to manufacture autos	N ACH
63	The 999 was largest and most powerful US car made	A+
66	Detroit manufacturers fed on each other	.RI
67	Detroit buzzing with economic success	N FACT
69	Improvement of vertical rather than horizontal engine	AHA
71	Model A created	N ACH
73	Ford motor coy virtually bankrupt 1903	A-
74	Dr Pfenning purchased first Model A	A+
75	Ford employed 300 men	A+
76	Creation of network of agents	A+
77	HF now a captain of industry	N ACH
79	Marketing the key to business success	INS
79	Suspicious of upper classes	L
81	Began own body manufacturing	A+
82	Control over Ford absolute	IND
83	HF a witty man	.ENTH
84	The cheap car was secret of Ford	AHA

Page		
84	We must get the car to the multitude - so low in price that every man can own one	SA
87	We wish to share the joy of machine with the world	ENTH
87	Alloy of vanadium best metal for HF car	INS
88	Mass production a long-established US tradition	N FACT
89	Education highly over rated	E-
91	Model T built with vanadium!	N ACH
91	Sat in rocking chair discussing ideas	ENTH
93	Worked 42 hours without let-up	Ww
93	Had complete control of company	IND
93	Threw himself into every detail of car	Ww
94	Model T sturdy, power, good value	A+
95	Simplicity was guiding principle	AHA
96	Model T had 5000 additional items which could be bolted to car	A+
97	We loved Model T. Made 15 million	E+
98	Largest car manufacturer in world	N ACH
110	At 50 he was intensifying work program	Ww
111	Created bird sanctuaries/wildlife interests. Bird watching and ornithology	OBS
112	Influenced by Thomas Edison, John D Rockefeller and Henry Thoreau, Ralph Waldo Emerson	RI
113	A restless spirit	EML
113	Concentrating on saving costs	L
112	Paying unheard of figure of \$5 a day!	A+
127	Concerned with social responsibility	AR
129	Mass production is slave driving!	INS
146	Peace ship an impressive failure	A-
146	Became increasingly suspicious and embittered	L
149	New home designed by Frank Lloyd Wright	A+
159	Edsel more humane than HF but did not have independence of spirit	INS
165	HF immensely alive and keen	ENTH
172	Resigned in favour of Edsel 1918	A+
179	Dark and terrible side of HF	A-

APPENDIX I BIOGRAPHICAL CODE EXAMPLES

EDWARD M FORSTER  
A BIOGRAPHY 1879 — 1970 : NICOLA BEANMAN : HODDER & STOUGHTON, LONDON  
1993 ISBN 0 340 52530 4

PAGE		
	The destruction of his family home created a sense of loss and a shared deprivation understood by millions in Britain.	
4	Marylebone Station demolished 1129 houses and displaced 11,000 people	REV
	A constant theme in his work was the importance of an ancestral home and the need to cherish it	CT
5	To be parted from your house is worse than dying	CB
6	The house where he was born was rubble	CB
6	The sense of loss never left him, a shared deprivation understood by millions	OBS
7	<i>Howard's End</i> and <i>Passage to India</i> same theme- no resting place	OBS
8	1879 Born Morgan Forster - eldest	SP
9	Mother Marianne turned out of her home. Morgan first learned to associate leaving houses with unhappiness	CB
26	Yet another house where ancestor's had loved was now ended	OBS
27	Mother Lily a widow - lived alone with Morgan and devoted herself to him	RM
28	Morgan could go through life knowing he never need earn a penny	E+
37	Rocknest House (near Woburn) remained throughout life as his ideal paradise	E+
38	Not easy to see how a house had so much influence on a child	CB
39	Isolated as a child. The move from Rocknest sets him apart	ISO
39	Homesick for Hertfordshire - almost an illness	EMN
40	He loved the house with passion	OS
40	His love for Rocknest determined his dislike of loud mouthed and ostentatious	OS
41	Life in the country is more 'real'	INS
43	He departed from paradise	A-
44	The boy grew up in great loneliness	ISO
44	Had few friends of his own age	ISO
45	Ansell was my first friend	RI
45	Favourite book was <i>Swiss Family Robinson</i>	RI
46	Became aware of his sexuality and preference for men	AS
48	Played with an older man	AS
53	The destruction of the life of tradition	OBS
54	Remained an outsider at Tonbridge (school)	ISO
60	Close friend in Reginald Tiddy	RI
61	Had a sexual relationship with another man	AS
67	Won English essay prizes every year	INQ5
67	Wondered whether he might be a writer	AP
71	Ida Darwin encouraged him to be a writer at Cambridge	RI
74	Morgan never spoke a word during meeting with King's Vice Provost	ISO

Page		
76	An appalled view of English suburban life	E-
80	At Cambridge - Why shouldn't I write?	SA
81	He was happy at Cambridge	E+
85	As part of Bloomsbury group he was always shy and on the edge	ISO
87	Gained second in Classics Tripos	INQ5
88	Began to write first novel <i>Nottingham House</i> at 21 years. The <u>mark</u> of genius is unmistakable	A+
93	Friendship with Hugh Meredith Hom akin to a love affair	AS
93	Real friends were few	ISO
94	Strong mother associated with homosexuality	RM
100	Travelled to Florence with mother	RM
10	Mother's solitariness resulted in Morgan's loneliness	ISO
101	Too weak and depressed to break with mother	EML
102	He was trapped	E-
103	Never felt sexual desire for a woman	E-
105	Mother made him lease things to keep him	E-
107	Depression and mother held him in their grasp	EML
108	1902 Wrote first complete short story	A+
112	Suddenly the first chapter of the story rushed into my mind	AHA
112	Used a direct conversational style of writing	A+
114	The East revealed to Morgan the potential of sensuality	OS
115	Lust was always lurking inside my head	OS
115	At 50 or 60 sexual images continued to spin around my brain	OS
116	Morgan was frightened of women	E-
117	Realisation that he would never marry	INS
118	Dust for him was a symbol of sexual unhappiness	INS
120	Any act of indecency constitutes a crime	A-
128	Worked steadily on <i>Old Lucy</i> in Greece	Ww
131	Writing made him happy	Ww
135	The writer found himself and his personality	AHA
144	If you were an invert, you were anti-God, anti-Society, anti-respectability	REV
147	I'm going to be a minority if not a solitary	ISO
149	Habit of long, solitary walks	ISO
152	The <i>Longest Journey</i> story based on Stonehenge	INS
158	Wrote <i>Where Angels Fear to Tread</i>	Ww
159	I'm having a very difficult life. Never came in contact with anyone's work	ISO
160	At Bloomsbury full of experiments and reforms	REV
161	I am very often home for weekends	ISO
161	At last an active homosexual - escaping from 70 year old mother	AS
163	Success at friendships slowed creative writing	INS
163	Finished <i>Where Angels Fear to Tread</i>	A+
164	The inhibited values of suburbia versus warm lack of Italian inhibition	REV
166	When he became farmer, nothing about him would change	E+
175	At Nassenheide, Germany he stayed. Liked an ancestral home	E+

Page		
177	It was accepted that he could write	AHA
179	<i>Longest Journey</i> = loyalty versus convention and self interest. Countryside versus suburbia	INS
182	In love with Indian, Ross Masood	AS
193	Quicker and quicker the writer works, his head grows hot, he spoils his lunch, lets out the fire	Ww
199	Human beings must not abandon houses, they must indeed be sensitive to their spirit	OBS
203	<i>A Room with a View</i> earned £5,000	L
210	He wanted someone to love, but would not stray beyond the confines of his world to find them	E-
214	<i>The Machine Stops</i> story based on Wright Bros first flight	INS
217	<i>Howard's End</i> his best novel to date	N ACH
230	<i>Maurice</i> novel an <u>exorcism</u> against homosexual love	AS
239	A period of depression	EML
246	Loss of father left a void in his life - cause of his writing and making a vocation of unhappiness	CB
241	Might have TB - his father's disease	A-
245	In love with Indian Masood	AS
266	Mother dominated him in youth. Manhood would bring emancipation	AHA
271	Preferred to read rather than talk	ISO
276	<i>A Passage to India</i> What happened in cave? A symbolic story	INS
279	Caves are cruel, obscene things	OBS
281	Lily (mother) always wanting me to be 5 again	RM
283	Writing <i>A Passage to India</i>	Ww
293	All I cared for in civilisation is gone forever	OBS
299	In love with Mohammed el Adl	AS
300	First full sexual experience in 40 <sup>th</sup> year	AS
307	Seduced an 18 year old Hindu - first regular sex he had had	AS
318	Search for a more lasting home, obsessed him throughout life	OBS
322	Cave experience in <i>Passage to India</i> was central to his novel and life	CT
327	<i>Passage to India</i> was his greatest novel	PERS
330	For <i>Passage</i> Morgan received his whole inspiration - a vision, a kind of plot all at once	AHA
333	Morgan's life as a novelist was over	A-
334	He regretted his childhood	E-
336	He was famous, wealthy miserable and ugly	E-
340	Now independent of his mother	A+
343	Houses, houses, houses, you cam from them and you must go back to them! A major theme of his life	OBS
345	18 lovers in total, including Harry Daley and Bob Buckingham	AS
352	I am happier now than ever in my life	E+
355	Supporting Liberal causes	AR
360	Forster never got farther than warming the tea pot (limited in sex)	AS

Page		
363	Morgan's shyness made Stephen Spender uncomfortable	ISO
363	The real joy of friendship was in letter writing	ISO
364	Mother died at 90	A-
367	Morgan represented civilisation - Liberal, intellectual observer	AR
367	I do not belong here at all	ISO
372	Died of stroke in 1970	A-

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 9	Cluster 7	Cluster 8	Cluster 10	Lorenz	Bernstein	Woolf
Number of Cases	12	29	12	20	4	4	7	3	3	3	1	1	1
Average Proportion of ... (x 20)													
A+	<b>5.22</b>	2.21	<b>3.19</b>	<b>2.71</b>	2.17	1.32	0.98	0.97	2.01	2.59	3.28	2.38	0.95
A-	1.81	1.43	<b>2.35</b>	<b>2.00</b>	1.78	1.52	0.97	<b>2.36</b>	<b>1.31</b>	1.37	0.66	0.95	0.76
Work Frenzy	1.40	<b>2.70</b>	0.95	1.00	<b>1.71</b>	1.18	<b>1.55</b>	0.50	<b>0.64</b>	1.11	0.00	0.48	2.29
Insight	1.22	0.94	<b>2.20</b>	0.67	1.22	<b>3.61</b>	1.40	<b>1.95</b>	0.25	1.06	4.59	0.95	0.95
Sex Act	0.60	1.17	0.56	<b>1.79</b>	0.59	0.40	<b>2.95</b>	1.56	<b>1.76</b>	0.36	0.33	0.00	2.67
Obsession	0.25	1.00	0.49	1.34	0.65	1.04	1.40	<b>1.58</b>	<b>6.28</b>	0.78	1.97	0.48	0.00
Independence	0.77	<b>1.28</b>	1.14	<b>1.27</b>	0.73	<b>1.71</b>	0.79	0.68	0.39	0.79	1.31	0.95	0.00
Role Influences	<b>1.39</b>	1.15	0.51	1.28	0.83	0.29	0.42	<b>1.43</b>	0.76	<b>1.37</b>	0.33	3.81	0.00
Self Actualisation	<b>1.31</b>	1.04	1.00	0.94	0.54	<b>1.21</b>	1.19	<b>1.57</b>	0.51	0.94	0.98	0.95	0.57
Family	0.79	0.77	0.83	0.69	0.44	0.43	<b>1.13</b>	<b>2.47</b>	0.84	<b>1.20</b>	0.66	3.33	1.71
Achievement	0.75	0.81	<b>1.60</b>	0.77	0.34	0.18	0.38	<b>1.09</b>	0.81	<b>1.25</b>	2.95	0.48	0.76
Minor Emotional	0.23	0.82	0.29	1.01	<b>2.14</b>	<b>1.28</b>	<b>1.14</b>	0.82	0.87	0.10	0.00	0.00	0.38
E+	0.28	0.99	0.57	0.57	<b>1.36</b>	<b>1.53</b>	<b>1.12</b>	0.55	0.56	0.42	0.33	1.90	0.76
E-	0.36	0.68	0.69	0.61	<b>1.03</b>	<b>2.09</b>	<b>1.98</b>	0.54	0.50	0.10	0.00	0.00	1.14
Perservation	<b>0.98</b>	0.55	0.22	<b>1.14</b>	0.20	0.14	0.32	0.69	0.25	<b>0.91</b>	1.31	0.48	0.00
Persistence	<b>0.87</b>	0.49	<b>0.82</b>	0.39	0.47	0.39	0.51	0.34	0.20	<b>2.95</b>	0.33	0.95	0.38
Enthusiasm	0.38	<b>0.84</b>	<b>1.24</b>	0.33	0.60	<b>0.66</b>	0.33	0.10	0.00	0.30	0.33	0.48	0.95
Ah Ha	<b>0.72</b>	0.40	<b>1.07</b>	0.48	0.29	0.62	0.48	0.48	0.28	<b>1.74</b>	0.66	0.00	0.00
Emotional Disturbanc	0.20	0.31	0.14	0.32	<b>2.62</b>	0.31	<b>0.78</b>	0.27	<b>1.61</b>	0.00	0.00	0.48	5.33
Hobbies	<b>0.47</b>	0.40	0.13	<b>0.68</b>	0.29	0.07	0.17	0.07	0.17	<b>0.66</b>	0.00	0.95	0.38
Incidence of ...													
Central Trigger	<b>100%</b>	76%	92%	60%	<b>100%</b>	50%	57%	67%	67%	<b>100%</b>	100%	100%	100%
Nationalism	83%	66%	83%	70%	50%	50%	57%	<b>100%</b>	<b>100%</b>	<b>100%</b>	100%	100%	0%
Competitive	58%	52%	<b>100%</b>	<b>90%</b>	25%	25%	43%	0%	<b>67%</b>	33%	0%	100%	100%
Isolation	50%	62%	25%	<b>75%</b>	<b>75%</b>	<b>75%</b>	71%	67%	<b>100%</b>	33%	0%	0%	0%
Bereavement	<b>75%</b>	41%	<b>83%</b>	70%	25%	25%	<b>71%</b>	33%	67%	33%	0%	0%	100%
Dominance	42%	66%	58%	<b>70%</b>	<b>75%</b>	0%	14%	<b>67%</b>	0%	<b>67%</b>	100%	100%	0%
Ideals	<b>58%</b>	31%	<b>92%</b>	55%	25%	<b>75%</b>	57%	33%	33%	33%	100%	100%	0%
Revolt	42%	<b>66%</b>	25%	45%	50%	25%	57%	<b>67%</b>	33%	<b>67%</b>	0%	0%	0%
Exhibitionism	25%	31%	17%	<b>65%</b>	0%	<b>50%</b>	0%	33%	<b>67%</b>	0%	0%	100%	0%
Child Prodigy	<b>50%</b>	<b>38%</b>	8%	25%	0%	0%	29%	0%	<b>33%</b>	0%	0%	100%	0%
School	<b>33%</b>	21%	8%	<b>40%</b>	0%	0%	14%	<b>33%</b>	0%	0%	0%	0%	100%

APPENDIX III INDIVIDUAL CODED BIOGRAPHIES

KONRAD LORENZ 1903 — 1975

SOURCE: KONRAD LORENZ A BIOGRAPHY BY ALEC NISBETT 1976  
LIBRARY OF CONGRESS CATALOGUE A HELEN & KURT WOLFF BOOK

Page		
7	Konrad Lorenz is the father of Modern Ethology	N ACH
13	Vienna, a bustling metropolis of ideas	N FACT
14	Adolf Lorenz, distinguished hip joint orthopaedic medico. Strong influence on Lorenz	FM
15	To be a great gentleman you must have two gloves. Find the 2 <sup>nd</sup> glove	FM
16	Adolf a collector of art pieces	OC
18	Kept first pet bird or Jackdaw at age of 10	ST
19	Unusual hobby of Lorenz – river fish, crustaceans, crocodile, dog etc	CT
20	An animal <u>collector</u>	OC
20	At age of 6 started with a duckling :early imprinting experience	CT
21	A lifelong endeavour is fixed by one decisive experience in early youth	CT
21	Fell under the influence of the imprinting concept that has dominated his whole life	SA
21	The boy <u>decided at once</u> to study evolution and to become a palaeontologist	SA
23	Developed a hearty admiration for self-taught man (future father in law)	RI
23	Literature on animal behaviour came by self-teaching	A+
23	Seeing waterfowls and crustaceans under magnifying glass sealed his fate – a turning point in his life	CT
23	Went through the collecting phase	OC
26	Son defied his father and enrolled at Columbia University	IND
28	A Jackdaw launched his career as a student of animal behaviour	CT
30	Birds main object of his study – more immediately intelligible to man	A+
32	I intend to start a colony of tame jackdaws	A+
33	Set a target of making a name for himself in three years	SA
32	Also kept herons	OC
36	Konrad contends that human psychology has much to learn from animal psychology	INS
36	Most productive years were 23 – 30	A+
37	In each separate species there is a characteristic system of action	INS
39	A vigorous, aggressive attitude to world about him	D
41	My wife and I were more or less siblings	AS
43	Working with geese, relaxed, confident and in harmony with life about him	E+
45	Goslings implanted on Lorenz as the parent	N ACH
47	There is all animal in man, but not all man in animal	INS
57	It is to him that we owe our knowledge of releaser and imprinting mechanisms	N ACH
58	A near irreversible fixation of a drive upon its object	INS
60	He wanted to call away mallards and by mistake had addressed them in greylag language	A-
62	Lorenz had a perversion for geese	OBS
63	1937 book " <i>Establishment of the Instinct Concept</i> " – gained him his second glove	N ACH
67	Clicked with M Nikolaas Tinbergen	RI

Page		
67	Ph.D. only 32 pages!	N ACH
69	Lorenz a good hunch producer, inbergen an excellent experimenter RI	
69	Lorenz domineering, Tinbergen paternalistic	D
69	Offered post of Professor of Psychology at Albertus University Königsberg	N ACH
74	Vigorous, assertive manner	D
74	Extended theory of animal behaviour	A+
75	Book on cognition " <i>Behind the Mirror</i> "	N ACH
77	Book 1963 " <i>On Aggression</i> "	A+
79	Drake tried to copulate with his boot – a fetish substitute	INS
82	Proposed the existence of certain innate schema	INS
99	Wrote and illustrated many popular books such as " <i>King Solomon's Ring</i> "	A+
108	Studied the code of bees dancing language	AP
114	A single room doubled as Lorenz's bedroom plus 70 fish, ducks, geese, 30 songbirds	OC
115	Talked with his customary enthusiasm	ENTH
117	Developed his ideas on the nature of instinct	A+
123	Chrono biology became a mini-science in its own right	AHA
124	Loving care in childhood similar to animal behaviour	INS
131	Lorenz against behaviourism (JB Watson)	A-
136	Behaviourism ignored the major role of instinct	INS
138	Conditioning only operates in a laboratory	INS
148	Some of my allies make me squirm	IND
155	The song of the Nightingale is a battle-cry	INS
157	Aggression arises spontaneously and seeks discharge	INS
170	K Lorenz is a revolutionary	REV
171	Behaviour is governed by the rule of insight	INS
176	We are over-populated, destroying our environment	AR
184	Lorenz science is resolutely descriptive, not numerative	IND
185	Never drawn a graph in my life and damned proud of it!	IND
185	Advance in science is by scientific reduction	INS
189	A strong theory is one that you try to disprove	INS
190	Lorenz method is to observe and the reflect	A+
193	A pattern emerges suddenly — AHA!	AHA
199	1973 Nobel Prize achieved	N ACH
212	The subjects of his later books were on cognition, human knowledge, philosophy of science and the condition of man	PERS
215	At 70 he busied himself briskly	PERS
220	Re-immersed in his original world of animal studies	PERS
222	That rascal gets the Nobel Prize for jackdaws! (Father Adolf)	N ACH
223	Plans a Nobel lecture	A+
224	At 70 his eyes alight with work still ahead of him	PERS

APPENDIX III INDIVIDUAL CODED BIOGRAPHIES

LEONARD BERNSTIEN : 1918-  
 JOAN PEYSER : BANTAM BOOKS, NEW YORK, 1987

Page		CP
p14	All my life an old man has stood in my way!	FM
15	What Bernstein did above all else was to prove that an American... could be an exciting musician.	N.FACT
16	A complicated man riddled with stresses and tensions that survived psychoanalysis	EMN
16	Most renowned for West Side Story	N.ACH
16	At 70 continues at a frantic pace conducting, lecturing, proselytising and composing	PERS
16	Smokes and drinks heavily and is sexually promiscuous	CA
16	Biographers may be tempted to invent or conceal. But Bernstein's life is so rich, no temptation at all.	INS
19	Negative image of father is incorrect	FM
20	Had love of sister and mother	FG
20	Born 1918. Eldest	SP First
21	Conflict over name. Lennie or Louis?	ST
21	Leonard is a great musician. A Renaissance man. Writing a book about him is like ... Einstein	A+
22	Discovery of the piano, changed him overnight	CT
22	It was his discovery of the piano that transformed him from a frail nobody into a powerful human being capable of conquering the world	CT
22	He made love to his piano	E+
22	Started to reconstruct popular melodies in his head	SA
23	Learned to read music very quickly	A+
23	Jennie encouraged him (mother)	RM
23	Started composing at 12	CP
23	He always wanted an audience	CAP
24	Brother and sister relationship strong	FG
24	Father bought a grand piano for Lennie	FM
24	Played Beethoven and went to Boston Pops concert	CIM
25	Formed a music club	CIM
25	Ramin and Lennie inseparable	RI
26	Conflict between Sam and mother. Lenny was a mother's boy	RM
26	Bernstein <u>intolerant</u> of sister's mistakes	D
27	Discovered music theatre and sex with maids	AS
28	Jazz was the centre of early teens	N.FACT
29	Relationship between father and son combative	D

30	Bernstein attracted rich patrons in music	RI
31	Continually on the move	A-
32	Bernstein was an honour student in Boston	INQ 5
33	B had stunning facility for sight- reading	A+
34	I am so jealous of conductor Koussevitzky	L
35	Close friend of Aaron Copland	RI
36	Immense joy in his music making	E+
36	Resisted all discipline, and avoided pedagogue demands	IND
38	Refused to be intimidated, including father	IND
42	Had a particular notion of essence of American music	N.FACT
43	Emulated George Gershwin	RI
43	Adored Gershwin. Went ape over Porgy and Bess	E+
47	We ignore 1st rate Americans and celebrate 10th rate European	N.FACT
48	Bernstein tries to become a serious artist	AP
48	Wanted a place in history	AP
48	Copland was single most important influence on American art music in 2nd third of century	RI
50	Bernstein a PH, ie a phoney homosexual	AS
50	Life-long influence with Copland	RI
51	Copland suggests conducting as a career	INS
53	Met and influenced by Mitropoulos	RI
54	Papa I am going to make music my life - promised job in Minneapolis Symphony	SA
58	Was handsome and brash	D
63	Increasingly attracted to conducting orchestra	E+
67	He was very brash	D
69	Conducting meant applause and adoring crowds	EXB
69	Joins Koussevitzky's class	A+
72	Became friends with K	RI
74	I am so thrilled. Never been more happy	ENTH
75	We've been working very hard	WW
77	Brasher than ever	D
78	An uncanny musical memory	A+
81	Long-standing asthma	A-
82	His homosexuality banned him from Army	AS
90	Verged on relationship with women but unsuccessful with them	AS

92	Depression over not in Boston Symphonia	EML
93	Could not find anything to do!	EML
95	Assistant conductor at New York Philharmonic	A+
103	Suddenly I was famous all over America (replaced ailing conductor)	A+
104	Conducted without a baton	INS
105	Has chutzpah, fresh and aggressive	D
108	Fell in love with Jennie Tourel	AS
108	Lenny had an unerring sense of newspaper headlines	EXB
109	He works too hard. He overloads himself	WW
109	When activity placed him in the limelight he couldn't get enough of it	EXB
112	He would conduct at the Philharmonic as a guest conductor	A+
112	Jenny (mother) said Bernstein had begun to compose at 12	CP
114	First large-scale work scored for orchestra was Jeremiah	A+
120	That frenetic way that characterised Bernstein's life	WW
122	Fancy Free was dance more than 160 X	WW
122	From the beginning B's income was around \$75,000	L
123	Psychoanalysis became a lifelong addiction	OBS
123	Predominantly homosexual, was drawn to both men and women	AS
124	Remained devoted to Drs Horowitz and Gaylin - psychoanalysis	OBS
125	Uncomfortable about wasting time	WW
126	Seems to overcommit himself	WW
133	Conducting remains a constant in his life	SA
136	B still not decided to be a composer or a conductor, a jazzman or a classicist	AP
143	Most artists at Tanglewood were homosexual	AS
145	Fell in love with Felicia Montralegre	AS
148	Back living life of homosexual - short-timer relationships	AS
153	40 Israeli concerts in 60 days	A+
153	Felt big excitement in Israel	ENTH
155	Identified with his Jewish heritage	N.FACT
156	Colour and drama in everything he did	EXB
157	Bernstein's God was on B's side. Reassured him that he was in touch with God.	AR
158	Deep connection with God and Religion (Jewish)	A-R
163	Engagement broken - remained homosexual	AS
169	"Friendship" with Harvey Propper	AS
171	Never able to tolerate attention being drawn away from himself	EXB

173	In late 1940's B was homosexual, vulgar, flamboyant musician	A-
184	Working nonstop producing his best work	WW
187	Idea of Romeo & Juliet set in slums of Brooklyn	INS
216	New York Philharmonic engaged B for 1957/58	A+
229	Created West Side story, symphonic and balletic	N.ACH
233	3% fee for music of Maria	L
233	The better a conductor, the harder it is to be a composer	INS
234	In constant contact with lyric-writer, Sondheim	RI
242	West Side story Bernstein's finest work	N.ACH
243	Appointed conductor of NY Philharmonic	A+
276	Bernstein becomes a prominent spokesman for American power and culture	N FACT
273	Chutzpah or cocky aggression is most common characteristic of Bernstein (Kennedy)	D
277	Elated and excited when conducting in the limelight	EXB
283	B had the most remarkable career in the history of music	A+
289	Only unfaithful with men, not with women (when married to Felicia)	AS
311	B's hunger for love his most important factor	E+
318	Homosexual relationships with number of Chilean men	AS
319	Instead of thinning out in texture, in time Bernstein's life thickens	PERS
331	Visibility always a critical issue with Bernstein	EXB
344	Father died - The most important event, the most poignant loss in a man's life - Sigmund Freud	A-
346	Bernstein is a phenomenally fast worker	WW
371	As he moved away from entertainment to pontification, Bernstein's failures grew	EXB
376	He loved to conduct	EXB
379	He became an international star, eclipsing all other living conductors	A+
380	The most successful conductor in the Us - 200 records	N.ACH
382	Carmen sold 100,000 copies!	L
383	Performance income surpassed any other conductor in US	L
388	Adamant about being Jewish	N.FACT
399	Always surrounded by crowds of young homosexual men, devoted to serving him	A-
	Never able to tolerate anyone else getting the spotlight	EXB
404	Bernstein's quest for money and power	L

APPENDIX III INDIVIDUAL CODED BIOGRAPHIES

VIRGINIA WOOLF : 1882 – 1941  
 SOURCE : VIRGINIA WOOLF : A BIOGRAPHY VOL I & II QUENTIN BELL  
 HOGARTH PRESS 1973

PAGE		
5	Father campaigner against slavery	FM
5	Father, Sir James Stephen, desperately shy and intensely pessimistic. Terrified of being comfortable	FM
5	Family rigidly puritanical. No balls or theatre	FG
6	Rejected arts and literature	FM
19	All family were writers	FG
23	Vanessa to be painter; Virginia a writer	SA
25	Virginia was family story-teller	CT
26	Virginia preferred father to mother (Electra)	FM
28	Virginia produced newspaper when 9	CIM
29	Virginia enormously sensitive to criticism	EMN
35	V's life <b>threatened</b> by madness, death, disaster	EML
35	Laura a mad sister	FG
35	Uncle went mad	FG
39	Mother died when V was 13	CB
40	Her death was the greatest disaster that could happen	E-
41	Stephen (father) embarrassed his children - groaned, wept, wished dead	FM
43	Half brother, George molested sisters	AS
44	V's first breakdown after mother's death	EMN
44	George molesting Virginia	AS
45	V becomes schizoid - voices, depressions, read feverishly	EMJ
48	V keeps diary and reads	CIM
57	Stella (sister) died!	A-
58	V suffers from ghastly mourners	A-
61	V is lesbian love with Madge	AS
71	Falls in love with Jack. Ex husband to Stella	AS
83	Lesbian love affair with Violet Dickinson	AS
86	Father died	A-
87	She begins to write about father	CST
88	Her grief was feverish, morbid, tried to prove nothing wrong with me	EMN
89	Desperately anxious to be at work	Ww

Page		
89	Nervous breakdown - schizoid	EMJ
90	She was impatient to start writing again	Ww
118	All her passions were for own sex not men	AS
123	Beginning of Bloomsbury period (1907)	SCH
128	Most of young men she were interested in were buggers	AS
129	Lyton Strachery - the arch-bugger of Bloomsbury	AS
139	Virginia busy with novel and journalism	Ww
142	Life is very exciting - how I wish I could write a novel	AP
15	A typical Bloomsbury party	A+
148	Her imagination was furnished with an accelerator and no brakes. She parted company with reality	ENTH
153	She was always busy working on her novel and journalism	Ww
162	1910. Finished her novel and on verge of madness	EMJ
162	Insomnia, nervous irritation, rejecting food	EMJ
164	Admitted to Burley, Cambridge, an exceedingly difficult patient	EMJ
165	Manic depressive, bi-polar	EMJ
170	A Bloomsbury wild party, stripped to waist	AS
174	Bathed naked with Rupert Brooke	AS
176	29, unmarried, a failure, childless, insane and no writer	EML
183	Working on a novel; living quietly	Ww
187	Married Leonard Woolf - a penniless Jew	AS
2	My novel is just upon finished	A+
5	They talked incessantly and became chronically nomadic and monogamic	ENTH
6	She never understood the sexual passion of men	AS
6	She dislikes the quality of masculinity	E-
6	Sexually frigid	E-
7	They both intended to make their living by writing	SA
7	A kind of tortured intensity	EMN
12	Headaches, sleeplessness, depression, guilt, aversion to food, suicidal	EMN
14	She worries constantly	EMN
15	She was sane enough to recognise her own insanity	EMN
17	Will she ever get really sound again	AP

Page		
18	The constant threat of suicide	EMJ
19	Burst of excitement, bouts of despair	EMJ
24	Began to talk of her mother - became excited and incoherent	EMJ
25	Violent, manic, gibberish, coma	EMJ
27	After two years intermittent lunacy her mind and character permanently affected	EMJ
28	"Voyage Out" clever and original	A+
28	Her novels very close to her own private imaginings	INS
36	To meet Katherine Mansfield. Divided by rivalry. Dresses like a tart, behaves like a bitch.	L
43	Leading a normal life. Wrote <i>Orlando</i> , <i>To the Lighthouse</i> , <i>Flush</i> , <i>The Waves</i> , <i>Three Guineas</i> , <i>The Years</i> etc	Ww
45	Wants to write out the pain	Ww
53	Working fast. Written over 100,000 words of <i>Night &amp; Day</i>	Ww
63	Finished <i>Night &amp; Day</i>	N ACH
64	I'm quite well again	A+
67	Bought a house	A+
72	I'm a great deal happier at 38 than at 28	E+
78	Story Monday or Tuesday "flooded her every nerve with pleasure"	E+
83	Bout of illness. Headaches, jumping pulse, frets, fidgets, sleeping draughts	EMN
88	Book, JACOB'S ROOM marks beginning of her maturity and her fame	N ACH
91	She returned to her work, her cares, her depression and her suburb	Ww
94	Happiness and unity in their marriage	AS
100	Now I'm writing fiction again I feel my force glow straight from me	SA
100	I should like to write away at it - quick and fierce	Ww
106	About my writing, I think practically of nothing else	Ww
108	Never have I felt so much admired	E+
110	The horrors are beginning	EMJ
110	I can't face this horror any more	EMJ
112	Moments of depression, followed by moments of creativity	EMJ
114	Sudden collapse beginning of long bout of illness	EMJ
114	Overdoing life in London	E-
116	Lesbian love affair with Vita	AS
120	<i>To the Lighthouse</i> – "Never have I written so easily, imagined so profusely"	ENTH
121	She was in good spirits and progressed	ENTH

Page		
131	<i>Orlando</i> – A Biography. My body was flooded with rapture and my brain with ideas	E+
131	<i>Orlando</i> is Vita	INS
132	Never had she worked so fast	Ww
140	Haunted by moths	EMN
143	Virginia lives in a world of her own	INS
143	Long fallow period after bout of illness	EMN
148	Her illness could yield spiritual dividends	INS
165	V was 50, had written six novels and was famous	N ACH
179	I don't think I have ever been more excited over a book	ENTH
189	New book THE YEARS - an increasingly miserable business	E-
195	All her novels are causes of anxiety	INS
195	She felt madness coming upon her!	EMJ
195	Very apprehensive as if I am to be laughed at my expense	E-
203	<i>The Years</i> was a success. Found herself really wealthy	N ACH
217	For 3 months on edge of precipice	EMJ
224	A symptom of illness is that she could not admit she was mentally ill	EMJ
226	Hearing voices, can't concentrate, drowned herself	A-

## APPENDIX IV

## SUMMARY OF 100 BIOGRAPHIES SELECTED

## MUSIC

Igor Stravinsky	Guiseppe Verdi	Elton John	Bela Bartok
Hector Berlioz	Richard Wagner	André Previn	Giacomo Puccini
Maurice Ravel	Arturo Toscanini	Benjamin Britten	Jacqueline du Pré
Jean Sibelius	Pyotr Tschaikovsky	Alfred Schnittke	Leonard Bernstein
Gustav Mahler	Nellie Melba	George Gershwin	Dmitri Shostakovich

## CREATIVE ARTS

Pablo Picasso	Aubrey Beardsley	Vaslav Nijinsky	Charles Chaplin
Eduoard Manet	Auguste Rodin	Egon Schiele	Paul Cezanne
Amedeo Modigliani	Noël Coward	Gustav Klimt	Stephen Spielberg
Vincent van Gogh	Henri Toulouse-Lautrec	Claude Monet	Frank Lloyd Wright
Oskar Kokoschka	Salvador Dali	Paul Gauguin	Gustave Courbet

## SCIENCE

Isambard Brunel	Konrad Lorenz	Howard Florey	Thomas Huxley
Frederic Joliot-Curie	Louis Pasteur	Christiaan Barnard	Ernest Rutherford
Stephen Hawking	Charles Darwin	Thomas Edison	Albert Einstein
Linus Pauling	Alexander Graham Bell	Kokichi Mikimoto	Robert Oppenheimer
Sigmund Freud	Marie Curie	Wright Brothers	Fred Hollows

## LITERATURE

Edgar Allan Poe	Wystan Auden	Jules Verne	Anthony Trollope
Robt L Stevenson	Arthur C Clarke	Oscar Wilde	Alexander Solzhenitsyn
Edward M Forster	Victor Hugo	Emile Zola	Joseph Conrad
John Galsworthy	Katherine Mansfield	Arthur Conan Doyle	Boris Pasternak
Charles Dickens	Steven Spender	Virginia Woolf	Rudyard Kipling

## COMMERCE

Richard Branson	Paul Getty	William Morris	King Gillette
Pierre Cardin	Calvin Klein	Yves St Laurent	Pierpont Morgan
Coco Chanel	Konosuke Matsushita	Bill Gates	Jesse Boot
Henry Ford	Akio Morita	Helena Rubinstein	Guccio Gucci
Frank Beaurepaire	Charles Schwab	Lee Iococca	Andrew Carnegie

## APPENDIX V

## SUMMARY OF AXIAL CODES

## CODE I SOCIO-HISTORIC ANTECEDENTS

N-FACT Nationalism factorREV Revolt against existing moresA-R Religious / Idealistic factor / Altruism / Philanthropy / PoliticsSCH Schools of Literature / Arts / Science Movements

## CODE II CHILDHOOD EXPERIENCE

RM Strong Mother roleFM Strong Father roleFG Family Group influenceCB Early childhood bereavement, conflict trauma, severe frightCIM Childhood hobbies, pastimes, play, reading, inventivenessCST Childhood StorytellingCAP Childhood attention-seeking behaviour, manipulationSP Sibling Position - Eldest : Middle : LastCP Child Prodigy / Early outstanding talentRI Role influences (in childhood and adulthood)INO Inferential intelligence

## CODE III PERSONALITY TRAITS

D Dominance, Aggression, Arrogance. AngerIND Independent Mindedness, DecisivenessENTH Enthusiasm, EnergyL Competitiveness, Commercial Trading, RivalryISO Isolated, Schizoid withdrawn personality. Inward thinkingEXB Exhibitionism, Self Adulation, Narcissism, Eccentricity

## CODE IV ACHIEVEMENT PROCESS

CT Central Trigger experience, Mind stormST Standard Trigger - curiosity valueSA Self Actualisation, confidence in self, self idealised, castles in the air,  
dreaming forward, full personal potentialINS Insight, sensing truth intuitivelyAHA Feeling that accompanies the moment of insight,  
pieces fitting togetherNACH Actual Major Achievement

CODE V OBSESSIVE BEHAVIOUR

OBS \_\_\_\_\_ General Obsessive Behaviour, Phobias

WW \_\_\_\_\_ Work Frenzy Obsession. Total Absorption, Speed of work

OC \_\_\_\_\_ Collective Acquisition Actions, Trophies

OS \_\_\_\_\_ Sexual Obsessions, voyeurism, fantasy, erotomania

PERS \_\_\_\_\_ Perseveration, Obsession into later life

CA \_\_\_\_\_ Consumption Obsessions - drugs, alcohol, smoking,  
over-eating, clothing,

RIT \_\_\_\_\_ Ritual Obsessions

OTH \_\_\_\_\_ Thanatophobia : morbid fear of human corpses,  
death obsessions, sex-death link-age, sado-necrophiliac

CODE VI ACTION CATEGORY

A+ \_\_\_\_\_ A Positive Action, not necessarily a major achievement, attention to  
detail, memory, focus branding, new innovative

A- \_\_\_\_\_ Negative Occurrence or action, loss, ill health

AS \_\_\_\_\_ Normal Sexual Reaction, homosexuality, love

AP \_\_\_\_\_ Persistence, determination, searching

CODE VII EMOTIONAL DIMENSIONS

E+ \_\_\_\_\_ Positive Emotion; passion, self confidence, ecstasy, contentment,  
generosity, atavisms, humour

E- \_\_\_\_\_ Negative Emotion - fear, anxiety, insecurity, pessimism, suppression,  
restlessness

CODE VIII EMOTIONAL PATHOLOGIES

EML \_\_\_\_\_ Mild Emotional Response - hypochondriasis, depression,  
premonitions, erraticity, fetishistic, highly strung, *idée fixée*,  
impotency, nightmares, headaches, rages, neurasthenia,  
ereuthrophobia (fear of blushing) masturbation

EMN \_\_\_\_\_ Minor Emotional Breakdowns - neurotic behaviour, character  
disorder, neurasthenia, paedophilia, delirium tremens,  
sado-masochism, SAD seasonal affective disorder

EMJ \_\_\_\_\_ Major Emotional Pathology - schizophrenia, manic bi-polar,  
Korsakof's Psychosis

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