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CREDIT SCORING AND THE CONSTRUCTION OF BORROWER IDENTITY

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, 2006

ABSTRACT

Automated credit application scoring is integral to lending money. For banks credit application scoring provides a mechanism for managing risk and hence profit: for borrowers it means immediate access to goods and services which might only have been accessible in the future. For borrowers, therefore, access to credit fundamentally shapes their every existence. Whereas all previous research exploring the unintentional effects of credit scoring has focused on its discriminatory effects, the main purpose of this study was to explore how borrower identity is unintentionally constructed through the credit scoring technologies of a retail bank. With a view towards constructing different borrower identities, it moreover proposed alternative scorecard characteristics which hitherto might not have been explored.

The study was wholly explorative and thus qualitative in nature. Critical ethnography was used as the principle method of analysis and means of interpretation.

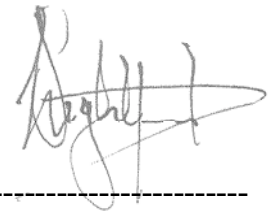
The main findings were that there are three broad sources of credit scoring characteristics and that these characteristics are associated with, not causative of, borrower riskiness. In addition, a non-exhaustive list of four assumptions underpinning credit scoring and scorecards and seven assumptions, which are made about borrowers by scorecard practitioners, were identified. As a consequence of these assumptions it was argued that there are groups of borrowers who are unintentionally excluded through credit scoring. Two primary consequences of credit exclusion were entertained and finally, some few alternative scorecard characteristics were proposed.

Collectively these findings support the view that borrower identity is systematically fabricated on an ongoing basis through the naïve application of processes, systems and technologies of credit scoring practitioners. It was also argued that the future of application scorecard building would

see more advanced variables being used which will give rise to a self-regulating borrower, less overtly disciplinary banks, and more pervasive credit bureaux.

DECLARATION

I, Neil Lightfoot, declare that this research report is my own unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.



Neil Lightfoot

10 March, 2006

DEDICATION

In memory of my father

Richard Gordon Lightfoot

1937-2003

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TABLE OF CONTENTS

ABSTRACT ii

DECLARATION iv

DEDICATION v

ACKNOWLEDGEMENTS vi

TABLE OF CONTENTS vii

LIST OF TABLES xiii

LIST OF FIGURES xiv

LIST OF APPENDICES xvi

CHAPTER 1: INTRODUCTION 1

1.1 Purpose of study 1

1.2 Background to the problem 1

1.3 Problem statements 3

1.3.1 Main problem 3

1.3.2 Sub-problems 3

1.4 Significance of the study 3

1.5 Delimitations and limitations 5

1.6 Definition of terms 5

1.7 Assumptions....6

1.8 Subsequent chapters of the research report....7

CHAPTER 2: LITERATURE REVIEW....8

2.1 Introduction....8

2.2 The significance of credit to South Africa....9

2.2.1 Size of the industry and main players....9

2.2.2 Redressing historical legacy....9

2.3 Credit scoring....10

2.3.1 Introduction to credit risk....10

2.3.2 Credit risk measurement....12

2.3.3 Mechanics of credit scoring....14

2.3.4 Implications of credit scoring....20

2.4 Credit application score cards as IT artifacts....24

2.5 Technology and identity....28

2.5.1 Introduction to Identity....28

2.5.2 Issues in identity construction....29

2.5.3 Identification and information technology....30

2.6 Conclusion....33

CHAPTER 3: RESEARCH QUESTIONS 35

3.1.1 Main question 35

3.1.2 Sub-questions 35

CHAPTER 4: RESEARCH METHODOLOGY 37

4.1 Introduction 37

4.2 The critical research tradition 37

4.3 Method 39

4.3.1 Overview of critical ethnography 39

4.3.2 Doing critical ethnography 41

4.4 Population and sample 44

4.5 Data collection 47

4.5.1 Researcher observations 47

4.5.2 In-depth interviews 47

4.5.3 Documentation collection 48

4.6 Data interpretation and write-up 48

4.6.1 Interpretation 48

4.6.2 Critical interpretation 48

4.6.3 Write-up 48

4.7 Validity and reliability....49

4.7.1 Expressing authenticity....50

4.7.2 Expressing plausibility....50

4.7.3 Raising criticality....51

4.7.4 Experimenting with reflexivity....52

4.8 Conclusion....53

CHAPTER 5: PRESENTATION AND INTERPRETATION OF RESULTS..54

5.1 Introduction....54

5.2 Characteristics typically used in building scorecards....54

5.3 The predicted variable....58

5.4 Credit scoring and scorecard assumptions....60

5.4.1 Assumption 1.1: Human credit decisions are faulty and unsustainable....61

5.4.2 Assumption 1.2: The past predicts the future....63

5.4.3 Assumption 1.3: Building scorecards is an imperfect science..66

5.4.4 Assumption 1.4: Credit scoring's primary responsibilities are to create and protect corporate profit....78

5.5 Borrower assumptions....83

5.5.1 Assumption 2.1: Borrowers have essences....83

5.5.2 Assumption 2.2: Borrower behaviour mirrors their essence 87

5.5.3 Assumption 2.3: Borrowers can be measured and represented mathematically 90

5.5.4 Assumption 2.4: Borrowers derive meaning through their belonging to the aggregate 95

5.5.5 Assumption 2.5: The essence of borrowers is unchanging 100

5.5.6 Assumption 2.6: Borrowers have an essential riskiness 103

5.5.7 Assumption 2.7: Good borrowers are good borrowers and are economically active 106

5.6 Groups excluded through credit scoring 109

5.7 Consequences of exclusion 111

5.8 Alternative scorecard characteristics 112

5.9 Conclusion 113

CHAPTER 6: CONCLUSIONS 116

6.1 Introduction 116

6.2 Summary of main findings 116

6.3 Limitations 120

6.4 Recommendations 122

6.4.1 For the borrower 122

6.4.2 For credit application scorers 123

6.5 Suggestions for further research 123

REFERENCES 125

APPENDICES 135

LIST OF TABLES

Table 1: Benefits and pitfalls of credit scoring (Schreiner, 2002) 21

Table 2: Scorecard experience of community of practice 45

Table 3: Criteria for critical interpretative research (Pozzebon, 2004) 49

LIST OF FIGURES

Figure 1: Process sketch of scorecard model building (Margaret, 24 June 2005).....60

Figure 2: Irrational vs. rationality axes (Neil, 24 June 2005).....63

Figure 3: Maximizing predictability (Margaret, 24 June 2005).....64

Figure 4: Past predicts the future vs. constant change (Neil, 28 July 2005).66

Figure 5: Example of typical community graphical language (Richard, February 2005).....70

Figure 6: Example of typical community graphical language (Richard, February 2005).....70

Figure 7: Example of typical scorecard report (Norman, 27 June 2005).....71

Figure 8: Gergen reference probed in second interview (Ghoshal, 2005).....75

Figure 9: Example of tabular and graphic representation of different risk categories of borrowers (Retail Credit, May 2005).....91

Figure 10: Example of graphic representation of Bad and Good borrowers (Richard, February 2005).....92

Figure 11: Humanise vs. dehumanize (a number) (Neil, 28 July 2005).....95

Figure 12: Individual vs. aggregate axis and subjective vs. objective (Neil, 28 July 2005).....97

Figure 13: Credit scoring's preoccupation with the aggregate at the expense of difference (Neil, 28 July 2005) 100

Figure 14: Summary of credit scoring and borrower assumptions 118

LIST OF APPENDICES

Appendix 1: Covering letter gaining access to community 135

Appendix 2: First introduction 137

Appendix 3: Feedback 138

Appendix 4: Final debrief 139

CHAPTER 1: INTRODUCTION

1.1 Purpose of study

The main purpose of this study is to explore the construction of borrower identity through the credit scoring technologies of a retail bank. With a view towards constructing different borrower identities, it moreover identifies alternative scorecard characteristics which hitherto have not been explored.

1.2 Background to the problem

To borrow money from creditors, borrowers are evaluated for credit-worthiness in order to establish their likelihood of debt repayment. Most retail loan applications are processed by automated application credit scoring systems. Having been built by people, these information systems represent the concretisation of assumptions and prejudices towards borrowers. These assumptions and prejudices coded into credit scoring create a system of inclusion and exclusion; of 'haves' and 'have nots'.

From an economic point of view, this process of exclusion and inclusion is the very raison d'être of credit scoring – what else does one expect? It is the mechanism by which the credit risk and therefore profits are managed. This economic argument tends to be blind to social and political questions, however.

From a social and political perspective, credit scoring always runs the threat of creating and perpetuating inequality. South Africa, like many other countries in the world which support democracy and constitutional freedom, therefore legislates against the use of particular credit scoring criteria relating to protected classes, such as race and gender. The vast majority of research exploring the effects of credit scoring internationally has tended to focus on

proving or disproving unintentional discrimination against protected classes (Streeter, 1993).

Although the current study takes its cue from discrimination research in credit scoring, it takes issue with two assumptions underlying this form of research: Firstly, credit scoring is always including and excluding. As such, it is always defining possibility along the lines of power relations. To focus the empirical lens too narrowly upon evidencing racial or gender discrimination alone is to lose sight of the complete process of discrimination. Secondly, discrimination through credit scoring, or other instruments of power, is unavoidable. Following Foucault (1975), the position of this research is that power exists within the structure of relations at the level of all activity. Power therefore is reduced to an impersonal and discursive force from which the subject cannot escape (Gannon, 2002). Which is not to say that power and the process of discrimination should not be understood, nor that the effects of this discrimination should not be explored; but ultimately by resisting or attempting to transcend power, the subject merely moves from one system of power to another.

The purpose of this study therefore is to explore how credit scoring technology operates. In particular, it looks to examine how this technology, through a process of inclusion and exclusion, constructs borrower identity. For the needs of this research study, identity is defined broadly as the answer to the question, “Who am I?” (Stryker & Serpe, 1982; Woodward, 1997; Coupland, 2003). Following the critical identity school (Baudrillard, 1981, 1983; Derrida, 1976, 1978; Foucault, 1975, 1979; Lyotard; 1984), the study deconstructs borrower identity and its accompanying discourses in an effort to explore a fuller range of “being” for borrowers. While much research which explores the relationship between identity and technology focuses on the more playful side of this dynamic, the current research examines the more serious, organizationally-based interactions and effects of credit scoring (Clarke, 1994). Identity in this mould therefore is considered socially

constructed, imposed (Clarke, 1994) by others and over which the individual has little direct control.

In a manner consistent with the critical interpretative tradition (Kincheloe & McLaren, 2000), I have elected to insert my subjectivity into the research by writing up the findings within the first person in a colourful and idiosyncratic style.

1.3 Problem statements

1.3.1 Main problem

The purpose of the research is to explore how the credit scoring technologies of a retail bank constructs borrower identity and to investigate alternative scorecard characteristics.

1.3.2 Sub-problems

The first sub-problem is to identify the typical characteristics used for building credit application scorecards.

The second sub-problem is to identify the assumptions made about borrowers through credit scorecard design.

The third sub-problem is to examine which credit applicants are included and which are excluded through the credit application process.

The fourth sub-problem is to explore alternative characteristics for building credit application scorecards.

1.4 Significance of the study

The research has both theoretical and practical significance. The main

intellectual contributions of this research include:

- Reframing questions on whether the practice of credit scoring discriminates or not.

- Extending the concept of identity to include “borrower identity”, thereby throwing light on a paradox of human identity – that people can be thought as having quintessence, or foundation, and riskiness, or instability, at the same time.

- Expanding technology and IT artifacts to embrace bank credit scoring models. This builds upon and enriches the body of literature, following Foucault (1975), which has tended to focus on more literal mechanisms of surveillance, such as biometrics and algorithmic video surveillance (Graham & Wood, 2003).

- Consolidating and contributing to the dearth of academic research on credit scoring in South Africa.

The wider social benefits of this research is its contribution to public policy debates concerning credit scoring characteristics and alternative ways of evaluating credit scoring. It also contributes to better public understandings of what is at stake for individuals in borrower identity construction and what some of the viable alternatives are (Clement, 2002).

From a personal perspective, the research assisted me in gaining a keener understanding into the mechanics of credit application scoring. When conceiving of this research programme I was an initiate into the area, having no prior experience or knowledge of credit scoring. Over the nine months of the ethnography, however, I not only learned to understand the issues but also formed relationships with my community of interest. Through the course of the research as well as proposal panel review, I also came to reflect on the fact that I hoped to both challenge the foundations of my community of

interest and shift their understanding and appreciation for what they do through credit application scoring.

1.5 Delimitations and limitations

The scope of the study was delimited to the construction of borrower identity by a retail bank within South Africa. While the credit scoring activities of other retail banks as well as non-banking operations and non-South African retail banks were be taken into account in the course of problem explication, no overt analysis was applied to these operations.

The study was expressly limited to the credit scoring of the bank's retail clients only. No effort was made to explore credit scoring of credit products extended to small, medium enterprises (SME) and business banking customers.

The study was not limited by the type of credit product for which the credit applicant attempts to gain credit. Nor was it limited by the amount of credit for which the credit applicant attempts to gain credit.

Recognition is given to the fact that the credit process is complex for the lender. Hinging on the product, it may also form the basis of a long relationship between lender and borrower. In that process, credit application scoring forms but a small part. Notwithstanding, the study was delimited to credit application scoring only.

Finally, the study made no appeal to positivist standards of truth. While validity and reliability considerations are entertained, they are reworked as appropriate to the critical epistemology employed.

1.6 Definition of terms

The following definitions are relevant to this research:

Assumption: Following the *Shorter Oxford English Dictionary on Historical Principles*, an assumption is taken to mean an, "unwarrantable claim, usurpation 1647; arrogance 1606; … The taking of anything for granted as the basis of argument or action 1660; a supposition, postulate 1628" (Onions, 1973:120).

Borrower: Borrowers are taken to mean individuals who apply for credit at a retail bank. Whether the outcome of the application is successful, or not, is inconsequential.

Credit scoring: "Credit scoring is a system creditors use to help determine whether to give you credit" (Federal Trade Commission For the Consumer, 2005).

Credit scoring practitioner: For the purposes of this research "credit scoring practitioners" are taken to be individuals who are employed currently, or who were employed in the recent past, to design, develop and implement credit application scorecards within the retail bank at which the research was conducted.

Identity: Identity is broadly defined as one's answers to the question, "Who am I?" (Stryker & Serpe, 1982; Woodward, 1997; Coupland, 2003).

Information Technology: Information Technology is, "those bundles of material and cultural properties packaged in some socially recognizable form such as hardware and/ or software" (Orlikowski & Iacono, 2001:121).

1.7 Assumptions

The research follows a critical interpretative tradition. Key to this school is an anti-essentialist view of identity – that identity is not a stable, inherent and

biologically founded characteristic. Part four of chapter two reviews critical perspectives of identity in greater depth. Chapter three also considers the methodological implications of the critical interpretative tradition for this research.

1.8 Subsequent chapters of the research report

The chapters of the research report are structured as follows:

Chapter 2 reviews in four parts the literary theory relevant to a comprehensive understanding of the problem. Firstly, the credit industry in South Africa is briefly reviewed. Secondly, credit scoring and its effects are explicated. Thirdly, an argument is made for viewing credit application scoring as an IT artifact. And lastly, different perspectives on identity theory are presented together with a discussion on the role of technology in defining identity.

Building on Chapter 2, Chapter 3 culminates in a clear delineation of the research questions which are addressed in the research study.

Chapter 4 describes the critical ethnographic approach which is employed in this study. This description includes sampling methods, research instruments and the processes that were used to collect, analyse and interpret the data. The validity and reliability standards by which the study will be evaluated are established.

Chapter 5 presents and interprets the results of the study, relating them to the literature and evaluating them with respect to the research sub-problems.

Chapter 6 summarizes the main findings of the study. The main problem is answered and limitations to the research explicated. Recommendations are offered and the chapter concludes with suggestions for further research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The chapter which follows reviews the key literature informing the main intellectual traditions which triangulate to foreground this research. Because these traditions are grounded in fundamentally different epistemological foundations and because they are shrouded in technicality, the boundaries of my review are deliberately governed loosely in order to give maximum explanation of the areas.

The chapter begins with an argument for the significance of credit with a brief overview of the credit industry in South Africa, including its size and key banking players.

Next, the concept of credit risk is introduced and its importance to banking is discussed. Traditional approaches to measuring credit risk are reviewed, leading into a discussion on the mechanics of how credit scoring is designed and how it operates. The second part ends with an exploration of the effects of credit scoring, concluding that no effects' studies consider the role that scoring plays in constructing borrower identity. Nor are any studies found which explore the power dynamics inherent within credit scoring.

Anchored in the work of Orlikowski and Iacono (2001), the third part of the literature review makes an argument for treating credit application scoring as an IT artifact. The implications for the research of this significant shift in perspective are spelt out.

Thereafter, the literature review explores what is meant by identity. Identity construction is introduced leading to a discussion on power and identity and the process of identification. Finally, given the thrusts of parts two and three,

the role of technology in identification is considered.

2.2 The significance of credit to South Africa

2.2.1 Size of the industry and main players

The consumer credit market in South Africa is worth some R362 billion and provides credit to approximately 15 million people (The Department of Trade and Industry, Undated). The South African banking industry is dominated by four major commercial banking groups namely, Absa, FirstRand Bank Limited (FNB and RMB), Nedbank, and Standard Bank, with 83% of total assets in the country (Hall & Davids, 2004).

2.2.2 Redressing historical legacy

South Africa's history of systematic discrimination against the majority of the population has resulted in a severe lack of access to credit for capital accumulation and product use and prevented investment in housing, in education and economic opportunities more generally (The Department of Trade and Industry, Undated; Dymski, 2003). Despite attempts to redress inequalities through legislation, the South African credit market remains characterised by a (i) lack of access to reasonably priced credit, (ii) overdebtedness, (iii) lack of consumer education, and (iv) an outdated and ineffective regulatory framework (Hawkins, 2003). With a view towards promulgation in mid-2005, the National Credit Bill thus was issued in December 2005 (Republic of South Africa, 2005). The preamble to the Bill offers as its stated intent:

> *To promote a fair and non-discriminatory marketplace for access to consumer credit and for that purpose to provide for the general regulation of consumer credit and improved standards of consumer information; to promote black economic empowerment and*

ownership within the consumer credit industry; to prohibit certain unfair credit and credit-marketing practices; to promote responsible credit granting and use and for that purpose to prohibit reckless credit granting … (Republic of South Africa, 2005:2)

Chapter 4 of the Bill covers consumer credit policy, with part A of the chapter dealing with consumer rights in engaging with credit providers. Seven consumer rights are recognized: (i) to apply for credit, (ii) to protection against discrimination in respect of credit, (iii) to reasons for credit being refused, (iv) to information in official language, (v) to information in plain and understandable language, (vi) to receive documents, and (vii) to protection of consumer credit rights.

2.3 Credit scoring

2.3.1 Introduction to credit risk

From the perspective of finance theory, bank management is typically acknowledged to involve the management of four major balance sheet risks: liquidity, interest rate, capital and credit risk (Boffey & Robson, 1995). Of these risks, credit risk is generally identified as the key risk influencing bank performance and bank failure (Boffey & Robson, 1995). Simply defined, credit risk is, "the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms" (Basel Committee on Banking Supervision, 2000:1).

The key reason why appropriate management of credit risk is important to banks is because they have limited capacity to absorb loan losses. Broadly speaking, loan loss is either absorbed through other profitable loans, or bank capital (Boffey & Robson, 1995).

Principles for sound credit risk management include (i) establishing

an appropriate credit risk environment, (ii) operating under a sound credit granting process, (iii) maintaining an appropriate credit administration, measurement and monitoring process, (iv) ensuring adequate controls, and (iv) appropriate use of bank supervisors (Basel Committee on Banking Supervision, 2000). According to Boffey and Robson (1995) granting, administering, measuring and monitoring credit risk have been most rapidly innovated over the past two decades.

The pricing of lending products is designed to compensate creditors for risks incurred. Generally, pricing is set taking into consideration the following factors (Bostic, 2004):

1. Operating costs

   The costs to receive and process the application and grant and service the loan.

2. Credit risk

   Any potential losses associated with non-payment of the loan.

3. Interest rate risk

   The opportunity cost of committing funds to a loan thus losing the chance to invest those funds in more attractive opportunities that may arise in the future.

4. Pre-payment risk

   When a borrower repays a loan sooner than its original term. Pre-payment is a cost to lenders because lenders do not receive the entire stream of interest payments they expected from the loan.

5. The profit margin

Profit margin reflects the reality that the lender, as an agent of the financial market, is in the business of facilitating a purchase that the lender would otherwise not be able to make. The profit margin should ideally exceed the return a lender could get by investing in other assets such as a different type of loan or the bond market.

2.3.2 Credit risk measurement

Traditional methods of credit risk measurement focus on predicting the probability that a borrower will default on their repayment (Hand & Henley, 1997; Allen, DeLong & Saunders, 2004). Probabilities of default (PD) are taken to include bankruptcy filing, default and liquidation. Three broad categories of estimating the PD are recognised: (i) expert systems, (ii) internal rating systems and (iii) credit scoring models.

The first of these, expert systems, uses loan officers to determine PD and has been in use for the longest but is also the most inconsistent and subjective (Hand & Henley, 1997). Classically, loan officers use the 5 Cs of credit to assess credit quality: character, capital, capacity, collateral, and cycle conditions.

More recently, artificial neural networks have been introduced to develop more objective expert systems. Neural networks, like loan officers, use historical information on defaulting borrowers to predict PD and are able to learn from subsequent experiences. Neural networks therefore are flexible, adaptable systems that can incorporate changing conditions into the decision-making process. Views on the efficacy of neural networks are mixed. Much depends on the type of system used, with multi-layer perceptron networks, for example, being best suited for predicting bankruptcy (Hawley, Johnson & Raina, 1990). Almost certainly, however, neural networks are costly to implement and maintain and lack transparency making it impossible for their plausibility and accuracy to be checked.

The second category of estimating the PD, internal rating systems, is driven by government regulatory bodies' requirements for banks to rank the credit quality of loans. Treacy and Carey (2000) have found considerable variance in internal ratings models. For most banks internal rating systems have been rather crude, with most loans rated simply as Pass/Performing. The Basel II Capital Accord scheduled for implementation in 2006, however, has many banks moving towards one- (PD) and two-dimensional (PD and loss severity) rating systems (Allen, DeLong & Saunders, 2004).

Finally, statistically-derived credit decision-making systems were pioneered during the 1950s by Fair, Isaac, and Company for retail chains offering consumer credit (Fortowsky & LaCour-Little, 2001), but only received widespread usage and popularity during the 1990s (Barefoot, 1997; Hand & Henley, 1997; Collins, Harvey & Nigro, 2002; Avery, Calem & Canner, 2004). By 1997 97% of US banks used credit scoring to approve credit card applications (Mester, 1997). Today the use of scoring is used for evaluating credit for all consumer credit products. It is also successfully used in extending credit to small businesses, with 70% of US banks scoring small businesses (Mester, 1997). Beyond application, scoring is now used to target prospects, to tailor product offerings and marketing efforts, to devise risk-based pricing for products and to guide the collections process (Barefoot, 1997).

Several driving factors are recognised in credit scoring practices. Firstly, the rapid increase in demand for consumer credit has placed economic pressures on retail banks to not only meet lending needs, but also in the processing requirements of applicants (Hand & Henley, 1997). Secondly, emerging computer technology has enabled lenders to take advantage of increasingly sophisticated and affordable analytical tools as well as the extensive data at their disposal (Barefoot, 1997). Thirdly, greater commercial competition has meant that lenders have sought to improve their credit lending decisions to drive down bad debts. For lenders this has meant shifting from

traditional, human judgment-based credit decision making. Fourthly, a key driver of credit scoring has been public and government pressure around usury and fair-lending practices (Barefoot, 1997; Hand & Henley, 1997). Also, the Basel II Capital Accord serves to drive consumer scoring by incentivising banks for effectively managing credit risk exposure within acceptable parameters (Basel Committee on Banking Supervision, 2000; Allen, DeLong & Saunders, 2004).

2.3.3 Mechanics of credit scoring

Credit scoring begins with the building of a statistical model, or scorecard, which predicts PD – the response variable – using a sample of applicants to whom credit has already been granted. The sample is typically classified according to risk class, either 'good' or 'bad', based on whether applicants defaulted on payment, or not. Other more sophisticated approaches, however, can categorise the sample on repayment behaviour (Hand & Henley, 1997).

In order to model the response variable, many predictor variables – or characteristics – may be considered. Schreiner (2002) distinguishes between three categories of characteristics:

1. Borrower characteristics
    a. Past arrears
        i. Days in arrears per installment
        ii. Longest spell of arrears in days
        iii. Number of spells of arrears
        iv. Subjective grade

b. Experience as a borrower

    i. Number of previous loans

    ii. Months since the first disbursement

c. Borrower demographics

    i. Gender

    ii. Age

    iii. Marital status

    iv. Number of household members

    v. Presence of telephone in the house

    vi. Education

d. Business and household financial data

    i. Monthly sales

    ii. Monthly expenses

    iii. Other business income

    iv. Other business expenses

    v. Household (non-business) income

    vi. Household (non-business) expenses

    vii. Monthly free cash flow

viii. Cash on hand and banks

ix. Inventory

x. Fixed assets

xi. Other business assets (accounts receivable)

xii. Accounts payable

xiii. Debts

xiv. Other liabilities

e. Other characteristics

i. Home tenure (owner, renter, other)

ii. Length of time at current address

iii. Presence of salaried job

iv. Length of time at salaried job

v. Whether or not the business is run from the home

2. Loan characteristics

a. Type of loan

b. Date of application

c. Date of disbursement

d. Date scheduled to be paid-off

e. Disbursement amount requested and granted

f. Installment amount requested and granted

g. Frequency of installments

h. Term to maturity requested and granted

i. Presence, type, and value of guarantee

3. Borrower characteristics

a. Branch

b. Loan officer

i. Number of disbursements of experience

ii. Gender

iii. Age

iv. Marital status

Which characteristics are most accurate in predicting PD is debatable as there is a paucity of published literature addressing the question. The main reason for this lack of literature seems to be that the credit industry perceives scorecards to provide competitive advantage (Hand & Henley, 1997). Notwithstanding, at the heart of most credit scoring models are 'past arrears' and 'experience as a borrower' characteristics (Fortowsky & LaCour-Little, 2001; Avery et al, 2004). Hand and Henley (1997) claim that the most typical characteristics include, (i) time at present address, (ii) home status, (iii) postcode, (iv) possession of telephone, (v) annual income, (vi) credit card, (vii) type of bank account age, (viii) number of judgments, (ix) type of occupation, (x) purpose of loan, (xi) marital status, (xii) time with bank,

and (xiii) time with employer. Avery et al (2004) present evidence that failure to consider measures of local economic circumstances and individual trigger events when developing credit history scores can diminish the effectiveness of such models. Despite the potential value they may offer to predicting PD (Boyes, Hoffman & Low, 1986), consumer protection legislation internationally (e.g. The Equal Credit Opportunity Act in the US) as well as within South Africa (the National Credit Bill[1]) prohibits the use of discriminatory variables in the granting of credit.

No academic research in South Africa could be found by the researcher on the credit characteristics most accurate in predicting PD.

The three main sources of data on characteristics include credit application forms, borrower own data records, and credit bureaux (Hand & Henley, 1997). Credit application forms are critical to collecting data on characteristics of the loan applicant; however, they fall short in two respects. Firstly, they can be a source of misinformation because it is in the interests of applicants to provide whatever information is considered most favourable to positive loan decisions. And secondly, they can be time and labour onerous adding to the cost of the overall loan process. Lender client data records, in comparison, are a rich and easy source of data, but limited to existing loan clients. Predicting and monitoring repayment behaviour of consumers to whom credit has already been granted is often referred to differently in the literature from credit application scoring (Hsieh, 2004). Hsieh (2004) argues that so called 'behaviour scoring' requires quite different analytical techniques to credit scoring, hence his argument for maintaining a distinction between the two scoring approaches.

[1] Republic of South Africa (2004)

Credit bureaux (sometimes referred to as credit reporting agencies or reference agencies) collect information on the experiences of individuals with credit, leases, non-credit-related bills, monetary-related public records, and credit inquiries and compile it in a credit record (Avery et al, 2004). Of the three national bureaux in the US, two – Experian and Trans Union – operate within South Africa (Davel, 2003). Generally bureaux receive information from creditors and others every month and update their credit records within one to seven days of receiving new information.

The coverage of credit bureaux varies between countries. In the UK almost every adult is kept on a bureau database (Hand & Henley, 1997). Of a nationally representative sample of adults in the US, 82% had a credit history score (Avery et al, 2004). According to Davel (2003) there are 23 million credit bureau scores in South Africa, representing approximately 76% of the adult population.

Historically, discriminant analysis and linear regression have been the most popular techniques used for building scorecards. Both have the merits of being conceptually straightforward and widely available in statistical software packages. Typically, the coefficients and the numNormanal scores of the attributes are combined to give single contributions which are then added to give an overall score. Usually, these contributions are manipulated so that they are integral. Other techniques which have been used in the industry include logistic regression, probit analysis, non-parametric smoothing methods, mathematical programming, Markov chain models, recursive partitioning, expert systems, genetic algorithms, neural networks and conditional independence models (Hand & Henley, 1997).

Hand and Henley conclude that, "[i]n general there is no overall 'best' method" (Hand & Henley, 1997:535) to building a scorecard as much depends on the data structure and characteristics used. They further stress that over and above accuracy, speed of classification and ease of

understanding, classifications are also important measures of a scorecard's performance. Hand and Henley (1997) consequently remark that significant improvements are most likely to come not from new classification methodologies, but new, more predictive characteristics.

The model having been built, a decision is made on the threshold against which applicants' default probabilities will be rated. The threshold is dependent on a creditor's appetite for risk and to a lesser extent, profit expectations. Applications are accepted or rejected by comparing the estimated probability of the application against this threshold.

Credit scorecards are typically implemented in three ways (Collins et al, 2002). In the first approach, creditors employ scoring models to eliminate the tails of the credit distribution from further consideration. Borrowers with very high scores therefore are approved immediately, while those with the lowest scores are rejected immediately. The remaining applicants in the middle of the distribution are underwritten judgmentally. Small businesses are typically scored in this manner. In the second approach, the bank relies solely on the score in choosing whether to underwrite the credit application. This approach is more common at retail banks. Finally, scores are often employed as one of several critical elements in the underwriting process for complex loans. On large loans for example, banks will pull scores in addition to debt-to-income ratios, to inform the decision process.

In those instances where the credit scores of applicants fall marginally on the reject-side of the threshold, management may make a decision to override the credit application system thus accepting the application. These decisions are referred to as 'overrides'.

2.3.4 Implications of credit scoring

On the whole, literature on credit scoring focuses on the implications of credit application scoring from the perspective either of lenders or of

borrowers. Whereas the former perspective tends to dwell on economic implications, the latter tends to explore fair lending, discrimination and rights issues.

Lender perspective

According to Schreiner (2002), credit scoring has both positive and negative implications for lenders, these being summarised in Table 1.

Table 1: Benefits and pitfalls of credit scoring (Schreiner, 2002)

Benefits	Pitfalls
1. Statistical scoring quantifies risk as a probability	1. Statistical scoring requires data on many loans
2. Statistical scoring is consistent	2. Statistical scoring requires a lot of data on each loan
3. Statistical scoring is explicit	3. Statistical scoring requires high- quality data
4. Statistical scoring accounts for a wide range of risk factors	4. Statistical scoring requires a consultant
5. Statistical scoring can be tested before use	5. Statistical scoring depends on integration with the MIS
6. Statistical scoring reveals trade-offs	6. Statistical scoring seems to fix what is not broken
7. Scoring reveals the links between risk and the characteristics	7. Statistical scoring can reject applications, but it cannot approve or modify them

Benefits	Pitfalls
8. Statistical scoring does not require changes in the current evaluation process before the credit committee	8. Statistical scoring does not approve, it can only reject
9. Statistical scoring reduces time spent in collections	9. Statistical scoring assumes that a large share of risk is linked with quantified characteristics in the data base
10. Statistical scoring affects profits, and the first-round effect can be estimated	10. Statistical scoring assumes the future will be like the past
11. Statistical scoring beats the "automatic" grade	11. Statistical scoring works in probabilities, not certainties
	12. Statistical scoring is susceptible to abuse
	13. Statistical scoring may use illegal or immoral predictors

Creditor perspective

Because of the lack of transparency among the retail banks in South Africa, civil action groups continue to argue that credit scoring practices are contributing to the inefficiencies within the credit market. According to the Congress of South African Trade Unions, "South African financial institutions have a track record of not lending to low-income neighbourhoods and have historically red-lined many low-income areas" (Congress of South African Trade Unions, 2000:no page reference).

Whether lenders systematically discriminate or not against minorities despite legislation, is a long standing debate internationally but in the US in

particular (Longhofer & Richardrs, 1998). The landmark 'Boston Fed Study' in 1992 (Munnell, Tootell, Browne & McEneaney, 1996) spawned a whole new chapter in discrimination research, however (e.g. Chakravarty & Scott, 1999; Crawford & Rosenblatt, 1999; Fortowsky & LaCour-Little, 2001; Scalera & Zazzaro, 2001). The study demonstrated that although credit application and granting processes might not have discriminatory intent or design, they may have discriminatory effects. Much subsequent research effort has focused on this corner of discrimination – what is referred to as 'disparate treatment discrimination' – but with few conclusive findings (Yates, 2004).

The debate on disparate treatment discrimination has considerable implications for credit scoring (Barefoot, 1993; Barefoot, 1997). On the one hand, the very reason for credit scoring is its perceived neutrality and lack of prejudice. On the other, scorecards may have discriminatory outcomes. While the US does condone discriminatory effects so long as a business necessity for continuing the practice can be demonstrated, the same cannot be said necessarily of South Africa. Initial indications from the yet to be promulgated National Credit Bill are that discrimination by design or outcome will be unacceptable. Irrespective of the outcomes of the Bill, it is doubtful whether any form of discrimination will pass the Constitution if put to the test. This debate notwithstanding, Barefoot (1993) flags ten areas within lending that may have potential discriminatory effects:

1. Minimum loan or house size: By imposing restrictions on loan or house size, lenders may indirectly prejudice borrowers.

2. Tiered pricing: Charging higher fees or rates for smaller loan sizes may be argued to prejudice.

3. Employment stability: Demanding employment history criteria may prejudice borrowers.

4. Rigid debt ratios: Setting debt-limit standards based

on experience from traditional markets may prejudice non-traditional markets.

5. Sources and amount of downpayment: Requiring downpayments may prejudice non-traditional markets.

6. Limited information sources on credit history: Requiring creditworthiness data may prejudice, if none or little exists.

7. Over-reliance on past record: Similarly, if no history exists then prejudice may result.

8. Use of criteria that correlate with but do not cause default: Scorecard characteristics which only correlate but do not explain behaviour, may raise questions around prejudice.

9. Marketing issues and delivery systems: If marketing and delivery target particular segments to the exclusion of others, there may be prejudicial effects.

10. Standards set by third parties: Other third parties involved in the credit process, including credit bureaux and appraisers, may be unwittingly prejudicing applicants.

Despite the extensive research on lending, discrimination and rights issues, the researcher could not find any research which deals directly with the assumptions, other than prejudice, inherent in credit application scorecards. Neither could anything be found which examines the constructionist effects of the scoring process and in particular the role that scoring plays in constructing an identity for the borrower.

2.4 Credit application score cards as IT artifacts

Given a definition of IT artifacts as, “those bundles of material and cultural properties packaged in some socially recognizable form such as hardware and/ or software” (Orlikowski & Iacono, 2001:121) and given that credit application score cards are designed and deployed through technology hardware and software that have been shown to contain social agenda – albeit in a limited way – it can be concluded that credit application score cards are IT artifacts.

IT artifacts came to prominence in the field of information system research in 2001 (Boland & Lyytinen, 2003) with Orlikowski and Iacono’s meta-analysis of all articles published in the Information Systems Research journal since its inception in 1990. Five broad meta-categories, each representing a common set of assumptions about and treatments of information technology in information system research, were arrived at using open coding.

1. Tool view of technology

   The tool view represents the popular conception of what technology is and means. From this view, technology is an “engineered artifact, expected to do what designers intend it to do” (Orlikowski & Iacono, 2001:123). What the technology is and how it works therefore, are seen to be largely technical matters; often the technology is simply named (e.g. Microsoft Word 2000) and its technical features are listed. Information technology, as a tool, is conceived independently of the social or organizational contexts within which it is developed and used.

2. Proxy view of technology

   Proxy conceptualisations of technology hold in common the assumption that the critical aspects of information technology – its value – can be captured through, “some set of surrogate (usually quantitative) measures” (Orlikowski & Iacono, 2001:124).

Proxy views thus explore the importance of technology to individual users (e.g. ease of use studies) and firms, industries, and economies (e.g. penetration studies). Grounded in economics, some forms of the proxy view aim to quantify the specific value of information technology as a resource or investment.

3. Ensemble view of technology

Other areas within technology research conceive of technology as only one element, among a package of components, required to address some socio-economic activity. These other components might include, for example, skilled staff, policies and incentives. Characterising an ensemble view of technology is their focus on the dynamic interactions between people and technology.

4. Computational view of technology

As the name implies, the computational view of technology concentrates almost solely on the calculative, computational power of information technology. Research exemplifying this view, "is interested primarily in the capabilities of the technology to represent, manipulate, store, retrieve, and transmit information, thereby supporting, processing, modeling, or simulating aspects of the world" (Orlikowski & Iacono, 2001:127). For the authors, the computational view consists further of further discrete types: technology as algorithm and technology as model. Whereas the former aims to build or enhance existing computational systems which can support some human activity, the latter aims to represent social, economic, and information phenomena through data modeling and simulation methods.

5. Nominal view of technology

> In the nominal view, “information technology”, “information system,” or “computer” are used incidentally, the conceptual and analytical focus lying elsewhere, such as CIO compensation or outsourcing practices. In this view therefore, IT artifacts are essentially absent, neither the independent nor the dependent variable.

According to Orlikowski and Iacono (2001) the bulk of information technology research (49%) adopts either a nominal or computational view. They conclude that, “many people are still relying on received notions of technology and viewing technology primarily through their disciplinary lenses” (Orlikowski & Iacono, 2001:130), “the IT artifact itself [tending] to disappear from view, be taken for granted, or is presumed to be unproblematic once it is built and installed” (Orlikowski & Iacono, 2001:121).

If, as it is argued, credit application scoring is an IT artifact, then Orlikowski and Iacono’s five premises for theorising about IT artifacts and questioning their context-specificity is applicable to this study. Firstly, credit application scoring cannot be presumed to be a natural, neutral object. Scoring is always implicated in action and effect. Secondly, credit application scoring is embedded in time, place, discourse and community. Its constant development and use, both material and cultural, therefore, cannot simply be ignored. Thirdly, credit application scoring is not a unified monolith, but represents a multiplicity of dislocated and often fragile components. Fourthly, scoring is dependent on social and economic practices. As artifacts of human design, credit application scoring evolves with time, coexisting and coevolving with different versions of the same or new technologies at any given time. And lastly, scoring technologies are fluid and unstable. Thus, whenever they do stabilise at certain times and places, important insight is provided into the socio-economic dynamics underpinning this reification.

Having highlighted the constructionist effects of credit scoring and having identified some of the appropriate questions which might be levelled at

the practice, the link between technology and identity needs to be made. To be specific, the role that credit scoring plays in constructing identity needs to be argued.

2.5 Technology and identity

2.5.1 Introduction to Identity

The study of identity is popular across the contemporary social sciences forming a cornerstone within cultural studies, sociology, psychoanalysis, psychology, political science, sociology, and history (Cerulo, 1997; Woodward, 1997; Serksnyte, 1999; Stryker & Burke, 2000). Despite its ubiquity, there is considerable variability in both identity's conceptual meaning and its theoretical role (Stryker & Burke, 2000). At its broadest, identity can be defined as one's answers to the question, "Who am I?" (Stryker & Serpe, 1982; Woodward, 1997; Coupland, 2003).

Among the most significant areas of identity research dominating the field throughout the 1970s (Cerulo, 1997), was included identity theory (e.g. Stryker, 1968; Stryker & Serpe, 1982) and social identity theory (e.g. Tajfel, 1959; Tajfel, 1972). While the former seeks to explain the meanings that individuals attach to the multiple roles they typically play in contemporary societies (Stryker & Burke, 2000), the latter sets out to explain group processes and intergroup relations (Hogg, Terry & White, 1995). Despite their sociological and psychological perspectives respectively and therefore, different levels of analysis, both identity theory and social identity theory share a common focus on the individual, exploring how interpersonal interactions fashion sense of self. According to Cerulo (1997), however, three trends over the past two decades have shifted the focus of identity research. In the first instance, social and nationalist movements have brought increasing attention to group agency and political action. Simultaneously identity studies have, "relocated to the site of the collective" (Cerulo, 1997:386), such as, gender,

sexuality, race, ethnicity, class. Also, questions over agency and self-direction have redirected the focus of identity research to the processes of identification. How distinctions are created, maintained and changed at the level of collective therefore, are explored. In addition, the rapid expansion of information technologies within society have changed the temporal-spatial dynamics by which self versus other are defined.

Following these trends, the following research report contains its scope to a review of the academic literature dealing with identity construction.

2.5.2 Issues in identity construction

One of the fundamental questions underpinning all identity research is whether identity is considered an essential or a non-essential characteristic (Cerulo, 1997; Woodward, 1997).

Based on social constructionism, identity constructionism rejects any arguments that suggest firstly, that individuals may have given unique, biological inheritance (Serksnyte, 1999) or secondly, that identity is fixed and transhistorical (Woodward, 1997). Informing much of the work on gender, sex, racial, ethnic and national identity, constructionists conceptualise identity – following the intellectual tradition of Mead (1934) – as an interactional accomplishment, identity being continually renegotiated through social rituals, symbols and linguistic exchanges. Subjective definitions of identity are thus entertained, attending to the symbols and norms which initiate and sustain classifications of inclusion and exclusion. Constructionist approaches often examine agents of socialisation, such as family, schools and popular culture (Cerulo, 1997), tracing the role they play in identity acquisition.

Critical (or postmodern) approaches to identity, while supporting anti-essentialism, find serious flaws in constructionism (Cerulo, 1997). For one, constructionism's agenda is found insufficient since it inevitably and simply catalogues the identity construction process. For another, the role of

power in the classification process is underemphasised, suggesting that there is a complicit, multidirectional flow of influence and agency. These deficiencies leave critical identity theorists skeptical of constructionism's compass, fearing that the school navigates towards the very essentialism it eschews. Located squarely within the critical tradition, critical approaches such as this research, therefore examine the reasons why essentialist identities continue to be invoked, focusing on public discourse rather than observation and deduction. Following Jean Baudrillard (1981, 1983), Jacques Derrida (e.g. 1976, 1978), Michel Foucault (e.g. 1975, 1979), and Jean-Francois Lyotard (1984), the critical identity approach deconstructs established identity categories and their accompanying discourses in an effort to explore the full range of "being". Works in this tradition question models which equate discourse with truth; they expose the ways in which discourse objectified as truth both forms and sustains collective definitions, social arrangements, and hierarchies of power (Cerulo, 1997).

Constructionist and to a lesser extent for critical accounts of identity are critiqued for the fact that they can tend towards fatalism, negating the role of human agency in creating identity (Baldine, 1997; Gannon, 2002). Baldine (1997) deflects this criticism arguing that human agency through 'self fashioning' – continuous reinvention, situation and assertion of selfhood – is ironic since the agenda of human agency is a particular glorification of western industrialised cultures. The same systems therefore which shape individuals also laud their individuality. Notwithstanding, Baldine concludes:

> *To say that human identity is an artifact is not to diminish its significance. Artifacts, being artifacts, are useful in getting us to the next stage. Even if cultural convergence means a subversion of the self, then a new self will likely adapt and construct a new identity. (Baldine, 1997:35)*

2.5.3 Identification and information technology

According to Cerulo (1997) there is a growing corpus of literature which explores the process, "by which collectives create distinctions, establish hierarchies, and renegotiate rules of inclusion" (Cerulo, 1997:394). These works draw upon various intellectual traditions, such as, Bourdieu's theories of distinction, Derrida's differance, Saussure and Pierce's semiology, Zerubavels' work on sociomental classification, and Foucault's genealogy of epistomes. The role which information technologies play in the process of identification forms an important sub-set within this resurging interest in identification (Cerulo, 1997).

Among the first to explore the link between information technology and identity is Meyrowitz (1985) who examines the ways in which electronic media reorganise sites of social interaction. Electronic media are thought to sever the connections between physical and social "place", locating the individual in new, hybrid arenas of action and in so doing forming new collective configurations. Information technology enabled spaces, such as the internet, for example, thus reconstitute the boundaries by which collectives typically distinguish themselves. Altheide (1995) argues in a similar vein that because information technology enable new communication formats, social activities are able to be reconfigured. The new environments created through information technology present new opportunities for collective affiliation and mobilisation.

Exploring the impact of information technology on community formation and collective identity further, Beniger (1987) argues that communities created through electronic media provide a "pseudo-gemeinschaft" experience – a sense of "we-ness". Findings from research exploring the impact of information technology in creating community and identity are inconsistent, however (Cerulo, 1997). Whereas some (e.g. Cerulo, Ruane & Chayko, 1992) have been able to map emerging cultures of reference which unify previously disparate actors, linking these cultures to the effects of technology, others, such as Morley and Robins (1995), have failed to discover

communities which should have been formed given the extent and nature of the electronic media.

Two of the most influential pioneers (Clement, 2002) in the early exploration of identification through information technologies are Turkle (1995) and Stone (1996). Both authors focus on the active construction of multiple identities in the context of role-playing activities, for example, members of a virtual, online community. For Turkle and Stone, information technologies present arena for individuals to experiment socially with new models of identity and opportunities. The findings of these early studies of identity in information technology have been challenged by subsequent research which shows that most identity construction, far from being constraint free, is based upon mainstream representations and stereotypes (Clement, 2002).

While Turkle and Stone's studies focus on 'projected identities' – identities which are at least partially, controlled by the individual – another stream of identity research examines the less playful, more organizationally-based interactions of everyday life (Clarke, 1994). This research will follow in the tradition of this latter stream. Works in this field explore how identity is imposed by others over which the individual has little direct control. So called 'imposed identities' (Clarke, 1994) are established through the collection of data from interactions with a given information technology interface, for instance, workplace software (Graham & Wood, 2003), and through systematic surveillance practices (Lyon, 1994; Introna, 2004), such as data-mining and profiling. Similarly, Altheide (1995) also explores the intersection of communication, power and social control. Since access to communication technologies is unequally distributed throughout society, those segments of society which do have access are able to participate in defining social situations. This provides them with a certain power which those segments without access do not have. The so called 'other' are consequently left vulnerable instead to an imposed, crafted reality.

Exploring further the particular influence of digitisation, Graham and Wood (2003) argue initially that information technologies enable ever increasing monitoring, prioritisation, and judgment unfettered by geographic or time constraints. Thereafter, they put forward that information technologies allow, "active sorting, identification, prioritization and tracking of bodies, behaviours and characteristics of subject populations on a continuous, real-time basis" (Graham & Wood, 2003:228). Finally, they conclude that, "[d]igitization facilitates a step change in the power, intensity and scope of surveillance. Surveillance is everywhere" (Graham & Wood, 2003:228). Significantly influenced by the work of Foucault, Graham and Wood are therefore arguing that information technologies produce a step-change in Foucault's (1975) panopticon. In brief, the panopticon was the practice of direct surveillance of prisoners by warders through a form of one-way technology. Because of the way in which the panopticon was set up, prisoners began to self-regulate their behaviour in the belief that they were being continuously watched. The concept of the panopticon functions as a metaphor for other techniques of surveillance by which society comes to regulate itself. The point which Graham and Wood are therefore making is that information technologies in practice constantly micro-monitor and micro-regulate in a more effective manner and that these expressions of power are direct.

In the same critical tradition, this research examines how the collection, clustering, categorisation and storing of data on borrowers for the purpose of credit application scoring constructs, in a panoptic manner, an identity for the borrower.

2.6 Conclusion

The main purpose of this chapter has been to connect three diverse bodies of research on, (i) credit scoring, (ii) information technology, and (iii) identity. Credit scoring is shown to be a rich intellectual tradition focusing largely on

the technical challenges of credit scoring. More recently research into credit scoring has extended itself into exploring whether credit scoring has discriminatory effects. The literature on information technology is only touched upon lightly in order to highlight through Orlikowski and Iacono's meta-analysis that, firstly, credit scoring is a form of technology and that, secondly, if what they argue holds true for credit scorers, then the constructionist effects of the discipline are highly probably overlooked. Being a broad corpus of work, the research on identity theory receives summary attention. Instead identity construction and critical identity theory are expounded upon.

The yawing gap between credit scoring and identity are thus bridged via technology. Two intellectual traditions are brought together and enabled is an exploration of the problem at hand, how an identity of the borrower is formed through credit scoring practices.

CHAPTER 3: RESEARCH QUESTIONS

A number of main and sub-questions precipitate from the review of the literature.

3.1.1 Main question

How is an identity of the borrower formed through credit scoring practices of a retail bank?

3.1.2 Sub-questions

1. What characteristics are typically used in building a scorecard?
2. Are scorecard characteristics causative of or correlated with risk?
3. What are the assumptions which underlie credit scoring practices?
4. What assumptions are made by credit scoring practices about borrowers?
    a. Are borrowers assumed to be homogenous?
    b. Are borrowers presumed to have inherent, defining characteristics that remain stable over time?
        i. Are borrowers presumed to have an inherent 'riskiness'?
5. Which groups of people are excluded through credit scoring?
    a. Intentionally
    b. Unintentionally

6. What are the consequences of exclusion through credit scoring?

    a. Intentionally

    b. Unintentionally

7. What alternative characteristics could be used to build a scorecards that will have different exclusionary effects?

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

The following chapter details the methodology which was pursued in the course of addressing the research problems.

The chapter first sets out the philosophical assumptions which foreground the chosen method of research. Next, an appropriate research method is identified that is consistent with these philosophical assumptions and the processes, which were used to collect, analyse and interpret the data are outlined. Finally, validity and reliability considerations appropriate to the chosen method of research are entertained.

4.2 The critical research tradition

Myers (1997) emphasises the need for the method of research to be consistent with its philosophical foundations. As Pozzebon puts it, "each research method represents a strategy of inquiry that moves from underlying philosophical assumptions to research design and empirical material interaction" (2004:279).

Using Orlikowski and Baroudi's (1991) typology of information systems' research orientations, this research may be labeled 'critical' (as opposed to 'positivist' or 'interpretative'). Whereas interpretivist or constructionist approaches aim to produce detailed explorations of the way in which particular social realities are constructed, critical approaches aim to focus more explicitly on the dynamics of power, knowledge, and ideology which surround social practices (Pozzebon, 2004). More recently Phillips and Hardy (2002) have argued that the distinction between interpretative and critical traditions is blurred and that studies framed in one of either camps tend to be

sensitive to epistemological issues facing the other.

Howcroft and Trauth (2004) identify five themes which distinguish a critical epistemology in its application within information systems. Firstly, critical research shows itself committed to emancipating individuals from the alienation and domination which characterize power relations (Cecez-Kecmanovic, 2001). Secondly, unlike traditional accounts which seek to justify organizational and technological imperatives as natural or unavoidable, critical research seeks to disrupt the status quo and question the taken-for-granted assumptions inherent in the status quo. Patterns of power and authority are thus disrupted. Thirdly, it has non-performative intent, rejecting the provision of tools to support and assist managerial efficiency through re-engineering minimum inputs for maxim outputs. Fourthly, critical research within information systems tends to critique technological determinism – that technological development is autonomous and that societal development is determined by technology. Lastly, philosophical and methodological reflexivity is engaged upon at the expense of a positivist and objective, value-free knowledge.

As far as research is concerned, the critical tradition assumes that the researcher engages with the participants in action arising out of authentic, critical insights facilitated by the researcher in the social construction of human society (Hair & Clark, 2003). This stands in marked contrast to traditional research approaches which often involve a 'disinterested' researcher, adopting non-participant observation with associated, ethical dilemmas of misrepresentation. Critical approaches, moreover, advocate the explicit recognition of bias and subjectivity of the researcher, recognizing that those being researched have the right to articulate and define how social reality is constructed. This is tantamount to the depriviledging of the voice of the researcher.

4.3 Method

The debate over which methodology is most suited to conducting critical research is largely unsettled (Pozzebon, 2004). Qualitative techniques are generally preferred because of the heuristic and exploratory nature of the research typically pursued (Clement, 2002). Further to this, Howcroft and Trauth (2004) argue that questions of which qualitative technique to use can detract from the central problem of how social reality is interpreted and represented. They observe that method is not simply the mechanics and logistics of data production and processing, but is a reflexive activity in which the theoretical, political and ethical issues are central.

Those of the qualitative techniques which have been nominated as critical researchers' preferred methodological approaches include, action research (e.g. Myers, 1999), critical discourse analysis (e.g. Pozzebon, 2004), case study (e.g. Clement, 2002) and critical ethnography (e.g. Hair & Clark, 2003; Cecez-Kecmanovic, 2001). Although each technique has its own particular strengths and weaknesses, critical ethnography finds favour as method of choice for the following research because of its well explicated approach, its relatively rich pedigree when applied to technology problems and its suitability for questioning commonsense assumptions (Myers & Young, 1997). Further promoting its cause are its flexibility and its mixed-method approach to data collection (Cecez-Kecmanovic, 2001). In order to contain the scope of the research, critical ethnography was applied to the problem within a single company. Technically, this makes the research a 'critical ethnographic case study'.

4.3.1 Overview of critical ethnography

The established view of ethnography is that it is a singular method of observing derived from anthropology (Hair & Clark, 2003). In this most characteristic form, ethnography involves the researcher participating as

observer (going 'native'), overtly or covertly in people's daily lives for an extended period of time watching what happens (Bate, 1997). Alternative views, however, consider ethnography not as a single method or technique, but rather as a discipline based upon culture as an organising concept and a mix of both observational and interviewing techniques to record behavioural dynamics (Hair & Clark, 2003). Bate (1997) argues that the key differentiator of ethnography is its pragmatic attitude:

> *… whereas qualitative researchers seem to have an insatiable appetite for "how to" methods books, ethnographers are much less fussy, preferring instead to "suck it and see", keeping their plans roomy and adaptive, perhaps occasionally offering the odd aphorism or piece of "advice" to would-be researchers – like: "I suggest you buy a notebook" … "Get yourself a decent hamper from Fortnum and Mason's and keep away from the native women" … "Make your will, buy yourself some shorts with locust-proof pocket flaps, and be sure you have a good stock of nail varnish for the local dandies" …! Obviously, the desire to preserve some of the mystique of anthropology is a factor in this, but the main point here … is that many ethnographers believe there are no rules as such, and the only way to do ethnography is to just get out and do it. (Bate, 1997:1152)*

Ethnography finds itself resonating with the needs of and being used within the field of technology research because much technology research tends to focus on the social and organizational contexts of information systems (Myers, 1999).

Within ethnography there are many different schools or types, of which 'critical ethnography' is but one type (Myers, 1999). For Myers, critical ethnography, "sees ethnographic research as emergent process, involving a dialogue between the ethnographer and the people in the research setting" (Myers, 1999:8). Critical ethnographers, moreover, scrutinize hidden agendas,

power centers and assumptions which inhibit, repress and constrain.

The main strength of critical ethnography is that it is the most in-depth, or most intensive research approach possible (Myers, 1999). A second key strength is its effectiveness in challenging commonly held, underlying beliefs and assumptions. Weaknesses of the method include the amount of time it takes to conduct the fieldwork as well as process and write-up the findings as well as and the limited generalizability of the findings. On the latter point, Myers, (1999) however, observes that there are many examples where theory has been able to be extrapolated from focused, case study type research studies.

4.3.2 Doing critical ethnography

Hair and Clark's (2003) five-step process to conducting critical ethnography was followed.

4.3.2.1 Identifying the community

Gaining access to the community of research interest is generally perceived to be one of the most considerable stumbling blocks to conducting ethnography. The role of gatekeepers is emphasized as are privacy concerns by the community. Because credit scoring is regarded as the 'crown jewels' to many banks, information privacy was a major factor which had to be managed continuously throughout the course of the research. This was accomplished by gaining bank executive support, by reassuring the community of the objectives of the research, and by keeping the questions non-specific to scoring algorithms.

The researcher gained access to the community of interest by firstly making contact with and proposing the research project to the Retail Banking Executive committee of the bank at which the case research was conducted. The Retail Banking Executive committee is the principle governing

body at the bank and through its endorsement of the initiative the researcher was introduced to the various gatekeepers. The gatekeepers were the general managers of the decentralized product divisions within the bank. To allay any initial concerns of the gatekeepers and other stakeholders, in other words, the credit scoring departments within the product divisions within the bank, letters of introduction were sent via email (see Appendix 1: Covering letter gaining access to community) explaining the purpose of the research in broad terms. The letters of introduction requested an audience with the gatekeeper and the head of credit scoring so that suitable participants in the community of research interest could be identified. "Suitable participants" were deemed to be any employees of the bank who were involved currently, or in the past six months, in building credit application scorecards within the retail cluster of the bank.

4.3.2.2 Negotiating access

Having identified potential members of the community of interest and having been granted an introductory interview (see Appendix 2: First introduction for an example to the invitation for a meeting), the researcher sought to explain in person his project, its role and the benefits of the research to the community in greater detail. Great care was taken to reassure future participants that the research was both about them as well as for them – the findings providing direction on long-standing and burning problems for the community. It was impressed upon the future members of the community that they were free to withdraw from the participation at any time, without reason.

4.3.2.3 Making contact

As has been observed above, first-hand observation of communities of interest is paramount in critical ethnography. Close proximity provides access to feelings and perceptions not readily available through other methods. It also serves to identify additional key participants on the ground who might be

able to offer further insight into the problem.

Observation creates, “a greater sense of awareness from which patterns of conflict and acts of suppression will emerge” (Hair and Clark, 2003:7). Awareness comes from translating observations into intense reflection on reasons for behaviours and events. Altering data collection methods is entertained if the change is likely to produce new insight. However, being unsystematic as a result needs to be guarded against. Generally detailed field notes on the researcher’s experience and documentary evidence are the preferred means of data collection.

Observation in this instance did not involve trying, “to mingle in to get access to the water-cooler discussions” (Chak On See, 2003), as is proposed in some research. For the research “making contact” meant firstly gaining access to the management meetings and other ad hoc meetings at which credit scoring was discussed. Next, it meant collecting technical documentation relating to credit scoring, including training material and Divisional Credit Committee submissions. Thereafter, it meant observing the process whereby the scorecards are designed.

4.3.2.4 Conducing in-depth interviews

Conventional ethnography uses either unstructured or semi-structured interviews with community members to facilitate an understanding of meaning. Denzin (1989) argues that unstructured interviews are most appropriate when probing the subjective experiences of individuals and when conducting critical research. Further to this, critical ethnography may use dialogic interviews which are interactive, exploring hidden meanings through joint explorations of subject matter. Such an approach requires the researcher to verify at each stage their understandings, before proceeding further with analysis and critique.

In terms of the research, this meant that the researcher interviewed in an

unstructured manner, on a one-to-one basis, members of the credit scoring communities identified through the previous steps. In most instances, it also meant repeating interviews to clarify the researcher's interpretation (see next) and to further probe emergent issues.

The in-depth interviews proved to be the primary technique used in the course of the research.

4.3.2.5 Returning results and analysis to community

In order to progress the emancipatory agenda of the research and the development of theory, the findings of the research ought to be returned to participant communities for commentary and subsequent reworking.

On this score, the researcher both iterated his preliminary findings with the community of interest as well as presented and discussed the final outcomes to various interested stakeholders and gatekeepers.

4.4 Population and sample

One of the four large retail banks in South Africa, namely Absa, FirstRand Bank Limited (FNB), Nedbank, or Standard Bank was approached to participate in the research. This solicitation was driven by convenience – the researcher being an employee of the bank at which the research was conducted. For reasons of confidentiality, the name of the participating institution was kept anonymous.

Although credit application scoring is technically designed and managed federally within the nine different divisions which constitute the retail cluster at the bank at which the research was conducted, resource constraints have resulted in much of this work being conducted, delivered and managed from a central capacity by service level agreement. As a consequence, though the research set out in its design phase planning to interview in-depth no less

than two participants from each participating product division in this federal arrangement (in other words, 18 participants), evidence on the ground showed that in fact the population consisted of a finite set of 10 credit scoring practitioners. This community of interest was arrived at through a process of referral. At each introductory meeting, credit practitioners were asked to define the known universe of fellow credit practitioners – colleagues – who were broadly involved in credit application scoring, whether they be statisticians, technicians or analysts. The entire universe of 10 practitioners subsequently participated within the research. Table 2 below lists the practitioners' product and scorecard experience. By agreement with the participants and in the interests of confidentiality, pseudonyms have been used.

Table 2: Scorecard experience of community of practice

Pseudonym	**Main product experience**	**Scorecard experience**
1. Alfred	Credit card and microlending products	Behavioural and application scorecards
2. Anne	Mortgage products	Behavioural and application scorecards
3. Bronwyn	Transactional (current accounts), asset based finance, microlending, savings, investments, and credit card products	Behavioural and application scorecards
4. Elizabeth	Transactional (current accounts), asset based finance, and mortgages products	Behavioural and application scorecards

Pseudonym	Main product experience	Scorecard experience
5. James	Transactional (current accounts), asset based finance, microlending, savings, investments, and credit card products	Behavioural and application scorecards
6. Jane	Microlending products	Behavioural, application and collection scorecards
7. Margaret	Credit card and microlending products	Behavioural and application scorecards
8. Norman	Transactional (current accounts), asset based finance, mortgages, microlending, savings, investments, and credit card products	Behavioural scorecards
9. Patrick	Asset based finance, mortgages, microlending, and credit card products	Behavioural and application scorecards
10. Richard	Transactional (current accounts), asset based finance, microlending, savings, investments, and credit card products	Behavioural, application and collection scorecards

4.5 Data collection

Three ways of sourcing data were deployed: researcher observations, in-depth interviews and documentation collection (Myers, 1999).

4.5.1 Researcher observations

Regular field notes are a defining characteristic of ethnography (Myers, 1999). Comprehensive notes therefore were written-up on an ongoing basis, covering observations, impressions, feelings, hunches and questions which emerged. These field notes were chronicled and transcribed on a weekly basis to an electronic format to facilitate referencing, retrieval and archiving.

Following Myers' (1999) recommendation, field notes were regularly reviewed to inform the interview process and further theory development. These were distilled in the form of 'analytical memos' against which progress was assessed.

4.5.2 In-depth interviews

The interview roster and schedule was set based on the outcomes of the negotiated access stage. In the main, all interviews were conducted at the participants' respective offices in order to put participants at ease, thus contributing to the sharing process. Onsite interviews also ensured that any documentation that was required by interviewees to support discussion was at hand during the interview. Because of the unstructured format of the interview, the duration of the interview was variable. Work time constraints, however, meant that all interviews ran to an hour in duration at most.

With the upfront consent of participants, all interviews were voice recorded. The voice records were transcribed to text by professional transcribers and functioned as supporting material to the analysis.

The voice recordings were supplemented with interviewee

illustrations, field note observations, and conceptual summations, taken at the time of the interview.

4.5.3 Documentation collection

Data output, scorecard models, statistical analyses, analytical reports, company memoranda and correspondence and the like relevant to the research were actively solicited by the ethnographer. Care was taken not to compromise the intellectual property rights and confidentiality of the participating community.

4.6 Data interpretation and write-up

Following Alvesson and Skoldberg (2000), a three-level process to data analysis and interpretation was followed.

4.6.1 Interpretation

Preliminary interpretations were made while the data was being collected, the degree of which being relatively low. Interpretation was guided by critical identity theory. On completion of the data collection, more systematic, second-level interpretation was made. The material was allowed to inspire, develop, and reshape theoretical ideas within critical identity theory.

4.6.2 Critical interpretation

Following the interpretation of the data against critical identity theory, the roles of ideology, power and social reproduction were explored and unpacked.

4.6.3 Write-up

The write-up discovers importance both from a critical and an ethnographic point of view (Myers, 1999; Bate, 1997). How the text is produced and what language is used therefore was deliberately reflected upon in the

write-up. What claims to authority the research appeals to was attended to: so too were the voices represented in the write-up.

4.7 Validity and reliability

The use of positivist criteria, even such as those of Lincoln and Guba (1985), for evaluating qualitative research has been argued to reflect the dominance of quantitative research logic in, "certain social science disciplines" (Pozzebon, 2004:280). While some qualitative researchers teeter on the edge of wholesale rejection of principles for evaluating their work, the general consensus is that, "it is better to have some principles than none at all, since the absence of any criteria increases the risk that interpretative work will continue to be judged inappropriately" (Klein & Myers, 1999:68).

Klein and Myers' (1999) set of principles for conducting and evaluating field studies in information systems is broadly recognized as the touchstone for qualitative research evaluation (Pozzebon, 2004). Because their principles are hermeneutically informed and thus not necessarily applicable in the context of postmodernism or deconstructionism (Klein & Myers, 1999), the door is left open for Pozzebon (2004) to assemble four criteria for evaluating critical research. That these criteria are built on criteria for judging ethnographic (largely Golden-Biddle and Locke, 1993) and critical research (largely Alvesson and Skoldberg, 2000), lends support to the argument for their use in evaluating this research in particular.

Table 3: Criteria for critical interpretative research (Pozzebon, 2004)

Criteria (Pozzebon, 2004)	**Aspects of Interpretations (Based on Alvesson and Skoldberg, 2000)**
1. Authenticity	Interaction with empirical material
2. Plausibility	Sound interpretation
3. Criticality	Critical interpretation

Criteria (Pozzebon, 2004)	Aspects of Interpretations (Based on Alvesson and Skoldberg, 2000)
4. Reflexivity	Reflection on text production and language use

4.7.1 Expressing authenticity

Authenticity refers to being genuine to the field experience as a consequence of *being there* (Bate, 1997). For the research, this means a deep immersion in the field, interpreting the participants' interpretations of credit scoring. It means demonstrating familiarity and deep understanding with the vernacular of the field. It means delineating the researcher's relationship to participants in the field. Lastly it means depicting the disciplined pursuit and analysis of data, including raw data, field notes, and documents. In this respect post hoc respondent validation is expected by conducting follow-up interviews and sending write-ups of events to respondents for feedback.

Nine months were spent in the field immersed in the experiences of the community and interviewing participants. Testimony to this were the relationships which were formed with members of the community of practitioners. Further evidence of this was the readiness with which I was included into their management meetings. As far as is practically feasible the breadth of this experience has been shared in this write-up. Lastly, as has been remarked on, follow-up interviews were conducted with the community and feedback was constantly provided to them on the direction that the study was taking.

4.7.2 Expressing plausibility

Plausibility is defined by Pozzebon as the ability of the text to connect to the reader's worldview. It refers to the rhetorical strategies used in the write-up phase to position the research as relevant to the concerns of the intended audience. By focusing on the write- up phase, plausibility differentiates

itself from authenticity, which addresses the field-work phase.

Plausibility, secondly, involves offering a distinctive contribution to the field of study. Following Golden-Biddle and Locke (1993), plausibility also is reflected in a colourful authoring of the research – dramatic authoring which creates expectation for the reader.

For the researcher, plausibility involved understanding and engaging with the issues and concerns of the anticipated readership. It meant establishing connections and getting to know their personal and disciplinary backgrounds. In order to meet this requirement, the researcher actively participated within formal credit governance forums within the bank. Much time was also spent reviewing numerous internal bank credit reports and following externally published credit-related trade magazines, journals and papers for style and content. The write-up of the report was therefore made mindful of this anticipated audience and advanced drafts of the report were circulated to some few members of the community for comment in order to align expectations.

Whether or not the study has offered a distinctive contribution to the field of study is too soon to say. As an intervention, the research did have some success in initiating thought among the community. This was evident from the emotive responses to some of my questioning as well as impassioned defenses of their practices.

In the mould of Golden-Biddle and Locke (1993), the report has been authored in a colourful and sensational manner.

4.7.3 Raising criticality

For Pozzebon, criticality is the ability of the text to entice readers to question taken-for-granted ideas and beliefs. It is the ability to put forward an understanding of ourselves and others in a novel way. For this

research, criticality means deliberate moments of reflection, within the text, where readers are challenged to pause and think about how credit scoring constructs identity. It means posing questions to the reader. It means, furthermore, using metaphorical language in order to shift readers' approach to texts (Golden-Biddle & Locke, 1993).

The principle means by which criticality was demonstrated was through logical contradiction. This is most telling in the analysis of the scorecard and borrower assumptions, where numerous inconsistencies are highlighted in practitioners' discourses. The effectiveness of this approach can be attributed to the significance of logic to the community. Criticality was also raised through my interrogation of the seldom-questioned foundations of credit scoring. Lastly it was expressed by restating the problem in different ways.

4.7.4 Experimenting with reflexivity

Reflexivity involves reflecting on how text is produced and how language is used, thus revealing the ambiguity of language. It involves the researcher actively exploring the foreground to their research and the extent to which their efforts construct realities. As Kincheloe and McLaren (2000) put it, "critical researchers enter into investigation with their assumptions on the table, so no one is confused concerning the epistemological and political baggage they bring with them to the research site" (2000:292).

Reflexivity was asserted in an ongoing basis throughout the authoring of this text, whether that be, through the use the first person (for example, "*I* have elected to insert my subjectivity"), the statement of personal opinion (for example, "my *impression* from the interviews"), owning the personal relevance of the research (for example, "When conceiving of this research programme I was an initiate into the area, having no prior experience or knowledge of credit scoring"), the spatial location of author and reader (for example, "the reader can draw his or her own conclusion on the study's limitations"), and the

deliberate use of non-words (for example, “the neologism ‘riskiness’ is used consciously over the commonly used ‘risk’ in order to draw attention through dissonance to the concept of risk as a dimension of personality”).

4.8 Conclusion

If the literature review is the foundation to the study, Chapter 4 has provided the shovel for how the research problem should be tackled.

The critical research method was introduced as the approach most consistent with the epistemological questions being entertained. Next critical ethnography was put forward as preferred technique because of its demonstrated success in tackling similar problems, in technology and assumption discovery. Where the analogy to a shovel falls short for critical ethnography is that unlike a shovel the method chosen for this study was shown to be foregrounded with assumptions. Unlike a blunt, sightless tool therefore, critical ethnography was recognized as being a conscious intervention whose very ontology shapes the solution.

In having detailed the step-approach in which the research was conducted, Pozzebon’s four criteria – authenticity, plausibility, criticality and reflexivity – for evaluating critical research were advanced as appropriate standards for judging the work.

CHAPTER 5: PRESENTATION AND INTERPRETATION OF RESULTS

5.1 Introduction

In the chapter which follows, I firstly consolidate, summarise, and distil the extensive and motley data which were collected over the nine months I was engaged with the community of credit scoring practitioners. The presentation and interpretation of the results is guided and structured around the sub-questions to the research, namely:

1. Characteristics typically used in building scorecards
2. The predicted variable
3. Credit scoring and scorecard assumptions
4. Borrower assumptions
5. Groups excluded through credit scoring
6. Consequences of exclusion
7. Alternative scorecard characteristics

A discussion of the main question is held off to the concluding chapter, chapter six, when the principle findings from the research are summarized.

5.2 Characteristics typically used in building scorecards

> *Now, there are three main sources of information that are not always available, but you can try and choose from. The first one is typically the bureau. The second one is application information. The third*

is what you call relationship information. (Alfred, 24 June 2005)

Without exception and without prompt, all credit scoring practitioners participating within the research process recognised three broad sources of credit scoring characteristics, namely (i) bureaux, (ii) relationship or behavioural, and (iii) application data. On the one hand, the consistency of their replies surprised me; but on the other, I realized that despite the fact that the practitioners applied their trade in different parts of the bank, on different products, they did form a close-knit community. In addition, many of the scorers were hired into the bank from the same company, Experian ITC, and therefore had the same or similar rites of initiation.

Beyond this broad level of agreement there was little consensus. This was partly a function of the fact that the credit practitioners worked across different banking products – these products requiring different input variables to construct the scorecards.

For practitioners, the richest source and the most predictive of data were from the bureaux, from which they were in a position to draw literally thousands of potential fields (Patrick, 7 June 2005; Alfred, 24 June 2005). Examples of commonly used fields included:

1. the number of credit enquiries which have been made against an applicant,

2. the number of credit products applicants have (payment profiles),

3. the age of credit products (how long they have been open), and

4. the number of legal judgments which have been made against an applicant (number of adverse decisions or “status fields”).

Little was said about behavioural data. From the feedback of participants, such as Elizabeth (23 June 2005), one of the fundamental limitations of

this form of data was that it could only be applied to scoring an applicant if the applicant was already a client of the bank. For this reason, separate scorecards had to be built; one assuming that no behavioural data existed and the other, that they did.

Application information, for most practitioners, offered the opportunity to fatten-up bureax and behavioural data with information not contained in either. It also offered the opportunity to cross-question and "trick" credit applicants into divulging their true riskiness (see Assumption 2.6: Borrowers have an essential riskiness below).

> *Some trick questions that you could put on the form like – give us a reference and if he puts his parents as a reference, he might be lower risk than if he puts on his girlfriend for example. (James, 6 April 2005)*

> *So … I can now ask you how old are you, what's your profession, do you want to take out a payment protection plan? Do you want to take out insurance, so in the event you can't afford to pay, there's something that will cover you. Typically, people who choose that, are high risk because they think, "Oh, let me take this, because there's a chance I might not pay". Another one is – do you want any immediate cash advance? And typically, people who want cash urgently are high risk. And there are others – would you like us to put you through our process, there's an additional fee, but you will get a card three days sooner? You know, things like that. So, people who are hungry and desperate for credit, typically tick these things as 'yes' and they push you up in your level of risk. (Margaret, 24 June 2005)*

> *You ask them a question – do you want a cash advance? But, when they get their credit card and they said no, they can still draw money, but if they ticked that box and said "yes", we know they're more risky. (Alfred, 24 June 2005)*

Over and above these trick questions, examples of commonly used application fields included:

1. ID number – from which age is derived,
2. salary,
3. education,
4. residential status,
5. living with parents, and
6. home ownership.

Overall, my impression from the interviews as well as the review of the literature, was that generally the characteristics which would be considered for building scorecards by the community of scorers differed little from that proposed within international literature, for example Schreiner (2002). What differed, however, is the richness of the data available for consideration in South Africa. (Generally, it was thought to be inferior). Another fundamental difference is that scorecard practitioners have begun to preclude potentially discriminatory variables, in anticipation of the promulgation of the National Credit Bill.

> *Some of the things that used to get in there is things like gender, marital status, age, which generally now, I'm trying to not use them at all; to be careful in terms of the Credit Bill itself. Some banks even have language in their scorecards. (Jane, 22 June 2005)*

On circumspection, it is my view that this sub-question of the research may have been better and more thoroughly explored. Responsibility for any such perceived failings must be taken by the researcher. Mitigating the outcome of this part of the research problem is that I used scorecard characteristics

as an ice-breaker to open up discussion with the community and did not wish to interrogate them too closely and have them withdraw from the process. In addition, my access and interview time was restricted and I needed to cover considerable territory. And lastly, I was much too eager to explore other facets of the broader problem.

5.3 The predicted variable

> *The whole scorecard building process is just logistic regression. Logistic regression, you're only predicting a one or a zero. But you never get a one, so you're actually predicting probability. (Margaret, 24 June 2005)*

In order to explore the chain of causality between scorecard characteristics and what the enterprise purports to do, I probed the scorecard practitioners on their understanding of the predicted variable. This was also done in order to gain a better insight into the self-awareness with which my community applied the tools of their trade.

Through the process of describing how scorecards are built with specific characteristics, the practitioners unanimously spoke about using predictive regression techniques.

These techniques involved taking very many variables (".. we can start off with possibly 200 variables …", Margaret, 24 June 2005) and passing them through a process which effectively stripped out the least predictive, in other words least correlated, variables in favour of the better. In order to perform this process, however, a predicted variable had to be identified in advance.

> *What linear regression tries to do is, is says – tell me what the output is? Say, bad. Then it says – tell me what the factors are that you see that predict bad, and what it will do is, it will fit a linear line through*

these different variables and it will try and minimise the error of this variable. (Alfred, 24 June 2005)

Prompted for which predicted variable was used, the practitioners spoke with one voice about good versus bad status, that the definition varied across products and that this variable was defined by international compliance to the Basel II Capital Accord.

Neil: Just tell me what are the variables that you are predicting for?

Patrick: That's good and bad status that you're looking for.

Neil: And that's fairly standard across the product groups, is that right?

Patrick: Yes, I would say fair. We're aiming towards the Basel 90 day plus definition for the scorecards that we've developed so far. (Patrick, 7 June 2005)

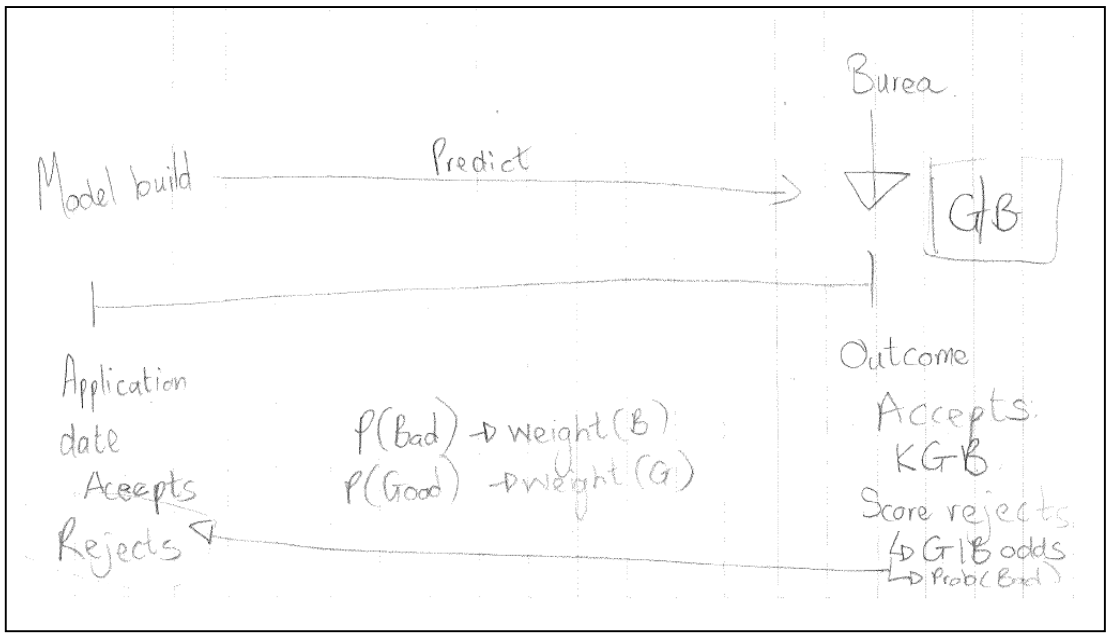
(Substance was thus provided to arguments made in the literature, such as that of the Basel Committee on Banking Supervision (2000) and Allen, DeLong and Saunders (2004), that the Accord is a significant driver of credit scoring).

From the different accounts of the good versus bad definition, it is my broad understanding that the scoring practitioners are exploring, per product, clients who have in some form or another defaulted on the payment of, or fallen into arrears in paying, the product. Because the variable is binary in nature – you either default or you don't – what scorers are actually predicting is the negative outcome ("[A]ctually you're just predicting bad", Margaret, 24 June 2005).

Therefore in summary, from my engagement with my community of practitioners was evident the following: Firstly, credit scorecards associate variables with a particular outcome. Secondly, this is done using any

variable which might reliably and cost effectively associate with the outcome. Thirdly, the predicted variable is a rarified technical definition which is tantamount to whether a credit applicant is a poor payer or not and finally, for scorers correlation *is* causality despite the fact that the linkages between the cause and the effect were little known or understood.

Figure 1: Process sketch of scorecard model building (Margaret, 24 June 2005)



5.4 Credit scoring and scorecard assumptions

In this section, the most palpable assumptions which the community of practice made about credit scoring and scorecard are identified.

Assumptions form a complex web of interwoven beliefs – seldom expressly voiced. For the purpose of reporting, they have been given a structure and some form of logical coherence which they might not have had before. Also for reporting, the categorization of assumptions has been kept deliberately broad-brush in order to avoid chasing potentially spurious distinctions. As a result, some of the main assumptions will have covered finer, more nuanced

assumptions which might arguably form distinctive assumptions of their own.

Four clusters of credit scoring and scorecard assumptions emerge through the analysis.

5.4.1 Assumption 1.1: Human credit decisions are faulty and unsustainable

> *Just look at Credit people. Please man. Years ago they were like cops, the most horrid people on god's earth. The phone calls that they dished out to people and how they treated applicants. It's like, "I'm god. You will fill in that form". It's like playing a very powerful game. And, depending on how these okes feel, they grant or decline loans. It's ridiculous. Barring if you can get back to the very old days, when a branch manager was a very, very powerful person in any town. He was equal to the big guns, the politicians. These days you get snot-kop kids being branch managers. What do they know about credit and credit granting and people's experiences or life in totality? And here I am sitting, "Please, I want money". "No, I don't like you, you look poor". Or whatever. (Norman, 23 June 2005)*

The fundamental premise on which the scoring enterprise is founded is that the decisions of individuals – historically the credit managers – are faulted. These faults stem from the inconsistency of human decision making, either as a result of emotion or the inability to apply the same set of rules in the same way. Norman, for instance, spoke impassionedly about the power of credit managers of old to grant credit depending on how they felt on the day. Asked to comment on Norman's observation in the second round of interviews Margaret put it thus:

> *I'm just saying that a credit manager is a human being and that personal dislike could come into it, where in the system it can't. So the system does not have any personal interest whatsoever in people, where a credit manager … I mean, if a nice looking young blonde*

chick or a woman walked into your office you would so much more likely give her credit than an old tannie who walks into the office. Because he's a man, she's a woman, she's looking pretty – there's personal interest there. In the scoring system, we don't care what the person looks like. We look at their behaviour and that's it. (Margaret, 2 August 2005)

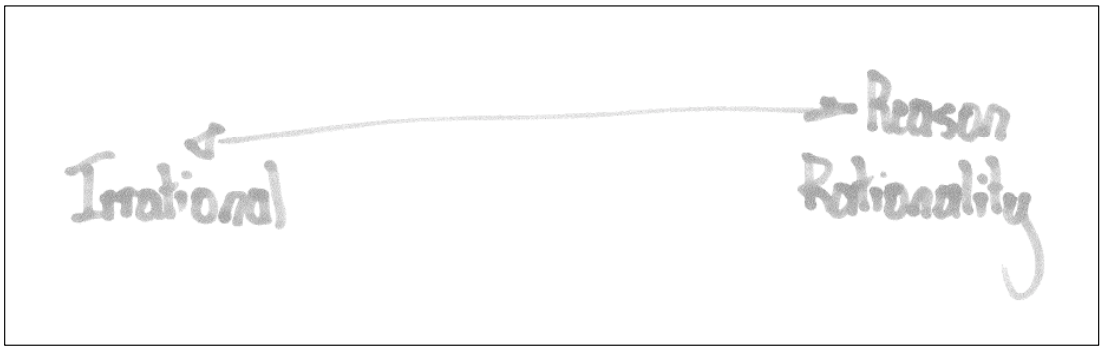
A second feature of human decision making which makes it unsustainable, is that it cannot be readily scaled for volume, in other words automated (Bronwyn, 13 June 2005). As the number of credit applicants increases, so too do the number of credit managers required. With the addition of every credit manager comes further emotion thus compounding the inconsistency of credit decision making. The prospect of technology replacing humans absolutely is therefore viewed enormously favourably. With the heralding of automated decision engines, technology is viewed as tantamount to progress.

One wants to make progress and technology is the only way. (Bronwyn, 13 June 2005)

Together, these sentiments towards technology strongly support Orlikowski and Iacono's (2001) argument that many people still rely on received notions of technology and what it has to deliver leading to the IT artifact disappearing from view.

For me, implicit in the discourses supporting this first assumption is that firstly, emotion is split as the antithesis of rationality and secondly, anything emotive or irrational is seen to be pejorative, having no belonging or right to belong. This view I summarized in the form of axes following my first round of interviews and subsequently positioned with my community of practitioners as Figure 2.

Figure 2: Irrational vs. rationality axes (Neil, 24 June 2005)



5.4.2 *Assumption 1.2: The past predicts the future*

> *Well, the only thing you have to predict the future is the past. That's the best we can do and from my experience it's quite good. Because what they say is, history repeats itself. If you've been bad for the last six months, you're probably going to be bad. I don't know if there's any other way of doing this. (Margaret, 24 June 2005)*

> *So, the reason behind having a scorecard is to try and get to a point where the decision around you choosing somebody who is going to be good is better than flipping a coin – that's kind of the first thing you want to be and there are a number of things which kind of play there. (Alfred, 24 June 2005)*

In blackballing credit managers, manual credit assessments and the vagaries of human nature, scorecard practitioners turn to logic as their saving grace.

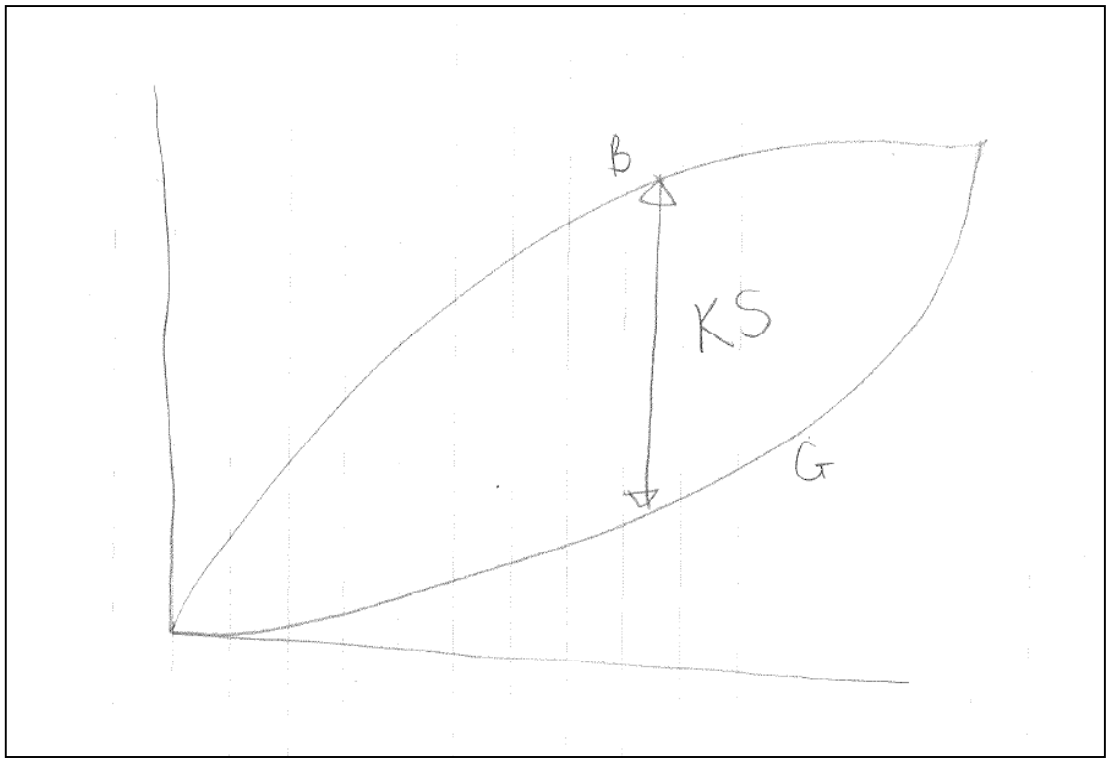
This saviour takes the particular form of inductive logic and probability theory and was especially prominent in the discourses of Alfred and Margaret who frequently spoke of probability, odds, prediction and their role in improving the outcomes of decision-making.

From them we get good/bad odds and then a probability of going bad. Then we use this probability and throw it back to these rejects. So your probability of bad, your weight has a bad; your probability of good, your weight is a good. When you add those, you get one. Then we have information on these people as well. Then we go back and we build the model. We try to predict risk there. (Margaret, 24 June 2005)

So, that's the basic philosophy for having a scorecard; is to get from kind of 50/50. Or you could just prove everyone here in the situation to say I'm going to approve 80%, decline 20%. (Alfred, 24 June 2005)

In short, inductive reasoning is based on the assumption that what was the case in the past will probably be the case in the future. Building scorecards involves both calculating the "probably" and improving it. Margaret, for example, demonstrated in Figure 3 how scorecard practitioners work at maximising the gap, the "genie" (Margaret, 24 June 2005), between goods and bads, thus improving the predictability of their forecasting models.

Figure 3: Maximizing predictability (Margaret, 24 June 2005)



In order for the future to be reliably predicted from the past, however, a number of factors need to be held constant:

> *If he is gave the truth, if the quality was good and if the scorecard, when it was developed, formed very strongly and when we monitor it, it stays strong; no changes in the economy, no changes in the population profile, then yes, the prediction power is quite high. (Bronwyn, 13 June 2005)*

That scorecards operate on the assumption that the past repeats itself and that they function optimally in a static universe strongly suggested to me, following my first round of interviews, that scorecard practitioners are considerably invested in the status quo and an ultra-modernist, essentialist view of the world. What was and what is must continue to be. What is now is thus projected into the future. In the headspace of the community of scorers, therefore, there is little room for the discourse of change: chaos, difference, variation, discontinuity. Inductive logic is thus the antithesis of chaos. Although credit scoring discovers itself defined through this antithetical relationship, constant change does not sit easily with the enterprise. Having summarized the tension between certainty and chaos pictorially as Figure 4, I discussed it with the community of practitioners in my subsequent round of interviews with them.

Figure 4: Past predicts the future vs. constant change (Neil, 28 July 2005)



Generally, the community's response to this discussion was to argue in the first instance that scorecards are re-evaluated on an ongoing basis to establish their currency and in the second, that not all of a client's history is analysed by a scorecard model, only their more recent past. I was left dissatisfied by these rebuttals – these defenses. For me, shortening the amount of history used in the calculations does not necessarily reflect a different attitude towards change. The very logic of inductive logic collapses if one acknowledges that there is constant change.

5.4.3 *Assumption 1.3: Building scorecards is an imperfect science*

> *I will never sit here and tell you that scoring is an exact science or in any way perfect, because it's not. It has a lot of pitfalls and that is definitely ... (Elizabeth, 23 June 2005)*

One of the overriding assumptions that imbued the rhetoric of most of the community is that building score cards and credit scoring is a science involving rigour and discipline. This was a science built on pure mathematics as is reflected in my questioning of Alfred below, some of which is quoted previously in describing the predicted variable.

Neil: …. Speak to me about scorecards as a science.

Alfred: The underlying mathematics behind scorecards are normally well-founded mathematical principles. So, you get things like linear regression. What linear regression tries to do is, is says – tell me what the output is? Say, bad. Then it says – tell me what the factors are that you see that predict bad, and what it will do is, it will fit a linear line through these different variables and it will try and minimise the error of this variable. Like you can get like dots on an Excel Spreadsheet, on a graph and you can right-click and put a train line through it and it will put a train line through it and what it does is, it's taking the movement between the X and Y axis across all those points it tries to minimise your error. It's a simple way of explaining linear revision. There are different mathematical functions that will do that – thousands of them. Some of them are really powerful and efficient, but some of them are not. What you will find is the statistical software that you purchase will have a lot of different options around which you can use. SAS is one of the better ones, which is available, but there are a lot of others. So, there's linear regression; there's logarithmic which then gives you the ability to fit certain types of curves; there's all sorts of mathematical functions that you can use there. (Alfred, 24 June 2005)

Supporting the assumption that credit scoring is a scientific and therefore more credible discipline, the community in general felt that the credit scoring and statistics were inherently neutral lacking a foreground of assumptions.

As you should know, that it's not a subjective exercise when you create scorecards. (Norman, 23 June 2005)

Because, being subjective, is a hell of a long process. It's a laborious and a painful process. If you're ahead in technology and you're objective, the ideal is, when the client walks into that bank, "There's

money for you sir", without signing anything. And monitoring these people, because again, what I'm saying is limits are granted subjectively, because business decides. We say we want to give this guy R100 000. They say, "Oh, we don't have appetite for risk", we will cap that R50 000 for say, some CG. It's pathetic. Why then go through all of this? This is exactly what happens. We say, "Give the guy R100 000", they give him 50. Now he is just over his limit. Now I did some analysis and it averages between R700 to R1500. Now that's where this RD thing comes in. Now what does the bank do? It goes and bounces this oke's cheques. Now there it's subjectivity versus being empirical. To me it's a proven fact. There's so much research done on that, and it's proven how it works, especially in the States and the UK. It's unbelievable. (Norman, 23 June 2005)

I believe it's more objective now – before, it was more subjective. It's difficult to say this person is going to pay us back and that person is not going to pay us back. (Anne, 20 June 2005)

That the empirical lens of science is absolutely distortion free was intimated at also by the unresponsiveness of the community to direct questions on the assumptions underlying their practices. Despite being led along the path of discussing specific assumptions several times Margaret, for example, struggled to engage with the notion that credit scoring had any form of foregrounding at all. This inability to respond to the probe I attribute to the community's complete conviction in the imperiousness of the scientific enterprise. Science and mathematics for the community requires no justification. Its pedigree speaks for itself: it simply *is*. Their inability to engage with the question however also points, in my view, to a worrying lack of self-conscious criticality in the use and effects of their discipline.

Being objective is the way to be because nobody can disprove

statistics. Who can? Who can disprove mathematics? (Norman, 23 June 2005)

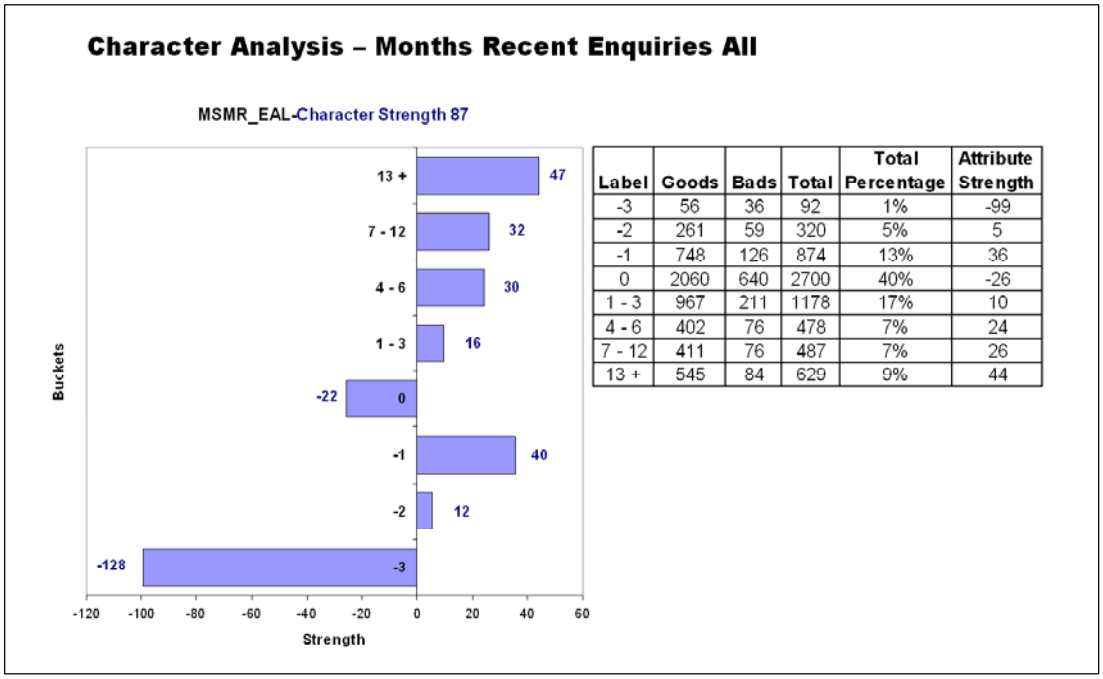
Being assumptionless, the language of credit scoring, numbers, formulae tables and graphs (see for example, Figures 5 and 6), were thus believed to be absolutely brilliantly transparent, without prejudice or ambiguity, reinforcing Orlikowski and Iacono's (2001) concern, once more, that the artifact itself disappears from view[2].

I'm a mathematician. So what the figures tell me, I believe. (Margaret, 24 June 2005)

You can only use past data and try the best to predict how people in similar categories will pay their accounts. And as I say, it's quite amazing how well you can see it. I've always found that is the best part of building a scorecard. It's where you've got raw data; you define good and bad customers and you get to the point where you plot. You get to the probability of bad for every single good. And sometimes you can't believe how well it's correlated. (Jane, 22 June 2005)

[2] "[T]he IT artifact itself tends to disappear from view, be taken for granted, or is presumed to be unproblematic once it is built and installed" (Orlikowski & Iacono, 2001:121).

Figure 5: Example of typical community graphical language (Richard, February 2005)



Label	Goods	Bads	Total	Total Percentage	Attribute Strength
-3	56	36	92	1%	-99
-2	261	59	320	5%	5
-1	748	126	874	13%	36
0	2060	640	2700	40%	-26
1 - 3	967	211	1178	17%	10
4 - 6	402	76	478	7%	24
7 - 12	411	76	487	7%	26
13 +	545	84	629	9%	44

Figure 6: Example of typical community graphical language (Richard, February 2005)

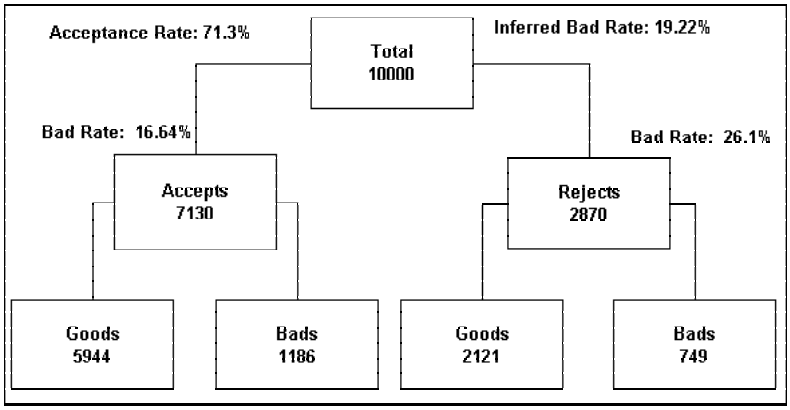
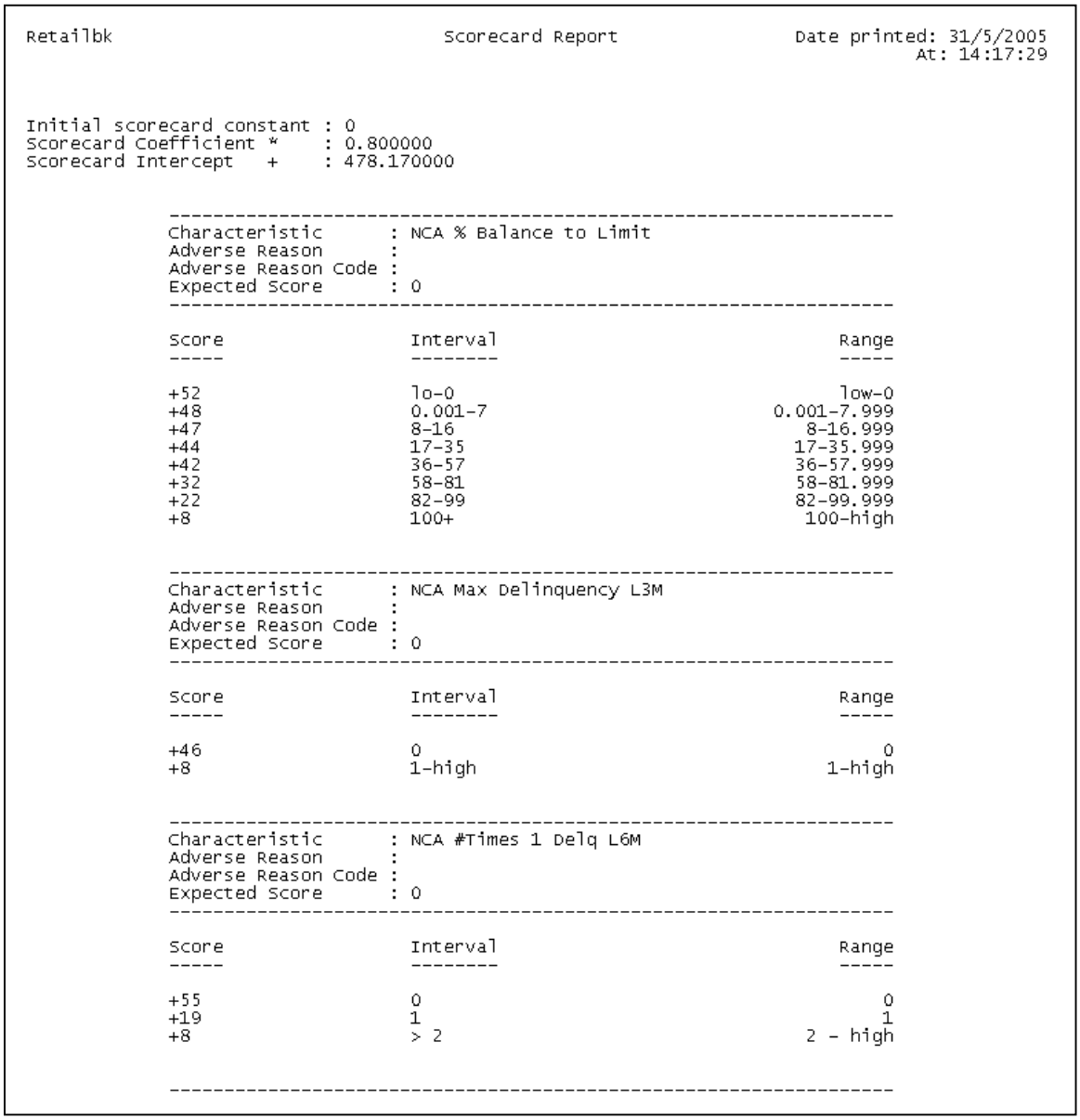


Figure 7: Example of typical scorecard report (Norman, 27 June 2005)



```
Retailbk                              Scorecard Report              Date printed: 31/5/2005
                                                                              At: 14:17:29


Initial scorecard constant : 0
Scorecard Coefficient *    : 0.800000
Scorecard Intercept   +    : 478.170000


            ---------------------------------------------------------------------
            Characteristic      : NCA % Balance to Limit
            Adverse Reason      :
            Adverse Reason Code :
            Expected Score      : 0
            ---------------------------------------------------------------------

            Score                 Interval                                  Range
            -----                 --------                                  -----

            +52                   lo-0                                      low-0
            +48                   0.001-7                             0.001-7.999
            +47                   8-16                                  8-16.999
            +44                   17-35                                 17-35.999
            +42                   36-57                                 36-57.999
            +32                   58-81                                 58-81.999
            +22                   82-99                                 82-99.999
            +8                    100+                                   100-high


            ---------------------------------------------------------------------
            Characteristic      : NCA Max Delinquency L3M
            Adverse Reason      :
            Adverse Reason Code :
            Expected Score      : 0
            ---------------------------------------------------------------------

            Score                 Interval                                  Range
            -----                 --------                                  -----

            +46                   0                                             0
            +8                    1-high                                   1-high


            ---------------------------------------------------------------------
            Characteristic      : NCA #Times 1 Delq L6M
            Adverse Reason      :
            Adverse Reason Code :
            Expected Score      : 0
            ---------------------------------------------------------------------

            Score                 Interval                                  Range
            -----                 --------                                  -----

            +55                   0                                             0
            +19                   1                                             1
            +8                    > 2                                   2 - high


            ---------------------------------------------------------------------
```

> *But the objective part of it is where you can see that there is not a lot of information. But the statistics actually tell you – that's where the objectivity comes in – that you can see these variables aren't very strong. (Patrick, 7 June 2005)*

For credit scorers such as Margaret, therefore, and for the community as a whole, truth resides in numbers and the ability to simulate individual action

through mathematics. The fact that reality was not always reflected in the numbers – in other words not borne out in consumers' behaviours – was not a fault of the numbers or the endeavour itself. Rather, the problem stemmed from not having enough of the right information and inefficiencies in the process of measurement.

> *Neil: So, building on what you said. You think it's more observation? One actually just has to feed scoring with more information [and it] would improve the truthfulness of the …*
>
> *Norman: Absolutely. No doubt. As far as I'm concerned, scoring is in its infancy. Because, in days to come, as far as I am concerned, they will eventually, like you do IQ tests or personality tests, that will come into the scoring process. You can get, I don't know whether you call it scorecards, but I know there's tests – ten questions – psychologists will sass you out with ten questions, and it's a proven fact. Why not bring it into the scorecard? Yes, they've got a long way to go. Demographics, DNA, you name it. I believe in it. Obviously. I mean, we're still walking around like Neanderthals as far as that is concerned. So, there's no doubt about it. But you will always have people building their little empires because people are very important – jobs. They have to control all these people so that he can be the oke bragging his arse off in meetings. And the bank gets nowhere with that. I call it AI, artificial intelligence takeover. And run with this thing. Yes, I firmly believe in it. No doubt. (Norman, 23 June 2005)*
>
> *There is obviously better ways of measuring a person's ability to pay back, or his willingness to pay back. But the information that we had at hand, and that we can use, is the bureau and the application information, the questions that we ask. Funnily enough, there was, on one of the Experian conferences, they had a questionnaire where, I think it was actually related to fraud, where it was something like 58*

questions and they would be able to predict just from those 58 questions whether the person will be falling into the mark. But then, obviously, practical things come into mind, as where you've got a person trying to sell a product and you ask him the 58 questions. (Patrick, 7 June 2005)

Neil: What are the opportunities of, I mean how might you pick up those needles [in the hay stack]?

Alfred: You could enhance your ability to see them by doing a lot more in your process. The problem is the process suddenly becomes incredibly expensive. (Alfred, 24 June 2005)

We really, really need better data capturing in [the bank] and the database structure, the inter-linking of information between data sources. That would greatly contribute to the quality and the predictive power of the scorecards. At the moment, I would say our scorecards are relatively moderate because of problematic data. You need clean data to work with and merging information across data sources. It's difficult at the moment. So yes, we end up using a very few accounts which we know they should be relatively clean and then we base the scorecards on them. But it limits the picture to only those that we could capture. So yes, there's a great opportunity for improvement, especially from a data point of view. Also, when we implement our application scorecards now then I should also build up a database of application variables; things that people should answer when they apply for credit. That we simply improve the scorecards in the moment that we can then also include those variables in future. It will take five years, but it will most probably help. (Bronwyn, 13 June 2005)

Bronwyn's proposed solutions above exemplify another commonly held perception within the community. Namely, that numbers had to be purged

and tortured in order for their truth to be plainly apparent to all. The concept of normalizing data appealed to the same perception (Patrick, 7 June 2005). So too did the distinction between dirty data and clean data and the need to filter data (Norman, 23 June 2005). For me, this poses somewhat of a contradiction for credit scoring. Effectively the sub-text is that not all numbers are the same and equal in the eye of the beholder. A value judgment is therefore being made. For an ostensibly cold, unemotive and rational discipline this jars.

For me however, the greatest contradiction in scorecards as a science lies in its capacity to create possibility, in other words, in its constructionist effects.

Having been schooled to believe that the scorecard as science simply involves creating a mirror of pure mathematics to reflect reality and that this reality is divorced from the process of reflection, the community were disbelieving that their enterprise had constructionist effects (for example, Jane, 22 June 2005). This is entirely consistent with their view that science is assumptionless and transparent. In my first interview with him, however, Norman made a telling comment where he likened the credit managers of yesteryear to god, "… it's like "I'm god. You will fill in that form" (Norman, 23 June 2005). Norman's vitriol towards credit managers is remarkable. Firstly, because it suggests that, like the Judeo-Christian conception of god, credit managers literally have a divine power to create and destroy. Secondly, although it is not apparently okay for a credit manager to be like god, it is clearly okay for credit scorecards to be bestowed with this absolute right and responsibility. Point two thus reinforces Assumption 1.1 explicated above: that in the divine hierarchy machines are above humankind. The first point though betrays even larger cracks in the argument that the scorecard science is merely one of reflection and description.

Interrogated further on the issue by soliciting specific comment in the second round of interviews on both Norman's diatribe as well as the article by

Ghoshal (2005) (see Figure 8), which I was reading at the time and had distributed to the community out of interest (see appendix for communication to the community), it gradually emerged among some of the community that they did recognize that credit scoring practices indeed impacted on their subject matter, despite their initial suppositions to the contrary. This is best exemplified in Elizabeth's comments on the article.

Figure 8: Gergen reference probed in second interview (Ghoshal, 2005)

> All of this would still not lead to any negative consequences for management practice but for the distinctive feature of double hermeneutic that characterizes the link between theory and practice in social domains. Unlike theories in the physical sciences, theories in the social sciences tend to be self-fulfilling (Gergen, 1973).

Neil: I'm going to jump – did you read this article? Essentially it speaks about management theories. They also go into the philosophy of science. The question that I have is like countries like the UK have fairly advanced economies, where you speak about a stable population. To what extent is the scorecard complicit in stabilising the market? I think it becomes a fundamental, philosophical question.

Elizabeth: [inaudible].

Neil: My position would be that scorecards are fundamental to form an important part of stabilising like credit behaviour.

Elizabeth: I'm assuming you've, amongst others, had other discussions with Richard.

Neil: I have.

Elizabeth: Okay. Because he has a favourite thing. What you're trying to do with the scorecard, you're trying to change behaviour and by doing that [inaudible].

Neil: So in that standardising you actually create some kind of stability. So you might have a highly dynamic changing market. But the more you measure, the more you apply these instruments, the more they became …

Elizabeth: Well you know, there's a big drive towards customer education around things like bureaus and things like that. Now, if you drill it into a customer's head that we are looking at your bureau information and using that information in the way that we make our decisions, and we will, if you skip a home loan payment, it is taken much more seriously than if you skip a Telkom payment. Chances are, you're actually going to influence that person's behaviour in terms of them actually paying their accounts. You may make sure that they rather pay their home loan, rather than their telephone. Which might not necessarily have been their personal preference. (Elizabeth, 2 August 2005)

Similarly, Alfred spoke about how credit applicants could get caught up within cycles of debt which trapped them in ever-worsening poverty.

Neil: But it creates different material, like … material opportunities for people. If you're at the bottom-end of the market, that can be fundamental.

Alfred: I don't know if you're leading to this, but I will say it now that – if you're not educated, you could end up in a terrible downward cycle, where you borrow money to buy groceries. You then have to

borrow money to pay off the money you've just borrowed because you can't afford to pay it back quick enough, and live. And you soon, suddenly end up in a position where you're borrowing less than what you owe and you can't live anymore and that's the danger of this thing. That's where you have the Reserve Bank which tries to oversee and govern how South Africa operates its credit businesses. And you have the banks which are governed by some public perception and so on. So there's a desire to be responsible when you lend – you get the loan sharks who couldn't care less – better make the money and bleed people dry, kind of thing. (Alfred, 24 June 2005)

Recapping then my findings on this assumption, the community of credit scorers intrinsically and uncritically believe that their discipline is scientific and that this claim alone provides justification to their activities. On further questioning, however, contradictions quickly appear, strongly suggesting that the foundations on which the enterprise are believed to be firmly based are chimeras. At its weakest, therefore, building scorecards is an imperfect science (Margaret, 24 June 2005; Jane, 22 June 2005); at its strongest, it is no science at all. Far from being a commonly held view, this last position is one that was expressed by some of the community. Whereas Alfred felt that scorecards involved both science and art, Richard opined that it was pure art. Clearly Richard's use of the term "art" is that the discipline – as I have shown elsewhere above – is heavily foregrounded and influenced by the gut of the scorecard builder him or herself.

Part of the scorecard is science and part of it is an art. (Alfred, 24 June 2005)

The other problem as well is, it's not a black and white science. It's grey because you're never going to get to the perfect zero one. Zero is bad and one is good. It's always going to be somewhere in-between and I think this is what people are missing, is that decision that I'm

making at a certain … (Richard, 29 July 2005)

I think that's why it doesn't catch on because people take it as a science. It's not a science; it's an art. Scorecard development is an art. The one thing that we have to get across is the first thing that you have to try and identify is, you need to identify things that are drivers of risk. What you then need to do then is, because this is how the assessment works, it's all on gut. (Richard, 29 July 2005)

In summary, although there were clear differences of opinion on whether credit scoring is a science or art, it is my view that much of this may well stem from certain personal preconceived and romanticized notions of what constitutes a science and an art. Notwithstanding these conceptions, the overwhelming view was that credit scoring was an honourable discipline that through its appeal to mathematical principles, rigour and science, need not explain or defend its pedigree.

5.4.4 *Assumption 1.4: Credit scoring's primary responsibilities are to create and protect corporate profit*

That's true. But I mean, we're running a business here which ultimately wants to make money and not make people change their behaviour. (Margaret, 24 June 2005)

Through the course of my interaction with the community of credit scorers and builders, I continuously sought to explore and understand their sense of responsibility and commitment to the consumer, the credit applicant. This I did in order to establish the community's "last line of defense" – the dominant decision bias to which the community would always swing when presented with decision alternatives.

First off, in their dialogues with me the community always positioned the needs of the corporate, the bank, differently to that of the individual.

The underlying premise here was that the interests of the credit applicant moved in opposition to that of the bank. Whereas the needs of the bank are to generate profits, through their need for credit and through their potentially irresponsible behaviour, the credit applicant is potentially profit-diluting. As employees – as instruments – of the bank, credit scorers therefore always find themselves weighted in favour of the bank. Given, for example, having to make a call between granting credit to a potentially risky applicant and improving the profit of the bank, a credit scorer will almost inevitably decide on the latter.

If the objective of the bank is seen to be making economic profit and if the scoring community acts in the interests of the bank, it then follows that the responsibility of the credit scorer is to maximize economic profit. This is the logic of the credit scorer; one that it applies to the problem by using mathematical algorithms to predict applicant behaviour.

> *Once again, on that – I mean those decisions and stuff, the framework that we work in is dictated to us and it all goes again in our shareholders stake and making a profit. And yes, it's using the math to enhance those figures. At the end of the day the choice, that's something that's been drilled into us, with the ethics as well. (Patrick, 28 July 2005)*

Since scorers act in the interests of banks first and foremost, it therefore also follows that they are obligated to deny credit to some while enabling credit to others. Those to whom credit is denied would in all likelihood dilute the profits generated to those whom credit is granted. What appears to be on the face of it a matter of simple economics however shrouds – in my opinion – a moral-ethical question as to the "correctness" of granting or denying credit. More appositely, being questioned is the agenda and rule set by which one applicant gains access to finance and another does not.

This issue came vividly to the fore in Elizabeth's response to my question, again probing Norman's 'god comment': If it was wrong for credit managers to be like god, to what extent is it right then for automated credit scorecards to be like god, no less creating possibilities for people?

> *Neil: You were a bit resistant to the concept of credit application scoring being associated with being like god. Given what we've just said, in what sense is it not good?*
>
> *Elizabeth: To me it's ultimately – we are a business and we're here to make money. So I can justify on business grounds. I don't see it as me playing a powerful political game. Whereas to imply it's acting like god is more about politics to me. It's not rational. It's a power play. And I don't think that's what anybody is trying to do. Not through being a credit manager, or by using an automatic system. On the contrary, we're trying to move away from that. So maybe "god" is the wrong terminology.*
>
> *Neil: A dream-maker?*
>
> *Elizabeth: If we use the dream-maker concept, then yes, we are very much. We're makers and dream-breakers, which can on a social level be seen as heart-breaking, but if you look at it from a business sense, then sorry, but no, I'm not going to go there. (Elizabeth, 2 August 2005)*

For Elizabeth, therefore, being god or being a dream-maker in the pursuit of business objectives is argument enough. Left seriously begging, however, in my view, is what corporate actions would then not be defensible, if business is the last line of argument? Given the weightiness of Elizabeth's argument, I would propose nothing.

Being an instrument of business I found it little surprising therefore, that

the community positioned The National Credit Act and Basel II Capital Accord apparently irreconcilably against one another. While the former is seen to represent the interests of the credit applicant, the latter is seen to operate in the interest of the bank and the business.

> *I think Basel II is more for the benefit of the bank, and the other one [the National Credit Act] is more to the benefit of the customer. (Anne, 20 June 2005)*

> *This is the predicament that we're facing. Because, how do you marry these two totally different concepts? Credit on the one hand, is saying – you have to get the economically inactive population involved, you can't realign, you can't go and charge rates, or whatever. You have to actually have this element of responsible lending. Whereas Basel, on the other hand, is saying – you've got to mitigate your risk at whole capital … gains, whatever high-risk profile customer you're having. So, that biases you towards the low-risk end of the market, whereas credible is doing precisely the opposite. How the hell do you bring the two together? That's the challenge that we face. And that's why I say – I think it's up to banks there to have some element of intervention from government, that together they seek some sort of solution. Because I don't think it's fair from a government point of view to have a policy stance which is very different to what the rest of our legislation is currently expecting of us. And at the same time we are still a bank. We fundamentally are a business who are here to make money. If that's not what we wanted to do, then the bank should finance that market. If they're wanting it in a traditional banking, or the government should finance it – if they want it to happen in a traditional banking environment, then you can't do that without any consideration of the risk element. You will risk your loss exposures. It's not profitable. It's not proper business sense. It's a huge challenge. I don't know how*

we're going to get the hell of it. I don't. (Elizabeth, 23 June 2005)

A final feature or consequence of this assumption which deserves highlighting is that the community on the whole felt passive to the process of business. They are literally the instruments of the profiting machine. The will of the business simply flowed through them.

> *You can build a model [inaudible] some people are going to lose their work, or some of the processes that you're going to automate with the computer systems that you're going to write, is people are going to lose their work. That decision at the end of the day is not made by the modeller or the developer. It's made by the entity who that process belongs to. It's sad but true. (Patrick, 28 July 2005)*

That credit scorers are completely submissive and transparent to the needs of the business is absolutely consistent with their world view – a view that has resonated, as I have argued, in the community's attitude towards numbers as well as the effects of their discipline. Entirely lacking are idiosyncrasy and human volition. From the way in which the community spoke, it would appear that not only would it be for the best that credit scoring be left to computers, but their own jobs too. Because there is no "desire" in the language of the machine, it is ironic that the community itself should yearn to be automata.

> *Neil: Your last defence is the bank's defence. We're all aggregates.*
>
> *Margaret: We're not all, no, but we're ultimately all numbers – face it. I'm happy to be a number. I don't think it's dehumanising. At least it's a unique number. (Margaret, 2 August 2005)*

In short, the role that credit application scoring has to play in preserving banks' profits is confirmed among the community. Although this presents no surprises considering that the assumption is entirely consistent with the literature, for example Boffey and Robson (1995), it does lead to the

needs of the individual being positioned separately to that of the corporate.

5.5 Borrower assumptions

Whereas in the previous section the purpose was to identify clusters of assumptions which underlie the credit scoring practices, in the section which follows I focus the lens of analysis on the assumptions made by the community of practice on borrowers themselves. As was the case with scorecard assumptions, such was the closeness of borrower assumptions to community that they did not often have ready access to their preconceptions. Consequently I found myself having to interpret and probe extensively.

Seven borrower assumptions are identified.

5.5.1 Assumption 2.1: Borrowers have essences

> *It's fascinating to see – it's actually a big driver if you look at the person's personality. It's not always losing your job or getting divorced – it's not those things. It's intrinsic the kind of person that you're dealing with. (Richard, 29 July 2005)*

Without question, the overriding view of the community of scorecard practitioners was that all individuals – borrowers – have intrinsic essences which can be distilled. These essences are defined by personality characteristics inherent to the individual. Richard (above) and Alfred (below) thus spoke confidently and knowledgably about the inherent goodness and badness of borrowers.

> *Neil: So, we present different fields of thought here. I present the average. You present the point of the individual. That the individual, me, as Neil, I have an inherent risk. I'm [on] the cusp of evilness or goodness.*

Alfred: So all the way up until now you've lived the good life, but deep inside you're a miserable bugger who's got a bad personality and you want to take the bank out. Okay – economics around a decision are a balance between – it's not only risk. So we will look at risk, but also all the others. (Alfred, 24 June 2005)

In the mindset of the community, essence is tantamount to truth. Part of the objective and challenge for credit scoring, therefore, was to discover the truth – specifically the truth of the individual. Falsehoods and deceptions had to be stripped away and deciphered in order to lay bare quintessence. This is well exemplified in my discussions with Alfred, who on several occasions brought conversation back to the concept of misrepresentation – that borrowers may deliberately present a facade different to what they are in truth.

Alfred: So there's inherently good and inherently bad. Lets make that the first split. An inherently bad person is going to take you for a ride and not be too flustered about it. If you want to commit fraud and if you want to take someone for a lot of … that's it. There's a difference here. Fraud – the bank thinks you're good and you know you're bad and you misrepresent yourself. Credit in some cases, they're misrepresenting themselves but it's more an ethical question. So they will represent themselves fine. But, what they're not telling you is – I have no intention of paying you back. And believe it or not, there are a lot of people like that who will take you for a ride. They couldn't care less about it. And what you see as well is, even once they've gone into default and you've told them – will you pay – and when you try to stop their card, they start spending below the … of it. So if they spend below the … of it, they can raise their balance up even higher and they know they shouldn't, but they still do it.

Neil: What drives that – I mean you speak about inherent badness.

Alfred: Again it comes down to averages, statistics. Inherently bad people, on average, are probably not going to be the first person they're taking for a ride. So I should get a view of this inherent bad, by looking at the bureau. (Alfred, 24 June 2005)

Similarly, in discussing with me the predictive power of scorecards, Bronwyn spoke about the importance of the individual's truth to the performance of the scorecard.

Neil: But ultimately the point is that some people you can know the ultimate truth, given the right questions, and if you got them cleared out the right quality …

Bronwyn: And if they've told the truth.

Neil: Then you could, in turn, tell the truth about that individual?

Bronwyn: For the future, yes. That's what I believe. With a high likelihood, he would form the way the scorecard predicts unless he experiences some kind of crisis in his life, which can happen. But yes, I would like to state it the way you just said it. If he is gave the truth, if the quality was good and if the scorecard, when it was developed, formed very strongly and when we monitor it, it stays strong; no changes in the economy, no changes in the population profile, then yes, the prediction power is quite high. (Bronwyn, 13 June 2005)

Having established that, for the community of practioners, borrowers can be explained by certain irreducible truths, I was left questioning what anchors these essences. By speaking about different characteristics in men and women, Alfred, on the one hand, seemed to suggest that essence may be defined genetically. (This was echoed in a different context by Norman who proposed that risk be established using DNA testing (Norman, 23 June 2005)). On the other, Alfred also entertained the view that essence

might be accumulated through a process of acculturation or socialization.

> *Men are slightly worse than women. There's no answer for that. It's almost like a personality in essence, I suppose. How you've been brought up, how you view the world, what are your beliefs – it's a whole ethical question, which is very difficult to measure at a scorecard level. (Alfred, 24 June 2005)*

By and large, most views on what defined borrowers' essences were nebulous and inconsistent, however, being attributed to some vague construct referred to as "human nature". "Human nature", for the community seemed to point to, from my reading, a genetic quality. Further to this, it suggests an abandonment to an inexplicable process that requires no explanation. It simply is.

> *I mean people aren't all the same. So, you're never going to get it right, perfectly. You can try your best but there's always going to be some circumstances like someone losing his job; someone just not getting his salary in time this month. There's human nature behind this; and that's the main thing. It's not a machine that's making the payments each month. There's a person who has difficulties as well. (Jane, 22 June 2005)*

> *Because you look at it and it's a consistent thing. If you start measuring from the time that we give you your loan, to … that you took in January 2005, in the first twelve to eighteen months all the people who would have defaulted, have already defaulted. After that point, you don't really get any further defaults. The people that you then get after the eighteen months are then people who where there's external factors, outside their control. But that first twelve to eighteen months; it's not because he loses his job or anything. It's because he is fundamentally that kind of person. (Richard, 29 July 2005)*

As shown, through their absolute commitment to borrower essence, the conversations I held with the community of practitioners consistently emphasized an ultra-modernist view of identity (Cerulo, 1997; Woodward, 1997). Given this orientation, it was therefore not unsurprising to find that the community had little to say on human agency or change. More on this however, will be said below (see Assumption 2.5: The essence of borrowers is unchanging).

5.5.2 Assumption 2.2: Borrower behaviour mirrors their essence

> *Neil: Behaviour is everything, and behaviour is what determines the person.*
>
> *Elizabeth: Let me put it this way. If you eat Kellogg's Cornflakes tomorrow morning for breakfast and you eat Kellogg's Cornflakes the next day for breakfast and you eat it the next day for breakfast, you can tell me that you're going to eat Oats the next day, chances are I'm going to believe you're going to eat Kellogg's Cornflakes for breakfast. And depending upon how long you've maintained that behaviour and how consistent that behaviour, the less I'm going to actually take what you're telling me, compared to what I'm … to seeing. And that's the way I see it as …. (Elizabeth, 23 June 2005)*

A second assumption that the community of credit scoring practitioners makes is that borrower behaviour reflects their true essence. In other words, the activities of borrowers defines who they really are.

The sentiment of this assumption was most pronounced when the scorecard practitioners discussed the types of variables that they used in building scorecards.

> *Neil: Okay – we can have a long chat about that one. Now you assume that like Experian, ITC, etc, they provide objective*

information. Ultimately that information – and this is another assumption – is based on some kind of behavioural thing that's observational. It's observation of how people act. Inherent in that is that people's behaviour is a truth around that individual that's truly reflective of the individual's riskiness.

Patrick: Yes, basically it's an assumption that you make that the information that we get from Experian is reflecting the activity of the client. (Patrick, 7 June 2005)

It was also evident though in discussions on fraud, such as those with Alfred, where truth is equated with behaviour.

Neil: Basically, it's in your activities or your behaviour that you determine who you are.

Alfred: Yes. So there's inherently good and inherently bad. Let's make that the first split. An inherently bad person is going to take you for a ride and not be too flustered about it. If you want to commit fraud and if you want to take someone for a lot of … that's it. There's a difference here. Fraud – the bank thinks you're good and you know you're bad and you misrepresent yourself. Credit in some cases, they're misrepresenting themselves; but it's more an ethical question. So they will represent themselves fine, but what they're not telling you is – I have no intention of paying you back. And believe it or not, there are a lot of people like that, who will take you for a ride. They couldn't care less about it. And what you see as well is, even once they've gone into default and you've told them – will you pay – and when you try to stop their card, they start spending below the … of it. So if they spend below the … of it, they can raise their balance up even higher and they know they shouldn't, but they still do it. (Alfred, 24 June 2005)

Even during the course of this research, I never failed to be

astonished by these views that borrower essence could be inferred by one behavioural dimension alone. For me, it effectively rubbished or denied a century's worth of modernist psychology as well as now popular thought suggesting that the individual can be explained by many other dimensions, including emotion and intent. This astonishment I repeatedly put back to the community in my discussions in order to gauge their responses. Many, like Jane below, conceded that behaviour alone did not capture the borrower. However, for the community the positives clearly far outweighed the negatives. For Jane, demonstrated behaviour is the most easily measured. Used as the basis for judging whether to grant credit or not, it is moreover – according to the practitioners – the most justifiable to the borrower. Implied therefore is that behaviour is absolutely congruent with the underlying character of the borrower. In reflecting borrower essence, there is no distortion in the mirror. Behaviour is a mirror to the soul. And borrowers can only act as they are.

> *Neil: Behaviour is another assumption, I think, that is built into scorecards – that who you are fundamentally, in terms of your risk. It's defined in terms of your behaviour, not in terms of your intent. There's a million and one different things to say how a person is made up, how you are construed.*
>
> *Jane: But how will you measure any of those things? That's the main thing; you can only build a scorecard with things you can measure. I once went to a workshop where they discussed using personality types to predict whether you're going to pay your account or not. I mean, it's going to be interesting going to Edgars and having to write a personality test for them to determine whether you're going to get credit or not. I mean, how are you going to describe that to a customer? I would rather hear that I can't get an account because I haven't paid my account for three months, than hearing that I'm a lazy person and I can't get an account or I'm not out-going enough so I can't get an*

account, or whatever. It's very difficult to measure anything else and that's why behavioural score, I think, also, especially if you had a record at a specific company. But it mostly, I guess, helps the company in the way of sort of just giving more credit to the good people and avoiding the bad people. So it's not necessarily going to help people that went bad, to get credit again. (Jane, 22 June 2005)

For others, like Norman, however, the one-dimensionality of credit applicants in scorecards were a sign of the science's infancy. For him, the future of building scorecards lay in using other elements of human personality.

Neil: I just want to turn to some of your earlier points around, for example, behaviour. One of the things that we assume here is that what determines your risk is your behaviour. There's nothing like it's how you act is how you are. Like no matter what you tell me, you could tell me all sorts of crap in the world, or you can tell me your best intent, but how you act is who you are.

Norman: Yes, now we're moving towards a type of an interpersonal or a personality-type of thing. (Norman, 23 June 2005)

In sum, like their view of numbers, credit scoring practitioners assume that behaviour is transparent providing a window to borrower essence. To draw a comparison between numbers and behaviour, is to draw deliberate attention to the semantic connectivity between the two. For the community, numbers and behaviour take on the same meaning. You are as you behave.

5.5.3 <u>Assumption 2.3: Borrowers can be measured and represented mathematically</u>

It's a bunch of numbers and your numbers represent you. And if you look like this type of thing, then the picture you're portraying, you're either a good or a bad. You get boiled down to binary. You're a

one or a zero, buddy. So yes, it's basically inhumane if you can look at it that way. (Patrick, 28 July 2005)

A third assumption about borrowers upon which the logic of credit scoring is heavily dependent is that the very essence, the behaviour, of borrowers can be converted to a symbolic system of numbers. In its simplest form this process of translating behaviour to numbers involves matching the absence or presence of a behaviour to a binary code. For example, whether or not a credit applicant has three or more accounts in arrears over the last year is allocated a 1 or a 0. More complex measurements, in comparison, may involve allocating a range of scores, a scale, to behaviour. With the borrower having been interpreted into numbers, credit scoring practitioners are further able to summarize, reinterpret, analyze and graphically represent the borrowers' characteristics. Figure 9 below, for instance, illustrates borrowers' behaviours having been converted into conclusions regarding their inherent riskiness and how this stacks up in comparison with borrowers from the year previously.

Figure 9: Example of tabular and graphic representation of different risk categories of borrowers (Retail Credit, May 2005)

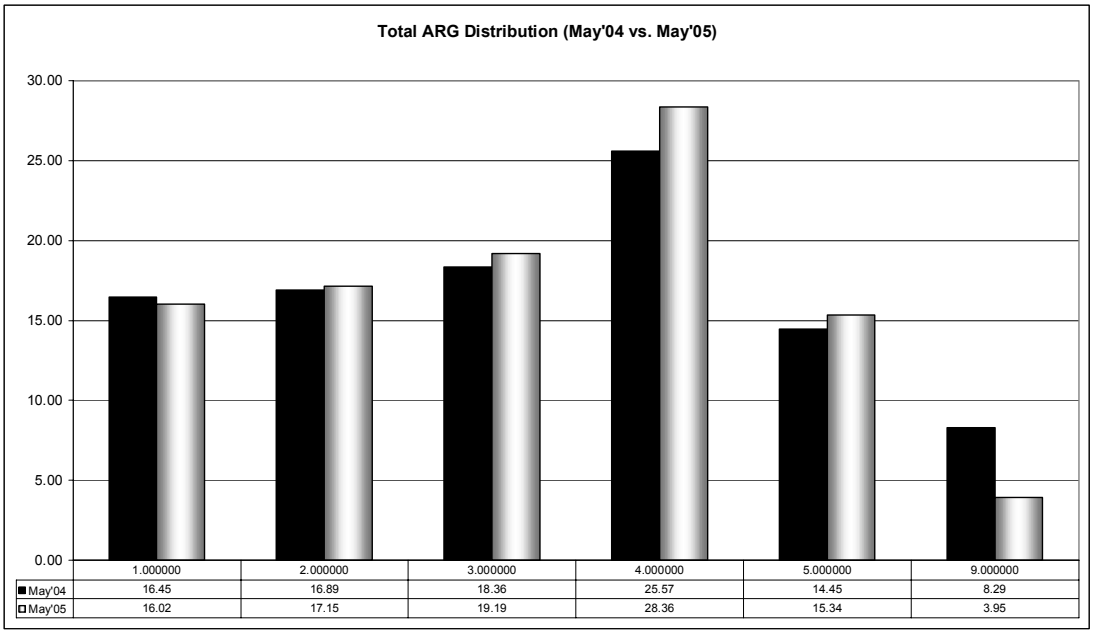
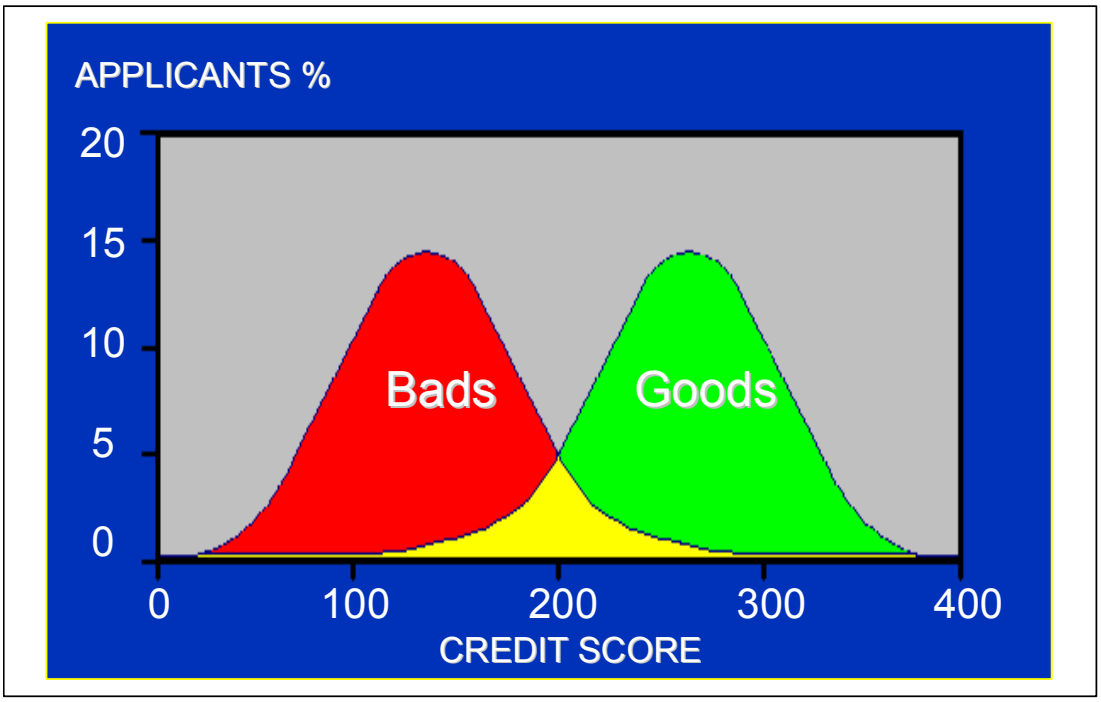


Figure 10: Example of graphic representation of Bad and Good borrowers (Richard, February 2005)



> *But I think the nice thing about this, the variables that we work with, you know, they're all quantifiable. If you look at a piece of paper, there it is; it's a number. (James, 13 July 2005)*

In response to a question I posed to her on credit scoring, Elizabeth argues that one of the benefits of measuring behaviour is that it makes the process objective and therefore equitable, it seems, for the borrower. This is a theme I have entertained previously.

> *I think that makes it more acceptable than subjectivity. I don't want to know that I'm being declined because of the colour of my hair or because the credit manager had a fight with his wife this morning. I would want to know that when they're looking at my application, they are doing so based on the facts that I provided them; things that*

I can perfectly quantify. (Elizabeth, 23 June 2005)

What makes her point interesting and worthy of further interpretation, in my view, is her choice of words, "… I would want to know that when they're looking at *my* application …". In psychology-speak this is referred to as projection – attributing one's own emotion to another. Given the community's standpoints on neutrality and the need to be machine-like, I was left questioning to what extent this was indeed a benefit to credit applicants or in fact the credit scorers themselves.

Notwithstanding, community members did generally recognize that in the process of measurement some nuances to the individual may be lost in translation. Patrick, for example, spoke about both the complexity of personality as well as the simplicity of measurement instruments confounding attempts to perfectly reduce individuals to numbers.

> *What I can comment on that is obviously we would like to measure the person's risk. The tools that we have available at the moment is the Credit Bureau; the kind of information that we have on the customer, the behavioural scoring system. Obviously there's more facets to the person that you can measure; but to stay as objective as possible and the tools that we have available at the moment, that, we use the bureau information. (Patrick, 7 June 2005)*

Yet for other members of the community of scorecard practitioners losing something of the perceived essence of borrowers through measurement means a simultaneous loss in what it means to being human. Replying to my probe on the cons of credit scoring Bronwyn thus responds as follows:

> *It's definitely; there are cons because it's very much rule-based, regulatory and you have to take into account that you're dealing with people, human beings. (Bronwyn, 13 June 2005)*

Further along she reiterates this view, arguing that people cannot be made to become machines.

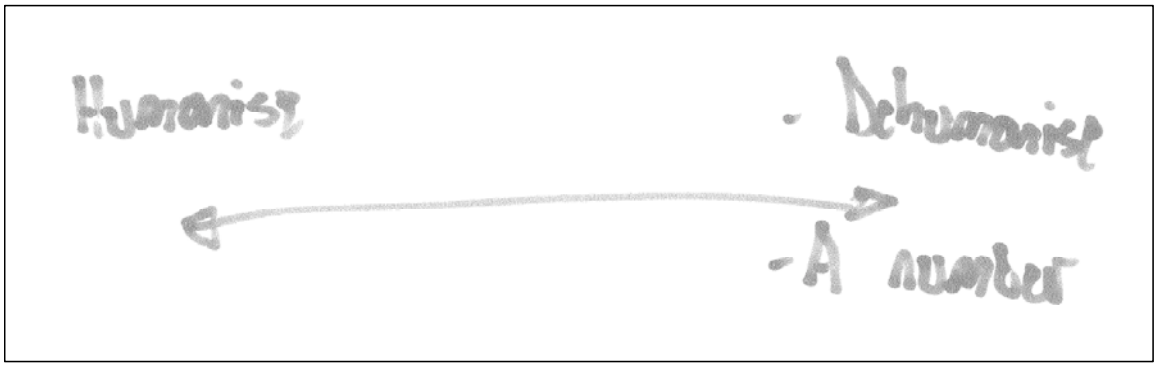
> *Yes for sure. It is true and it will always be like that. So, we will always have the extreme number of people who will end up dying with a huge lot of debt on their names. There's nothing to be done about that. You can't force people to become machines … (Bronwyn, 13 June 2005)*

Whether this represents the denial of her sub-conscious wishes (in other words, wanting to make people machines), or a sense of misgiving in the objectives of her enterprise lies beyond this material and this interpretation. Certainly, the point was not pursued during the course of our interactions together.

Norman, too, spoke about something indefinably human being lost in the representation of individuals by numbers. For him, the problem is exacerbated by a two-fold translation. First, borrowers are converted into numbers; then, following scorecard interrogation, they are converted into written and spoken language so that the outcome of the credit decision can be communicated back to the applicants.

> *So maybe, I don't know, but getting the human factor at the end of the score, when the number crunching has been done and all of these factors are taken in and you end up with a numeral is there. I would agree is to get more human contact or human intervention – not overriding the score, but explaining it to whoever is working with it. (Norman, 2 August 2005)*

Figure 11: Humanise vs. dehumanize (a number) (Neil, 28 July 2005)



In concluding this assumption, whatever character lies at the core of borrower is assumed able to be measured and 'numericised'. Contesting the strength of this supposition is the gap between what is experienced and witnessed of identity and the representation. Because of this reduction, it may well be more apposite to speak of the deconstruction of borrower identity through credit scoring techniques rather than its construction.

5.5.4 *Assumption 2.4: Borrowers derive meaning through their belonging to the aggregate*

Margaret: Basically what we do is – we take a whole bunch of people with the same characteristics and on those people we can see what happened that they go good or bad. We can classify on that bunch of people. Then, when we get somebody else with that same profile we assume that he would be the same. It's not on an individual basis; we look at a complete group. And if you have the same characteristics that that group and that group was bad, you probably would go bad as well. I think that's the only way we can predict it.

Neil: Again, one can't invalidate the assumption because it's fundamental to the thinking. You said there's only one assumption. There must be another assumption there, which is [that] people behave

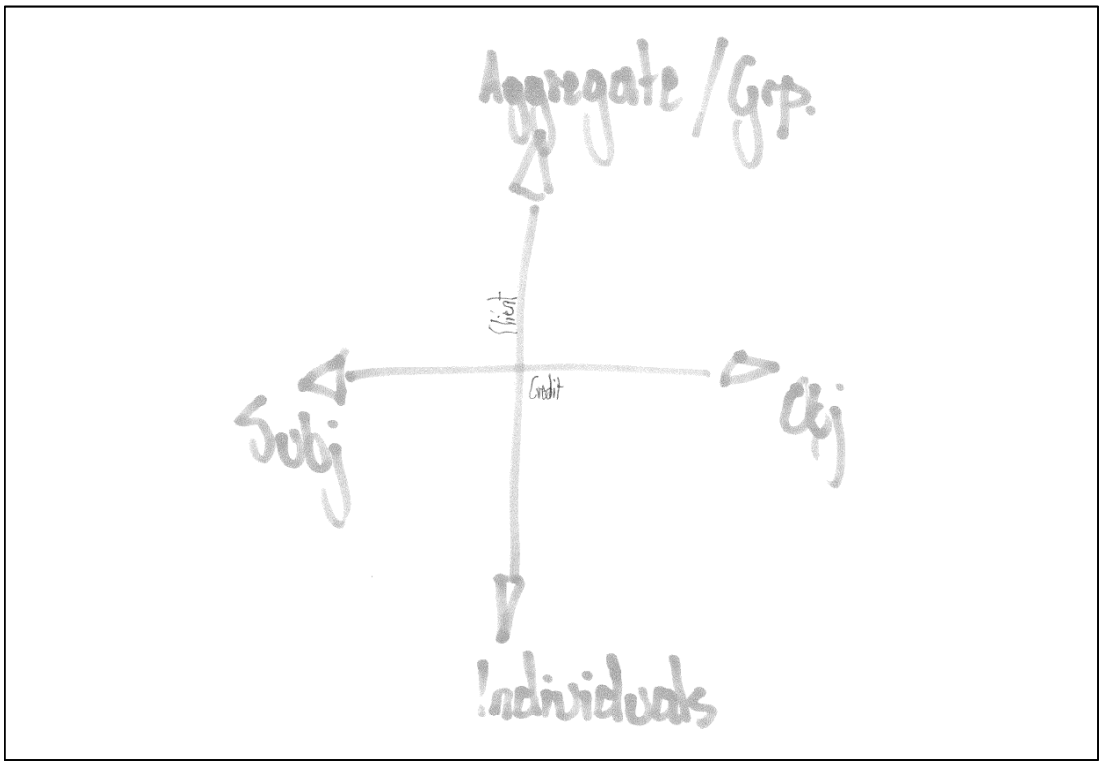
similarly, in groups.

Margaret: Yes. So people with the same characteristics behave similarly, yes. (Margaret, 24 June 2005)

There's no way that we can take every individual's behaviour and track that and accommodate that into a specific scorecard. (Bronwyn, 13 June 2005)

Taking its cue from the third assumption, a fourth assumption made about borrowers by the credit scoring community is that that they only derive meaning through their belonging to an aggregate or group. To paraphrase and to be absolutely clear: the *individual* borrower has no meaning among credit scoring practitioners. That this view of the borrower was a popular, unquestioned supposition is clear from the uniformity of voice with which the scorecard builders and users spoke, as well as their aversion to exceptions – examples of individual applicants whose character traits, behaviours and measured scores did not stack up to expectation.

Figure 12: Individual vs. aggregate axis and subjective vs. objective (Neil, 28 July 2005)



In order to derive the aggregate, the essences of borrowers are first reduced to numbers. These essences are constituted of behavioural variables which are next inserted into a weighted, multivariate formula. In having been computed, the various behavioural truths of an individual are summarized into a final result. Describing the aggregation of individuals through computation, however, begs the question *how* they are constructed. The formula which reconstitutes applicant individuals into groups is derived from the scorecard building process. Logistic regression, linear regression and neural networks all hold in common either blindly or 'artfully' taking a number of variables and establishing their concurrence with the predictor variable. Hinging on the extent to which the variables are concurrent with the predictor variable they are attributed with different weights, the final sum of which equals 100%. With a calculation having been written to interpret a number of different attributes into one score outcome, the final scores from the sample data on

which the algorithm is based are clustered formulaically in order to maximize similarity and minimize variance within a group or, as Elizabeth refers to them below, a “bucket”.

> *What you find in scoring is that you almost have buckets of profiles of customers that have a certain risk profile associated to them. And assigned to each of those profiles would be your good/bad answer-type relationship and if you’ve got odds of say, 400/1 that still means that out of those 400 customers, only one is going to go bad. (Elizabeth, 23 June 2005)*

> *Your underlying economic value is also based on averages. So, I will class you into a segment, based on my average or based on a view of what the average risk of that segment would be. I also have a view which says I would base my average spend on that segment to be this. Some people would spend a lot more; some people would spend a lot less. I would also base my average revolve rate – some people would have revolved more and some people would have revolved less. But, the thing is to try and segment those segments out so you have defined groups of people. And when you model that you can say – I won't allow more than one in ten people in any segment to destroy value, for example. And that enables you to do this. (Alfred, 24 June 2005)*

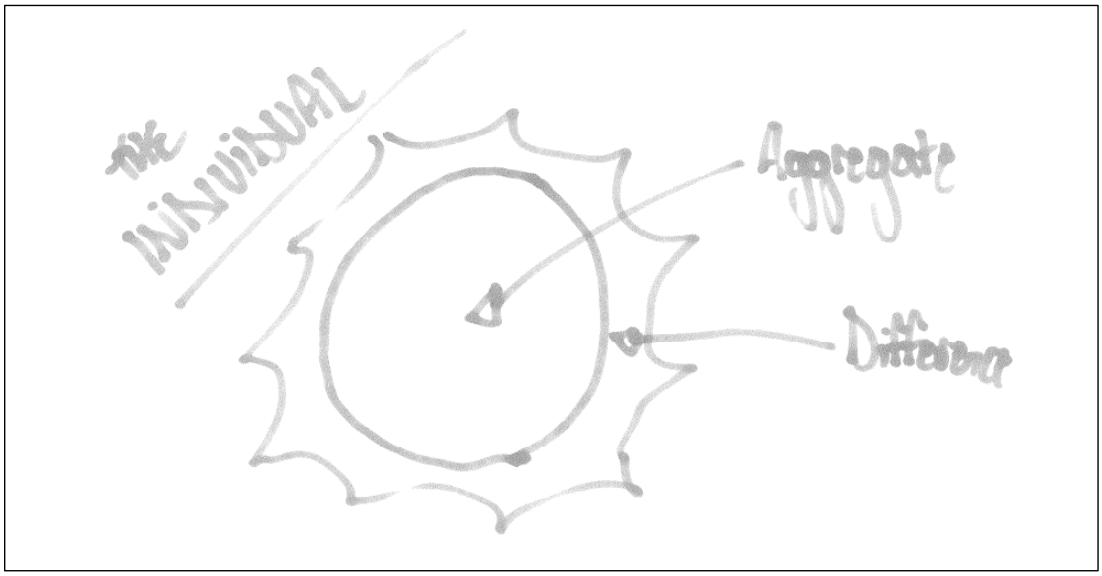
Feedback from the community of practice suggests that distillation and summary find importance from a practical point of view (for example Elizabeth, 23 June 2005). A finite few general segments make possible business interventions which can be put in place. They also enable the segments to be engaged with conceptually in scorecard rhetoric and dialogue.

> *Neil: But that doesn’t speak to changes that the individual could experience in their credit lifetime.*

Bronwyn: No. The difficult thing here that we're trying to accommodate is the fact that, yes, we are scoring an individual, a person, one single person, but we've got to use mass to mass, to try and get there. There's no way that we can take bi-person behaviour and then come to a scorecard. So, I have to work from the bulk, from the big picture and then, just hopefully, it will cater for most people. And, then there would be the individuals that would experience extreme situations and they could go worse or become better or recover. (Bronwyn, 13 June 2005)

While the aggregation of borrowers may well have positive utilitarian consequences for scorecard builders and users, the effects for the borrowers themselves are perhaps less positive, in my view. For one, aggregation encourages credit applicants to move not as individuals, but *en masse*. And for another, by focusing on a few particular aggregate behaviours and not others, these few behaviours are deified, completely overlooking the broad range of other behaviours, emotions and intents. In short, for credit scorers, therefore, essence is discovered in similarity and sameness, not difference. In looking for sameness, sameness is uncovered. Left in the lens' blind spot, however, are idiosyncrasy, difference and uniqueness. This view I summarized in Figure 13 and positioned with the community of credit scorers in my second round of interviews with them.

Figure 13: Credit scoring's preoccupation with the aggregate at the expense of difference (Neil, 28 July 2005)



That credit applicants experience the process of aggregation in a negative light is evident from signs of their resistance to both being reduced to a number as well as a group – what I referred to in my discussions as the "double-reduction". Richard for example, spoke of the "fight" that applicants put up to this double-reduction:

> *I think the big problem with these sorts of things is the human element. Those are people saying that you're treating me like a number or I'm an individual. That's a big thing in scoring, where people have a big stand-up fight. (Richard, 29 July 2005)*

In following, credit scoring practices assume that borrower essence and meaning is derived through belonging and behavioural similarity. This is vindicated on pragmatic grounds, but results in applicant resistance.

5.5.5 Assumption 2.5: The essence of borrowers is unchanging

> *Margaret: Well, the only thing you have to predict the future is the*

past. That's the best we can do and from my experience it's quite good. Because what they say is, history repeats itself. If you've been bad for the last six months, you're probably going to be bad. I don't know if there's any other way of doing this.

…

Neil: I don't question the role of the … of the bank and the need for profit. I think your assumption that you speak about is one that is basically inherent … in that it will. I mean, if you are a bad risk the bank basically condemns you, to use quite strong language, to that risk … that … that bucket, but there's no real expectation around moving out. In fact, it will probably suit us. It will suit us to the best if you don't, we're going to reject you in advance perhaps, but it doesn't really expect change.

Margaret: No, it doesn't. (Margaret, 24 June 2005)

Because the community holds a static view of the universe (the past predicts the future) and is unable to account for the development or emergence of qualities intrinsic to credit applicants (borrower behaviour mirrors their essence), it was little surprising that it had a weak grasp on how or whether, in fact, peoples' essences change. Probed specifically on the matter, Elizabeth, for example, was unable to account for changes in people, arguing that it was a complex question to which there was no definitive answer.

Neil: How do people change?

Elizabeth: Well, that, I suppose, is a question for the psychologists. Change in terms of credit behaviour; or change in terms of general? I don't know. That's a psychological question. I'm not the one to answer that. I think it's a function of your environment, your circumstances, your own inherent persona, your willingness to change. There's

so many different variables that come into that.

Although, in my view, she is no doubt correct that change is indeed a complex question, it troubled me that rather than engage with the problem she – like the community – chose to ignore it, preferring to assume that applicants do not change. Once the applicant has an essence, that essence is forever. If the applicant is a good credit risk now, he or she is likely to be good risk in the future; if the applicant is bad credit risk now, one is likely to be bad risk in the future. Simultaneously reflecting and constructing this reality, credit scoring will offer, therefore good terms to good risk clients and poor terms to the bad and in so doing perpetuate the status quo (see also Assumption 1.3: Building scorecards is an imperfect science). Many scorers within the community of practice made repeated reference in their discussions with me to a behavioural modification agenda or, rather, a behavioural *perpetuation* agenda, ala Pavlov.

> *If the scorecard said you get a perk, you would get a loan; if not, you won't get a loan under any circumstances. (Jane, 22 June 2005)*

> *I think what makes it quite difficult is that the more you introduce this to people, to a large extent … if you start changing people behaviourally you're going to have less and less of a chance to more accurately predict risk. (Richard, 29 July 2005)*

Reinforcing my interpretation that the community shared a simplistic understanding of how change may occur, some members believed that changing risk, irrespective of its origin, was a matter of personal choice and volition. Elizabeth, again, for example below, argues that individuals are masters of their own destinies.

> *Elizabeth: But I still think that it's ultimately up to each individual. I don't believe that you can actually blame genetics for anything, when it*

comes to your own personal behaviour. You're in control of your own destiny.

Neil: So you can learn and un-learn your badness.

Elizabeth: Yes. [Inaudible.]

Neil: But you're also saying [it] is damn difficult?

Elizabeth: Oh yes, I'm not saying it's easy. [Inaudible.] If you put your head down to doing something, you will do it. But you have to actively and consciously make that choice within yourself. And that relates to everything in life, not just in terms of how you behave in terms of your payment.

Similarly Margaret, twice in the same interview, shared the view that credit applicants, like all people, can consciously act to change their reality by choosing to behave differently.

Ultimately you create your own reality. (Margaret, 2 August 2005)

I still feel that people create their own destiny. So yes, they might act out of character once, but ultimately what they are going to do … they've done before. So the things they do consistently are the ones that define them. So I don't think this distortion, as far as you see it, there might be, yes, but I don't think it's that far. (Margaret, 2 August 2005)

In brief this assumption, reveals that if credit applicants are to change, this will have had little involvement or help from credit builders or scorers. In fact, the change will have bucked the community's commonly held beliefs and practices.

5.5.6 Assumption 2.6: Borrowers have an essential riskiness

Neil: Explain that to me in obvious terms – around the individual. So, you're saying that a person has an inherent ability or something that makes them either go bad or good.

Elizabeth: There's a probability. And what you're trying to assign to what that probability is of that person doing something, in an application scorecard, of the probability of him going bad. So what you could say is – what is the chance of somebody actually missing three payments in the next year? If he is supposed to make a monthly payment on his current account, what is the chance that he is going to miss three payments?

Neil: And badness being – not paying.

Elizabeth: That's why I say – your definition of 'bad' becomes so crucial. You can say your definition of 'bad' is having missed three payments. You can say in current accounts, your definition of bad is having gone into excess of your limit for ten consecutive days. It's very much an arbitrarily defined definition. (Elizabeth, 23 June 2005)

The sixth assumption identified is that borrowers have an innate riskiness. An extension of Assumption 2.1 (borrowers have essences), this assumption holds that every credit seeker has a measurable, essential propensity towards not fulfilling on their obligation to repay the bank the money they owe to it. Indeed, the neologism 'riskiness' is used consciously over the commonly used 'risk'[3] in order to draw attention through dissonance to the concept of risk as a dimension of personality. As an innate characteristic, the truth of this

[3] "The sixth assumption identified is that borrowers *have innate risk*" may sit better with the reader than, "The sixth assumption identified is that borrowers *have an innate riskiness*", for example.

riskiness is assumed to lie buried deep within the nature of the individual and nowhere else; neither in his or her environment nor in his or her circumstances. For credit scoring techniques to be successful, therefore, they must be able to tease out the risk from credit applicants. Credit applicant risk must be made to speak its truth.

> *The scorecard makes a good attempt at it and the scorecard gets a lot of it right, but it's not going to be able to predict for each person whether he's actually got the intention to pay it back and whether he's actually got the ability, both financially as well as from a character point of view or whatever makes a person do it. (James, 13 July 2005)*

As has been discussed above in section 5.2, views among the community on how risk should be determined and what variables point to an applicant's inherent risk varied. This leads Richard to argue that some scorecard builders are confused in their intent, corrupting the measure with other variables.

> *I fundamentally believe that if you look at something like a home loan, most of the banks and, in fact, all of the banks, in their models, they would have the loan to value and installment to income as drivers of the model. So, these are two pieces of information that determines your score. Because, historically, the higher the LTV, the higher the risk and the higher the installment income, the higher the risk. In my mind, that says bad credit management. Because, you should be building a model that predicts the risk excluding those two factors and you should be determining those two factors with the client. So, you actually, if loan to value is a strong predictor risk, you want to negate that. You want to make it not a predictive risk at all because then you're managing the risk on that axis. (Richard, 29 July 2005)*

Certainly the feedback from Anne (personal communication, 20 June 2005),

for example, would seem to vindicate such a claim.

One of the apparent contradictions of this assumption is that credit application evaluations through scorecards, in practice, require building scorecards for different product lines such as current accounts, credit cards and home loans (for example, Margaret, 24 June 2005). To speak simultaneously of inherent riskiness but different product scorecards to determine the same riskiness, therefore, would not seem to make sense.

Apparently a further more serious contradiction for the assumption, however, is that evidence of the assumption does not stack up to what is borne out in reality. Patrick, for example, argued that when clients did go "bad" this was often not a function of their innate riskiness but rather circumstantial factors.

> *I reckon most of the instances where people had defaulted on their accounts; it's more where they were really into a situation where they couldn't pay. It's like small businesses where their money comes in late. They will pay a little bit later, but they will pay. And then there's instances where the person just forgot. And you get a little paper in the post – you have not paid. And that information gets recorded by the – it's information that's shared by the bureau. So, we would actually get information like that. (Patrick, 7 June 2005)*

Weighing up the arguments for this assumption, despite a number of contradictions which might result in the foundations of the assumption being contested if any tests of logic were applied to it, the community continues to doggedly pursue the unshakable belief that credit applicants are imbued with inherent riskiness.

5.5.7 *Assumption 2.7: Good borrowers are good borrowers and are economically active*

Neil: Yes, I agree with you. You were speaking there again

about another assumption that we haven't spoken about, which also interests me, which is the regular payment issue. Because, fundamentally, in order to, like you have to follow a regular payment cycle. There's certain assumptions in that, that one that, for one that you either need to be employed or have some form of regular form of cash flow, and also, that those cash flows follow a regular monthly cycle. Which, as we speak, it's clear that there are constraints in a lot of that thinking particularly in the small business example that you have. You have small businesses that get shit loads of cash one month and then a complete dry for ages.

Patrick: A couple of months, definitely. And I think whether it's a discipline issue once again. The thing is then you can't educate the consumer because it's not the consumer's fault, once again. It's his source of income. Yes, I think that's where you probably get more information in terms of a home loan where I think that's where your application forms would differ; that you've got a regular income; you can see that you've got a regular income. Okay, that's fine. We can put it on an automated debit on your account. Where you would accept more risk in your credit cards or current account and stuff like that. (Patrick, 7 June 2005)

The seventh assumption expressed by the community was that good borrowers are good borrowers elsewhere, with other institutions, and are economically active members of the community.

Further, credit applicants who can be classified from their behaviour as having inherently good risk have accessed credit previously with other retail and financial institutions and have subsequently comported themselves in a favourable manner. This track record provides inductive evidence for credit builders and scorers that the client is inherently good risk. It does, however,

create a circular, “chicken-egg” problem for applicants who have no such history.

> *Neil: For you it's just a case of … catching up because you betray your assumption as you're speaking. The one assumption that you used there is "economically active". Borrowers, I mean it's one of those slight contradictions. In order to get credit you have to be economically active. So, if you're part of the system, fantastic. If you're not in the system it's quite difficult. You're either getting high interest rates, which can perpetuate a cycle of pro-activity.*
>
> *Elizabeth: Absolutely. That inherent risk that you … and if you statistically model those variables, somebody who is not credit active has a much higher rate of default than somebody that is. So from a statistical point of view, you tend to shy away from those profile customers. Whether that’s necessarily fair is a different story. Because it does – it's negatively biased against the young people that are not; that haven’t built up that type of a credit history.*
>
> *Neil: Or the marginal clients, clients who have just entered the economic cycle. Because, I think, … economic too, is – this catches on a whole bunch of issues, but the whole frequency of payment thing that ‘economically active’ means, you're only part of the economy if you both have a regular income stream and you regularly pay out. So, then what constitutes frequency? To be more explicit, you're asking to get monthly payments. It's not good enough to have one month’s R50 and two months later, I don’t know, R3 000. (Elizabeth, 23 June 2005)*

In order to be good risk, therefore, one must be good risk. On how applicants might enter into the cycle, Elizabeth had the following to recommend:

> *And it makes it very difficult for youngsters who are entering the market, who don’t have that type of credit history, to actually*

obtain credit. Which is why the recommendation from my point of view is to them – go out and open an Edgars account, and conduct that account well for a year, before you try and acquire a banking … (Elizabeth, 23 June 2005)

Essential to being a good borrower, applicants also needed to be able to make frequent payments on their debt. Almost inevitably this means not just being employed, but more restrictively, being employed within the formal economy. Having the ability to pay is insufficient. The applicant must have the ability to pay frequently and, moreover, have the support of a company's employment. The view was well-expressed in my interview with Patrick (see above).

In short, the last borrower assumption that I have identified among the scorecard practitioners holds that an applicant's behaviour in one context can be fully transposed to other contexts. This leads inexorably to systems of inclusion and exclusion for credit seekers.

5.6 Groups excluded through credit scoring

But the thing is we know on average; we know that particular segment is made up of a group of people where ninety of them will go bad and ten will be good. The problem is we only really make money where ten of them will go bad and ninety of them will be good. So, as soon as that threshold or that mix becomes worse, we're forced to make a business decision to say we can't actually take the risk here unless you're interested in us charging you a fortune and then you get governed by usually by, how much you're allowed to charge. It's kind of how the economics will fall into … (Alfred, 24 June 2005)

The interviews with the members of the credit application scoring community confirmed the purpose of credit scoring to measure the inherent risk

of credit applicants, to rank and categorise this risk and, finally, to make judgments both on whether to grant credit or not, as well as at what rate to grant credit (see Hand and Henley (1997)). The entire enterprise, therefore, aims to include some applicants while excluding others. ("Exclusion" in this context is used in a broader sense to refer to both those to whom credit is withheld as well as to those who attract higher interest rates, for having been judged higher risk).

While the exclusion of bad risk clients may be argued to be an intentional outcome of the process, there are other groups of clients who are excluded, I would argue, unintentionally. As has been posited in Assumption 2.7, because credit scoring takes applicants already within the credit cycle an entire group of people is excluded who have never received credit before. This group of people may include the youth, the unemployed, the financially illiterate, the uneducated and non-credit seekers – people who may not have needed to access credit before. Almost certainly to be excluded, however, are applicants who are unable to demonstrate regular income streams. In other words, applicants not employed within the formal economy. All these categories of people may be considered at the periphery of economic society.

Warranting particular stress, I believe, is that but for its grading and segmentation of risky applicants the process of exclusion is largely neither conscious nor deliberate. Being invoked is the notion of 'disparate treatment discrimination' (Yates, 2004; Barefoot, 1993; Barefoot, 1997). Certainly, from both what the practitioners told me directly on their commitment to non-discrimination (for example Bronwyn, 13 June 2005) and the less-than-conscious assumptions spelt out above it was clearly evident that the community of practice had no appreciation or regard for the discriminatory implications of their practice. This it would seem is the nature of assumptions – their very propinquity make them impossible to see.

5.7 Consequences of exclusion

> *If you take things like a house and a car, I mean, it can be a totally different level of living for someone having a car or having a house. I mean, if you can't access credit, how on earth can you buy a house or buy a car? There are very few people who can afford those, just like that. (Jane, 22 June 2005)*

Continuing with our broad use of "exclusion", consequences of being marginalized include not being granted credit or attracting higher interest rate charges for the amounts advanced. This holds implications for both borrowers and scorers.

As I have shown (see Assumption 1.4: Credit scoring's primary responsibilities are to create and protect corporate profit), for the scorers exclusion has profit consequences.

Without exception, the entire community recognized that scorecard exclusion can have restrictive consequences for applicants falling on the less favourable side of the decision process. Not having access to credit fundamentally means not having access to certain material possibilities or, to resurrect and corrupt a term used by Elizabeth, "dreams" (Elizabeth, 2 August 2005). Expensive credit, particularly where an applicant is over extended, on the other hand, threatens to engulf borrowers in a cycle of ever increasing debt. This view was well illustrated by Alfred in his discourse on loan sharks: "You then have to borrow money to pay off the money you've just borrowed because you can't afford to pay it back quick enough, and live. And you soon, suddenly end up in a position where you're borrowing less than what you owe and you can't live anymore and that's the danger of this thing" (24 June 2005).

Notwithstanding these implications for credit applicants, the community

steeled itself to the fact that its primary responsibility was to the bank.

5.8 Alternative scorecard characteristics

> *We really, really need better data capturing in [the bank] and the database structure, the inter-linking of information between data sources. That would greatly contribute to the quality and the predictive power of the scorecards. At the moment, I would say our scorecards are relatively moderate because of problematic data. You need clean data to work with and merging information across data sources. It's difficult at the moment. So yes, we end up using a very few accounts which we know they should be relatively clean and then we base the scorecards on them. But it limits the picture to only those that we could capture. So yes, there's a great opportunity for improvement, especially from a data point of view. Also, when we implement our application scorecards now then I should also build up a database of application variables; things that people should answer when they apply for credit. That we simply improve the scorecards in the moment that we can then also include those variables in future. It will take five years, but it will most probably help. (Bronwyn, 13 June 2005)*

As I have argued above, credit application scorecards and the science thereof is considered deficient by its practitioners. From this finding one might expect, as I did, the community to have much to say on opportunities to redress these shortcomings. Sadly, this was not the case especially when it came to entertaining alternative scorecard characteristics.

According to the community, characteristics which might be considered in building scorecards of the future included:

1. Tax information

2. Utility bill information

3. Geo-coding

4. Intelligence variables (IQ tests)

5. Personality variables

6. DNA

Strikingly, these variables share in common the fact that various forms of measure exist for them already. The question therefore might shift to why alternative variables are not being experimented with in application scorecards already? In answer to this question, the community inevitability retreated to the defense of practicality. Alternative variables are simply too expensive to conduct and manage in a sustainable way. In addition, they are viewed as being overly onerous to administer. Evaluating the truthfulness of these replies were not within the scope of this research; however, what can be commented on is the apparent lack of urgency on the part of the community to experiment with different ways of scoring risk.

In summary, therefore, the paucity of ideas for alternative characteristics to be used in application scorecards as well as apparent lassitude on behalf of the community of scorecard practitioners would appear to have painted them into a corner of ignorance: you don't know what you don't know.

5.9 Conclusion

An analysis of the interview material, observations and collected material using a critical ethnographic approach, answered all seven of the sub-problems to the research.

Firstly, three broad sources of credit scoring characteristics, namely

bureaux, relationship or behavioural, and application data, were identified and unpacked in detail.

Secondly, by exploring the make up of scorecards and in particular examining the predicted variable it was shown that scorecard characteristics are correlated with risk. The predicted variable was demonstrated to be clients who have in some form or another defaulted on the payment of, or fallen into arrears in paying, the product.

Thirdly, four broad assumptions underpinning credit scoring and scorecards were identified namely, that human credit decisions are faulty and unsustainable, that the past predicts the future, that building scorecards is an imperfect science, and that credit scoring's primary responsibilities are to create and protect corporate profit.

Fourthly, seven assumptions which are made about borrowers by scorecard practitioners were thrown into light namely, that borrowers have essences, that their behaviour mirrors their essence, that they can be measured and represented mathematically, that they derive meaning through their belonging to the aggregate, that their essence is unchanging, that they have an essential riskiness, and lastly that good borrowers are good borrowers and are economically active.

Fifthly, it was argued that there were groups of borrowers who were unintentionally excluded through credit scoring, including new borrowers and applicants who are unable to demonstrate regular income streams.

Sixthly, two primary consequences of credit exclusion were entertained. For one it was argued that being excluded from credit may mean not being able to realize one's material dreams. For another, it was maintained that exclusion from inexpensive credit threatened to entrap borrowers in cycles of ever increasing debt.

Finally, some few alternative scorecard characteristics were proposed and it was concluded that practitioners were not making good progress in innovating on this front, preferring the seductive shores of ignorance instead.

Collectively these results illuminate the main research problem from all dimensions: how borrower identity is formed through credit scoring practices. This problem is addressed in the final chapter of this report.

CHAPTER 6: CONCLUSIONS

6.1 Introduction

The final chapter sets out to present and discuss the key findings of the study. In particular, by levering off the findings entertained thus far it aims to address and answer the main research question: namely, how the identity of the borrower is formed through credit scoring practices of a retail bank.

With all the problems having been addressed, the chapter identifies the limitations of the research and makes recommendations. It then concludes with suggestions for further research.

6.2 Summary of main findings

Perhaps the single most significant finding that this critical ethnography served to expose, in my view, is the brute naiveté with which credit scoring practitioners apply their discipline.

This artlessness was most evident in their lack of critical appreciation for the assumptions foregrounding credit application scoring. Following Orlikowski and Iacono (2001), the community of practitioners demonstrated having a computational view of technology. The IT artifact thus receded absolutely into the background as the riskiness of borrowers was measured, modelled and simulated.

It was also clearly apparent in the lack of appreciation which they demonstrated for the constructionist effects of granting or withholding credit. Lest I be misinterpreted: the scoring practitioners loosely understood the effects of credit for borrowers. However, they did not connect their role and responsibility in the process with these same effects. They simply designed

and developed the scorecards. And these scorecards are simply tools.

A blunt response, therefore, to the question of how the identity of the borrower is formed through credit scoring practices is: blindly. This is an unconscious, accidental outcome. Credit scoring is about statistics, probabilities and mathematical algorithms. It is about data and computation. It is about predicting loss given default, economic capital and bank profit. Credit scoring is *not* about borrowers. It is certainly *not* about borrower identity.

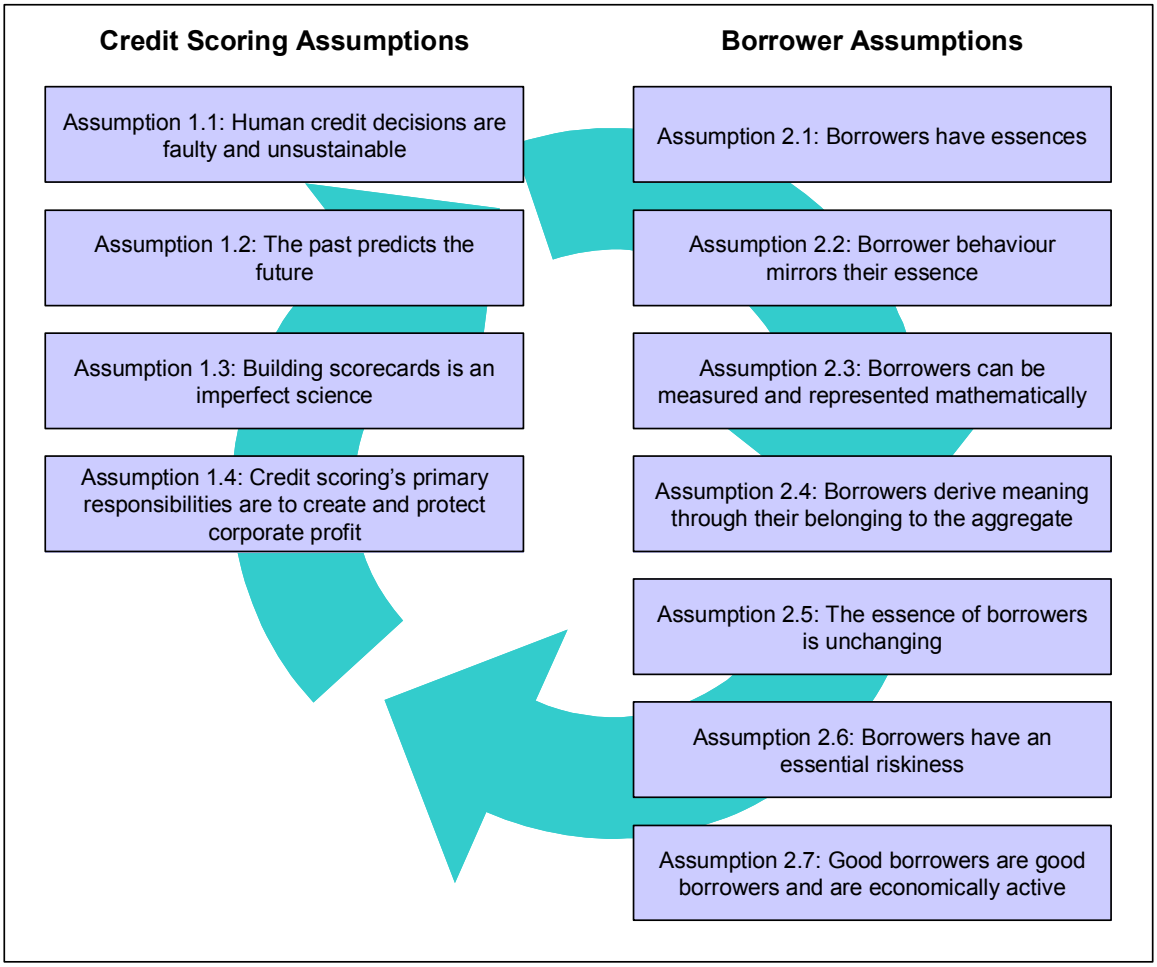
To complicate the answer further, although credit application scoring unwittingly constructs identity for the bower, this process is no less unrelenting nor ineffective. Indeed, its very efficacy may be the thoughtlessness with which the constructing is approached for if it lies beyond comprehension, it cannot be discussed or engaged with meaningfully. Unfettered, the construction of borrower identity, through credit scoring, simply bumbles along, perpetuating itself.

At its earliest, borrower identity starts to be formed through the individual's every interaction with money taking, for profit, organizations such as banks, retail stores, and utility companies. The outcomes of these transactional experiences are submitted to credit bureaux which effectively function as clearing houses of economic behaviour. Because of the unobtrusiveness and pervasiveness of their surveillance, these credit bureaux might be considered panopticons. Paraphrasing Graham and Wood, the digitization and centralization of the individual's every economic transaction enables "active sorting, identification, prioritization and tracking of bodies, behaviours and characteristics of [prospective borrowers] on a continuous, real-time basis" (Graham & Wood, 2003:228). For civil society, this effectively means that it is unwittingly a substantial part of the surveillance machine well before any application for credit is made.

As has been discussed at length in Chapter 5 above, although borrowers only

discover identity through their actual application for credit, the nature and form which that identity takes begins well before, even as the scorecard is designed in the assumptions that are built into the process. Hence, the emphasis of this research report has been to argue that there are one, at least four broad assumptions underpinning credit scoring and scorecards, and two, seven assumptions which are made about borrowers by scorecard practitioners (see Figure 14). The fact that these suppositions are prevalent, however, is less important than the fact that they locate the individual relative to him or herself, to others and to the environment.

Figure 14: Summary of credit scoring and borrower assumptions



In making an application for credit, the individual is clustered or assigned to a risk bucket through a reduction of their key characteristics and a comparison of these characteristics to mathematical aggregates, of good and bad odds. To make no mistake: the individual has *no* meaning in credit application scoring. The individual only has relevance for credit application practitioners within groups of other individuals. Through explicit behaviour reinforcement, individuals are split from themselves as particular behaviours, such as regular debt repayment, are recognized and encouraged to the neglect of others. Re-emphasized throughout the write-up of this report is that this narrow focus on behaviour also comes at the cost of a full appreciation of human complexity. Aggregated to buckets, credit applicants are described and discussed as collectives by scoring practitioners within the bank; not simply as theoretical distributions, but real, flesh-and-blood, autonomous groups which move collectively as a mass. This is the stuff of identity construction. Lying outside the scope of this research, it would be further illuminating to explore whether borrowers assume this identity. Given such evidence as the promulgation of the National Credit Bill and the advent of borrower rights, I believe that research exploring borrower experiences would discover both strong affinities to particular borrower groups and resistance to this process of grouping, thus concurring with the results of this study.

Where to then in the future the construction of the borrower? The advancement of credit application scoring will include using scorecard variables which currently exist beyond the horizon of possibility. For example, tax information, utility bill information, geo-coding, personality dimensions, and DNA. Again, the actual form which these variables take is less important than the effects that they will realize for the borrower. The general tenure of these variables will be to breath further life and dimensionality into the borrower with the overall result that the borrower will enter the 21st century together with his or her fellow *self*-aware, *self*-realizing, *self*-actuating and *self*-regulating individual. Banks will be able to adopt a less directly punitive approach in the

face of this new borrower. (Punishment will move from the metaphorical gallows, as it were). The surveillance machine will bury deep into the far reaches of the borrower psyche. Such will be the power of the panopticon that borrowers will by their own volition confess their credit wrong-doings, seeking to be disciplined for the wrong which they know they do. Self-help literature for deviant borrowers will fill the shelves at local bookstores. I know all this will be the case not only because this is the same history of the individual as told by Foucault (1975, 1979), but because this future is now already in the emergence of borrower rights, for example.

In summary, borrower identity is systematically fabricated and reinforced on an ongoing basis through the innocent application of processes, systems and technologies of credit scoring practitioners. The future of application scorecard building will see more ambitious, sophisticated variables being used which will give rise to a self-regulating borrower, less overtly disciplinary banks, and more omnipresent and omniscient credit bureaux.

6.3 Limitations

Four limitations to this study are recognized, none of which, in my view, are icebergs to the titanic.

For one, as I have pointed out, this research set out to in its design phase to interview 18 participant credit scorers. Practical experience within the various credit departments, however, showed that the population was in fact limited to 10 credit application scorers. All 10 of these scorers were included within our community and were interviewed and engaged with by the researcher. A fundamental tenet of critical ethnography is flexibility and adaptability. I believe, that by being responsive and malleable to the context I have acquitted myself of this responsibility.

Although this research had sufficient material for the meaningful

identification and discussion of the problems at hand, it might be argued that yet more could have been gathered. This argument, it should be acknowledged, is foregrounded in the knowledge that qualitative research can be entrapped in never-ending cycles of data gathering. That last anecdote … the ultimate gem … . What is sufficient? For me, enough was being able to credibly answer the research questions in a manner which was consistent with critical ethnography. That said, I do believe that a critical ethnography may have greater compatibility with more open, less secretive, problems. Managing the community's concern for the confidentiality of their enterprise proved a constant challenge. It was also a barrier to them sharing documentation with me. Suffering, as a result, were some of the sub-problems which aimed to explore alternative approaches and variables in credit application scoring. Also, as a consequence, my analysis was compelled to lean more heavily on the interview material as well as informal interactions with the community of practice.

A third limit of the study was the extent to which it was able to raise criticality among the community of credit scoring practitioners. By my own reckoning, the research was successful certainly in stirring momentary irritation, frustration and denial in different members of the community as they struggled with trying to comprehend the nature and angle of my questioning. This might be indicative of a significant step in the direction of critical self-reflection. Raising sustainable criticality, however, in my view, requires a more prolonged and complex intervention. This research, therefore, marks progress in that general direction and, in its defence, makes no claim to wholesale transformation.

Finally, this study is limited by the fact that some of the standards, against which it is asked to be evaluated, only have effect in the wake of its completion and submission. Plausibility, for example, is optimally demonstrated when the results of the research are presented to the community of practice and other interest groups, such as inter-bank

forums and civil action groups with a vested stake in the promulgation of the National Credit Bill. As far as is possible, plausibility has been mitigated by having drafts of this report circulated amongst a number of the community of practice for comment. Feedback on technical inaccuracies was addressed. However, no interpretive amendments were made in order to remain authentic to the critical ethnographic approach.

6.4 Recommendations

Although this critical ethnography has no commitments to making pragmatic recommendations, given its pedigree several recommendations might be made for the two main protagonists addressed throughout the research; borrowers and credit application scorers.

6.4.1 For the borrower

It is difficult to remain upbeat for the future of the borrower. The borrower will become increasingly absorbed into the credit machine and the rise in his or her rights and liberties will be to the detriment of increasing dominance and control. This is the fatalism of critical theory. To quote Baldine, “If human identity is structured by technological convergence, what about the role of human agency in creating, fashioning, and shaping one's own identity?” (Baldine, 1997:34).

From a critical perspective, the recommendation to borrowers, therefore, is to assume agency through resistance to the machinery of production. Indeed, the heels of borrowers need to be dug in all the way! Acquiescing to having one’s transacting experiences submitted to the bureaux should be resisted. Being treated as a cipher should be resisted. Being bucketed should be resisted. Automated responses should be rejected in favour of a personal reply from a credit official. For the borrower, this resistance will mean an expression of selfhood. Credit technology, however, is highly

adaptive and responsive. Resistance will serve, thus, to spawn further credit innovation and expansion.

From my point of view, to become dispirited by this guaranteed fatalism is to glorify the role of personal agency – a particularly western intellectual endeavour. Being part of the credit machine is clearly a trade-off. For many aspirant borrowers this trade-off is purely academic.

6.4.2 For credit application scorers

In order to facilitate critical insight into their discipline, I would recommend that the community of practice have additional, more protracted perhaps, interventions which complicate credit scoring.

These interventions might dwell on the same assumptions highlighted throughout this research. They might also reiterate the practical consequences of extending credit, or not, for borrowers and the gravity of the scorecard practitioner's role. Certainly, at minimum I would hope that these interventions might result in the community adopting a more conscious approach to their enterprise. More ambitiously, I would hope that these interventions result in them experimenting with new score card variables which reflect other dimensions of human experience.

6.5 Suggestions for further research

The research focused on exploring the construction of borrower identity through the credit application scoring technologies of a single retail bank in South Africa. Being a case study and being explorative in nature, it is not exhaustive thereby offering significant avenues for further investigation and research.

Clear opportunities for further research include expanding the scope of this research to not only other banks in South Africa, but to international

banks as well. The assumptions and variables identified through this study might thus be elucidated and expanded upon.

The lens of analysis used in this research has been trained on credit application scoring. Explained above is that this forms a small component of the overall credit process. A more comprehensive deconstruction of the borrower would certainly benefit from systematic analyses of other credit technologies such as credit bureaux. The findings from these studies, I believe, would complement the overall results of this research.

Lying outside the scope of this research, it would be instructive to investigate more fully whether borrowers have inculcated the identity inscribed upon them. I have argued that there are indications which suggest that borrowers have a clear sense of identity. Research in this mould would explore the experiences of borrowers: awareness of credit bureaux activity and information sharing; understanding of credit application scoring; reactions to being translated into a number; satisfaction with computer-generated credit communication and feelings of resistance to the credit process. Being able to tie-up borrower experiences with the cold mechanics of credit bureaux and banks, without question, would mark significant progress in the understanding of borrower construction, I believe.

Whether there would be any value in testing any of the results from this, and similarly conceived, critical research through scientific, statistical interrogation is questionable. Recognized as a limitation to this research, the exception to this claim might be research into alternative scorecard characteristics. What alternative characteristics there are to be used is, however, poorly understood.

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APPENDICES

Appendix 1: Covering letter gaining access to community

Dear [Gatekeeper]

I am a MBA student at the University of the Witwatersrand currently conducting research on credit scoring and borrowers in South Africa. The research explores the effects of credit scoring on borrowers, and whether there are alternative ways in which borrowers might be scored. The results from the research will prove valuable to the development of credit scoring theory and practice both within South Africa as well as abroad.

In order to more fully appraise you of the scope of the research and to assist identifying suitable research participants, I would much welcome the opportunity to meet up with you in person. This initial meeting would require no more than ½ hour.

Kind regards

Neil Lightfoot

MBA Student

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I confirm that Neil Lightfoot is a student at Wits Business School and is

conducting research under my supervision.

Yours sincerely

Louise Whittaker PhD

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Appendix 2: First introduction

Subject: Score card research

Elizabeth, hi, Bronwyn recommended I speak to you. I'm reading for my MBA at the moment and am doing some focused work on score cards. I'll tell you more when we see one another.

Kind regards

Neil

Neil Lightfoot

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Appendix 3: Feedback

Subject: Thanks

Thanks for your contribution to my research thus far. For your interest, please find a rather interesting article by Ghoshal, published posthumously.

Neil

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Appendix 4: Final debrief

Subject: Final debrief on research

Patrick, I'd like to spend a short time debriefing on some on where the research is heading. If you've read the article I sent through, I'd also be keen to know your thoughts on it.

Kind regards

Neil

Neil Lightfoot

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